Ministry of Health

Malaria Epidemic Preparedness and Response in Kenya

Participants Guide

DIVISION OF NATIONAL MALARIA PROGRAMME

Komesha Malaria Okoa Maisha

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DIVISION OF NATIONAL MALARIA PROGRAMME

FOREWORD

Malaria epidemic preparedness and response (EPR) is an important strategy for malaria control, involving early detection and early deployment of response interventions to contain the epidemics. Malaria epidemics usually occur among nonimmune or semi-immune populations because of their infrequent exposure to malaria infection. Therefore, malaria epidemics tend to create an emergency that requires urgent attention to prevent high morbidity and the potential for high mortality among affected vulnerable populations.

To address malaria epidemics effectively, the health systems should be able to predict and detect the evolution of malaria epidemics and have the flexibility to respond rapidly to contain detected epidemics.

The Ministry of Health, through the Division of the National Malaria Programme and its partners, has been supporting targeted counties and sub-counties to develop capacity for malaria EPR. This approach ensures that the health management teams in the targeted counties have developed EPR plans that include resources to prepare the health workforce to respond in the event of epidemics. Since the change of governance to the devolved system in 2012, a lot of changes in the delivery of health services and, by extension, malaria control, have occurred. Consequently, previously built capacity for malaria EPR has eroded over time owing to high health worker turnover both at the management and operational levels. In view of these changes, the Division of the National Malaria Programme recognised the need to devise a mechanism for continuous capacity development for malaria EPR in all 26 counties (127 sub-counties) prone to malaria epidemics.

This participants training guide has been developed to facilitate continuous capacity development for malaria EPR at subnational levels. This capacity comprises training, planning for, and implementation of EPR activities that include prediction, detection, and effective responses to contain malaria epidemics. This first edition of the malaria EPR training guide comprises an introductory section outlining the objectives and content of the course and PowerPoint slides. The course will be useful to all stakeholders involved in malaria control: health managers, trainers, and service providers across all levels of the healthcare system.

I hope that the training approaches and content outlined in this guide will be reliable and sufficient to address malaria EPR knowledge and skill needs. I encourage all county and

sub-county health management teams and their partners to use this guide for malaria EPR training to enhance the capacity of health workers on the management of malaria during epidemics in their areas of jurisdiction.

Dr Joseph Kibachio
Head, Department of Strategic National Public Health Programmes

ACKNOWLEDGMENTS

This first edition of the malaria epidemic preparedness and response training guide— together with PowerPoint training modules— was developed from a consultative process involving stakeholders in malaria control in Kenya.

This training guide was developed with support from the United States President's Malaria Initiative (PMI) and the United States Agency for International Development (USAID). We are very grateful for this support.

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With the contribution of everyone mentioned here, we are proud of this final document that will be relied upon in strengthening capacity for malaria epidemic preparedness and response in Kenya.

Dr Grace Ikahu Muchangi
Head, Division of National Malaria Programme

CONTENTS

ABBREVIATIONS

DNMP	Division of the National Malaria Programme
EPR	epidemic preparedness and response
MOH	Ministry of Health
MOPHS	Ministry of Public Health and Sanitation
SITREP	(disease outbreak) situation report

BACKGROUND

Malaria epidemics are defined as sharp increases in the incidence of malaria in populations in whom the disease is rare, or seasonal increases above the normal patterns in areas of low-to-moderate transmission (Gilles & Warrell, 1993). Epidemics may be precipitated by natural climatic variations that favour increased vector breeding and increased transmission. Epidemics may also occur because of human factors, such as migration of nonimmune populations to areas of high transmission, development activities such as dam construction and irrigation, or breakdown of malaria control interventions.

In Kenya, malaria epidemics occur in the Western Highlands when climatic conditions favour sustained minimum temperatures around 18° C that sustain vector breeding, resulting in increased intensity of malaria transmission. Extreme climatic conditions such as El Niño can also contribute to the occurrence of malaria epidemics in the arid and semi-arid parts of northern and southern-eastern Kenya, which experience short periods of intense malaria transmission during the rainy season. Epidemic preparedness and response (EPR) is one of the key approaches adopted to control malaria in Kenya in the Western Highlands and arid and semi-arid parts of the country.

Malaria epidemics can, to a large extent, be predicted through a combination of meteorological information, local epidemiological data, and knowledge of human population dynamics. Thus, multisectoral actions by stakeholders can help to predict and prevent epidemics. Continuous monitoring, early detection, and prompt response with recommended treatment and timely vector control methods can help minimise the impact of malaria epidemics.

In recent years, malaria epidemics have been experienced in various parts of the country. In 2012, epidemics occurred in the Pokot North region, in West Pokot County. In 2015, Igembe North experienced an upsurge of malaria cases. In September and October 2017, malaria upsurges were reported in Baringo, Isiolo, Mandera, Marsabit, Samburu, Tana River, Turkana, Wajir, and West Pokot. The upsurges caused more than 50 fatalities, 400 hospitalisation cases, and more than 2,000 adults and children diagnosed with the disease. Marsabit was the worst-hit county, with 1,300 adults and children diagnosed with malaria and 26 malaria deaths reported (Mulambalah, 2018). In 2019, malaria upsurges were again reported in Baringo, Elgeyo Marakwet, Turkana, and West Pokot counties. The increasing occurrence of malaria upsurges calls for intensified efforts to enhance surveillance to detect and respond to malaria epidemics.

