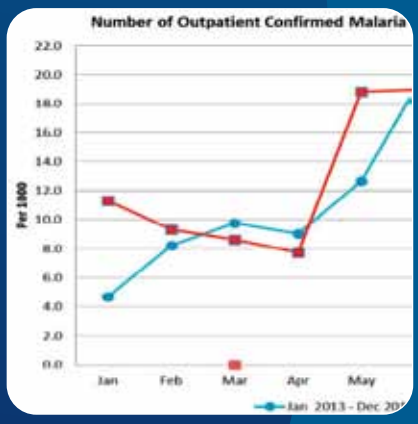
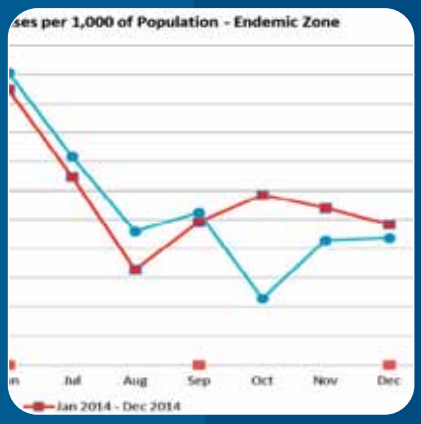
Ministry of Health





Kenya Malaria Monitoring and Evaluation Plan

2009 - 2018

REVISED 2014

Contents

Foreword

The Revised Kenya Malaria Strategy 2009 -2018 is a product of the mid-term review of the National Malaria Strategy (NMS) 2009-2017. This strategy is aligned to the Kenya Health Strategic and Investment plan (KHSSP) 2013-2018, the Kenya vision 2030, the Kenya constitution 2010, The Millennium Development Goals, the Roll Back Malaria partnership goals and the World Health Organization guidelines. The process of the development of the Strategy was with the consultation of all stake holders including the Counties.

Surveillance, Monitoring and Evaluation and Operational Research are key to measuring performance and evaluating achievements in targeted results for any health program. To measure achievements of the Revised Kenya Malaria Strategy 2009 -2018 the Ministry of Health through the National Malaria Control Programme and partners used routine surveillance data as well as various national and sentinel surveys, including the Malaria Indicator Survey of 2010. The programme was thus able to generate information on performance toward meeting the program implementation targets as outlined in the Annual Operational Plans, the Abuja targets, and Millennium Development Goals.

This monitoring and evaluation plan for the National Malaria Program has been developed in line with the overall health sector framework for monitoring and evaluating performance, including the institutional framework that is required for effective monitoring and evaluation of performance on various indicators and targets. The plan is part of the implementation of the principle of the "three ones" in malaria control in Kenya:(1) one national malaria control coordinating authority where implementation is a country-led process; (2) one agreed comprehensive national plan for malaria control, including costed work plans; and (3) one agreed country-level monitoring and evaluation framework to serve the national malaria control program and its partners in effective monitoring of performance and outcomes.

The plan articulates in detail indicators, sources of data, data collection and data analysis, and use in evaluation of all program intervention areas. In addition, the plan addresses information reporting and feedback and the responsibilities of the various stakeholders in its implementation.

I am confident that this plan provides the necessary framework for monitoring and evaluation of malaria control interventions and I urge all stakeholders to put all effort into its implementation to enable the country move toward the vision of "a malaria-free Kenya."

JAMES MACHARIA
Cabinet Secretary
Ministry of Health

Acknowledgements

The development of the Revised Kenya Malaria Monitoring and Evaluation Plan 2009 - 2018 involved an elaborate consultative process involving several key stakeholders in malaria control. The Ministry would like to thank the Director of Medical Services Dr. Nicholas Muraguri and the Head of the Department of Preventive and Promotive Health Dr. Jackson Kioko for providing policy guidance and technical directions to the development of both the Revised Kenya Malaria Strategy 2009 -2018 and this Monitoring and Evaluation Plan.

The commitment, technical support, and overall stewardship from the members of the Malaria Inter-agency Coordinating Committee, the World Health Organization (Africa Regional Office, Inter-country Support Team, and the Kenya Country Office) is highly appreciated. I acknowledge the contribution and technical support from the United States President's Malaria Initiative through USAID, U.S. Centers for Disease Control and Prevention and MEASURE Evaluation, Global Fund to fight Aids Tuberculosis and Malaria, Kenya Medical Research Institute, Wellcome Trust Program, the Division of Health Informatics and Monitoring and Evaluation, Population Services Kenya (PS-K), and all Malaria Control Monitoring and Evaluation Technical Working group Members.

My sincere gratitude to the United States President's Malaria Initiative (PMI) through Measure Evaluation PIMA for financing the development of the M&E plan.

I would like to thank staff of the Malaria Control Programme for coordinating the development of the M&E plan and in particular the Monitoring and Evaluation technical Working group and all partners and stakeholders in malaria control who made this possible.

Komesha Malaria, Okoa Maisha

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List of Abbreviations

ACSM	Advocacy, Communication and Social Mobilization
ACT	Artemisinin-Based Combination Therapy
ADR	Adverse Drug Reaction
AMFm	Affordable Medicines Facility for malaria
ANC	Antenatal Care
AOP	Annual Operational Plans
BCC	Behavior Change Communication
CCM	Country Coordinating Mechanism
CDC	Center for Disease Control and Prevention
CDROM	Compact Disk Read Only Memory
CHV	Community Health Workers
CORP	Community Owned Resource Persons
CSO	Civil Society Organizations
CU	Community Unit
CWC	Child Welfare Clinic
DFID	UK Department for International Development
DHMT	District Health Management Teams
DSRU	Disease Surveillance and Response Unit
DVD	Digital Versatile Disk
EPI	Expanded Programon Immunization
EPR	Epidemic Preparedness and Response
FTP	File Transfer Protocol
GFATM	Global Fund to Fight AIDS, Tuberculosis And Malaria
GoK	Government of Kenya
HIS	Health Management Information System
HMM	Home-Based Management of Malaria
HRIO	Health Records Information Officer
ICT	Information, Communication and Technology
IDSR	Integrated Diseases Surveillance and Response
IEC	Information, Education and Communication
IMCI	Integrated Management of Childhood Illness
IPT	Intermittent Preventive Treatment
IPTp	Intermittent Preventive Treatment in Pregnancy
IMCI	Integrated Management of Childhood Illness
IRS	Indoor Residual Spraying
ITN	Insecticide Treated Nets
IVM	Integrated Vector Control Management
KDHS	Kenya Demographic and Health Survey
KDR	Knock-down Resistance

KEMRI	Kenya Medical Research Institute
KEMSA	Kenya Medical Supplies Agency
KMS	Kenya Malaria Strategy
KNBS	Kenya National Bureau of Statistics
KSPA	Kenya Service Provision Assessment Survey
LLIN	Long Lasting Insecticide Treated Nets
LMIS	Logistics Management Information System
LMU	Logistics Management Unit
M&E	Monitoring and Evaluation
MCH	Maternal and Child Health
MIAS	Malaria Information Acquisition System
MICS	Multiple Indicator Cluster Survey
MIP	Malaria in Pregnancy
MIS	Malaria Indicator Survey
MOPHS	Ministry of Public Health and Sanitation
MSH	Management Sciences for Health
MTR	Mid-term Review
NCAHU	National Childand Adolescent Health Unit
NMCP	National Malaria Control Program
NMS	National Malaria Strategy
NPHLS	National Public Health Laboratory Services
NQCL	National Quality Control Laboratory
OR	Operational Research
PHMT	Provincial Health Management Team
PMI	President's Malaria Initiative
PMM	Pharmaceutical Management of Malaria Medicines
PPB	Pharmacy and Poisons Board
PSI	Population Services International
PSM	Procurement and Supply Chain Management
PV	Pharmacovigilance
QC	Quality Control
QoC	Quality of Care
RBM	Rollback Malaria
RDT	Rapid Diagnostic Test
SMEOR	Surveillance Monitoring and Evaluation and Operational Research
TWG	Technical Working Group
UNICEF	United Nations Children's Fund
USG	United States Government
WHO	World Health Organization
WTRP	Wellcome Trust Research Program

1. Introduction

The goal of the Kenya National Malaria Control Program is to reduce morbidity and mortality caused by malaria in the various epidemiological zones by two-thirds of the 2007-2008 level by 2017. The National Malaria Control Programme (NMCP) coordinates National Malaria Control program activities at the national level by developing guidelines, strategies, and policies while also undertaking the M&E function and providing capacity building to counties in implementation of malaria interventions. The NMCP is housed in the Division of Communicable Disease Prevention and Control, which is under the Department of the Preventive and Promotive Health. Previously the unit was called the Division of Malaria Control (DOMC) and was renamed following the health ministry structure subsequent to the introduction of the devolved system of government in Kenya.

The Kenya Malaria Strategy 2009 - 2018 (Revised 2014) was developed to support achievement of the stated goal through investment in four core interventions:(1) vector control,(2) access to prompt and effective treatment,(3) prevention of malaria during pregnancy, and (4) epidemic preparedness and response. Three supporting interventions were also identified: (1) surveillance, monitoring and evaluation, and operational research (SMEOR); (2) advocacy, communication, and social mobilization (ACSM); and (3) strengthening of program management.

Effective monitoring and evaluation of the national malaria program remains an essential function of the malaria program management in assessing progress in the achievement of the set objectives and targets. Following the review of the National Malaria Strategy 2009-2017, with gave birth to the Kenya Malaria Strategy 2009 - 2018 (Revised 2014) the National Monitoring and Evaluation (M&E) Plan was also reviewed and maintained the principles of the "Three Ones"

The "Three Ones"

a) One national malaria control coordinating authority where implementation is a country-led process

b) One agreed comprehensive national plan for malaria control, including costed workplans

c) One agreed country-level monitoring and evaluation framework

Monitoring is the *routine tracking* of the key elements of program performance through record keeping, regular reporting, surveillance systems, and periodic surveys. More specifically, monitoring involves generating data on inputs, processes, and outputs of an ongoing program over time. Program monitoring also assesses the extent to which the implementation of planned activities is consistent with the project or program design. Indicators selected for monitoring will be different depending on the reporting level in the health system and the interventions deployed. At the national and sub-national levels of implementation, monitoring of inputs (human resources, financing, guidelines, and supplies), processes (procurements and training), and outputs (services delivered) is essential for assessing program performance.

Evaluation is 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 after a period of time. It helps determine the value or worth of a particular program. Evaluation deploys various techniques that include quantitative and qualitative research methods to systematically investigate a program's effectiveness and impact to determine the extent to which the invested resources have yielded the expected results.

This Reviewed M&E plan articulates, by program area, details of what data are needed, the indicators, sources of data, and frequency of data collection. It also provides information of the data flow, analysis, use, reporting, and feedback mechanisms, as well as the responsibilities of the various malaria stakeholders. It details plans for developing M&E capacity of human, logistical, and financial resources and includes a detailed activity plan covering the duration of the reviewed strategic plan from 2014 to 2018.

1.1 The current malaria situation in kenya

1.1.1 Plasmodium Species

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

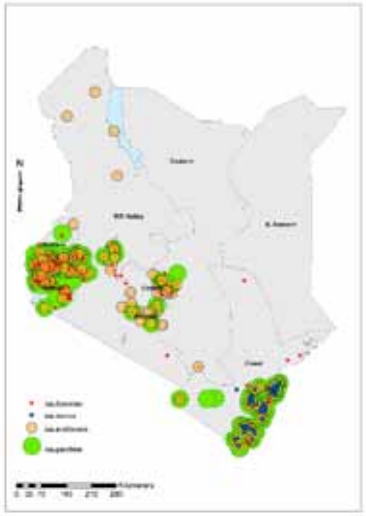


Figure 1.1 Malaria Vector Map (NMCP, Insecticide Resistance Project 2010)

1.1.2 Main malaria vectors

The major malaria vectors in Kenya comprise of Anopheles gambiae, An. Arabiensis, An. merus and An. funestus. The distribution and relative abundance of these vectors is shown in the (figure1.1).

1.1.3 Epidemiological stratification

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

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

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

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

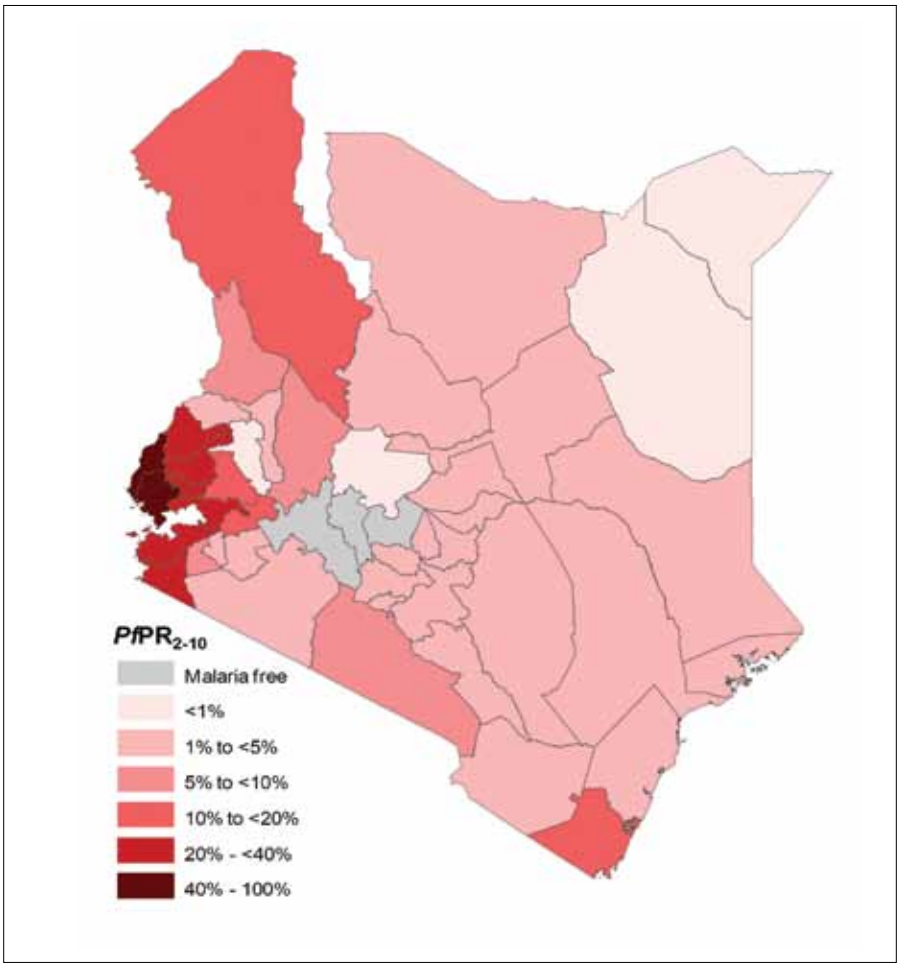
d. Low risk malaria areas – this zone covers the central highlands of Kenya including Nairobi. The temperatures are usually too low to allow completion of the sporogonic cycle of the malaria parasite in the vector. However with increasing temperatures and changes in the hydrological cycle associated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

1.1.4 Dynamics of malaria transmission and implication on malaria programme intervention

Data from various sources shows the different epidemiological zones of malaria in Kenya.The map in (Figure 1.2) shows that the majority of the population 47.3%, live in areas with a parasite prevalence of 5-10% and 18% live in areas with a parasite prevalence of 20-40%.

Routine data on malaria cases shows a similar picture with majority of the cases from the malaria endemic zone and the lowest cases in the low endemic areas (figure 1.3).

From 2011 to 2015 the suspected malaria cases as a proportion of the outpatient department cases has reduced over the years. This could be attributable to a better clinical acumen of the health worker due to trainings that have occurred over the years and also the preventive malaria interventions that have been employed over the years. This is depicted below (Figure 1.4).



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

Figure 1.2 Annual mean predicted PfPr2-10at 1X1 km resolution and the population at risk by endemicity class for the year 2010 (Noor et al., 2010)

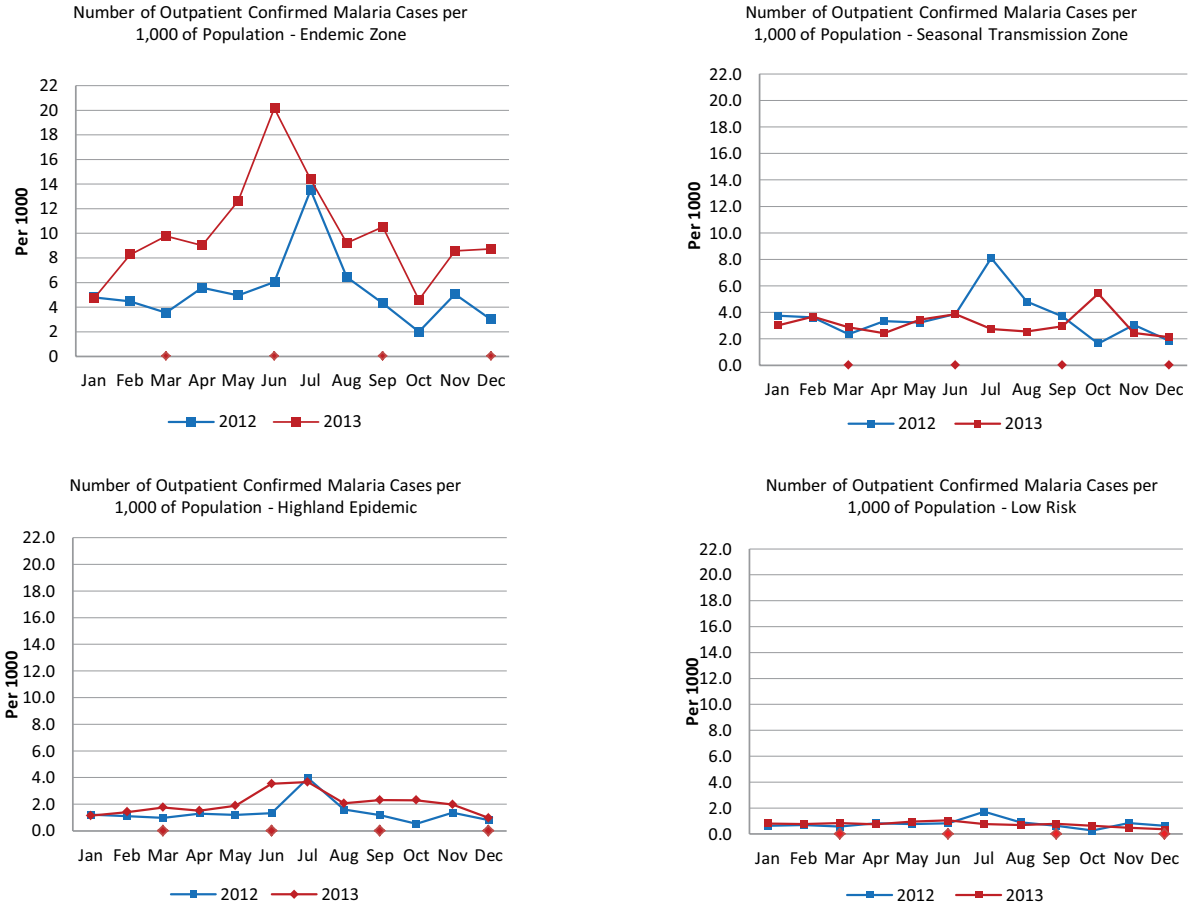
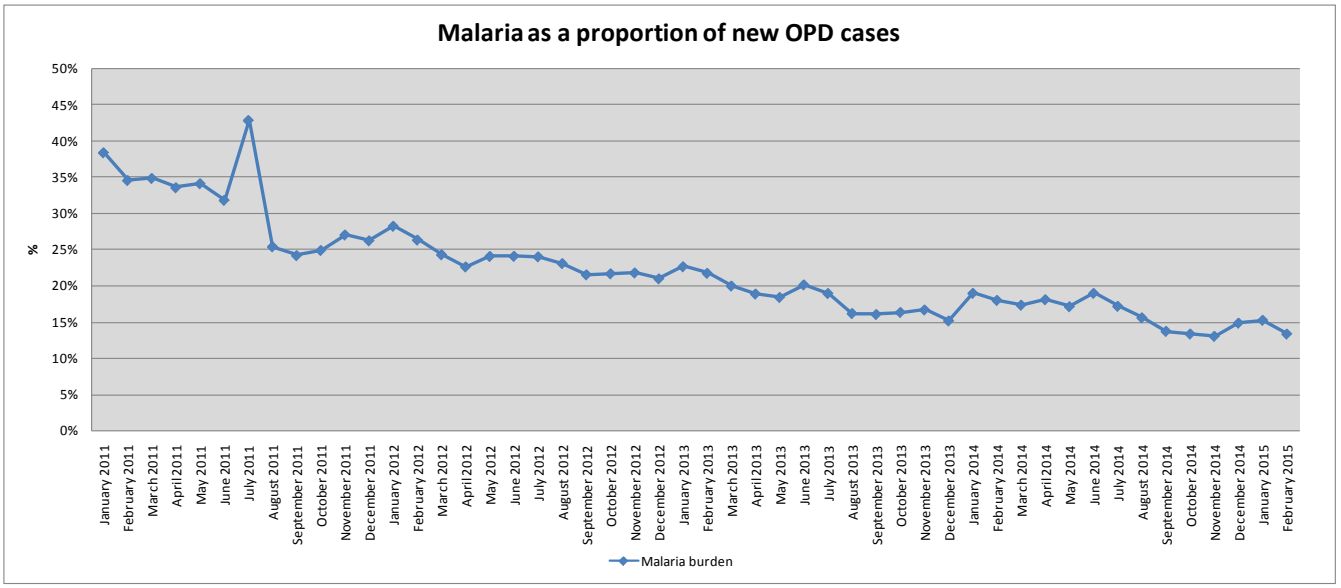