The Division of the National Malaria Programme (DNMP) supports annual EPR data review and planning workshops in the Western Highlands and arid/semi-arid areas of the northern and south-eastern parts of the country. With the devolution of health services in 2013, the annual review workshops were conducted for county-level health management officers, with the expectation that they would cascade the training down to the sub-counties, health facilities, and communities. However, the officers trained at the county level faced challenges with cascading the training to the sub-counties. In 2019, DNMP decided to

include the sub-county health managers in the annual EPR data review and planning workshops. A rapid assessment conducted 8 to 10 months after the 2019 annual review and planning workshops showed that there were major gaps in malaria EPR at the county and sub-county levels because of challenges in cascading EPR training to lower levels.

This was partly attributed to the lack of standardised EPR training manuals and reference materials to support cascading the training. This made it difficult for DNMP to assess the effectiveness of the training workshops conducted over the years as the epidemics recurred with low detection and suboptimal response. In view of this, DNMP, with support from the

U.S. President's Malaria Initiative (PMI) through the United States Agency for International Development and PMI-funded MEASURE Evaluation project, developed this EPR training manual for use by healthcare providers and health managers in all areas prone to malaria epidemics.

Purpose of This Course

This course is designed to equip you with knowledge and skills to monitor, predict, detect and respond to malaria epidemics.

Objectives of the Course

The overall objective of the EPR training course is to build your capacity to routinely monitor, detect, and respond to malaria epidemics. The specific objectives of the course are to enable you to perform the following tasks:

- Undertake malaria surveillance tasks related to EPR
- Predict, detect, and verify malaria epidemics
- Undertake activities relating to malaria epidemic preparedness
- Undertake activities to respond to malaria epidemics
- Conduct post-epidemic assessments
- Develop and implement a malaria EPR plan

Course Duration

The recommended duration for this course is five days. The modular approach ensures that it can be tailored to address various audiences and needs.

Target Audience

The course is targeted for county/sub-county health managers and frontline healthcare workers who routinely generate, process, transmit, and use malaria surveillance data for decision making. The course is recommended for the following county and sub-county health management team members: disease surveillance coordinators, malaria control

coordinators, and health records and information officers. At the health facility level, the course is recommended for disease surveillance officers, health records clerks/officers, clinicians who routinely see patients in the outpatient departments, and laboratory officers who routinely test and report data on malaria testing. Participants should have taken the malaria surveillance training.

Materials Required

Participants should bring the following materials to the course:

- Five-year retrospective data on weekly numbers of confirmed malaria cases reported through the integrated disease surveillance and response platform and weekly number of confirmed malaria cases reported in the current year for at least five health facilities.
- Note: The health facilities should be representative of the malaria epidemiology in the sub-county and have the capacity to diagnose malaria, and they should not be referral facilities.
- A laptop with Microsoft Office installed
- Note: Participants should be computer literate and conversant with the Kenya/District health information system (KHIS/DHIS2) and must be able to use Microsoft Excel and Word.
- A flash disk
- Background information about the county, sub-county, or health facility current catchment population, health profile, annual workplan, and county integrated development plan
- Existing county and sub-county malaria EPR plans
- A brief report on ongoing malaria control activities implemented in the county, sub-county or health facility and on the stakeholders supporting malaria-related activities

Course Facilitation Methods

The course will apply the following teaching and learning methods:

- Overview lectures
- Brainstorming sessions
- Demonstrations
- Small-group discussions
- Individual and group assignments
- Group project

Training Activities and Exercises

This training includes a group project that will be assigned on the first day and submitted on the last day of the course. The group project involves preparing a plan for malaria EPR. Each group will be assigned a facilitator to guide them through the project. Several other small-group activities are included in this training. These activities enable you to practice the skills learnt. During the group activities, the facilitators will move around to clarify any questions, provide feedback to help you understand and perform the activities.

Performance Assessment and Certification

A pretest and posttest will be administered at the beginning and end of the course. Continuous assessment will be done throughout the course in the form of individual and group assignments. A group project will be assigned on the first day of the course. You will be expected to apply the knowledge and skills gained to complete sections of the project each day and present the final project on the last day.

A daily evaluation form will be completed at the end of each day to provide feedback to the course facilitators on any topics or concepts that need to be explained or clarified further. Instructional materials and mode of delivery will be adjusted as appropriate to enhance your understanding of the course content and application of skills learnt. A comprehensive end-of-workshop evaluation will be conducted to assess overall course organisation, logistics, modules covered, and mode of delivery.

You will sign in at the beginning and end of each workshop day. You will be awarded a certificate upon completing all the course modules.

Course Organisation

The course has eight modules, each with several units. The course is designed for classroom delivery and has components for facilitators and participants. The participant component has training slides and spaces for notes. The course modules are outlined in the following section.

Table 1. Outline of Course Modules

Module	Unit	Duration	Content
Module 1: Introduction to Malaria Epidemic Preparedness and Response (EPR)	Unit 1	30 minutes	Introduction to malaria epidemiology in Kenya
	Unit 2	30 minutes	Introduction to malaria epidemics
	Unit 3	30 minutes	Factors that can contribute to malaria epidemics
	Unit 4	15 minutes	Basic concepts of malaria epidemic preparedness and response
Module 2: Prediction, Detection, & Verification of Malaria Epidemics	Unit 1	45 minutes	Malaria early warning and detection systems
	Unit 2	45 minutes	Timely detection of malaria epidemics
	Unit 3	30 minutes	Verification of malaria data for epidemic confirmation
Module 3: Malaria Surveillance in the Context of Epidemic Preparedness and Response	Unit 1	30 minutes	Malaria case definitions and detection
	Unit 2	45 minutes	Malaria surveillance data reporting
	Unit 3	45 minutes	Epidemic detection methods and threshold setting
	Unit 4	30 minutes	Malaria data analysis, interpretation, and dissemination
	Unit 5	30 minutes	Data demand and use
Module 4: Basic Concepts of Malaria Entomology	Unit 1	20 minutes	Basic concepts of malaria entomology
	Unit 2	55 minutes	Mosquito surveys and key entomological indicators
Module 5: Malaria Epidemic Preparedness	Unit 1	30 minutes	Introduction to malaria epidemic prevention strategies
	Unit 2	45 minutes	Quantification, procurement, and appropriate placement of essential and emergency malaria commodities
	Unit 3	45 minutes	Coordination structures and capacity to prepare and respond to malaria epidemics

Module	Unit	Duration	Content
Module 6: Malaria Epidemic Response	Unit 1	45 minutes	Malaria Epidemic/outbreak Investigation
	Unit 3	75 minutes	Epidemic Response Interventions
Module 7: Post-epidemic Evaluation	Unit 1	30 minutes	Declaration of end of epidemic
	Unit 2	45 minutes	Post-epidemic evaluation
	Unit 3	45 minutes	Documenting and disseminating a malaria epidemic report
Module 8: Malaria EPR Planning	Unit 1	30 minutes	Introduction to EPR planning
	Unit 2	8 hours	Developing a malaria EPR plan
	Unit 3	30 minutes	Adoption and implementation of a malaria EPR plan

TRAINING PROGRAMME

The EPR course is expected to take five days. The programme may be modified to allow more time for the participants to practice and set accurate thresholds to monitor and detect epidemics using their health facility data. EPR planning should be done as a group project involving the sub-county and county teams. The EPR planning module may be introduced in the last session on the evening of the first day, to enable the participants to start gathering the information required to prepare the plan. EPR planning should continue on the fourth day. All groups should present their completed EPR plan on the fifth day of training and receive feedback on it.

Time	Monday	Tuesday	Wednesday	Thursday	Friday
8:30–9:30 a.m.	Climate setting Introductions Group norms Expectations Pretest	**Module 3** Unit 1: Malaria case definitions and classification	**Module 4** Unit 1: Basic concepts of malaria entomology	**Module 6** Unit 2: Malaria epidemic response interventions	EPR planning practicum
9:30–10:30 a.m.	**Module 1:** Introduction to malaria epidemic preparedness and response (EPR) Unit 1: Introduction to malaria epidemiology in Kenya Unit 2: Introduction to malaria epidemics	**Module 3** Unit 2: Malaria surveillance data reporting	**Module 4** Unit 2: Malaria vector surveys and key indicators	**Module 6** Unit 3: Monitoring epidemic response (line listing and situational reports)	EPR planning practicum

Time	Monday	Tuesday	Wednesday	Thursday	Friday
10:30–11:00 a.m.	**Module 1** Unit 3: Factors contributing to malaria epidemics	**Module 3** Unit 3: Malaria epidemic threshold setting	**Module 5** Unit 1: Introduction to malaria epidemic prevention strategies	**Module 7** Unit 1: Declaring the end of epidemic	EPR planning practicum
11–11:30 a.m. Break					
11:30 a.m.–12 p.m.	**Module 1** Unit 4: Overview of malaria EPR	**Module 3** Unit 3: Malaria epidemic threshold setting	**Module 5** Unit 1: Introduction to malaria epidemic prevention strategies	**Module 7** Unit 2: Postepidemic evaluation	EPR post-training assessment test
12–1 p.m.	**Module 2** Prediction, detection, and verification of malaria epidemics Unit 1: Malaria early warning and detection systems	**Module 3** Unit 3: Malaria epidemic threshold setting	**Module 5** Unit 2: Emergency commodities for malaria EPR	**Module 7** Unit 3: Postepidemic evaluation report and dissemination	EPR planning presentations and feedback
1–2 p.m. Lunch					
2–3 p.m.	**Module 2** Unit 2: How to timely detect a malaria epidemic	**Module 3** Unit 3: Malaria epidemic threshold setting	**Module 5** Unit 3: Coordination structures and capacity to prepare and respond	**Module 8** Unit 2: EPR planning practicum	EPR plan presentations and feedback

Time	Monday	Tuesday	Wednesday	Thursday	Friday
3–4 p.m.	**Module 2** Unit 3: Verification of malaria data	**Module 3** Unit 4: Malaria data analysis, presentation, interpretation, data sharing, feedback, and dissemination	**Module 6** Unit 1: Epidemic field investigation	EPR planning practicum	EPR plan presentations and feedback
4–4:30 p.m. Break					
4:30–5 p.m.	Introduction to EPR planning (group project)	**Module 3** Unit 5: Data demand and use	**Module 6** Unit 2: Malaria epidemic response interventions	EPR planning practicum	Adoption of EPR plans

NB: The time allocated for each unit may be adjusted depending on how participants grasp the content