Figure 1.3 Number of malaria cases per 1000/population according to epidemiological stratification

Efficacy of antimalarial medicines

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

Figure 1.4 Malaria as a proportion of new OPD cases



1.2 Review of the Kenya Malaria Monitoring and Evaluation Plan (2009 – 2017)

1.2.1 Mini Malaria Program Review (MPR)

In July 2013, the NMCP together with partners and other stakeholders, conducted a Mini-Malaria Program Review. The review report highlighted, by thematic area, the situation analysis, including key achievements, challenges and future directions.

1.2.2 Malaria Mid-Term Review (MTR)

A stakeholders' meeting for the Malaria Mid-Term Review of the Kenya National Malaria Strategy (KNMS) 2009-2017 was held at Maanzoni Lodge between 24th and 28th March 2014. Thematic groups were formed to address the review issues for each of the KMS objectives, with thematic group 4 being charged with the responsibility of reviewing the objective on Surveillance, Monitoring, Evaluation and Operational Research(SMEOR). This group held brainstorming sessions, while simultaneously making reference to the Mini-Malaria Program Review (Mini-MPR) findings, to undertake a situation analysis of the strengths, weaknesses, opportunities and threats that face the implementation of the SMEOR objective of the KMS 2009 – 2017. During the Mini-MPR, the SMEOR gap analysis had been summarized in form of enabling and constraining factors in the implementation of this objective.

1.2.3 Preliminary Review of M&E Indicators

Subsequently thematic group 4 met again during a follow-up workshop held at the KCB Training Centre in Karen between 1st and 4th April 2014 whose key objectives were:

- To develop a write-up by thematic area mainly focusing on the description of the strategies and activities under each objective;
- To select suitable indicators and targets for the activities and strategies; and
- To cost the revised KMS using activity based costing and the One Health costing model.

Final meetings were held at the NMCP boardroom and at Silver Springs hotel in Nairobi to finalize the review work, including undertaking a detailed programmatic and resource gap analysis per objective. The outputs of these workshops and meetings were used to inform further review of the KNMS 2009–2017 and the accompanying M&E Plan.

One key output of these meetings was identification of the need to re-word the M&E objective in order to keep the focus on the core functions of SMEOR, which are monitoring, reporting and evaluation of all malaria indicators. Thus KNMS objective 4 became: ***"Ensure that all malaria indicators are routinely monitored, reported and evaluated in all counties by 2017."***

1.2.4 Stakeholders' Review of the Draft Revised Malaria M&E Plan

(i) An initial version of the revised Kenya Malaria M&E Plan was presented to the M&E technical working group (TWG) meeting held on 8th May 2014 at the NMCP boardroom. The key areas requiring modifications were highlighted and deliberated upon. An M&E consultant was tasked with incorporating feedback from the meeting into a more refined draft of the plan.

(ii) A 5-day stakeholder workshop was convened at Masinga Dam Resort from 23rd to 27th June for an in-depth review and revision of the draft malaria M&E plan. Special emphasis was placed on the review of input, process, output, outcome and impact indicators in the M&E Plan's Performance Framework. In addition, the workshop analyzed the M&E related costs for each of the KMS objectives, and reviewed the text of the draft M&E Plan. Finally, the workshop developed a Data Demand and Use (DDU) action plan for the Kenya NMCP.

1.3 Summary of the Kenya Malaria Strategy

The vision for malaria control remains to have a malaria free Kenya. The goal of the Kenya Malaria Strategy (2014-2018) also remains *"to have reduced morbidity and mortality caused by malaria in the various epidemiological zones by two-thirds of the 2007/2008 level by the year 2017"*. To achieve this goal the KMS 2014-2018 identified six strategic objectives, each with key strategies that outline how these objectives will be achieved during the strategic plan period. The objectives have been revised and modified in accordance with the findings of the mini-MPR as well as the MTR.

Additionally, the targets for each objective were revised to make them more realistic considering what has been achieved over the first half the NMS implementation

period. Following is a summary of the revised objectives and strategies:

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

a) Distribution of LLINS through appropriate channels in order to achieve and sustain universal coverage
b) Indoor residual spraying in the targeted areas
c) Larval source management
d) Malaria-free schools initiative
e) Prevention of Malaria in pregnancy (MIP)

Objective 2: To have 100% of all suspected malaria cases presented to a health provider managed according to the national malaria treatment guidelines by 2018

a) Capacity building of health workers in malaria diagnosis and treatment at health facilities
b) Access to affordable malaria medicines and diagnostics through the private sector
c) Strengthening community case management (CCM) of malaria using the Community strategy through Community Health workers
d) Ensure commodity security of anti-malarials and diagnostics in the public sector
e) Strengthen quality assurance of malaria diagnosis

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

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

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

a) To strengthen malaria monitoring and evaluation systems
b) Conduct and facilitate health facility surveys
c) Conduct and support community surveys
d) Strengthen school-based malaria sentinel surveillance
e) Facilitate operational research and translation to policy
f) Strengthen malaria data management systems
g) Human resource capacity building in surveillance, monitoring and evaluation
h) Conduct and support entomological surveillance

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

a) Strengthen structures for the delivery of advocacy, communication and social mobilization (ACSM) interventions at all levels
b) Strengthen program communication for increased utilization of all malaria interventions
c) Advocate for inter-sector collaboration for malaria ACSM
d) Strengthen community-based social and behaviour change communication for increased utilization of all malaria interventions

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

a) Develop/update and disseminate policy and lobby for legislation and regulations to strengthen malaria control in Kenya
b) Strengthen procurement and supply management systems for malaria medicines and commodities
c) Capacity strengthening for planning, partnerships, coordination and implementation at all levels
d) Strengthen resource mobilization capacity to improve malaria control financing

1.4 Funding For The M&E Plan

Table 1 shows a summary budget estimate of the KMS 2009–2018 and the corresponding M&E component for each of the KMS objective. It is evident the M&E has been given prominence in the revised strategy since on average it represents 7% of the total KMS budget.

Table 1: The Revised 2009 -2018 M&E Budget Component of the KMS

		BUDGET ESTIMATE IN KSHS				Grand Total
KMS Objective Focus		**2014/15**	**2015/16**	**2016/17**	**2017/18**	
Objective 1: Malaria Preventive Interventions	Total Budget	9,477,560,362	4,166,070,834	6,364,835,077	7,906,179,538	27,914,645,811
M&E Component	327,361,752	332,481,946	29,430,427	669,787,146	1,359,061,271	
Objective 2: Case Management	Total Budget	4,847,031,160	4,189,506,473	4,934,932,577	4,363,091,088	18,334,561,297
M&E Component	115,994,300	115,994,300	115,994,300	115,994,300	463,977,200	
Objective 3: Epidemic Preparedness and Response	Total Budget	44,033,600	20,234,350	20,234,350	20,234,350	104,736,650
M&E Component	33,349,350	15,186,350	15,186,350	15,186,350	78,908,400	
Objective 4: Surveillance, M&E and Op. Research	Total Budget	459,558,723	224,970,295	228,427,564	394,415,102	1,307,371,685
Objective 5: Advocacy, Communication and Social Mobilization	Total Budget	857,400,464	363,423,850	368,459,850	358,423,850	1,947,708,014
M&E Component	70,093,700	60,337,000	60,337,000	60,337,000	251,104,700	
Objective 6: Program Management	Total Budget	1,799,140,244	1,877,999,590	1,994,201,250	2,218,169,039	7,889,510,122
M&E Component	128,163,470	154,526,862	207,182,126	300,099,360	789,971,818	
Total Budget		17,484,724,554	10,842,205,391	13,911,090,668	15,260,512,967	57,498,533,580
Total M&E Budget Component			1,134,521,295	903,496,753	656,557,767	1,555,819,258
M&E Budget as a proportion of Total Malaria Budget		6%	8%	5%	10%	7%

Revised Kenya Malaria Monitoring and Evaluation plan 2009 -2018

2. The Revised Kenya Malaria Monitoring and Evaluation plan 2009 – 2018

The articulation of a malaria M&E plan for the NMCP and its partners will ensure effective monitoring of performance, including outcomes. This document will facilitate the efficient use of data and resources by ensuring, for example, that indicators and sampling methodologies are comparable over time. Data generated by a comprehensive malaria M&E system will serve the needs of many constituents, including the NMCP, academic researchers and international donors, eliminating the need for parallel and duplicative M&E processes and activities in line with the "Three Ones" principle.

M&E is key to all aspects of the national malaria control programming. Through the implementation of the M&E plan, program results can be measured to provide a basis for accountability and evidence-based decision-making at both program and policy levels.

2.1 Objectives of the M&E Plan

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

a) To ensure collection, collation, processing, analysis and use of appropriate malaria data at all levels of malaria control programming;
b) To enable regular monitoring and documentation of program performance based on implementation plans and targets;
c) To facilitate harmonization of malaria data collection based on standardized definitions, tools and indicators;
d) To ensure the updating of the malaria databases for comprehensive storage, retrieval and use of malaria control information;
e) To coordinate and strengthen linkages with other programs and partners who generate malaria data in order to acquire all relevant data and thus avoid duplication of efforts; and
f) To provide accurate and timely information to the malaria program and all stakeholders for evidence-based decision-making at all levels.

2.2 Framework for Monitoring and Evaluating the Kenya Malaria Strategy (KMS)

The Malaria Control Unit has adopted the basic M&E Framework for monitoring and evaluating the national malaria control program.

Indicators are used at different levels to measure the performance of a program. For a program or project to achieve its goals, **inputs,** such as money and staff time, must result in **outputs,** such as stocks and delivery systems for drugs and other essential commodities, new or improved services, trained staff and information materials.

These outputs are often the result of specific **processes**, such as training sessions for staff. If these outputs are well designed and reach the populations for which they were intended, the program is likely to have positive short-term **effects** or **outcomes**, for example increased use of insecticide treated nets (ITNs) or improved access to effective treatment. These positive short-term outcomes should lead to changes in the longer-term **impact** of programs, measured in reduction of malaria cases and deaths.

The basic framework, shown in **Figure 5** outlines the inputs, processes, outputs, outcomes and impact indicators.

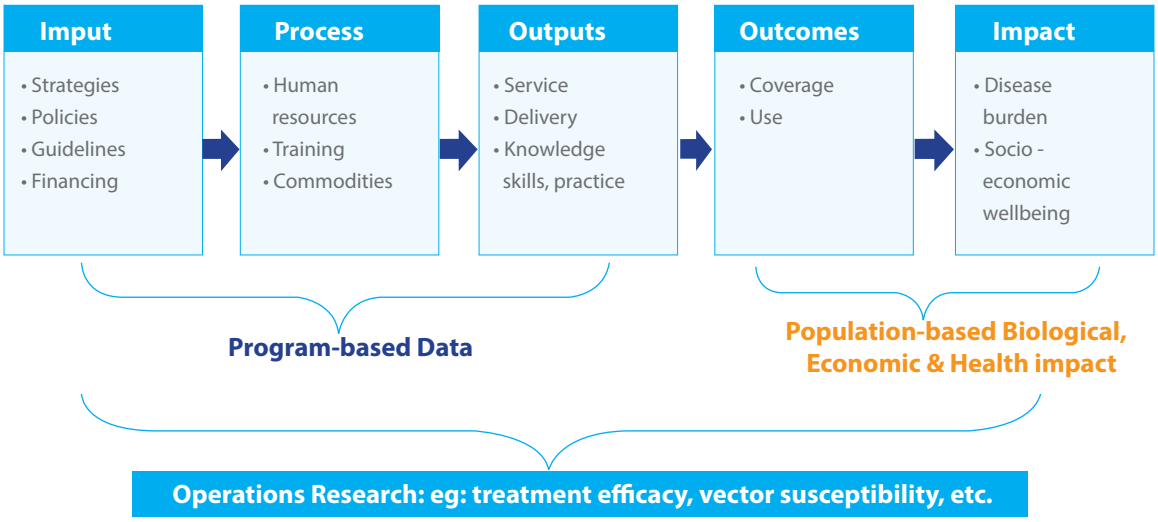


Figure 5: The Basic M&E Framework

The performance framework for monitoring implementation of the KMS 2009 -2018 is presented in **Table 2**.This is informed by the goal, objectives and strategies in the strategic plan. The detailed log frame for the KMS 2009 -2018 is contained in **Appendix 1**of this plan.

Table 2: M&E Basic Performance Framework for the Revised Kenya Malaria Strategic plan 2009 -2018

GOAL: By 2018, to have reduced morbidity and mortality caused by malaria in the various epidemiological zones by two thirds of the 2007/2008 level

GOAL	IMPACT INDICATORS	DATA SOURCE	FREQUENCY	RESPONSIBLE
To have reduced morbidity and mortality caused by malaria in the various epidemiological zones by two thirds of the 2007/2008 level by 2017.	Inpatient* malaria cases among children <5yrs [per 1000 persons per year]	Routine surveillance	Quarterly	NMCP M&E /HIS
	Total inpatient* malaria cases [per 1000 persons per year]	Routine surveillance	Quarterly	NMCP M&E /HIS
	Inpatient* malaria deaths among children <5yrs [per 1000 persons per year]	Routine surveillance	Quarterly	NMCP M&E /HIS
	Total inpatient* malaria deaths [per 1000 persons per year]	Routine surveillance	Quarterly	NMCP M&E /HIS
	Confirmed outpatient malaria cases at health facility level among children <5yrs [per 1000 persons per year]	Routine surveillance	Monthly	NMCP M&E /HIS
	Total confirmed outpatient malaria cases at health facility level [per 1000 persons per year]	Routine surveillance	Monthly	NMCP M&E /HIS
	Total Clinical outpatient malaria cases at health facility level [per 1000 persons per year]	Routine surveillance	Monthly	NMCP M&E /HIS
	Percentage of suspected malaria cases tested using a parasitological based test	Routine surveillance	Monthly	NMCP M&E /HIS
	Slide/RDT Test Positivity Rate (TPR) at health facility level	Routine Surveillance	Monthly	NMCP M&E and Lab /HIS
	Malaria parasitaemia prevalence (pf) rate among children < 5yrs in lake endemic areas (by microscopy) Disaggregated by sex	Survey	3Yrs	NMCP M&E /KNBS

Objective 1:To have at least 80% of people living in malaria risk areas using appropriate malaria preventive interventionsby 2018				
Strategy	**Performance Indicators**	**Source of data**	**Frequency**	**Responsible**
Strategy 1 Distribution of LLINs through appropriate channels in order to achieve and sustain universal coverage	**Input**			
	Amount of funds available for the LLIN/ITNs strategy	Program reports	Annually	NMCP Vector Control/ PSI//UNICEF/KENAAM
	Plan of Action (Guideline) for Mass Net Distribution			
	Process			
	Number of people trained in LLINs distribution	Activity reports	Quarterly	NMCP Vector Control/ PSKenya/ WV/Counties
	Number of LLINs purchased			
	Number of distribution points (community and health facilities) established			
	Number of LLINsPOA disseminated			
	Number of households registered			
	Number of meetings held with stakeholders			
	Number of mass net distribution tools distributed			
	Output			
	Number of LLINs distributed through mass campaigns	Activity reports	Quarterly	NMCP Vector Control/ PS Kenya / WV/ Counties
	Number of LLINs distributed through health facilities			
	Number of LLINs distributed through social marketing			
	Cost per distribution mechanism			
	Outcome			
	Proportion of households with at least one ITNs/LLINs	Household survey	2-3 years	NMCP M&E/KNBS
	Proportion of households with more than one ITNs/LLINs			
	Proportion of household with at least 1 ITN/ LLIN for every 2 persons			
	Proportion of pregnant women sleeping under ITN/LLIN			
	Proportion of U5 sleeping under ITN/LLIN Disaggregated by sex			
	Proportion of people sleeping under ITN/LLIN			
	Proportion of population protected by ITNs/ LLINs	Activity Report	2-3 years	NMCP

Objective 1:To have at least 80% of people living in malaria risk areas using appropriate malaria preventive interventionsby 2018				
Strategy 2 Indoor residual spraying in the targeted areas	**Input**			
	Amount of fund available for the IRS strategy	Program reports	Annually	NMCP Vector Control/ USAID/IRS contractor
	IRS guidelines			
	Reviewed IRS Business Plan			
	Process	Activity reports	Quarterly	NMCP Vector Control/ USAID/IRS contractor /DMFP
	Number of spray equipment purchased			
	Number of personal protection equipment purchased			
	Volume of insecticide purchased			
	Number oftarget HHs mapped/ defined			
	Number of spray operators trained			
	Number of IRS guidelines distributed			
	Output			
	Number of House units (dwelling structures) sprayed in specified time frame (e.g. last 12 months)	Activity reports	Quarterly	NMCP Vector Control/USAID/IRS contractor/DMFP
	Volume of insecticides used in specified time frame (e.g. per spray cycle)			
	Number of structures assessed for quality of spraying			
	Outcome			
	Proportion of targeted structures sprayedper spray cycle	Activity reports	Quarterly	NMCP Vector Control/USAID/IRS contractor
	Proportion of target population protected by IRS			
	Duration of residual efficacy of sprayed insecticide			
	Proportion of assessed structures meeting specified quality thresholds			

Objective 1:To have at least 80% of people living in malaria risk areas using appropriate malaria preventive interventionsby 2018				
	Input			
	Amount of fund available for LSM	Program reports	Annually	NMCP Vector Control/ VBDU/DEH
	Larval Source Management guidelines			
	Process			
	Number of spray equipment purchased	Activity reports	Quarterly	NMCP Vector Control/ KEMRI/VBDU
	Volume of larvicide purchased			
	Number of larval habitats mapped			
	Output			
Strategy 3 Larval Source Management (LSM)	Number of targeted counties with larval habitat maps	Activity reports	Quarterly	NMCP Vector Control/ KEMRI/VBDU
	Number of larval habitats identified			
	Number of larval habitats targeted for LSM			
	Number of targeted counties trained in LSM			
	Number of people trained in LSM in targeted counties			
	Outcome			
	Proportion of targeted habitats appropriately managed Proportion of targeted counties with vector habitat maps	Entomological survey	Annually	NMCP Vector Control/ KEMRI/ VBDU
Malaria Fee Schools initiative	**Input**			
	Amount of fund available for Malaria Free schools initiative	Program reports	Annually	NMCP
	Output			
	Number of schools implementing the malaria schools initiative	Activity reports	Annually	NMCP/Partners

Objective 1:To have at least 80% of people living in malaria risk areas using appropriate malaria preventive interventionsby 2018				
Strategy 4 Prevention of malaria in pregnancy (MIP):	**Input**			
	Amount of fund available for the IPTp strategy	Program reports	Annually	NMCP MIP/RHU/ JPIEGO
	IPT guidelines			
	Process			
	Number ofhealth care workers trained in IPT in targeted counties	Activity reports	Quarterly	NMCP MIP RHU/ JPIEGO
	Number of IPTp drugs purchased			
	Number ofIPT guidelines disseminated			
	Output			
	Number of IPTp drugs consumed			
	Number ofpregnant women who had 4 ANC visits in targeted counties	HIS/MIS	Annually	NMCP MIP/ RHU
	Number ofpregnant women who received IPT 1 in targeted counties			
	Number ofpregnant women who received IPT 2 in targeted counties			
	Outcome			
	Proportion of pregnant women who received at least 1 dose of intermittent preventive treatment (IPTp) for malaria during their last pregnancy (in the last 2 years) in endemic areas	Household survey / MIS	2-3 years	NMCP M&E / KNBS
	Proportion of pregnant women who received 2 or more doses of intermittent preventive treatment (IPTp) for malaria during their last pregnancy (in the last 2 years) in endemic areas			
	Proportion oftargeted facilities with no reported stock outs of IPT drugs in the last 3 months lasting more than 7 days			NMCP MIP/JHPIEGO/ Counties

Objective 2: To have 100% of all suspected malaria cases presenting to a health provider managed according to the national malaria treatment guidelines by 2018				
STRATEGY	**INDICATORS**	**Source of data**	**Frequency**	**Responsible**
Strategy 1 Capacity building for malaria diagnosis and treatment at health facilities	**Input**			
	Available Funds	Program reports	Annual	NMCP / Counties / Partners
	Reviewed parasitological diagnosis guidelines, reference slides and curriculum	Review meeting reports	Biennial	NMCP / Partners
	Case Management treatment guidelines	Activity report	Annual	NMCP / Partners
	Emergency Triage Assessment and Treatment Plus (ETAT+) training materials	Activity reports	Biennial	NMCP/ Partners
	Process			
	Number of lab technologists and technician trainings	Training report	Annual	NMCP / NPHLS
	Number of Integrated case management trainings	Training report	Annual	NMCP / Partners
	Number of Emergency Triage Assessment and Treatment Plus (ETAT+) Trainings	Activity reports	Annual	NMCP / Partners
	Number of guidelines (parasitological, case management, ETAT+) printed	Activity reports	Annual	NMCP / Partners
	Number of guidelines (parasitological, case management, ETAT+) distributed	Activity reports	Annual	NMCP/ Partners
	Number of supervisory visits conducted	Activity reports	Annual	NMCP/ Partners
	Output			
	Number of health workers trained on integrated case management	Training report	Annual	NMCP/ Partners
	Number of lab technicians and technologists trained on parasitological diagnosis of malaria	Training report	Annual	NMCP / NPHLS
	Number of health workers trained on ETAT+	Training report	Annual	NMCP / Partners
	Outcome			
	Proportion of patients with fever presenting to health facility who are tested for malaria with RDT or microscopy. (<5 years and >5 years of age) Disaggregate by sex, if possible in with the QoC	QoC survey	Biannual	NMCP / Partners
	Proportion of patients with fever presenting to health facility who are managed in accordance with national malaria guidelines (tested for malaria AND test positive prescribed ACT or test negative not prescribed an antimalarial)	QoC survey	Biannual	NMCP / Partners
	Proportion of children under 5 years old with fever in the last 2 weeks who had a finger or heel stick (disaggregated by sex)	MIS Survey	3 Years	NMCP / Partners

Objective 2: To have 100% of all suspected malaria cases presenting to a health provider managed according to the national malaria treatment guidelines by 2018				
	Input			
	Private sector implementation plan	Meeting report	3 years	NMCP / Partners
	Available funds	Program Reports	Annual	NMCP / Partners
	Process			
	Number of malaria case management trainings in the private sector	Activity reports	Annual	NMCP / Partners
	Private sector implementation plan developed	Meeting report	3 years	NMCP / Partners
	Private sector implementation plan printed	Implementation reports	Biennial	NMCP / Partners
	Number of meetings held for private sector implementation plan dissemination	Activity report	Annual	NMCP/ Partners
	Number of quarterly planning and coordination meetings with private sector held	Meeting reports	Quarterly	NMCP / Partners
	Numbers of ACTs procured for the private sector	Program report	Annual	NMCP
	Output			
Strategy 2 Access to affordable malaria medicines through the private sector	Number of private sector outlets and facilities reached in the dissemination of private sector implementation plan	Activity reports	Annual	NMCP / Partners
	Proportion of private outlets and facilities that have the recommended ACTsin stock at the time of field visit	Drug Availability Survey	Biannual	NMCP
	Number of health workers in private sector trained on malaria case management	Training reports	Annual	NMCP
	Outcome			
	Proportion of outlets/facilities with at least one trained health worker in malaria case management	Drug Availability Survey	Biennial	NMCP
	Proportion of patients with suspected malaria presenting to health facilities in private sector who are tested for malaria with RDT or microscopy in the private sector	Drug Availability Survey	Biennial	NMCP/ KEMRI WT
	Proportion of suspected malaria cases presenting to health facilities in private sector who are managed in accordance with national malaria guidelines (tested for malaria AND test positive prescribed ACT or test negative not prescribed an antimalarial)	Drug Availability Survey	Biennial	NMCP / KEMRI WT

Objective 2: To have 100% of all suspected malaria cases presenting to a health provider managed according to the national malaria treatment guidelines by 2018				
Strategy 3 Strengthening community case management of malaria using the community strategy through community health volunteers	**Input**			
	Available funds			NMCP
	Malaria training curriculum and guidelines			NMCP
	Process			
	Number of CHVs and CHEWs trainings on malaria case management	Training Report	Annual	NMCP / Partners / Counties
	Malaria CCM curriculumreviewed	Curriculum review meeting report	3 years	NMCP/ Partners
	Number of malaria CCM curriculumprinted	Program report	Once	NMCP / Counties / Partners
	Output			
	Proportion of targeted counties implementing community strategy which includes CCM	Implementation reports	Biennial	NMCP / Counties / Partners
	Number ofCHVs and CHEWs trained	Training reports	Annual	NMCP / Partners
	Outcome			
	Proportion of patients with fever presenting to a CHV who are tested for malaria using an RDT.	Implementation reports	Monthly	NMCP/ Partners
	Proportion of patients with fever who tested positive by a CHV who were treated with ACT.	Implementation reports	Monthly	NMCP/ Partners
	Proportion of patients with fever who tested negative by a CHV who were not treated with an anti-malarial.	Implementation reports	Monthly	NMCP/ Partners

Objective 2: To have 100% of all suspected malaria cases presenting to a health provider managed according to the national malaria treatment guidelines by 2018				
Strategy 4 Ensure commodity security of antimalarials and diagnostics in the public sector	**Inputs**			
	Available funds	Program reports	Annual	NMCP / Partners
	Essential Medicines List	DoP report	3 years	NMCP / DoP
	Specifications (for medicines and diagnostics)	Program reports	2-3 years	NMCP/ Partners
	Quantification Report	Program reports	Annual	NMCP / Partners
	Process			
	Number of ACTs, RDTs and doses of Artesunate Injection procured	Procurement report	Annual	NMCP / Partners
	Pre-shipment lot testing of ACTs and RDTs	Procurement report	Annual	NMCP / Partners
	Number of meetings to review the essential drugs list to ensure inclusion of antimalarials and diagnostics as per the national treatment guidelines	Activity reports	Annual	NMCP / Regulatory boards / DoP
	Number of drug management sub-committee meetings	Activity reports	Quarterly	NMCP / Partners
	Number of forecasting and quantification meetings held	Activity reports	Biannual	NMCP / Partners
	Number of post-market surveillance surveys of antimalarials and diagnostics conducted	Activity reports	Annual	NMCP / Partners / PPB
	Number of AL Registers printed	Activity reports	Annual	NMCP / Partners
	Outputs			
	Quantity of ACTs distributed against projected Forecasting &Quantification(F&Q) targets	Distribution reports	Annual	KEMSA / NMCP
	Quantity of malaria RDTs distributed against projected F&Q targets	Distribution reports	Annual	KEMSA / NMCP
	Quantity of Artesunate distributed against projected F&Q targets	Distribution reports	Annual	KEMSA / NMCP
	Forecasting and quantification reports generated at national and county levels	Quantification reports	Biannual	NMCP / Partners/ Counties
	Outcomes			
	Proportion of health facilities having no stock-out of ACTs for 7 consecutive days in past 3 months (for each ACT weight band)	QoC Surveys / DHIS2	Biannual / monthly	NMCP
	Proportion of health facilities having no stock-out ofRDTs for 7 consecutive days in past 3 months	QoC Surveys / DHIS2	Biannual / monthly	NMCP
	Proportion of health facilities having no stock-out of Artesunate Injections for 7 consecutive days in past 3 months	QoC Surveys / DHIS2	Biannual / monthly	NMCP

Objective 2: To have 100% of all suspected malaria cases presenting to a health provider managed according to the national malaria treatment guidelines by 2018				
	Inputs			
	Available funds	Program reports	Annual	NMCP/partners
	Implementation plan			
	QA/QC manual			
	Process			
	Implementation plan for QA/QC of parasitological diagnosis of malaria at all levels of care developed	Implementation reports	Annual	NMCP / NPHLS
	QA/QC curriculum developed	Activity report	Once	NMCP / Partners
	QA/QC supervisory checklist developed	Supervisory reports	Biannual	NPHLS/NMCP
	Number of QA/QC manuals printed	Activity reports	Biennial	NMCP / Partners
Strategy 5 Strengthen Quality assurance of malaria diagnosis	Quantity of re-agents procured for the national malaria reference laboratory	Procurement reports	Annual	NPHLS/NMCP/ Partners
	Number of microscopes procured for the national malaria reference laboratory	Procurement Reports	Annual	NPHLS/NMCP/ Partners
	Number of QA/QC supervisory visits conducted	QA/QC reports	Biannual	NMCP / NPHLS
	Outputs			
	Functional National Malaria reference lab	Program Report	Annual	NMCP / NPHLS
	Number of county malaria reference laboratories established and operational	NMRL reports	Annual	NMCP / NPHLS
	Number of laboratory technologists trained in QA/QC of malaria diagnosis	Training reports	Annual	NMCP
	Outcomes			
	Proportion of facilities able to perform malaria parasitological diagnosis	QoC reports	Biannual	NMCP
	Proportion of laboratories enrolled with EQA reporting blood smears correctly	QA Reports	Quarterly	NPHLS/Counties

Objective 3: To ensure that 100% of malaria epidemic proneand seasonal transmission sub counties have the capacity to detect,prepare for and timely respond to malaria epidemics by 2018				
Strategy	**Indicators**	**Source of data**	**Frequency**	**Responsible**
Strategy 1 Strengthen early detection systems for malaria epidemics in epidemic prone and seasonal transmission areas	**Input**			
	Amount of funds available for the EPR activities	Program reports	Annually	NMCP EPR/WHO/ DSRU
	List of epidemic prone and seasonal transmission counties and sub counties			
	Human resource for EPR activities			
	Malaria EPR guidelines, policy and strategic plan			
	Health facility malaria lab data			
	Process			
	Malaria commodities procured for early response	Activity reports	Quarterly	NMCP EPR/ SCDSC/DMFP
	Number of EPR planning and review meetings conducted			
	Number of trainings conducted for EPR in seasonal transmission areas			
	Malaria EPR guidelines revised and disseminated			
	Number of county EPR plans reviewed	Activity reports	Annually	NMCP/DSRU
	Output			
	Proportion of epidemic prone and seasonal transmission sub counties with updated EPR plans	Activity reports	Annually	Counties
	Number of targeted health workers at county, sub-county and facility level trained in epidemic preparedness and response	Activity reports	Annually	NMCP/DSRU/ Counties
	Proportion of counties and sub-counties with functional epidemic preparedness and response (EPR) teams	Activity reports	Annually	NMCP EPR DDSC/DMFP
	Proportion of Sub Counties with active sentinel sites for threshold monitoring	Activity reports	Annually	Counties
	proportion of sub counties with updated risk maps	Activity reports	Annually	Counties
	Number of EPR guidelines printed and disseminated	Program reports	Annually	Counties
	Outcome			
	Proportion of sub-counties in epidemic-prone and seasonal transmission areas with at least five functional sentinel sites	Program reports	Annually	NMCP / Counties
	Proportion of sentinel health facilities monitoring and reporting current malaria thresholds data	Activity reports	Quarterly	NMCP EPR/DSRU
	Proportion of malaria epidemics detected, reported, and responded to within 2 weeks of surpassing action thresholds	Outbreak reports	Annually	Counties
	Proportion of detected malaria epidemics responded to within 2 weeks of surpassing action thresholds	Outbreak reports	Annually	Counties
	Proportion of epidemics managed according to the Malaria EPR guidelines.	Post-epidemic evaluation reports	Annually	NMCP / Counties
	Proportion of counties and sub counties with updated malaria EPR guidelines	Program reports	Annually	NMCP / Counties

Objective 4:Ensure that all malaria indicators are routinely monitored, reported and evaluated in all counties by 2018				
Strategy	**Indicators**	**Source of data**	**Frequency**	**Responsible**
Strategy 1: To strengthen malaria monitoring and evaluation	**Input**			
	Finances	Program reports	Annually	NMCP SMEOR
	Surveillance curriculum package			
	M&E plan			
	Surveillance guidelines			
	DQA Tools			
	Process			
	Number of malaria M&E plans printed	Activity reports	Quarterly	NMCP SMEOR/ Partners
	No of meetings held to disseminate M&E framework and plan	Meeting report		
	Number of malaria M&E plans distributed	Distribution report		
	Number of M&E technical working group meetings held	Meeting reports		
	Surveillance guidelines developed			
	Number of surveillance guidelines printed			
	Number of surveillance guidelines distributed			
	Number of trainings conducted on malaria surveillance	Activity reports		
	Number of counties supported to conduct malaria surveillance and supervision			NMCP SMEOR
	Number of counties trained on malaria DQA	Training reports		
	Output			
	Number of surveillance e-bulletins produced	Activity report	Quarterly	NMCP / Partners
	Proportion of counties with M&E framework and plan	Distribution reports / supervision report		NMCP SMEOR / Counties
	Number of health facilities submitting timely weekly surveillance reports		Quarterly	NMCP SMEOR / Counties/DSRU/HIS
	Number of facilities reporting on malaria surveillance monthly	IDSR reports		
	Proportion of health facilities supervised	Supervisory reports		
	Number of DQAs conducted	Activity reports	Annually	NMCP / HIS/ DSRU/Counties
	Number of counties conducting DQAs	Activity reports	Annually	Counties
	Number of health workers trained on surveillance	Activity reports	Annually	NMCP / Partners
	Number of surveillance data review meetings held	Activity reports	Monthly	NMCP/DSRU/HIS
	Outcome			
	Proportion of facilities reporting monthly	HIS reports	Monthly	NMCP/DSRU/HIS
	Proportion of counties conducting DQA	Activity reports	Quarterly	NMCP SMEOR

Objective 4:Ensure that all malaria indicators are routinely monitored, reported and evaluated in all counties by 2018				
Strategy 2: Conduct and facilitate health facility surveys	Input	Source of data	Frequency	Responsible
	Available funds	Program reports	Annually	NMCP/Partners
	QoC manual	Program reports		
	Pharmacovigilance guidelines	Program reports		
	Data collection tools	Program reports		
	Process			
	Protocol development	Activity reports	Biannual	NMCP/SMEOR TWG
	Number of QoC and Pharmacovigilance training sessions	Activity report	Biannual	NMCP/PPB/KMLTB/Partners
	Number of Drug Availability training sessions	Activity report	Biennial	MCU/PPB//Partners
	Number of stakeholder meetings	Program reports	Biannual	NMCP/PPB/KMLTB/Partners
	Output			
	Number of QOC surveys done	Activity reports	Annually	NMCP /SMEOR
	Number of health provider and health facility inventory for malaria diagnosis and treatment done			
	Number of drug availability surveys done in the private sector			
	Number of pharmacovigilance surveys done			
	Outcome			
	Proportion of planned health facility surveys done	Survey reports	Annually	NMCP/ SMEOR
Strategy 3: Conduct and support community surveys	**Input**			
	Available funds	Program reports	Annually	NMCP SMEOR
	Data collection tools			
	Process			
	Protocols developed	Activity reports	Annually	NMCP SMEOR/KNBS/ KEMRI/ Partners
	Number of training sessions for data collectors conducted	Activity reports	Annually	NMCP / Partners
	Number of stakeholder meetings held	Activity reports	Annually	NMCP / Partners
	Output			
	Number of community surveys done	Activity reports	Annually	NMCP SMEOR/KEMRI/MoE/ Partners
	Number of impact evaluations for malaria interventions done	Activity reports	Once	NMCP / Partners
	KMIS conducted	Activity reports	3 years	NMCP / Partners
	Number of drug efficacy studies done	Activity reports	Biennial	KEMRI
	Outcome			
	Proportion of scheduled surveys successfully completed	Activity reports	Annually	NMCP SMEOR/KEMRI/MoE/ Partners
	Number of publications resulting from the surveys			
	Number of policy briefs resulting from the surveys			
Strategy 4: Strengthen school based malaria sentinel surveillance	**Input**	Source of data	Frequency	Responsible
	Available funds	Program reports	Annually	NMCP/SMEOR/Partners
	Survey protocol	Program report	Annually	NMCP/SMEOR/Partners
	Process			
	Protocol reviewed	Activity reports	Annually	NMCP/Partners
	Output			
	Number of malariometric surveys conducted by the research institutions in schools	Survey reports	Annually	NMCP /SMEOR
	Number of county malariometric surveys which received technical assistance from the national level			
	Outcome			
	Proportion of planned malariometric surveys done by research institutions	Survey reports		
	Proportion of county malariometric surveys assisted by national level	Survey reports		
	Parasite prevalence in school children			