PRETEST

Questions for pretest and posttest

1 Which of the following is not a consequence of a malaria epidemic?

A. Flooding

B. Disruption of economic activities

C. Overburdened health service delivery system

D. Increased mortality

E. All of the above

2 Which of the following is not a component of epidemic preparedness activities?

A. Have an epidemic response plan

B. Map areas of hotspots

C. Establish a rapid response team

D. Conduct lab verification to confirm malaria slides from the outbreak areas

E. Ensure that health workers have guidelines and standard operating procedures

F. None of the above

3 Which is the correct order for outbreak detection and response?

A. First case, detection/reporting, response, lab confirmation

B. First case, response, lab confirmation, detection/reporting

C. First case, detection/reporting, lab confirmation, response

D. First case, lab confirmation, detection, response

E. None of the above

4 Which of the following is not part of the malaria epidemic data verification indicators?

A. Number of inpatient malaria cases

B. Number of confirmed malaria cases

C. Average monthly temperature for the outbreak region

D. Malaria test positivity rate

E. None of the above

5 Which one of the following is not part of entomological monitoring for early warning of malaria epidemics?

A. Vector densities

B. Presence of Plasmodium falciparum in a blood slide

C. Entomological inoculation rates

D. Efficacy of insecticides used for vector control

E. Increased vector longevity

6 Which of the following elements is not part of public health surveillance?

A. Ongoing and systematic collection and collation of data

B. Investigators using closed-circuit television to monitor people's movements

C. Analysis and interpretation of data

D. Use of data for public health action to reduce morbidity and mortality

E. Dissemination of health data to relevant stakeholders

7 What are the different types of surveillance?

A. Passive

B. Active

C. Sentinel

D. All of the above

8 Which one of these tools contains malaria data?

A. MOH 505

B. MOH 240

C. MOH 705 A&B

C. MOH 711

D. All the above

9 Which of the following is used to calculate malaria epidemic thresholds in Kenya?

A. Monthly confirmed malaria cases

B. Weekly confirmed malaria cases

C. Weekly suspected malaria cases

D. Daily malaria data

10 Which mosquito species transmit malaria?

A. Culex

B. Anopheles

C. Aedes

D. All the above

11 Why do mosquitoes feed on blood?

A. To transmit malaria

B. To get energy to fly

C. To develop the eggs

D. All of the above

12 The following vector surveys are used in malaria epidemics except:

A. Preliminary surveys

B. Foci surveys

C. Spot checks

D. Sentinel surveys

13 Which of the following is not an entomological indicator used in EPR?

A. Entomological inoculation rate

B. Infectivity/sporozoite rate

C. Test positivity rate

D. Human blood index

14 The following are responsibilities of the public health emergency management committee after an outbreak except:

A. Sustain preventive measures

B. Prepare epidemic reports

C. Produce and distribute relevant guidelines

D. Conduct epidemic review

E. None of the above

15 Which of the following statements is true?

A. An epidemic is confirmed if the defined alert threshold has been reached.

B. Early response is critical only to minimise mortality.

C. Rapid assessment of the situation is key after response.

D. (a) and (c)

E. None of the above

16 Why should postepidemic evaluation be conducted?

A. To assess the overall outbreak preparedness and response

B. To know who was involved in epidemic control

C. To understand the epidemic

D. To generate a postepidemic report

17 Which one of these is not a component of a malaria EPR plan?

A. Strategies

B. Targets

C. Activities and tasks/subactivities

D. Surveillance

E. Monitoring and evaluation indicators

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TRAINING SLIDES

Ministry of Health

Malaria Epidemic Preparedness and Response Training Slides

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Notes

Introduction

- Malaria epidemics are defined as:
  - Sharp increases in incidence of malaria in populations in whom the disease is rare
  - Seasonal increases above the normal patterns in areas of low-to-moderate transmission
- In Kenya, malaria epidemics mainly occur in:
  - Western highlands and arid/semi-arid areas
- Malaria epidemics can be predicted and their impact minimized

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Notes

Purpose of this Course

- This course is designed to build your capacity and skills to routinely
  - Monitor
  - Detect
  - Prepare for and
  - Respond to malaria epidemics

- The course has 8 modules

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Notes

Ministry of Health

Module 1

Introduction to Malaria Epidemic Preparedness and Response

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Notes

Learning Objectives

By the end of this module, you will be able to:

- Outline malaria epidemiology in Kenya
- Describe four different types of malaria epidemics
- Identify human and natural factors that may contribute to or trigger malaria epidemics
- Explain three basic concepts of malaria epidemic preparedness and response

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Module 1 Outline

Unit 1: Introduction to Malaria Epidemiology

Unit 2: Introduction to Malaria Epidemics

Unit 3: Factors Contributing to Malaria Epidemics

Unit 4: Basic Concepts of Malaria Epidemic Preparedness and Response

Notes

Module 1: Learning Unit 1
Introduction to Malaria Epidemiology

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Notes

Definitions of Terms (1)

Epidemiology is the study and analysis of the distribution, patterns, and determinants of health and disease conditions in defined populations

Endemic is defined as the habitual presence of a disease within a given geographic area

Epidemic: The occurrence of an illness in a population clearly in excess of the expected number of cases within a given period

Notes

Definitions of Terms (2)

Outbreak: An epidemic limited to localised increase in number of cases of a disease (e.g., village, town, closed institution)

Upsurge: Normal expected seasonal increase in disease incidence

Case definition: A uniformly applied set of criteria for deciding whether to classify a person as having a particular disease, injury, or other health-related condition

Line listing: A rectangular database, similar to a spreadsheet, that captures a summary of key data about cases in an outbreak

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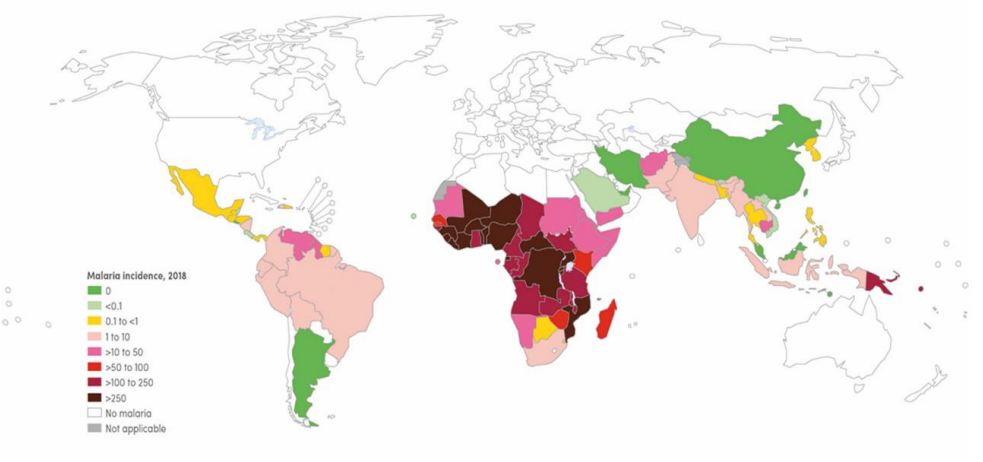
Notes