Objective 4:Ensure that all malaria indicators are routinely monitored, reported and evaluated in all counties by 2018				
Strategy 5: Facilitate Operational Research and translation of research findings to policy	**Input**			
	Available funds	Program reports	Annually	NMCP SMEOR/RTWG/ WHO/PMI
	Operational Research Protocol	Activity report	Annually	KEMRI
	Process			
	Number of OR TWG meetings held	Activity reports	Quarterly	NMCP SMEOR/RTWG
	Protocol reviewed	Activity reports	Annually	
	Operation research agenda for malaria set	Activity reports	Biennial	
	Number of research grants issued to research institutions	Activity report	Annually	
	Number of stakeholder meetings held to plan for KNMF	Activity report	Biennial	
	Policy briefs developed	Activity report	Annually	
	Output			
	Number of malaria control operational research studies conducted	Activity reports	Annually	NMCP SMEOR/RTWG
	Number of research to policy conferences held	Activity Reports	Once every 2 years	
	Outcome			
	Number of studies for which results were presented	Activity reports	Quarterly	NMCP SMEOR
	Number of policy briefs developed from study results			
	Number of publications resulting from studies			
	Number of abstracts presented at conferences			
Strategy 6: Strengthening malaria data management systems	**Input**			
	Available funds	Program reports	Annually	NMCP SMEOR/HIS
	Process			
	Number of facilities reporting through the DHIS, IDSR	Activity reports	Quarterly	NMCP SMEOR/HIS
	Upgrade of MIAS completed			
	Link of MIAS to other reporting systems e.g. DHIS and IDSR established			
	Number of trainings on MIAS	Activity reports	Annually	NMCP
	Output			
	Proportion of MCU staff trained on the upgraded MIAS	Activity reports	Quarterly	NMCP SMEOR/HIS
	Partners database updated			
	Database of surveys and research studies updated			
	Upload of data from linked data sources completed			
	Outcome			
	Proportion of MCU staff reporting through MIAS	Activity reports	Quarterly	NMCP SMEOR/HIS
	Proportion MCU staff using MIAS for planning and budgeting			

Objective 4:Ensure that all malaria indicators are routinely monitored, reported and evaluated in all counties by 2018				
Strategy 7: Human Resource capacity building in surveillance monitoring and evaluation	**Input**			NMCP SMEOR /ICF
	Available funds	Program reports	Annually	
	Curriculum packages			
	Process			
	Number of meetings held to develop national data demand and use strategy	Activity reports	Quarterly	
	Number of meetings held to develop malaria M&E curriculum			
	Number of malaria M&E curriculum printed			
	Number of training sessions held on malaria M&E			
	Number of meetings held to disseminate national data demand and use strategy			
	Output			
	Number of MCU staff trained DDIU	Activity reports	Annually	
	Number of MCU staff trained in M&E			
	Number of County staff trained on M&E			
	Outcome			
	Proportion of MCU staff with capacity for data analysis and use			
	Proportion of counties with capacity for data analysis and use			
Strategy 8: Conduct and Support Entomological Surveillance	**Input**			
	Available Funds	Program reports	Annually	NMCP / Partners
	Entomological surveillance guidelines	Activity reports	Annually	MCU / Partners
	Entomological surveillance curriculum	Activity reports	Annually	NMCP / Partners
	Entomological surveillance SoPs	Activity reports	Annually	MCU / Partners
	Process			
	Number of entomological surveillance trainings	Activity reports	Annually	NMCP / Partners
	Number of entomological surveillance equipment procured	Activity reports	Annually	NMCP / Partners
	Number of entomological data surveillance meetings held	Activity reports	Annually	NMCP / Partners
	Number of entomological surveillance tools printed	Activity reports	Annually	NMCP/ Partners
	Output			
	Number of health workers trained on entomological surveillance	Activity reports	Annually	NMCP / Partners
	Number of entomological surveys conducted	Activity reports	Annually	NMCP / Partners
	Number of dissemination meetings held	Activity reports	Annually	NMCP / Partners
	Outcome			
	Updated National Entomological Profile	Activity reports	Annually	NMCP / Partners
	Proportion of targeted counties carrying out entomological surveys	Activity reports	Annually	NMCP / Partners

Objective 5. To increase utilization of all malaria control interventions by communities in Kenya to at least 80 % by 2018				
Strategy	**Indicators**	**Source of data**	**Frequency**	**Responsible**
Strategy 1: Strengthen structures for the delivery of ACSM interventions at all levels.	**Input**			
	Available Funds	Activity reports	Quarterly	NMCP / Partners
	Malaria Communication Strategy			
	Guidelines and other strategic documents			
	Process			
	Number of meetings held to review / update ACSM policy and guidelines			
	Number of ACSM policy and guidelines developed			
	Number of ACSM policy and guidelines printed	Activity reports	Quarterly	NMCP/ Partners
	Number of county SBCC training sessions conducted			
	Number of quarterly ACSM TWGs meeting at national level held.			
	Number of quarterly ACSM TWGs meetings at county level held			
	National malaria ambassador identified			
	Number of counties where the malaria ambassador has been identified			
	Output			
	Proportion of counties with ACSM plans.			NMCP/Counties
	National malaria ambassador supported			
	Proportion of counties where the malaria ambassadors has been identified and supported.			
	Number of counties and sub-counties with communication plans developed			
	Number of counties trained on SBCC			
	Outcome			
	Proportion of counties implementing ACSM activities as per their communication plans.	Activity reports	Quarterly	NMCP/ Counties, Partners

Objective 5. To increase utilization of all malaria control interventions by communities in Kenya to at least 80 % by 2018				
Strategy 2: Strengthen program communication for increased utilization of all malaria interventions.	**Input**			
	Available funds	Activity reports	Quarterly	NMCP / Partners
	ACSM tools and materials			
	ACSM packages			
	Process			
	Number of TWG meetings held to review and endorse ACSM packages			NMCP
	Number of focused ACSM packages developed			NMCP/partners
	Number of ACSM packages printed			NMCP/Partners
	Number of meetings to disseminate ACSM packages	Activity reports	Quarterly	NMCP / Partners
	Number of interactive radio programs through county and sub-county regional stations conducted.			
	Number of radio and TV adverts aired			
	Output			
	Number of focused ACSM packages disseminated	Activity reports	Quarterly	NMCP/ Partners
	Number of media campaigns conducted			
	Outcome			
	Proportion of the population that cite LLIN as the best protection against malaria Disaggregate by sex and age	MIS	3 years	NMCP SMEOR/ KNBS
	Proportion of population who know that they should seek treatment within 24 hours of fever onset (disaggregate by sex and age)			
	Proportion of population who correctly cite at least 3 main symptoms of malaria (disaggregate by sex and age)			
	Proportion of people who recall hearing or seeing targeted malaria messages in the last six months (disaggregate by sex and age)	MIS		

Objective 5. To increase utilization of all malaria control interventions by communities in Kenya to at least 80 % by 2018				
Strategy 3: Advocate for inter-sector collaboration for malaria ACSM	**Input**			
	Available funds	Activity reports	Quarterly	NMCP / Partners
	Relevant ACSM packages for non-health sectors			
	Process			
	Number of IEC/BCC materials for non-health sector partners disseminated.	Activity reports	Annually	NMCP / Partners
	Number of planning meetings for the national commemoration of the WMD conducted			
	Number of counties and sub-county planning meetings for the commemoration of the WMD held			
	Number of biannual malaria information and advocacy bulletin published.			
	Number of consultative meetings held with non-health sector partners			
	Output			
	Number of non-health sectors engaged in malaria ACSM	Activity reports	Annually	NMCP / Partners
	Number of IEC/BCC materials distributed through non health sector partners.			
	National World Malaria Day commemorated			
	Number of counties that commemorated WMD			
	Number of biannual malaria information and advocacy bulletins distributed.			
Strategy 4: Strengthen community-based social and behavior change communication for increased utilization of all malaria interventions	**Input**			
	Funds available	Activity reports	Quarterly	NMCP / Partners
	Focused ACSM packages available			
	Process			
	Number of CHVs training sessions on ACSM	Activity reports	Quarterly	NMCP/ WHO/ PMI/PS Kenya: KENAAM?Malaria Ambassador: PMFP/ DMFP
	Number of malaria advocacy groups (comprising of CBOs, FBOs, and ward representatives) formed			
	Number of malaria advocacy meeting held at county level			
	Number of schools trained in promoting malaria interventions at household level			
	Number of interactive radio programs on malaria in local dialects planned and conducted			
	Output			
	Number of CHVs trained in ACSM	Activity reports	Quarterly	NMCP/ WHO/ PMI/ PS Kenya/ KENAAM/ Malaria Ambassador/ PMFP/ DMFP
	Number of community dialogues on malaria interventions planned and conducted			
	Number of community malaria action days planned and conducted			
	Number of regional radio programs in local dialect aired			
	Number of schools promoting malaria interventions through pupils			
	Proportion of HH reached by school pupils			
	Outcome			
	Proportion of people who received malaria ACSM messages through community channels (disaggregated by sex and age)	MIS	3 years	MCU SMEOR/ KNBS

Objective 6:To improve capacity in coordination, leadership, governance and resource mobilization at all levels towards achievement of the malaria program objectives by 2018				
Strategy	**Indicators**	**Source of data**	**Frequency**	**Responsible**
Strategy 1: Develop/Update and disseminate policy, lobby for legislation and regulations to strengthen malaria control in Kenya	**Input**			
	Available funds	Program Reports	Annually	NMCP / Partners
	Kenya Malaria Strategy			
	Malaria Policy			
	Process			
	Number of meetings on legislation related to malaria control	Activity reports	Once	NMCP / Partners
	Number of stakeholder meetings to develop a risk management plan			
	Number of stakeholder meetings to develop the operation manual			
	Number of stakeholder meetings to develop county malaria manual			
	Number of operation manuals printed			
	Number of operation county malaria manuals printed			
	Number of stakeholder meetings to review implementation of Kenya Malaria Strategy			
	Number of stakeholder meetings on policy matters	Activity reports	Annually	NMCP / Partners
	Output			
	Updated Kenya Malaria Strategy	Malaria review reports	Three years	NMCP/All partners
	Updated malaria legislation			
	Risk Management Plan completed			
	Operation Manual completed			
	County Malaria Manual completed			
	End-term review conducted	Activity report	Once	NMCP / Partners

Objective 6:To improve capacity in coordination, leadership, governance and resource mobilization at all levels towards achievement of the malaria program objectives by 2018				
	Input			
	Available funds	Program report	Annually	NMCP / Partners
	Guidelines and SoPs for Inventory Management	Activity report	Once	NMCP / Partners
	PSM Plan			
	Public Procurement and Disposal Act			
	Protocol for evaluation of malaria commodities distribution system			
	Process			
	Number of stakeholder meetings to review and update PSM plan	Activity reports	Annually	NMCP/Partners
Strategy 2: Strengthen procurement and supply management systems for malaria medicines and commodities	Number of stakeholders meeting to develop guidelines an SoPs for all malaria commodities			
	Number of SoPs and guidelines printed	Activity reports	Annually	NMCP/Partners/ Counties
	Number of stakeholder meetings to undertake quantification for malaria commodities			
	Evaluation Protocol developed	Activity reports	Once	NMCP/Partners
	Output			
	Number of guidelines and SOPs for inventory of malaria commodities disseminated	Activity reports	once	NMCP/Partners / Counties
	Updated PSM plan	PSM Plan	Annually	NMCP
	Evaluation reports on commodity distribution system completed	Evaluation report	Every two years	NMCP/Partners
	Annual quantification reports completed	Quantification reports	Annually	NMCP/Partners

Objective 6:To improve capacity in coordination, leadership, governance and resource mobilization at all levels towards achievement of the malaria program objectives by 2018				
	Input			
	Available funds	Program reports	Annually	NMCP / Partners
	ToRs for staff positions	Program reports	Annually	NMCP
	Annual business plan			
	Office equipment and supplies	Program reports	Annually	NMCP/CMCCs
	Training curriculum for malaria program management training	Program reports	Annually	
	Process			
	Number of program officers recruited and working with the program	Program reports	Annually	NMCP / Partners
	Number of MCU staff who participated in regional/international meeting & conferences	Activity reports	Quarterly	NMCP/Partners/ CMCCS
	Stakeholders meetings to plan for Capacity assessment for systems	Activity report	Every two years	NMCP/Partners
Strategy 3: Capacity strengthening for planning, partnerships, coordination and implementation at all levels	Number of quarterly performance monitoring meetings	Meeting report	Quarterly	NMCP
	Conduct malaria partner mapping	Activity report	Annual	NMCP/Partners
	Number of TWG & MICC meetings held	Minutes of meetings	Quarterly	NMCP/Partners
	Number of counties represented at biannual review meetings	Meeting report	Biannually	NMCP/CMCCS
	Output			
	Number of MCU and county staff who participated in short courses in malaria management	Training reports	Biannually	NMCP/partners
	Proportion of targeted county and sub-county staff trained in program management and planning	Training reports	Biannually	NMCP/Partners
	Number of counties with designated and trained MFP	Training reports	Annually	NMCP/CMCCs
	Number of Community Units supported	Program report	Annually	NMCP/Partners
	Annual Business plan completed	Program reports	Annually	NMCP / Partners
	Capacity assessment for systems completed	Activity report	Biennial	NMCP/Partners
	Outcome			
	Proportion of counties with malaria program aligned with national malaria strategy	Activity reports	Quarterly	NMCP/Partners

Objective 6:To improve capacity in coordination, leadership, governance and resource mobilization at all levels towards achievement of the malaria program objectives by 2018				
Strategy 4: Strengthen resource mobilization capacity to improve malaria control financing	**Input**			
	Available funds	Program report	Annually	NMCP / Partners
	Resource mobilization strategy			
	Malaria goodwill ambassador			
	ToRs for consultants' engagement	Activity report	Once	NMCP / Partners
	Process			
	Number of stakeholders meetings to develop resource mobilization strategy	Activity report	Annually	NMCP/Partners
	Number of stakeholders meetings to develop funding proposals			
	Number of public private partnership forums held	Meeting minutes	Biannual	NMCP/Partners
	Number of resource mobilization tools printed	Program report	Once	NMCP / Partners
	Number of consultants identified and recruited	Program report	Annually	NMCP / Partners
	Output			
	Finalized resource mobilization strategy	Resource mobilization strategy	Every three years	NMCP/Partners
	Number of proposals raised, submitted and negotiated	Proposals	Annually	NMCP/Partners
	Outcome			
	Proportion of annual work plan funded for malaria control	Program report	Annually	NMCP/Partners

Table 3: Targets for Key Indicators of the M&E Performance Framework

Indicators	Sources	Responsibility	Frequency	Baseline		Targets (2013 - 2017)				
				Data	Source/ year	'13	'14	'15	'16	'17
Goal: ***By 2018, to have reduced morbidity and mortality caused by malaria in the various epidemiological zones by two thirds of the 2007/2008 level***										
Inpatient* malaria cases among children <5yrs [per 1000 persons per year]	Routine surveillance	MCU M&E /HIS	Quarterly	None	HIS	3				2
Total inpatient* malaria cases [per 1000 persons per year]	Routine surveillance	MCU M&E /HIS	Quarterly	4	HIS (08/09)	3				2
Inpatient* malaria deaths among children <5yrs [per 1000 persons per year]	Routine surveillance	MCU M&E /HIS	Quarterly	None	HIS	2				1
Total inpatient* malaria deaths [per 1000 persons per year]	Routine surveillance	MCU M&E /HIS	Quarterly	3	HIS (08/09)	2				1
Confirmed outpatient malaria cases at health facility level among children <5 yrs [per 1000 persons per year]	Routine surveillance	MCU M&E /HIS	Monthly	138	HIS (12/13)	138				92
Total confirmed outpatient malaria cases at health facility level [per 1000 persons per year]	Routine surveillance	MCU M&E /HIS	Monthly	57	HIS (12/13)	57				38
Total Clinical outpatient malaria cases at health facility level [per 1000 persons per year]	Routine surveillance	MCU M&E /HIS	Monthly	277	HIS 2007	164				92
Proportion of suspected malaria cases tested using a parasitological based test	Routine surveillance	MCU M&E /HIS	Monthly	60%	HIS 2013	60%				100%
Slide/RDT test positivity rate (TPR) at health facility level	Routine Surveillance	MCU M&E and Lab /HIS	Monthly	None	-	27%				13%
Malaria parasitaemia prevalence (pf) rate among children < 5yrs in lake endemic areas (by microscopy)	Survey	MCU M&E /KNBS	3Yrs	3.3	MIS [2007]	26.8 [MIS 2010]				17%

Indicators	Sources	Responsibility	Frequency	Baseline		Targets (2013 - 2017)				
				Data	Source/ year	'13	'14	'15	'16	'17
Objective 1:To have at least 80% of people living in malaria risk areas using appropriate malaria preventive interventions by 2018										
Proportion of households who own more than one ITN/LLINs	Survey	MCU Vector Control and M&E /KNBS	2-3 years	23%	MIS [2007]	65%	75%			90%
Proportion of children <5yrs who slept under an ITN/LLIN on night before a survey	Survey	MCU Vector Control and M&E /KNBS	2-3 years	39%	MIS [2007]	23%	30%			80%
Proportion of pregnant women who slept under an ITN/LLIN on night before a survey	Survey	MCU Vector Control and M&E /KNBS	2-3 years	40%	MIS [2007]	37%	60%			80%
Proportion of individual slept under an ITN/LLIN on night before a survey	Survey	MCU Vector Control and M&E /KNBS	2-3 years	None	MIS [2007]	32%	35%			80%
Proportion of population in targeted areas protected by IRS	Activity reports	MCU Vector Control and M&E /KNBS	Annually	85%	Activity Reports	0%	0%			90%
Proportion of pregnant women who received 2 or more doses of IPTp during last pregnancy (within last 2 years) in endemic areas.	Survey	MCU Vector Control and M&E /KNBS	2-3 years	12.5%	MIS [2007]	25%[KMIS 2010				80%
Objective 2: To have 100% of all suspected malaria cases presenting to a health provider managed according to the national malaria treatment guidelines by 2018										
Proportion of patients with suspected malaria presented to health facility who are tested for malaria with RDT or microscopy in the public sector	QoC Survey	MCU/KEMRI WT	Biannual	None		58%	60%	65%	80%	100%
Proportion of suspected malaria cases presented to health facility who are managed in accordance with national malaria guidelines in public sector	QoC Survey	MCU/KEMRI WT	Biannual	None		50%	60%	70%	80%	100%

Revised Kenya Malaria Monitoring and Evaluation plan 2009 -2018

Indicators	Sources	Responsibility	Frequency	Baseline		Targets (2013 - 2017)				
				Data	Source/ year	'13	'14	'15	'16	'17
Proportion of public health facilities having no stock-out of ACTs for 7 consecutive days in past 3 months (for ALL ACT weight bands)	QoC Survey	MCU/KEMRI WT	Biannual	None		93%	95%	95%	97%	100%
Proportion of private facility outlets stocking quality assured ACTs	Drug availability survey	MCU/KEMRI WT	Once every 2 years	None		36.4%	40%	50%	55%	60%
Proportion of patients with fever who tested positive by a CHV who were treated with ACT in lake endemic areas	Routine surveillance	MCU/AMREF	monthly	2%	2013	40%	60%	80%	100%	100%
Objective 3: To ensure that 100% of malaria epidemic prone and seasonal transmission sub counties have the capacity to detect, prepare for and timely respond to malaria epidemics by 2018										
Proportion of sub-counties in epidemic prone and seasonal transmission areas with at least five sentinel sites	Threshold reports /EPR review meeting reports	MCU/EPR	Annually	20%	(2013)	20%	60%	80%	90%	100%
Proportion of sentinel health facilities in targeted epidemic prone and seasonal transmission sub counties monitoring and reporting current thresholds data	Weekly Thresholds Reports	MCU/EPR	Weekly	20%	Annual Thresholds reports (2013)	20%	50%	80%	90%	100%
Proportion of target counties and sub-counties with reviewed malaria epidemic preparedness and response plans	EPR review and planning meeting reports	MCU EPR	Annual	40%	EPR review and planning meeting reports [2013]	40%	60%	80%	100%	100%
Proportion of malaria epidemics detected and reported within 2 weeks of surpassing action threshold	OutbreakReport / threshold reports/ Outbreak & Rumour Log	Counties / MCU EPR/ DSRU	Annual	100%	Outbreak reports[2013]	100%	100%	100%	100%	100%

Indicators	Sources	Responsibility	Frequency	Baseline		Targets (2013 - 2017)				
				Data	Source/ year	'13	'14	'15	'16	'17
Proportion of the detected epidemics properly managed as per the EPR guidelines.	Post Epidemic Evaluation reports	Counties / MCU EPR/ DSRU	Annual	100%	Post Epidemic EvaluationReport [2013]	100%	100%	100%	100%	100%
Objective 4:Ensure that all malaria indicators are routinely monitored, reported and evaluated in all counties by 2018										
Proportion of health facilities sending timely reports on malaria disease surveillance	e-IDSR Reports	MCU EPR/ CDSC	Quarterly	83%	2013	83%	100%	100%	100%	100%
Proportion of counties using malaria surveillance data to produce a malaria profile	DHIS / e-IDSR Reports	MCU EPR/ CDSC	Annual	0	2013	0	25%	50%	75%	100%
Proportion of counties conducting entomological surveillance in endemic and epidemic-prone areas	Surveillance reports	MCU/VBDU	Annual	0	2013	0	8%	20%	50%	90%
Objective 5. To increase utilization of all malaria control interventions by communities in Kenya to at least 80 % by 2018										
Proportion of people with knowledge on malaria prevention, diagnosis and treatment	Survey	MCU ACSM	3-5 years	38%	MIS [2007]	35%[MIS 2010]		60%		80%
Proportion of people who know that they should be tested for malaria before treatment	Survey	MCU ACSM	2-3 years	None			50%			80%
Proportion of mothers/caregivers who know that ACT is the recommended treatment for malaria	Survey	MCU ACSM	2-3 years	39%	MIS [2007]	35%		60%		80%
Proportion of individuals who slept under an LLIN the previous night	Survey	MCU ACSM	2-3years	None			35%			80%
Proportion of children under five who slept under an LLIN the night before	Survey	MCU M&E and ACSM	2-3 years	39.2%	MIS [2007]	23%	30%			80%
Proportion of suspected malaria cases presenting to health workers who were tested for malaria using RDT or microscopy	Survey	MCU M&E and ACSM	Biannual	None		58%	60%	65%	80%	100%

Revised Kenya Malaria Monitoring and Evaluation plan 2009 -2018

Indicators	Sources	Responsibility	Frequency	Baseline		Targets (2013 - 2017)				
				Data	Source/ year	'13	'14	'15	'16	'17
Objective 6:To improve capacity in coordination, leadership, governance and resource mobilization at all levels towards achievement of the malaria program objectives by 2018										
Proportion of counties with malaria work plans aligned to the national malaria strategy	County Plans	MCU / Partners	Annually	None		100%	100%	100%	100%	100%
Proportion of counties with malaria activities in their health plans	County Health Plans	MCU / Counties	Annually	None		-	100%	100%	100%	100%
Proportion of annual national malaria business plan funded	Malaria Business Plan	MCU / Partners	Annually	None		-	60%	70%	80%	90%
Proportion of county malaria focal persons trained in malaria control program management	Program Report	MCU / Counties	Annually	None		-	50%	100%	100%	100%

2.3 Measuring Performance

The M&E framework contained in this plan identifies the core indicators for impact, outcome, and output measurement towards scaling up malaria control efforts in Kenya in the period 2009-2017. These indicators have further been detailed in Appendix 2 with definitions, numerators and denominators.

2.4 Data Collection Systems

An effective M&E plan for the KMS requires clear understanding of how the requisite data/information will be acquired and used for measuring progress in implementation of planned interventions. While the NMCP uses routine information to track changes in program performance over time, impact and outcome measurements of the program and population-based coverage are estimated through facility and household surveys and routine surveillance. The program will continue supporting routine reporting by the Health Information System (HIS) unit in the Ministry of Health (MoH), as well as to undertake malaria specific surveys and operational research. The program will also continue to strengthen its surveillance capacity, as well as capacity for advanced data analysis and use for decision making at all levels. Figure 6 summarizes the different sources of malaria M&E data.

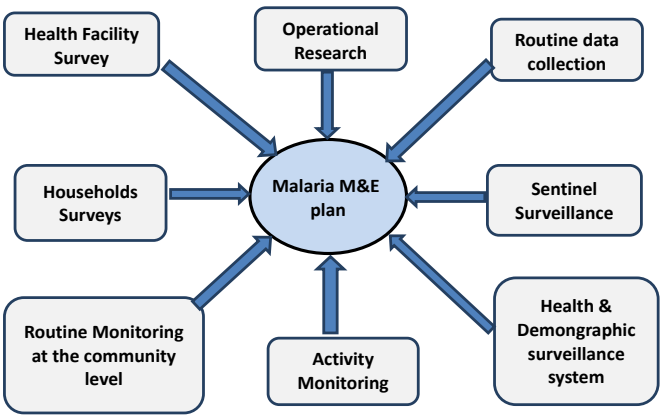


Figure 6: Data sources for the malaria M&E plan

2.4.1 Routine Data Collection

a) Health Management Information System

The Health Information System (HIS) unit in the MoH is the main body charged with monitoring health system performance. HIS is charged with the responsibility of collecting, collating, analyzing, publishing and disseminating health data to all stakeholders (both public and private) for evidence-based decision-making. Most of the routine malaria data is collected through the HIS unit. Previously, health information used to be reported monthly by health facilities to the districts, which consolidated and electronically transmitted the information to the national level (with a copy to the provincial level) via a File Transfer Protocol (FTP) system.

At the national level the HIS Unit would analyze the data and produce some routine reports for all health programs, including for the then Division of Malaria Control (DOMC).Since 2010 the HIS Unit has introduced a new web-based and open source health management system called the District Health Information Software 2 (DHIS2). Introduction of DHIS2 has minimized some of the key challenges previously experienced with the HIS, such as incomplete information and timeliness of the data collected. However, the challenges still remain and include insufficient data quality, occasional stock out of reporting forms at collection points, insufficient funding for supervision and inadequate personnel to compile the data at the peripheral facilities and all data collection points in general.

The malaria program will continue using a passive data collection model to obtain essential malaria surveillance data primarily from the HIS to measure the surveillance indicators. Based on this data, the program is able to produce quarterly surveillance bulletins that are intended to be a scorecard for the progress made towards achieving the set targets in the Kenya Malaria Control Strategy and Millennium Development Goals and subsequently Sustainable Development Goals. The bulletins are used to report on key

malaria indicators that are necessary to boost the program's ability to predict, respond and monitor the malaria situation in the country. Data on these indicators is presented using the essential surveillance graphs, as recommended by the World Health Organization (WHO) and adopted by the MCU.

b) The Integrated Disease Surveillance System

In some areas of Kenya, malaria has taken on epidemic proportions that require weekly reporting of routine surveillance data through IDSR in order to detect malaria epidemics in a timely manner. The Disease Surveillance and Response Unit (DSRU) is responsible for the weekly Integrated Disease Surveillance System, which is used to detect malaria epidemics. Malaria alert and action thresholds have been set in at least 5 sentinel facilities in each of the affected sub-counties to facilitate early detection of malaria epidemics and to trigger appropriate responses. Plans are in place to expand the monitoring of weekly malaria thresholds beyond the traditional epidemic-prone sub-counties in the western highlands of Kenya to include the seasonal transmission sub-counties in the north-eastern, eastern and North Rift regions. Through the IDSR system, the weekly malaria laboratory data is collected from health facilities that have capacity for microscopy or rapid diagnostic tests (RDTs). Health facilities submit data to sub-counties on the first day of the following week, the sub-county then enters the weekly health facility data in the web-based system (e-IDSR), which is linked to the Master Facility List (MFL). Completeness and timeliness are the two performance indicators measured when all data reaches national level.

c) Indoor Residual Spraying (IRS) Monitoring System

The current IRS policy recommends implementation of IRS as a malaria burden reduction strategy in areas of high transmission and as a response to potential epidemics in low transmission areas. When spraying is done, standard forms are used by spray operators to collect daily, weekly and monthly IRS data. Data collected includes spraying coverage, population protected by IRS, as well as net coverage and usage. These data are then submitted to and consolidated at the sub-county level before being transmitted to the national level. Excel and Access databases are in place at the national level for aggregation, analysis and reporting of this data. During the IRS cycle, pre- and post-spray assessments, both entomological and epidemiological, are undertaken in addition to compiling reports on the implementation process. The NMCP provides oversight of the IRS activities and studies.

d) Insecticide Treated Nets (ITNs)/ Long lasting Insecticide Treated Nets (LLINs) Tracking System

A data collection system has been established for tracking mass net distribution at all levels. Routine data on the ITNs/LLINs that are distributed through antenatal care (ANC)/child welfare care (CWC) clinics is captured using the harmonized HIS tools. Outcome indicators are captured using the malaria indicator survey (MIS) and other related surveys.

e) Data on Microscopy and Rapid Diagnostic Test (RDT)

The malaria medicines reporting tool was modified to allow reporting on RDT consumption data using the already established Logistics Management Information System (LMIS) housed in the DHIS. Discussions are underway to include reporting of all laboratory data through the DHIS system under which it will be possible to capture microscopy data. Currently microscopy data is captured through the weekly surveillance reports with the source being the laboratory register.

f) ACT and RDT Consumption Data

Tracking of both ACT and RDT consumption data is done through the Logistics Management Information System (LMIS), which has been integrated in the web-based DHIS2 platform. Data collection at the facility level is a manual process, initially done on daily registers and subsequently aggregated on summary forms on a monthly basis. The aggregated monthly facility data is entered into the LMIS by the sub-county pharmaceutical facilitators. A key benefit of the web-based platform is that the MCU,

counties and other stakeholders can access the data as soon as it is keyed into the LMIS, thus improving the speed of feedback and response as appropriate.

g) Pharmacovigilance - Voluntary Spontaneous Adverse Drug Reaction (ADR) Monitoring

Pharmacovigilance (PV) falls under the Pharmacy and Poisons Board (PPB), which regulates pharmaceutical products and services and ensures quality, safety and efficacy of human and veterinary medicines and medical devices. The national PV 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 on ADRs can be done either through spontaneous reporting or active reporting. Spontaneous reporting is done using yellow forms (suspected adverse drug reaction reporting form).Reporting to PPB or the nearest health authority can be done on paper or online on the PPB website. Active reporting is designed as a cohort event monitoring study and typically targets adverse drug reactions of interest or medicines of public health importance. Data on spontaneous reporting is stored on an international WHO database called VIGIBASE that allows both national and international analysis on potential signals of untoward events of interest. Cohort event monitoring data is stored on CEMFLOW, an international database that enables confirmation of association between adverse events and the drugs in question.

2.4.2 School-based Malaria Surveys

In the revised KNMS, school-based monitoring of parasite prevalence should be undertaken on an annual basis through surveys. The surveys are cross-sectional, targeting national and regional primary day school children aged between5 and15 years. Typically, about 100 children per school are randomly selected for the surveys. The surveys are often conducted under the umbrella of the school health program, alongside helminth surveys.

2.4.3 Sentinel Surveillance

In addition, county and sub-county hospitals meeting the set operational criteria will be used as sentinel surveillance sites to monitor inpatient as well as other malaria trend data. The health facility-based sentinel sites in the epidemic-prone districts will be maintained.

2.4.4 Program Monitoring

The Malaria Information Acquisition System (MIAS) is used to monitor the malaria business plan and implementation of activities. It also reports on programmatic and budgetary performance. The malaria business plan, which is derived from KNMS, is also the tool used by NMCP to advocate for resources and to solicit for technical support from development and implementation partners. The annual malaria work plan is derived from the business plan and progress is reported on a quarterly basis to the MoH and to the NMCP .The NMCP facilitates biannual planning and review meetings at the national level, which is a good forum for sharing information on implementation of activities by various malaria control stakeholders, including counties. The NMCP provides support for integrated support supervision at the sub-national level. Internally, NMCP holds quarterly progress update and review meetings, which also serve as forums for information sharing and charting the way forward. The M&E TWG holds scheduled quarterly meetings to provide guidance and coordination in monitoring the implementation of the KMS.

2.4.5 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 developed in line with KHSSP. According to this strategy, the community health workers (CHVs) are responsible for collecting integrated health information right from the household and village levels and submitting the same to community health extension workers (CHEWS) on a monthly basis. The CHEWS are formal employees of the national health system and attached to local health facilities, while the CHVs are volunteers identified by the local community who are trained and supported by the CHEWS. The sub-county health management team has

the responsibility of facilitating the availability of data collection tools (e.g. village registers and household service delivery forms) to the CHEWS and CHVs. The CHEWS ensure that the data collected is availed to those in charge of health facilities for further collation prior to review during the monthly meetings by the Health Facility Management Committees. Integration of Community Health Information System with Health Information System (HIS) is ongoing.

2.4.6 Community and Facility Based Surveys

Under the KNMS, several community- and facility-based surveys have been planned. All the malaria surveys are done in collaboration with the Kenya National Bureau of Statistics (KNBS), which specializes in data management and ensures that the surveys are properly designed and statistically sound.

a) Demographic and Health Surveys

The Kenya Demographic and Health Survey (KDHS) is a good source of LLIN and intermittent preventive treatment in pregnancy (IPTp) coverage data. However, KDHS under estimates true fever prevalence because it is conducted in the dry season when malaria transmission is at its lowest in Kenya. The standard malaria modules used in the surveys need to be revised and updated, while collaboration with KNBS should be enhanced in order to improve the contribution of KDHS in evaluating the impact of the malaria control program, for example, through the possible inclusion of new questions in the KDHS tools or by increasing the sample to address malaria M&E needs.

b) Malaria Indicator Survey

The Malaria Indicator Survey (MIS) is conducted regularly (every three years) in Kenya to inform program design and effective implementation by measuring performance of the key malaria indicators. The last MIS was done in 2010; the next one scheduled for 2013 was postponed to enable the holding of KDHS first, and is now scheduled for 2015.

c) Entomological Surveys and Insecticides Resistance Monitoring

Biannual entomological surveys will be undertaken by the Vector-Borne Disease Unit to establish malaria vector distribution, abundance, behavior, and infection. The samples will be analyzed by the national reference unit established at Kenya Medical Research Institute (KEMRI). This data will be used to update the malaria entomological profile map. In addition, the vector susceptibility to insecticides will be evaluated regularly to inform the choice of insecticides that will be used for vector control.

d) Quality Control/Assurance of Diagnostic Methods

Pre- and post-market surveillance of the RDTs will be undertaken to ensure that the quality of the kits is acceptable. The RDT kits will be sampled and tested regularly against known standards at the National Quality Control Laboratory (NQCL).At the health facility level, confirmation of RDT test results will be done by laboratories that have the capacity to undertake expert microscopy. Supportive supervision will also be provided to health facilities using RDTs to ensure the specified standards are maintained to guarantee integrity of results and to inform effective malarial treatment.

e) Quality Control/Assurance of Medicines

The NQCL tests pre-market batches of malaria medicines entering the public sector. PPB will be supported to undertake regular integrated post-market surveillance of medicines with emphasis on malaria medicines. Sampled medicines will be tested by NQCL and requisite action will be taken if there is evidence of compromised quality.

f) Antimalarial Drug Efficacy Monitoring

Data gathered on anti-malaria drug resistance informs review of national treatment guidelines and regional resistance patterns for appropriate planning and intervention. The NMCP will conduct therapeutic efficacy studies in five sentinel sites. Two therapeutic efficacy studies on AL and DHAP are proposed to be undertaken in the five sentinel sites every two years. MCU will work with research institutions to undertake this activity.

g) Monitoring Quality of Care

Since 2010 MCU has been monitoring outpatient quality of care (QoC) for malaria case management on a biannual basis, in line with diagnostic and treatment policies. The MCU will continue to carry out the QoC and expand it to include both outpatients and inpatients. The program will build capacity for counties to undertake county specific QoCs. The program will also conduct drug availability surveys in the private sector to monitor access, pricing and market share of malaria medicines in this sector.

2.4.7 Operational Research and Translation

As Kenya progresses to malaria elimination in the long term, there is need to undertake operational research in key areas that include: social behavioural research in malaria control; entomological studies; tracking of changes in malaria transmission; cost-effectiveness analysis of different combination of control interventions and other emerging questions relevant to malaria control. This requirement is addressed through the regular malaria operational research technical working group meetings that define and frequently update the malaria operational research agenda. NMCP will facilitate institutions to conduct relevant research, and provide a forum for the translation of the research findings into policies.

3. Implementation Arrangements

The NMCPSMEOR focal unit coordinates the monitoring and evaluation of the KNMS and its implementation in Kenya. The SMEOR focal unit is responsible for the following functions: data collation, management and analysis; surveillance; program activities and financial performance monitoring; operational research, documentation and dissemination; and overall co-ordination of all the SMEOR activities outlined in the M&E Plan.