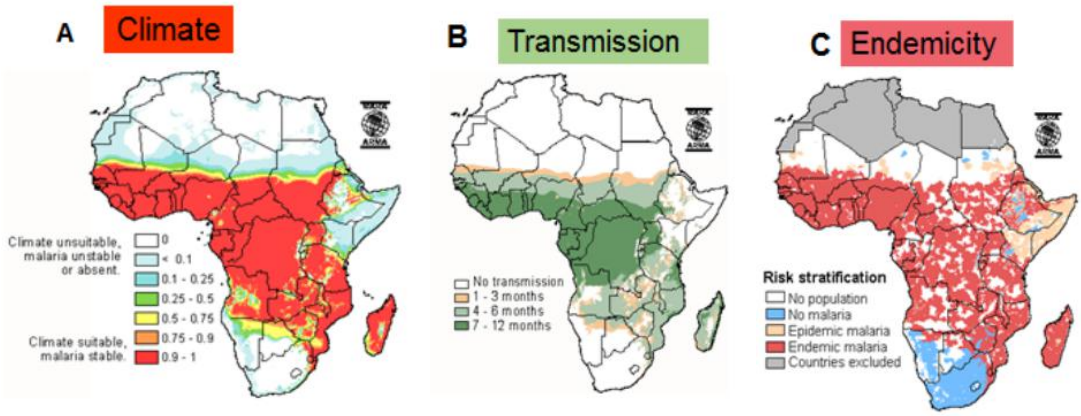
Malaria Case Incidence Rate, by Country, 2018



Source: World Malaria Report 2019

Notes

Malaria Endemicity in Africa



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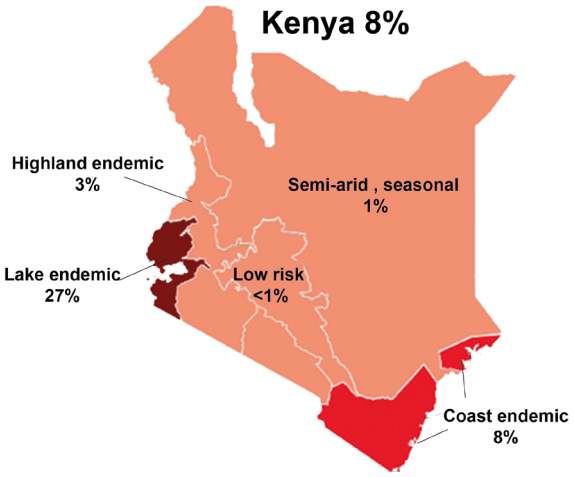
Notes

Epidemiology of Malaria in Kenya

Malaria Prevalence by Zone

Percent children age 6 months to 14 years who tested positive for malaria by microscopy



Source: Adapted from Kenya Malaria Indicator Survey 2015

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Notes

Factors that Influence the Distribution of Malaria

Distribution of malaria is influenced by:

- Presence of competent ***Anopheles*** mosquitoes
- Climatic factors: Temperature and rainfall
- Human factors: Development activities, population movements, genetical factors
- Control measures: Large-scale distribution of long-lasting insecticidal nets (LLINs), indoor residual spraying (IRS)

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Notes

Malaria Disease Burden in High Risk Groups

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Malaria Disease Burden in Kenya

- Children under 5 years of age and pregnant women are at greater risk of malaria
- **15%–19%** of hospital admissions in Kenya are due to malaria
- 3%–5% of patient deaths are due to of malaria
- **18%** of outpatient clinic visits in Kenya are because of malaria (Ministry of Health [MOH], 2019)
- Each family spends **Kshs.1,400** or more annually on treating malaria

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Notes

Malaria Control Interventions

Epidemiological zone	Case Management	Intermittent Preventive Treatment in pregnancy	Long-Lasting Insecticidal Nets	Indoor Residual Spraying	Surveillance	Epidemic Preparedness and Response	Advocacy, Communication and Social Mobilization
Lake and Coast endemic	x	x	x	x	x		x
Highland epidemic-prone	x		x	x	x	x	x
Arid/semi-arid seasonal transmission	x				x	x	x
Low risk	x				x		x

Adapted from the Kenya Malaria Policy 2010

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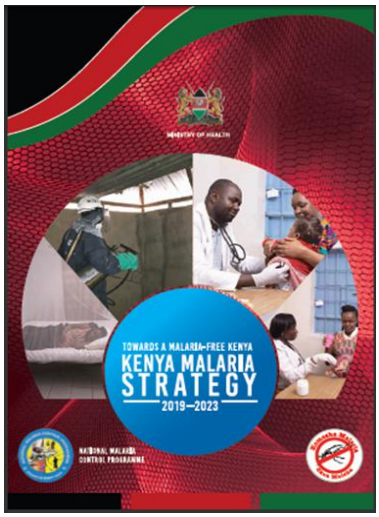
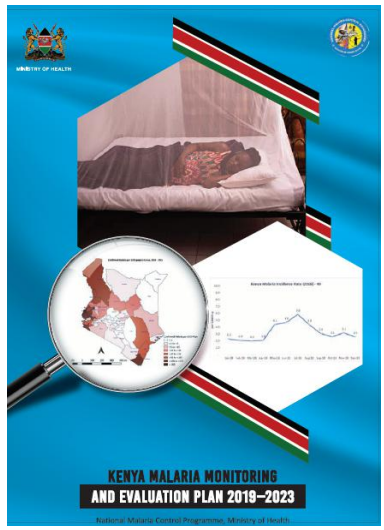
Notes