The capacity of the NMCP to undertake SMEOR for the malaria program was strengthened during the first half of the implementation phase of the KMS. Notable strengths include the organizational structure of the SMEOR focal unit, strong M&E partnerships as reflected in the regular technical working group meetings, and the presence of a comprehensive M&E system and costed M&E plan. In addition, there is a malaria supportive supervision manual and reporting and supervision tools at all levels. Finally there is great improvement in routine reporting through the DHIS2, which is used for reporting on disease and service delivery, by all health facilities in the country.

On the other hand, the main weakness facing SMEOR of the malaria program include the quality of routine data from HIS/LMIS and Disease Surveillance and Response Unit (DSRU), inadequate M&E capacity at county and sub-county levels, poor flow of entomological, laboratory and inpatient data, delayed development of the Community Health Information System (CHIS) tools; and challenges of working with the counties in a devolved system.

Coordination of Malaria Monitoring and Evaluation in Kenya

In line with "The Three Ones" principle, there will be only one agreed upon M&E framework to serve both the NMCP and its partners. The NMCP SMEOR focal unit will work with all partners and different units within and outside the MoH. The NMCP, through the SMEOR focal point, will strengthen the existing linkages between the SMEOR focal unit and all other focal units in the malaria program, namely Case Management, Vector Control, Epidemic Preparedness and Response, Malaria in Pregnancy, Advocacy, Communication and Social Mobilization and Program Management. The SMEOR focal unit will also maintain close links with the Health Information System (HIS) unit and maintain functional linkages between the NMCP and other MoH units, such as the Reproductive and Maternal Health Services Unit(RMHU), the Vector-borne Disease Unit (VBDU), the National Child and Adolescent Health Unit (NCAHU), the National Public Health Laboratory Services(NPHLS), the Pharmacy and Poisons Board(PPB) and Kenya Medical Supplies Agency(KEMSA). Linkages with other government departments, civil society organizations(CSOs), counties, the private sector and partners working in malaria control, such as GFATM, the President's Malaria Initiative (PMI), the UK Department for International Development (DFID),the World Health Organization (WHO), the United Nations Children's Fund(UNICEF), Population Services International(PSI),and Management Sciences for Health (MSH), will also be established and maintained.

This coordinated implementation guided by the M&E plan will promote efficient use of data and resources by ensuring, for example, that indicators and sampling methodologies are comparable over time. Data generated by a comprehensive malaria M&E system will serve the needs of many constituents, including the NMCP, all counties, academia, researchers and development partners, thus eliminating the need for parallel and duplicative M&E processes and activities.

3.1 M&E within the NMCP

The Surveillance, Monitoring, and Evaluation and Operational Research (SMEOR) focal unit is mandated to coor-

dinate the generation of information and data on progress towards the implementation of malaria interventions and to evaluate the health impact of these interventions. The performance of the NMCP is measured against the KMS achievements towards set targets, and the outputs of the annual malaria business plan.

The SMEOR focal unit is equipped with the requisite hardware and software to enable data compilation, analysis, and storage in an M&E database. A national M&E TWG exists as part of the overall NMCP governance mechanisms, with clear terms of reference which include provision of technical leadership and oversight, and coordination of the M&E system for effective malaria control. Through the TWG, the focal unit benefits from advice and technical guidance from a group drawn from a wide range of stakeholders with interest in M&E (government, academia, research institutions, non-governmental organizations, and development partners). The M&E TWG also has internal NMCP representation from thematic areas, such as case management, vector control, and advocacy, communication and social mobilization. The NMCP provides leadership to the M&E TWG.

The NMCP has an inventory of malaria stakeholders that was developed in 2007 as part of the development of the Malaria Information Acquisition System (MIAS) and was last updated in 2010. The unit also has clear mechanisms, such as feedback reports and newsletters, to communicate M&E activities and decisions to its stakeholders. Key information products from the NMCP include quarterly malaria surveillance bulletins, annual malaria reports, biannual quality of care survey reports, and technical reports on on-going activities.

3.2 Current NMCP SMEOR Unit Resources

3.2.1 Human Resources

An assessment of the existing capacity of the NMCP to undertake malaria M&E functions was carried out in 2013 by Measure Evaluation. The main findings were that NMCP has an SMEOR focal unit that is adequately staffed to undertake its mandate. The current M&E staff establishment at the MCU consists of one public health specialist, one health records information officer (HRIO), one statistician, one data manager and one entomologist. The data manager is in charge of implementation of the malaria database (MIAS), including managing and analyzing all the relevant malaria data. An epidemiologist will be added to complement the existing skills set.

Though the assessment concluded that NMCP had a good skills-mix of staff with the right qualifications to carry out M&E tasks, it also highlighted staff capacity gaps that need to be strengthened. These areas include building staff ability to use geographic information system (GIS) applications to produce simple info-graphics, and capacity to undertake program evaluations through large scale surveys. To sustain overall M&E capacity building in the context of devolution, the assessment recommended that there is a need to have costed human capacity building plans for the NMCP, training databases and strategies that list training needs and existing capacity of trained staff, and a validated, multi-stakeholder malaria M&E curriculum that can be used at all levels of the health care system.

3.2.2 Data Management Software and Equipment

Several desktop computers and laptops are available to support management of data at the NMCP. All these computers are equipped with Microsoft Office applications and client applications for the MIAS system. Some statistical packages (SPSS, EPI info, Stata) are also available. Data backups are undertaken using CD-ROMS and DVDs. The use of flash disks and email system for easy information sharing and access is widespread, which calls for enhanced protection of all ICT equipment from viruses and other malware. The computers and UPS system, however, need replacing on a regular basis for enhanced efficiency in application usage and information sharing, as well as safety of the computer equipment.

3.2.3 Information Dissemination

Information generated by the program is disseminated mostly via the program website www.nmcp.or.ke and also via the MoH website www.health.go.ke.Internal and external emails are

also used for this function, as are the various meetings and workshops that the unit holds or participates in. A surveillance bulletin is produced every quarter for information sharing with malaria partners and the general public. In addition, information dissemination also takes place during planning, program update and review meetings, which are held with the various stakeholders on a regular basis, as well as through the Annual Malaria Report (AMR).

3.3 Monitoring and Evaluation of Implementation of the KMS

The NMCP will strengthen malaria monitoring and evaluation of the KMS to ensure acquisition and use of data/information for more effective planning and implementation of interventions. The program will monitor the implementation of all activities and evaluate progress using malaria-specific surveys. Operational research will be undertaken to test or evaluate new malaria control interventions. Furthermore, both epidemiological and entomological surveillance capacity will be strengthened and school malariometric surveys will be undertaken to monitor the parasite's prevalence in the country. Monitoring of the program will include regular supportive supervision by counties and sub-counties and mentoring support by the national government. Monthly program meetings, quarterly review meetings with all partners involved in malaria control and regular technical meetings to review technical issues related to implementation will also be held. To make sure implementation is monitored effectively by the NMCP, this M&E plan will be disseminated to all program personnel, counties and partners for a coordinated and harmonized approach. With regard to evaluation, several surveys and studies have been planned.

3.4 Data Flow

The source of routine health information, including malaria data, is from health facilities and community units distributed throughout the country. The HIS data flow has shifted from transmission of facility data at the district level through the electronic File Transfer Protocol (FTP) system to the use of DHIS2 for management of this information. The DHIS2 database for Kenya is installed on a central server using the "cloud" based computing infrastructure and as such users are expected to access the system via the internet both for data entry and information use purposes. Unlike the FTP system, which could not capture individual facility data, DHIS2 data is captured per facility and entered directly into the web-based central server by the sub-county health records information officers (HRIOs).This difference is illustrated in figure 7.

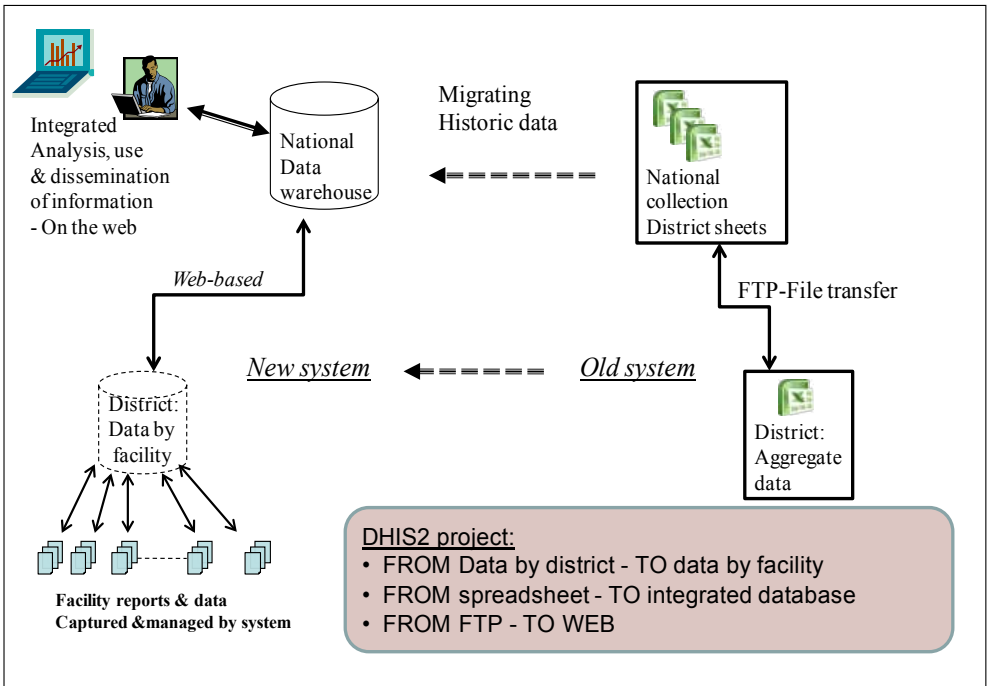


Figure 7: DHIS versus FTP data flow

Source: Division of HIS

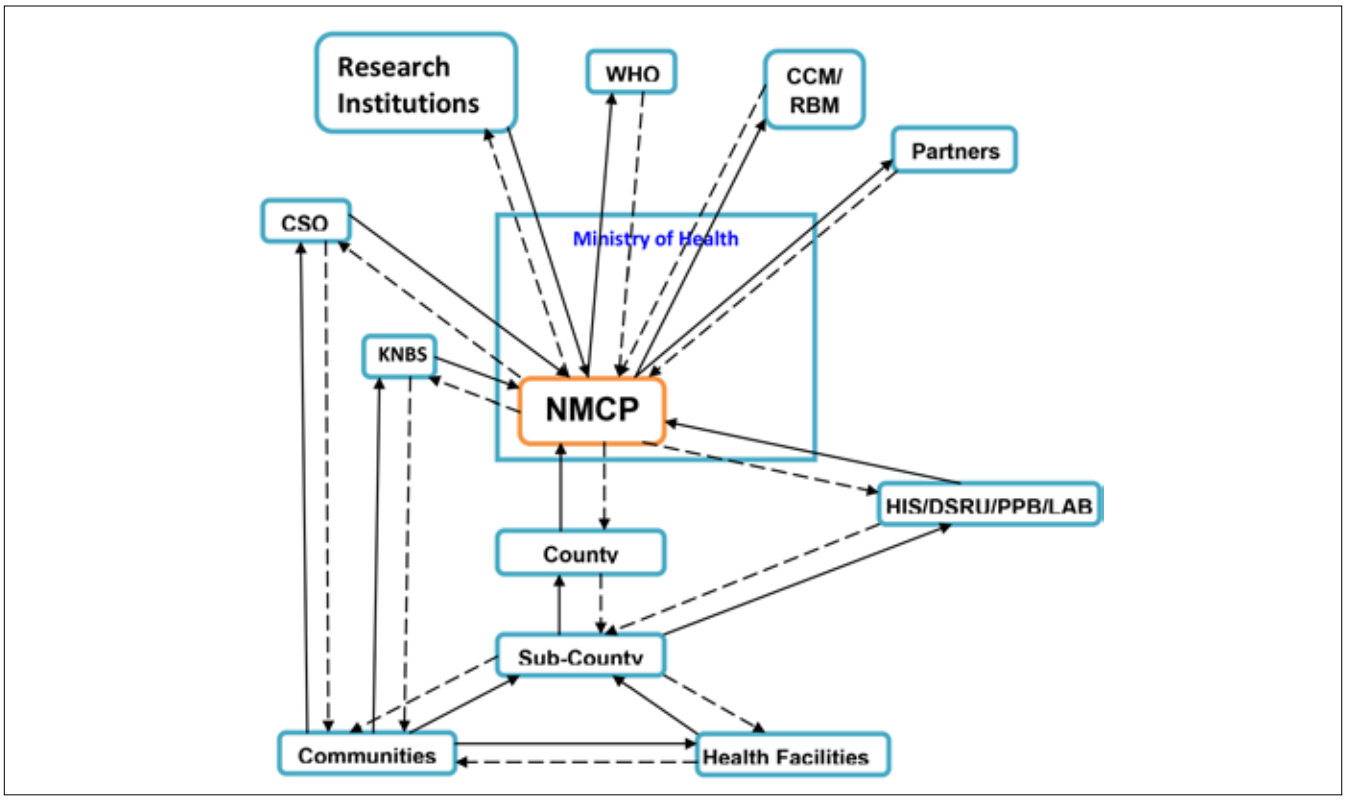


Figure 8: Overall Malaria Data and Information Flow from sources to MCU

3.5 Data Quality Assurance

In Kenya, the HIS unit in the Ministry of Health is charged with the responsibility of collecting, collating, analyzing, publishing and disseminating health data to all stakeholders (both public and private) for evidence-based decision-making. Data quality assurance is important for verification and validation of data. Specially trained HRIOs exist at sub-county, county and national levels; they are responsible for data collection and management at these levels.

One major challenge in malaria M & E remains the need to standardize and improve the quality of the health information that is obtained from the DHIS2. The HIS unit has identified this weakness and has set its vision as: "to be a center of excellence for quality health information". The unit subsequently identified steps to ensure that this vision is realized. The MCU will work with the HIS unit to make sure that routine data quality audits are undertaken and that the data collected is interpreted appropriately. In addition, the NMCP plans to build capacity for data quality audits (DQAs) at the county level. The existing DQA tools will be customized from time to time to meet any arising needs.

3.6 Data Demand and Use (DDU)

Strengthening health information ultimately leads to building the foundations of a health system and informing decision-making in Kenya. Information use is the key to achieving M&E objectives and strengthening the organizational, behavioral and technical aspects that support data collection, availability and use. The NMCP will endeavor to provide leadership in promoting data use for decision-making, which will ultimately improve malaria interventions, such as case management, surveillance reporting, and the production of essential information products. Information products used to disseminate the data will include annual reports, guidelines, bulletins, policy briefs, commissioned research studies and other evaluations relevant to the NMCP.

Operationally, DDU will place emphasis on generating relevant data to meet the information needs of different stakeholders at both the national and sub-national levels, creating awareness of the available information for its effective use in planning and decision-making, and disseminating data to relevant stakeholders. Appendix 6.3 shows a matrix of data users and how they use information for decision-making and programming in their respective program areas.

3.7 Malaria Database

The main database for the NMCP is the malaria information acquisition system (MIAS).The objective of MIAS is to enable users to plan, assign budgets and report against planned activities within the KMS. The database consolidates data from HIS, IDSR, laboratory information system and operational research data and acts as a repository to support evidence-based actions. Effective use of the MIAS would be a great aid in reviewing both programmatic and financial progress.

One main challenge during the first half of the implementation phase of the KMS has been that the malaria database was not up to date since it was not being used internally at the NMCP as intended. In order to strengthen the use of this system, the ICT infrastructure at the NMCP will be upgraded to enhance efficiency of data collection and reporting. Additionally, the MIAS system itself will be upgraded and updated by including the malaria surveillance data module from HIS and DSRU, an updated partnership database, a training database, and summary data for surveys and research that have been carried out the recent years.

Monitoring and Evaluation Activity Plan

Strategies	Activities	2013/14	2014/15	2015/16	2016/17	2017/18
SMEOR Activity Plan as in the KMS 2009 – 2018 Objective 4						
4.1 To strengthen capacity for malaria surveillance, monitoring and evaluation	(i) Review and disseminate M&E framework and plan	X	X			X
	(ii) Support M&E technical working group	X	X	X	X	X
	(iii) Support scale up of malaria surveillance and monitoring in collaboration with IDSR and HIS	X	X	X	X	X
	(iv) Develop malaria surveillance guidelines		X			
	(v) Malaria surveillance monitoring and supervision	X	X	X	X	X
	(vi) Conduct DQA for malaria data	X	X	X	X	X
4.2 Conduct and facilitate health facility surveys	(i) Conduct and support the monitoring of the quality of malaria case management in sampled health facilities	X	X	X	X	X
	(ii) Conduct drug availability survey in the private sector	X		X		X
	(iii) Countrywide health provider and health facility inventory for malaria diagnosis and treatment	X	X	X	X	X
	(iv) Support pharmacy and poisons board to undertake pharmacovigilance for malaria medicines	X	X	X	X	X
4.3 Conduct and support community surveys	(i) Conduct malaria medicines post-marketing surveillance and quality assessment studies	X	X	X	X	X
	(ii) Conduct malaria drug efficacy monitoring studies every 2 years	X		X		X
	(iii) Conduct Malaria Indicator Surveys		X			X
	(iv) Conduct impact evaluations for malaria interventions		X			
	(v) Evaluation for community Case Management	X	X	X	X	X
	(vi) Conduct re-analysis of KDHS malaria data			X		X
4.4 Strengthen school-based malaria sentinel surveillance	(i) Facilitate malariometric surveys	X	X	X	X	X
4.5Facilitate operational research and translation to policy	(i) Hold meetings of the OR TWG to define Malaria OR agenda and coordinate malaria research activities	X	X	X	X	X
	(ii) Provide research grants to research institutions	X		X		X
	(iii) Hold national malaria research to policy conference once every two years	X	X		X	X
4.6 Strengthen malaria data management systems	(i) Update and upgrade malaria database (MIAS)	X	X	X	X	X
4.7 Human resource capacity building in surveillance, monitoring and evaluation	(i) Develop and implement a system for monitoring improvements in M&E capacity			X		X
	(ii) Training of MCU staff in M&E	X	X	X	X	X
	(iii) Capacity building of county teams on M&E			X	X	X
	(iv) Develop and disseminate national data demand and use strategy		X	X	X	

4.8 Conduct and support entomological surveillance	(i)	Strengthen entomological surveillance capacities at county levels (through training)	X	X	X	X	X
	(ii)	Selection of sentinel sites for entomological surveillance in endemic counties	X	X	X	X	X
	(iii)	Procurement of entomological surveillance tools	X	X			
	(iv)	Conduct entomological surveys once a year in malaria endemic counties	X	X	X	X	X
	(v)	Development of entomological profile maps for the sentinel sites	X	X	X	X	X
	(vi)	Conduct routine monitoring of vector susceptibility to insecticides (twice/ year) in malaria endemic counties	X	X	X	X	X
	(vii)	Conduct dissemination meetings for entomological surveillance data	X	X	X	X	X
	(viii)	Develop and review of vector control strategies and policy guideline in line with emerging evidence					X

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5. Appendices

5.1 Appendix 1: Log frame for Revised Kenya Malaria Strategy 2009 -2018

Strategies	Activities	FY 2014/15	FY 2015/16	FY 2016/17	FY 2017/18
Objective 1: To have at least 80% of people living in malaria risk areas using appropriate malaria preventive interventions by 2018					
1.1 Universal distribution of LLINs through appropriate channels (1 LLIN for 2 people)	1.1.1 Conduct a mass LLIN distribution campaign to achieve universal access	X			X
	1.1.2 Micro-planning at sub-county level	X	X		X
	1.1.3 Mapping and registration of households	X	X		X
	1.1.4 Routine distribution of LLINs using ANC/CWC	X	X	X	X
	1.1.5 Distribution of LLINs through social marketing	X	X	X	X
	1.1.6 Pilot community continuous net distribution	X			
1.2 Indoor residual spraying in the targeted areas	1.2.1 Conduct IRS in epidemic prone and fringe endemic counties	X	X		
	1.2.2 Conduct IRS in endemic counties	X	X		
	1.2.3 Capacity building for IRS	X	X		X
	1.2.4 Procurement and distribution of IRS commodities and equipment	X	X		X
	1.2.5 Develop GPS mapping system for planning and monitoring IRS activities				X
	1.2.6 Supervision, monitoring and evaluation of IRS operations	X	X		X
1.3 Larval Source Management	1.3.1 Capacity building for Larval source management	X	X		X
	1.3.2 Larval source management in targeted areas.	X	X	X	X
	1.3.3 IVM (Environmental management)	X	X	X	X
1.4 Support malaria-free schools initiative	1.4.1 Development of Malaria content for schools curriculum	X		X	
	1.4.2 Dissemination and adoption of the developed content by stakeholders	X		X	

Strategies	Activities	FY 2014/15	FY 2015/16	FY 2016/17	FY 2017/18
1.5 Provision of IPTp at ANC and promotion of its use at the community level	1.5.1 Update and disseminate IPTp guidelines		X	X	
	1.5.2 Procurement and distribution of effective medicines for IPTp	X	X	X	X
	1.5.3 Capacity building for provision of IPTp-SP (Service Providers, CHEWs, CHVs, Private Sector and FBOs)	X	X	X	X
	1.5.4 Supportive supervision of MIP activities (facility and community) by CHMTs and SCHMTs with mentorship by NMCP/RMHSU	X	X	X	X
	1.5.5 Conducting advocacy and mobilization activities (e.g. Community outreach activities; sensitization of pregnant women to start early ANC attendance)	X	X	X	X
	1.5.6 Holding quarterly MIP TWG meetings	X	X	X	X
	1.5.7 Conduct a review of IPTp implementation in 2016 to inform next KNMS		X		X
Objective 2: To have 100% of all suspected malaria cases presenting to a health provider managed according to the national malaria treatment guidelines by 2018					
2.1 Capacity building of health workers in malaria diagnosis and treatment at health facilities	2.1.1 Review print and disseminate malaria diagnosis and treatment guidelines and training curricula		X		X
	2.2.1 Train health workers on integrated case management	X	X		X
	2.2.2 Monitor and supervise case management trainings and practice	X	X		X
	2.2.3 Review print and disseminate guidelines and training material for ETAT+	X	X	X	X
	2.2.4 Train health workers on ETAT+	X	X	X	X
	2.2.5 Monitor and supervise ETAT+ trainings and practice	X	X	X	X
2.3 Access to affordable malaria medicines and diagnostics through the private sector	2.3.1 Develop private sector case management implementation plan	X		X	
	2.3.2 Conduct biannual planning and coordination meetings with private sector	X	X	X	X
	2.3.3 Procure ACTs and ensure availability of RDTs in the private sector	X	X	X	X
2.4 Strengthening Community case management of Malaria using the community strategy through community health volunteers	2.4.1 Review print and disseminate malaria community case management training curriculum	X		X	
	2.4.2 Train Community health volunteers and community health extension workers	X	X	X	X
	2.4.3 Supervise and Monitor community case management trainings and practice	X	X	X	X

Strategies	Activities	FY 2014/15	FY 2015/16	FY 2016/17	FY 2017/18
2.5 Ensuring commodity security of antimalarials and diagnostics in the public sector	2.5.1 Ensure inclusion of antimalarial drugs and diagnostics in relevant guidelines and essential drugs list as per the national treatment guidelines	X	X	X	X
	2.5.2 Develop and disseminate specifications for antimalarial drugs and diagnostics	X	X	X	X
	2.5.3 Ensure a conducive regulatory environment for antimalarials and diagnostics	X	X	X	X
	2.5.4 Conduct forecasting and quantification of malaria medicines and diagnostics	X	X	X	X
	2.5.5 Procure and distribute antimalarials and malaria diagnostics	X	X	X	X
	2.5.6 Strengthen Logistics Management Information System (LMIS)	X	X	X	X
	2.5.7 Conduct Post Market Surveillance of antimalarials and diagnostics	X	X	X	X
2.6 Strengthen QA of malaria diagnosis	2.6.1 Review and disseminate malaria laboratory guidelines and curricula	X		X	
	2.6.2 Review malaria diagnosis QA implementation plan	X		X	
	2.6.3 Train lab personnel on QA of microscopy and RDTs	X	X	X	X
	2.6.4 Supervise and monitor QA training and implementation	X	X	X	X
	2.6.5 Support county and national reference laboratories	X	X	X	X
Objective 3: To ensure that 100% of malaria epidemic prone and seasonal transmission sub counties have the capacity to detect, prepare for and timely respond to malaria epidemics by 2018					
3.1 Strengthen early detection systems for malaria epidemics in epidemic prone and seasonal transmission areas	3.1.1 Set-up sentinel surveillance in the seasonal transmission areas:	X			
	3.1.2 Strengthening existing sentinel surveillance sites in the epidemic prone areas.	X	X	X	
	3.1.3 Install infrastructure for climate based malaria early warning systems (MEWS)	X			

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

Strategies	Activities	FY 2014/15	FY 2015/16	FY 2016/17	FY 2017/18
4.3 Conduct and support community surveys	4.3.1 Conduct malaria drug efficacy monitoring studies every 2 years	X		X	
	4.3.2 Conduct Malaria Indicator Surveys	x			X
	4.3.3 Conduct impact evaluations for malaria interventions		X		
	4.3.4 Conduct re-analysis of KDHS malaria data	X		X	
4.4 Strengthen school based malaria sentinel surveillance	4.4.1 Facilitate malariometric surveys	X	X	X	X
4.5 Facilitate Operational Research and translation to policy	4.5.1 Hold quarterly meetings of the OR TWG	X	X	X	X
	4.5.2 Provide research grants to research institutions		X		X
	4.5.3 Hold national malaria research to policy conference once every two years		X		X
4.6 Strengthen malaria data management systems	4.6.1 Update and upgrade MIAS	X	X	X	X
4.7 Human Resource capacity building in monitoring and evaluation	4.7.1 Develop and implement a system for monitoring improvements in M&E capacity	X	X	X	X
	4.7.2 Training of NMCP staff in M&E	X	X	X	X
	4.7.3 Capacity building of county teams on M&E	X	X	X	
	4.7.4 Develop and disseminate national data demand and use strategy	X	X	X	
4.8 Conduct and Support Entomological Surveillance	4.8.1 Malaria Vector Surveillance	X	X	X	X
	4.8.2 Conduct insecticides susceptibility studies	X	X	X	X
Objective 5. To increase utilization of all malaria control interventions by communities in Kenya to at least 80 % by 2018					
5.1 Strengthen structures for the delivery of ACSM interventions at all levels.	5.1.1 Review and disseminate ACSM policy and guidelines	X			
	5.1.2 Scale up the capacity of implementers at county, sub-county and partners on ACSM and develop county communication plans.	X	X	X	
	5.1.3 Hold quarterly meetings of malaria ACSM TWGs at national level.	X	X	X	X
	5.1.4 Support quarterly meetings of ACSM TWGs at county levels	X	X	X	X
	5.1.5 Undertake support supervision for malaria ACSM activities at county level.	X	X	X	X
	5.1.6 Identify and support national malaria ambassador.	X	X	X	X
	5.1.7 Support the counties to identify and support malaria ambassador.	X	X		

Strategies	Activities	FY 2014/15	FY 2015/16	FY 2016/17	FY 2017/18
5.2 Strengthen program communication for increased utilization of all malaria interventions	5.2.1 Develop, disseminate and distribute ACSM package to promote utilization of all malaria interventions at household level.	X	X	X	X
	5.2.2 Scale up of routine multi-media activities (mainly interactive radio programs) to support ACSM at county /sub-county and community level	X	X	X	X
	5.2.3 Support national multi-media activities.	X	X	X	X
5.3 Advocate for inter-sector collaboration for malaria ACSM	5.3.1 Hold bi-annual consultative meeting with relevant sector partners for malaria ACSM	X	X	X	X
	5.3.2 Support priorityy ACSM implementing partners with IEC/ BCC materials	X	X	X	X
	5.3.3 Commemorate World Malaria Day	X	X	X	X
	5.3.4 Publication of bi-annual malaria information and advocacy bulletin	X	X	X	X
5.4 Strengthen community based Social and Behavior Change Communication activities for all malaria interventions	5.4.1 Support community health workers to actively map out households for targeted malaria interventions.	X	X		
	5.4.2 Support counties to identify community own resource persons in areas without community units, train and facilitate them to undertake promotion of malaria interventions at household level	X	X		
	5.4.3 Support community health units to conduct community dialogues to identify and address barriers to uptake and utilization of malaria interventions	X	X	X	X
	5.4.4 Support the community health units to conduct community malaria action days.	X	X	X	X
	5.4.5 Support communities to form malaria advocacy groups comprising of CBOs, FBOs, Ward representatives to advocate for malaria at various locations and villages.	X	X		
	5.4.6 Support counties to undertake monitoring and supervision of net use promotion activities at household level	X	X	X	X
	5.4.7 Support counties to engage school pupils to malaria interventions at household level	X	X	X	X
	5.4.8 Support counties to use local interactive radio programs on malaria in local dialects.	X	X	X	X
	5.4.9 Document and disseminate lessons learnt on innovative malaria ACSM promotion in selected counties		X		X

Strategies	Activities	FY 2014/15	FY 2015/16	FY 2016/17	FY 2017/18
Objective 6: To improve capacity in coordination, leadership, governance and resource mobilization at all levels towards achievement of the malaria program objectives by 2018					
6.1 Develop/Update and disseminate policy and strategic documents, lobby for legislation/regulations to guide malaria control in Kenya	6.1.1 Update and disseminate malaria policy			X	
	6.1.2 Develop/update Strategic and M&E plan			X	
	6.1.3 Review Malaria Prevention Act			X	
	6.1.4 Mainstream malaria into national health plan			X	
	6.1.5 Develop/Update risk management plan and operations manual	X		X	X
	6.1.6 End-term review of the strategic and M&E plan			X	X
6.2 Strengthen procurement and supply management systems for malaria drugs and commodities	6.2.1 Develop and review the guidelines and SOPs for Malaria Commodity Quantification, forecasting and inventory management	X	X	X	
	6.2.2 Develop and review the annual PSM plan within the context of devolution to counties	X	X	X	X
	6.2.3 Evaluation of malaria commodity distribution system (LLINs; ACTs and RDTs)	X	X	X	X
	6.2.4 Provide support to expand storage facilities	X	X	X	
	6.2.5 Strengthen and enhance monitoring and reporting of PSM	X	X	X	X
	6.2.6 Build capacity for procurement supply chain at county levels		X		
	6.2.7 Support supervision for commodity security	X	X	X	X

Strategies	Activities	FY 2014/15	FY 2015/16	FY 2016/17	FY 2017/18
6.3 Capacity strengthening for planning, partnership, coordination and implementation at all levels	6.3.1 Train counties and sub counties on malaria program management and planning	X			
	6.3.2 Develop/update annual work plan	X	X	X	X
	6.3.3 Advocate for malaria intervention within the county health strategies			X	X
	6.3.4 Review County malaria work plan	X	X	X	X
	6.3.5 Mapping of partners		X		X
	6.3.6 Participate in regional and international meetings and workshops	X	X	X	X
	6.3.7 Conduct regular performance monitoring and review meetings	X	X	X	X
	6.3.8 Provide Technical support to County/sub-county on need basis	X	X	X	X
	6.3.9 Conduct TWGs and MICCs	X	X	X	X
	6.3.10 Recruit and remunerate program officers	X	X	X	X
	6.3.11 Remuneration of current core NMCP staff	X	X	X	X
	6.3.12 Conduct external capacity assessment		X		
	6.3.13 Training, coaching, mentoring & enhancement of skills of health personnel	X	X	X	X
	6.3.14 Support establishment and functionality of community health units	X	X	X	X
	6.3.15 Maintenance of NMCP office infrastructure, plant, logistics, equipment, utilities, communication and connectivity	X	X	X	X
6.4 Strengthen resource mobilization capacity to improve malaria control financing	6.4.1 Develop/update resource mobilization strategy	X	X	X	
	6.4.2 Resource mobilization proposal development (such as GFATM)	X	X	X	X
	6.4.3 Identify and engage Public Private Partnership for malaria control	X	X	X	X
	6.4.4 Lobby for increased funding for malaria control	X	X	X	X
	6.4.5 Hold bi-annual donor round-table meeting	X	X	X	X

5.2 Appendix 2: Core Indicators Definitions

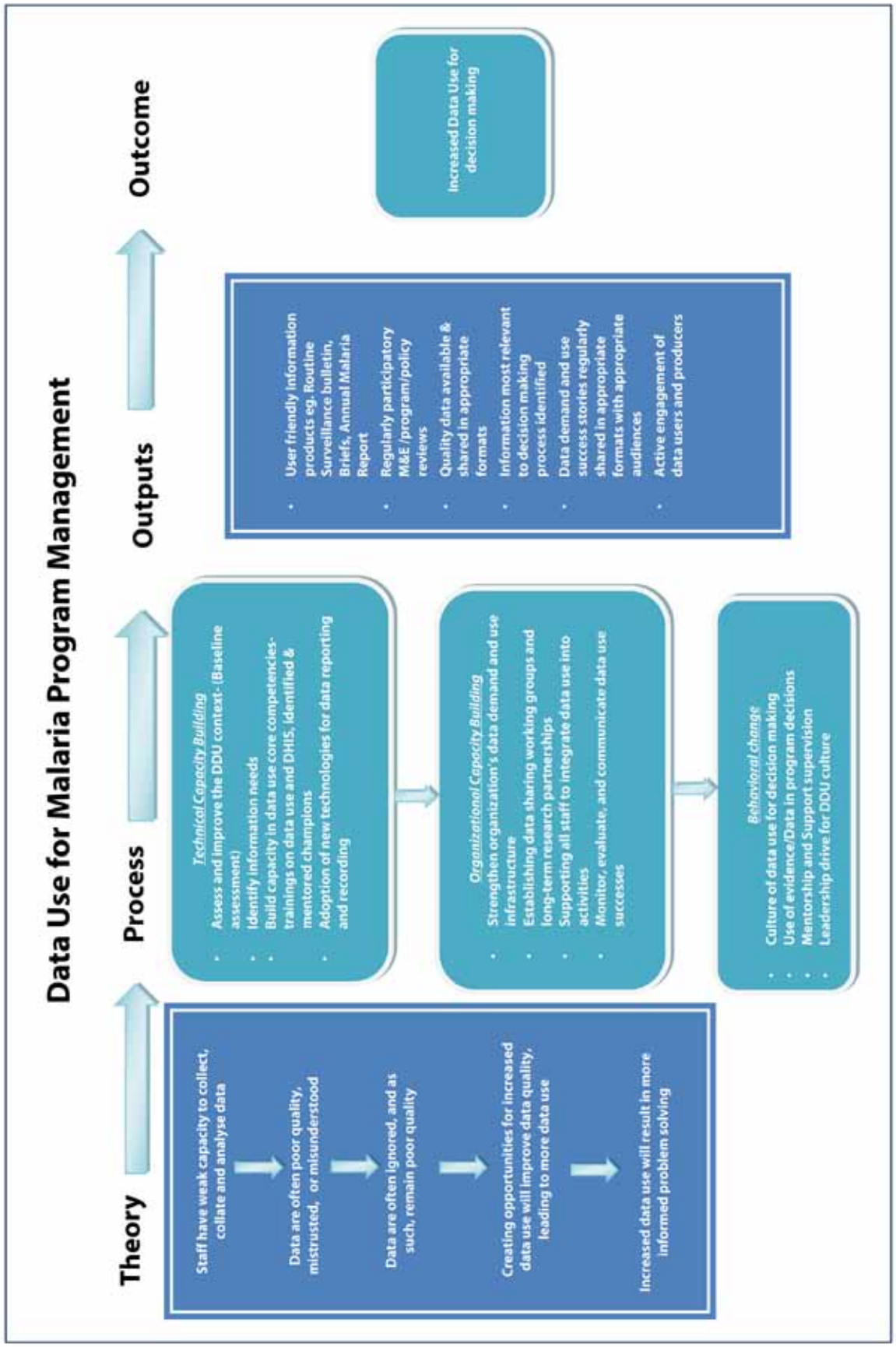
	Name of indicator	Numerator, Denominator	Data Type/ Source
Impact Indicators			
1.	Inpatient* malaria cases among children <5yrs [per 1000 persons per year]	N: Number of inpatient cases<5yrs with a Confirmed diagnosis of malaria D: Population (under 5yrs) per 1000 persons for persons resident in areas at risk of malaria.	Routine surveillance
2.	Total inpatient* malaria cases [per 1000 persons per year]	N: Total number of inpatient cases with a Confirmed diagnosis of malaria D: Total population per 1000 persons for persons resident in areas at risk of malaria.	Routine surveillance
3.	Inpatient* malaria deaths among children <5yrs [per 1000 persons per year]	N: Number of inpatient deaths due to Confirmed malaria for children< 5 years D: Population (under 5yrs) per 1000 persons for persons resident in areas at risk of malaria	Routine surveillance
4.	Total inpatient* malaria deaths [per 1000 persons per year]	N: Total number of inpatient deaths due to Confirmed malaria D: Total population per 1000 persons for persons resident in areas at risk of malaria	Routine surveillance
5.	Confirmed outpatient malaria cases at health facility level among children <5 yrs [per 1000 persons per year]	N: Number of outpatient malaria cases confirmed by microscopy or RDT among children <5yrs reported by health facilities per year D: Population (under 5yrs) per 1000 persons for persons resident in areas at risk of malaria	Routine surveillance
6.	Total confirmed outpatient malaria cases at health facility level [per 1000 persons per year]	N: Number of outpatient malaria cases confirmed by microscopy or RDT reported by health facilities per year D: Total population per 1000 persons for persons resident in areas at risk of malaria	Routine surveillance
7.	Total Clinical outpatient malaria cases at health facility level [per 1000 persons per year]	N: Number of clinical malaria reported by health facilities per year D: Total population per 1000 persons for persons resident in areas at risk of malaria.	Routine surveillance
8.	Percentage of suspected malaria cases tested using a parasitological based test	N: Number of suspected malaria cases tested D: Number of suspected cases	Routine surveillance
9	Slide/RDT Test Positivity Rate (TPR) at health facility level	N: Total number of outpatient cases confirmed positive for malaria by Microscopy or RDT D: Total number of outpatient suspected malaria cases tested	Routine surveillance for laboratory data
10	Malaria parasitaemia prevalence (pf) rate among children < 5yrs in lake endemic areas (by microscopy)	N: Number of children testing positive by microscopy for presence of malaria parasite in the blood D: Total number of children tested Sex and age disaggregation	Household surveys
Outcome Indicators – Objective 1			
1.	Proportion of households who own more than one ITN/LLINs	N: Number of households that own more than one ITN/LLINs D : Number of households surveyed	Household survey
2.	Proportion of children <5yrs who slept under an ITN/LLIN on night before a survey	N:Number of children under 5 years of age who slept under an ITN the previous night D: Total number of children under 5 years who slept in surveyed households the previous night Disaggregated by sex	Household survey
3.	Proportion of pregnant women who slept under an ITN/LLIN on night before a survey	N:Number of pregnant women who slept under an ITN/LLIN the previous night D: Total number of pregnant women who slept in surveyed households the previous night	Household survey
4.	Proportion of individuals who slept under an ITN/LLIN on the night before the survey	N: Number of individuals who slept under an ITN/LLIN the previous night D: Total number of residents and visitors who slept in surveyed households the previous night Disaggregated by sex	Household survey