Kenya Malaria Strategy (KMS) 2019–2023





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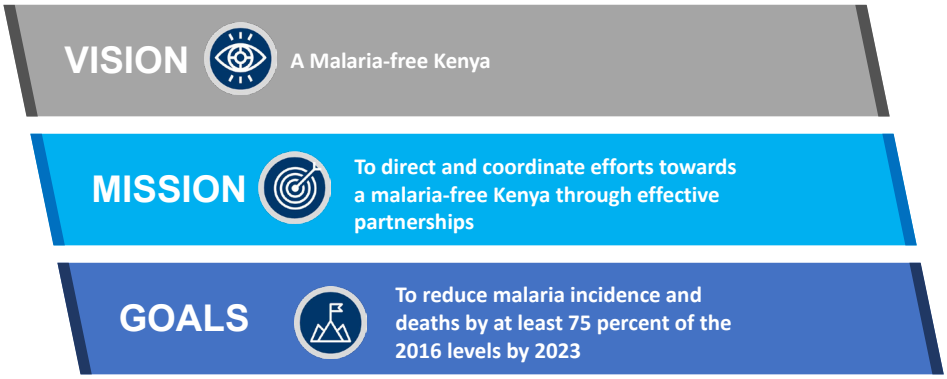
Notes

Kenya Malaria Strategy 2019–2023: Goal, Mission, and Vision



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Notes

KMS 2019–2023, Objectives 1–3

Objective 1	**To protect 100% of people living in malaria risk areas through access to appropriate malaria preventive interventions by 2023**
Objective 2	To manage 100% of suspected malaria cases according to the Kenya malaria treatment guidelines by 2023
Objective 3	To establish systems for malaria elimination in targeted counties by 2023

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KMS 2019–2023, Objectives 4 – 6

Objective 4	To increase utilisation of appropriate malaria interventions in Kenya to at least 80% by 2023
Objective 5	To strengthen malaria surveillance and use of information to improve decision making for programme performance
Objective 6	To provide leadership and management for optimal implementation of malaria interventions at all levels for the achievement of all objectives by 2023

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Notes

Malaria EPR Strategy in KMS 2019-2023

Activities listed under EPR strategy:

- Annual EPR planning and review meetings (threshold setting)
- Capacity building for EPR—county and sub-county level
- Enhance commodity supply during epidemics and upsurges
- Participate in integrated disease surveillance and response (IDSR) technical working group meetings
- Rapid assessments of detected epidemics and preparedness capacity
- Quarterly EPR review meetings
- Post-epidemic evaluations

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Notes

Module 1: Learning Unit 2
Introduction to Malaria Epidemics

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Notes

Definition of Malaria Epidemic

It is a **sudden increase in malaria cases** at a given place beyond what is expected to be normal at that time against a set threshold for that area

- It is also described as an outbreak
- An upsurge is a normal, expected seasonal increase in malaria incidence; it is **NOT** an epidemic

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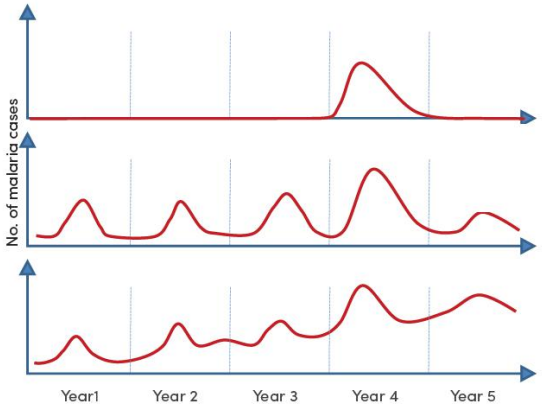
Notes

Types of Malaria Epidemics



Adapted from WHO, 2018

Epidemics can also be caused by complex emergencies (conflicts / natural disasters).

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Notes

Malaria Epidemic-Prone Areas in Kenya

- 26 counties
- 127 sub-counties

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Notes

Module 1: Learning Unit 3
Factors Contributing to Malaria Epidemics

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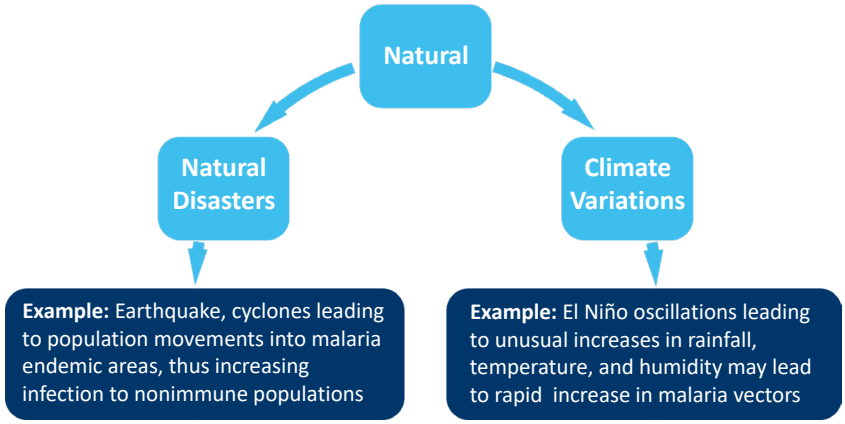
Notes

Natural Factors that Can Contribute to Occurrence of Malaria Epidemics



Source: Adapted from World Health Organization (WHO), 2018

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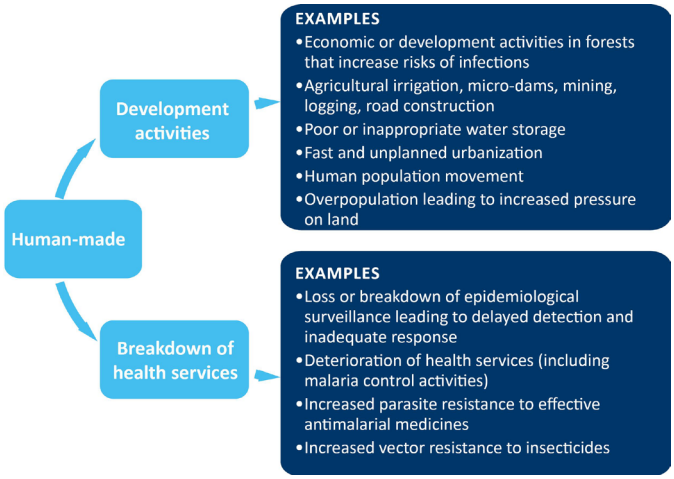
Notes

Human Factors that Can Contribute to Occurrence of Malaria Epidemics



Source: Adapted from WHO, 2018

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Notes

Group Activity (5 minutes)

What are the consequences of malaria epidemics?

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Notes

Consequences of Malaria Epidemics

- Increased morbidity and mortality
- Vulnerable groups become susceptible to other infections
- Disruption of healthcare services
- Effects on pregnant women and their unborn children: *Maternal deaths, pre-term deliveries, and stillbirths*
- Economic losses at household, community, and national levels
- School and work absenteeism

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Notes

Module 1: Learning Unit 4
Overview of Malaria Epidemic Preparedness and Response

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Notes

Components of Malaria Epidemic Preparedness and Response

1. Epidemic preparedness
2. Rapid assessment of epidemic/pre-epidemic preparedness
3. Epidemic response
4. Post-epidemic evaluation

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Notes

Malaria Epidemic Preparedness

Epidemic preparedness entails activities that ensure that health workers and the health system are ready to manage any potential malaria outbreak.

Group activity (15 minutes)

Identify and explain activities for epidemic preparedness

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Notes

Malaria Epidemic Preparedness Activities (1)

Epidemic preparedness activities include:

- Developing malaria epidemic preparedness plans
- Providing continuous surveillance and monitoring of malaria trends
- Setting and monitoring thresholds
- Mapping of hotspots

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Malaria Epidemic Preparedness Activities (2)

- Ensuring availability of emergency commodities
- Establishing and ensuring functionality of rapid response teams (RRTs)
- Ensuring the availability of EPR guidelines and standard operating procedures
- Conducting pre-epidemic field assessment

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Notes

Malaria Epidemic Response

Rapid response is essential to avert excess morbidity and mortality.

Group activity (10 minutes)

Outline actions/activities undertaken to respond to a malaria epidemic

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Notes

Epidemic Response Steps (1)

1. Conduct rapid assessment to verify the epidemic
2. Perform **notification** and **declaration** of the epidemic
3. Estimate population likely to be affected (based on epidemiology)
4. Ensure prompt diagnosis and treatment to contain the epidemic

    -Availability of medicines, diagnostics, and other supplies

5. Consider vector control measures (e.g., targeted distribution of LLINs, focalised IRS)

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Notes

Epidemic Response Steps (2)

6. Disseminate malaria epidemic social and behaviour change (SBC) messages
7. Monitor the containment of the epidemic — daily line listing and reporting, data analysis, situation reports
8. Provide feedback to all data-generating points
9. Conduct regular review meetings
10. Declare end of the epidemic

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Notes

Post-Epidemic Evaluation

Post-epidemic evaluation assesses the entire epidemic cycle activities and outcomes.

Group activity (10 minutes)

Brainstorm on post-epidemic evaluation activities

Notes

Post-Epidemic Evaluation Activities

- Document **morbidity** and **mortality** associated with the epidemic
- Document factors that led to the epidemic
- Assess and document how planned activities were implemented
- Document experiences and lessons learned in preparedness and response
- Propose recommendations for future EPR management
- Recommend interventions/activities to prevent future epidemics

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Notes

Key Messages to Remember

- Four malaria epidemiological zones
- Definition of malaria epidemic
- Factors precipitating malaria epidemics
- Malaria epidemic risk areas in Kenya
- Explain the four phases of malaria EPR