5.	Proportion of population in targeted areas protected by IRS	N: Population in targeted areas protected by IRS D: Population of targeted areas	Activity Reports
6.	Proportion of pregnant women who received 2 or more doses of IPTp during last pregnancy (within last 2 years) in endemic areas.	N: Number of women who received two or more doses of IPTp during ANC visits 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 survey
Outcome Indicators – Objective 2			
1.	Proportion of patients with suspected malaria presenting to health facility who are tested for malaria with RDT or microscopy in the public sector	N: Patients with suspected malaria presenting to health facilities who are tested for malaria with RDT or microscopy in the public sector D: Patients with suspected malaria presenting to health facilities in the public Sector(public facilities surveyed)	Routine surveillance/QOC surveys
2.	Proportion of suspected malaria cases presenting to health facility who are managed in accordance with national malaria guidelines in public sector	N: Suspected malaria patients who had a test performed, test positive patients who received AL, and those with a negative test who did not receive any anti-malarial on day of survey D: Suspected malaria patients who presented themselves to a public health facility on the day of the survey	QOC survey
3.	Proportion of public health facilities having no stock-out of ACTs for 7 consecutive days in past 3 months (for ALL ACT weight bands)	N: Number of health facilities with no reported stock-outs of nationally recommended ACTs lasting more than 7 days at any time during the past three months D: Total number of public health facilities/public health facilities surveyed	Routine surveillance (LMIS)/ QOC survey
4.	Proportion of private facility outlets stocking quality assured ACTs	N: Private facility outlets stocking quality assured ACTs on day of survey D:Private facility outlets surveyed	Drug availability survey
5.	Proportion of patients with fever who tested RDT positive by a CHV who were treated with ACT in Lake Endemic areas	N:Patients with fever who tested RDT positive by a CHV who were treated with ACT in Lake Endemic areas D:Patients with fever who tested RDT positive by a CHV in lake endemic areas	Routine reports
Outcome Indicators – Objective 3			
1.	Proportion of sub counties in malaria epidemic prone and seasonal transmission areas with at least five sentinel sites	N:Sub counties in malaria epidemic prone and seasonal transmission areas with at least five sentinel sites D: sub counties in malaria epidemic prone and seasonal transmission areas	Activity reports
2.	Proportion of sentinel health facilities in targeted epidemic prone and seasonal transmission sub counties monitoring and reporting current thresholds data	N: Sentinel health facilities in targeted malaria epidemic prone and malaria seasonal transmission sub counties monitoring and reporting current thresholds data D:Sentinel health facilities in targeted epidemic prone and seasonal transmission sub counties	Activity reports
3.	Proportion of target counties and sub counties with reviewed Malaria Epidemic Preparedness and Response plans	N:Target counties and sub counties with reviewed Malaria Epidemic Preparedness and Response plans D:Target counties and sub counties	Activity reports
4.	Proportion of malaria epidemics detected and reported within 2 weeks of surpassing action threshold	N:Malaria epidemics detected and reported within 2 weeks of surpassing action threshold D:Malaria epidemics that have occurred	Activity reports
5.	Proportion of the detected epidemics properly managed as per the EPR guidelines.	N: Detected malaria epidemics properly managed as per the EPR guidelines. D: detected malaria epidemics	

Outcome Indicators – Objective 4			
1.	Proportion of health facilities sending timely reports on malaria disease surveillance	N: health facilities sending timely reports on malaria disease surveillance D: All health facilities expected to report	Routine surveillance
2.	Proportion of counties using malaria surveillance data to produce a malaria profile	N: Counties using malaria surveillance data to produce a malaria profile D:All Counties	Activity reports
3.	Proportion of counties conducting entomological surveillance in endemic and epidemic-prone areas	N:Counties conducting malaria entomological surveillance in endemic and epidemic-prone areas D:All malaria endemic and epidemic-prone Counties	Activity reports
Outcome Indicators – Objective 5			
1.	Proportion of people with knowledge on malaria prevention, diagnosis and treatment	N:People with knowledge on malaria prevention, diagnosis and treatment D:All people surveyed Disaggregated by sex and age	KMIS/Community surveys
2.	Proportion of people who know that they should be tested for malaria before treatment	N: People who know that they should be tested for malaria before treatment D:All People surveyed Disaggregated by sex and age	KMIS/Community surveys
3.	Proportion of mothers/caregivers who know that ACT is the recommended treatment for malaria	N:Mothers/caregivers who know that ACT is the recommended treatment for malaria D: Mothers/caregivers surveyed Disaggregated by sex and age	KMIS/Community surveys
4.	Proportion of individuals who slept under an LLIN the previous night before the survey	N: Number of individuals who slept under an ITN/LLIN the previous night D: Total number of residents and visitors who slept in surveyed households the previous night Disaggregated by sex and age	Household survey
5.	Proportion of children under five who slept under an LLIN the night before the survey	N:Number of children under 5 years of age who slept under an ITN the previous night D: Total number of children under 5 years who slept in surveyed households the previous night Disaggregated by sex and age	Household survey
6.	Proportion of suspected malaria cases presenting to health workers who were tested for malaria using RDT or Microscopy in the public sector	N: Patients with suspected malaria presenting to health facilities who are tested for malaria with RDT or microscopy in the public sector D: Patients with suspected malaria presenting to health facilities in the public Sector that were surveyed and had diagnostic capability Disaggregated by sex and age (if possible in QOC surveys)	QOC surveys
Outcome Indicators – Objective 6			
1.	Proportion of counties with malaria work plans aligned to the national malaria strategy	N: counties with malaria work plans aligned to the national malaria strategy D: All Counties	Activity reports
2.	Proportion of counties with malaria activities in their health plans	N: counties with malaria activities in their health plans D: All Counties	Activity reports
3.	Proportion of annual national malaria business plan funded	N: Available funding for annual business plan D: Funding needed for annual business plan	Program reports
4.	Proportion of county malaria focal persons trained in malaria control program management	N: County malaria focal persons trained in malaria control program management D: All County malaria Focal persons	Activity reports
			Program reports

5.3 Appendix 3: Data Demand and Information Use (DDIU) Plan

5.3.1 Conceptual framework of data use in a rapidly changing malaria environment



5.3.2 Improving Data for Decision making in malaria programs using the following interventions as illustrated in the conceptual framework:

i) Assessing and improving the data use context

An assessment conducted in 2013 of the organizational, technical, and behavioral factors that affect decision-making at the Malaria Control Unit revealed that no comprehensive national data use plans or data analysis and presentation guides exist. The lack of a demand-driven model for data, poor availability of relevant data, lack of confidence in data quality (e.g. mortality data), and timeliness of reporting were key factors that hindered data use. Supportive supervision visits and data quality audits at sub-national level have also revealed there is lack of data use at the source of data collection.

ii) Identifying and engaging data producers and data users

Data producers tend to be M&E program officers, health record information officers and data clerks, whereas data users tend to be program managers, policymakers and other decision-makers at the facility, county or national levels. The lack of interaction between data users and producers to discuss data in program planning contributes to the breakdown in the decision-making cycle.

iii) Improving data quality

For consistent malaria data use to occur, data need to be of high quality so that data users are confident that the data they are using are accurate, complete, and timely. Without quality data, data-informed decision-making will not occur and will compromise program efficiency and effectiveness.

iv) Improving data availability

Ensuring that data are understood by potential users requires that malaria data be synthesized and disseminated in formats that are targeted to the individual and organizational contexts in which they are intended to be used. Data users and producers have different needs and these factors need to be taken into account when synthesizing data and developing information products.

v) Identifying information needs

To facilitate malaria data use, a focus needs to be placed on what stakeholders need to know to effectively run malaria programs instead of what data are available to them. This can be done through forums such as data review meetings, TWGs, OR meetings and data use networks.

vi) Building capacity in data use core competencies

To improve sustainable demand for and use of data in decision-making, individual capacity in core competencies in demanding and using data must exist at all levels of the health system. Competencies include skills in data analysis, interpretation, synthesis, and presentation, and the development of data-informed programmatic recommendations. Competencies can be strengthened through training, mentorship and recognition of stellar performers in the health sector.

vii) Strengthening the organization's data demand and use infrastructure

Malaria data demand and use can only be strengthened by implementing processes, values, and systems to support staff engaged in decision-making for malaria programs. An enabling environment that has structures and processes for improving the interaction of data users and producers, providing clear guidelines for data quality processes, and defining roles and responsibilities related to using data will strengthen other interventions put in place for decision-making.

viii) Monitoring, evaluating and communicating results of data demand and use interventions

In order for stakeholders and decision-makers to use data in decision-making, they need to place value on data. This value can be built through a positive experience using information to support a decision or through exposure to positive messages about the benefits of using data in the decision-making process. The higher the value data users put on data-informed decision making, the more likely they are to use data. The following activities to communicate malaria data demand and use interventions will take place at both national and sub-national levels:

- Biennial malaria forum (conference)
- Data use forums (community, county, national)
- SMEOR technical working groups
- Information products, such as media briefs, policy briefs, quarterly surveillance bulletins, peer reviewed journal articles, malaria county profiles

5.3.3. Available Malaria data sets and illustrative use

Type of Malaria Data	Illustrative Uses
Epidemiologic Data	• Monitoring disease trends over time, population, and place • Mapping sub-national malaria risk • Measuring testing rate of confirmed malaria • Measuring infection transmission intensity • Detecting malaria outbreaks and conducting investigations • Identifying malaria hot spots • Targeting IRS spraying • Developing national strategic plans • Assessing impact of interventions • Advocating for malaria control resources • Performing gender analysis to examine gender gaps
Health System Data	• Quantifying malaria commodities and monitoring stock levels • Monitoring appropriate case management practices • Mapping human resource availability • Assessing health system readiness for outbreak response • Understanding health worker competencies • Monitoring introduction of new malaria medicines • Establishing or revising policies on malaria
Program Data	• Measuring distribution and coverage of bednets • Measuring distribution and coverage of IRS • Measuring distribution and coverage of treatment commodities • Following up issues identified on supervision visits • Monitoring quality of program implementation processes • Identifying and supporting needs of malaria program
Community Data	• Defining population catchment areas • Mapping households, pregnant women, and children • Examining gender differences with respect to malaria prevention, treatment and care • Identifying high risk, underserved or target groups for interventions • Identifying community leaders, community volunteers, and health staff to support malaria control • Understanding community level perceptions and challenges to malaria control • Evaluating behavior change interventions

5.3.4 Proposed Malaria Data Use Action Plans

	Programmatic Questions	Indicator (Output/Outcome)	Data source	Timeline for analysis	Proposed decisions	Decision maker	Communication channel
Objective 1:	What is the LLIN coverage among households?	· Proportion of households who own at least 2 nets · Proportion of households with at least 1 LLIN for every two persons	MIS, PMLLIN & KDHS Surveys Research data Mass net distribution reports	3-5 years	Use available data to: -Inform LLIN distribution	Head NMCP CHMTs	Survey report County Specific briefs Annual malaria reports
	Are pregnant women in endemic areas receiving at least 2 doses of IPTp?	· Proportion of pregnant women who received 2 or more doses of IPTp during last pregnancy (within last 2 years) in endemic areas.	Survey, routine data, Census data Research data	Quartely 3-5 years	Use available data to: -Ensure un-interupted supply of SP -Update Service providers on MIP - Improve linkages between the health facilities and communities -Improve uptake of SP -Improve data capture and reporting	Head NMCP CHMTs	Survey report Meetings Bulletin Annual malaria reports
Objective 2:	Are malaria patients managed according to case management guidelines?	· Proportion of patients with suspected malaria presenting to health facility who are tested for malaria with RDT or microscopy in the public sector · Proportion of suspected malaria cases presenting to health facility who are managed in accordance with national malaria guidelines in public sector · Proportion of patients with fever who tested positive by a CHV who were treated with ACT in Lake Endemic areas	QOC surveys Routine data Stock status reports Training report Research data Supervisory reports	Biannually Monthly	Use available data to: -Train/mentor health workers on malaria case management -Ensure no stock outs of diagnostics and antimalarials -Provide updated case management guidelines	Head NMCP CHMTs	Survey Report Surveillance bulletins Annual malaria reports Meetings Peer review publications
Objective 3:	What is the state of preparedness for malaria epidemics in the sub county?	· 'Proportion of target sub counties with updated Malaria Epidemic Preparedness and Response plans · Proportion of sentinel health facilities in targeted epidemic prone and seasonal transmission sub counties monitoring and reporting current thresholds data, · Proportion of the detected epidemics properly managed as per the EPR guidelines.	EPR review and planning meeting reports Weekly thresholds reports Post Epidemic Evaluation Report	Annually	Lessons learnt to improve the management of future epidemics and use data to: -inform Epidemic Preparedness and Response plans, -enhance Skills, -Training needs, -update thresholds, -commodity management , - funds, equipment, -Rapid Response Team	Head NMCP/Head DSRU/CHMT/ SCHMT/Partners	County/Sub-county EPR review meetings Annual malaria report Bulletins

Objective 4:	What is the quality of malaria surveillance data reported by health facilities?	Proportion of health facilities sending quality reports on malaria disease surveillance	Data Quality Audit, DHIS2, e-IDSR Training Reports	Weekly, Monthly, Quarterly	Update/customize/adapt DQA tools -Build DQA capacity for counties - Conduct DQA to verify data completeness, timeliness and accuracy. -Sub counties to review data prior to reporting - Train/Mentorship of H/W on data validation	Head NMCP, Head DSRU, Head HIS,CHMT,SCHMT, Health facility in-charge.	County/Sub-county data review meetings DQA activity reports
	What are the malaria trends in the sub-counties?	Proportion of sub counties monitoring current malaria trends	Supervisory reports DQA reports	Quarterly, Annually	-Advocacy for resource allocation -Use malaria trends to target interventions	Head NMCP, Head DSRU, CECHs, CHMT, SCHMT, Health facility in-charge	County review meetings Annual malaria report Bulletins Supervisory reports
Objective 5:	What is the level of LLIN use among different categories of household members?	·Proportion of children <5yrs i who slept under an ITN/LLIN on night before a survey Proportion of pregnant women who slept under an ITN/LLIN on night before a survey · Proportion of individuals who slept under an ITN/LLIN on night before a survey	MIS, PMLLIN & KDHS Surveys Research data	3-5 years	Use available data to: -Inform LLIN distribution -Enhance net hang up -Strengthen BCC for net use	Vector Control and ACSM Focal Points CHMTs	Survey report County Specific briefs Annual malaria reports
	What is the level of knowledge on malaria prevention, diagnosis and treatment among populations?	· Proportion of people with knowledge on malaria prevention, diagnosis and treatment (disaggregated by sex and age as possible)	MIS, KAP surveys, KDHS	Every 1-5 years	Design appropriate messages to increase knowledge on malaria prevention, diagnosis and treatment	Head NMCP , CECH, CHMT, SCHMT,partners	Survey report/study report/ bulletins
	Are malaria patients managed according to case management guidelines?	· Proportion of patients with suspected malaria presenting to health facility who are tested for malaria with RDT or microscopy in the public sector · Proportion of suspected malaria cases presenting to health facility who are managed in accordance with national malaria guidelines in public sector · Proportion of patients with fever who tested positive by a CHV who were treated with ACT in Lake Endemic areas (disaggregated by sex and age as possible)	QOC surveys Routine data Stock status reports Training report Research data Supervisory reports	Biannually Monthly	Use available data to: -Train/mentor health workers on malaria case management -Ensure no stock outs of diagnostics and antimalarials -Provide updated case management guidelines	Head NMCP CHMTs	Survey Report Surveillance bulletins Annual Malaria reports Meetings Peer review publications Journals

Objective 6:	Do county health plans include malaria control activities that are in line with the Kenya malaria strategy?	· Proportion of counties with malaria workplans aligned to the national malaria strategy · Proportion of counties with malaria activities in their health plans · Proportion of county malaria focal persons trained in malaria control program management	County health plans County malaria Plans Training reports Kenya Malaria Strategy County malaria profiles	Annually	Use available data to: -Advocate for malaria activities to be included in the county health plans - Update county malaria operational plans -Plan trainings for malaria focal persons in malaria control program management	Head NMCP CEC CHMT	County Regional meetings Reports
IMPACT	What are the changes in malaria epidemiology in Kenya from 2009 to 2017?	· Confirmed outpatient malaria cases at health facility level among children <5 yrs [per 1000 persons per year] · Total confirmed outpatient malaria cases at health facility level [per 1000 persons per year] · Total Clinical outpatient malaria cases at health facility level [per 1000 persons per year] · Proportion e of suspected malaria cases tested using a parasitological based test · Slide/RDT Test Positivity Rate (TPR) at health facility level · Malaria parasitaemia prevalence (pf) rate among children < 5yrs in lake endemic areas (by microscopy) · Inpatient* malaria cases among children <5yrs [per 1000 persons per year] · Total inpatient* malaria cases [per 1000 persons per year] · Inpatient* malaria deaths among children <5yrs [per 1000 persons per year] (disaggregated by sex and age as possible)	KMIS Routine data (DHIS, DSRU) Surveys Research	Monthly 3 years	Use available data to: · Target malaria control interventions · Improve reporting · Advocate for malaria control funding	Head Department of preventive and promotive health Partners	Survey and research reports Policy brief Conferences World malaria Report Publications NMCP website

Komesha Malaria
Okoa Maisha

World Health Organization

UKaid
from the British people

CDC
USAID
FROM THE AMERICAN PEOPLE
President's Malaria Initiative

MEASURE Evaluation PIMA