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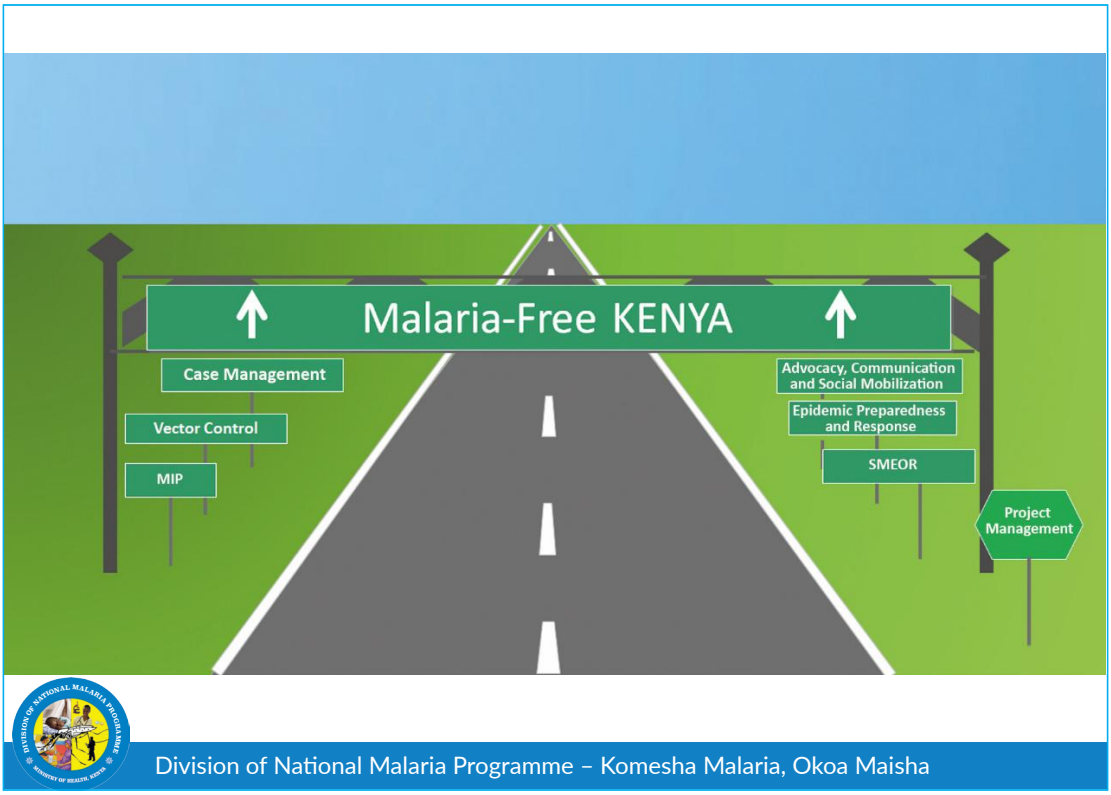
Malaria-Free KENYA
Case Management
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Notes

Ministry of Health

Module 2

Prediction, Detection, and Verification of Malaria Epidemics

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Notes

Learning Objectives

By the end of this module, you will be able to:

1. Explain the concept and rationale of malaria early warning and detection systems
2. Describe how to detect a malaria epidemic in a timely manner
3. Describe how to rapidly verify a malaria epidemic

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Notes

Module 2 Outline

Unit 1: Malaria early warning and detection systems

Unit 2: Timely detection of malaria epidemics

Unit 3: Verification of malaria data for epidemic confirmation

Notes

Module 2: Learning Unit 1
Malaria Early Warning and Detection Systems

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Notes

Malaria Epidemics Early Warning

Malaria epidemics early warning entails:

- Vulnerability assessment and monitoring the local population
- Seasonal climate forecasting (medium- to long-range forecasting) to manage risk
- Monitoring of environmental variables (prediction systems)
- Malaria surveillance (epidemiological and entomological)

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Notes

Vulnerability Assessment and Monitoring Local Population

Factors that increase the population's vulnerability to malaria epidemics:

- Floods—affect access to health services
- Food insecurity—poor nutrition status of the population
- Civil unrest—population movements to different levels of malaria endemicity
- Resistance of the parasite to antimalarial drugs
- Interference of the physical environment—land use changes may lead to suitable habitat for vector breeding

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Notes

Seasonal Climate Forecasting

- It is also known as long-range forecasting (LRF)
- It provides greater than 6 months prediction of epidemics before transmission season
- It broadly predicts epidemics over large geographic regions

- It entails monitoring and understanding interactions between sea surface temperatures and atmospheric pressure (El Niño phenomena)
- El Niño events—associated with hurricanes, floods—epidemics and droughts

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Early Warning

- It provides medium-range prediction of epidemics (3 months before transmission season)
- It is issued regularly at varying intervals — weekly or monthly
- It relies on patterns of rainfall, temperature, and humidity
- It uses meteorological data

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Notes

Prediction: Meteorological and Environmental Variables

Routine monitoring of relevant climate and environmental variables:

- Rainfall—increased rainfall mean monthly of >150mm
- Temperatures—optimum of 25ºC to 35ºC
- Vegetation status (indicating soil water availability) and flooding

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Notes

Prediction: Monitoring Entomological Variables

Entomological variables monitored include:

- Vector densities — number of known malaria vectors in a certain area
- Increased vector longevity — mosquito lives long enough for sporogonic cycle to be completed
- Entomological inoculation rates — mean daily biting/person by infected vectors
- Efficacy of insecticides for vector control — correct choice of insecticides for malaria epidemic control

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Prediction: Monitoring Parasite Factors

Parasite factors monitored include:

- Increase in fever cases and malaria test positivity rate
- Increase in incidence of gametocytes in the community
- Increase in uptake of antimalarial medicines
- Reported increase in mortality rate at the community level
- Increase in observed cases of treatment failure due to parasite resistance to antimalarial medicines

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Other Early Warning Indicators

Other indicators that can predict epidemics include:

- Nutritional status (e.g., drought leads to decreased immunity and higher susceptibility to disease)
- Loss of immunity owing to a long period of non-exposure
- Significant population movements into endemic areas

Notes

Early Detection of a Malaria Epidemic

Steps in early detection:

- Monitor the weekly number of confirmed malaria cases from surveillance data
- Use epidemic thresholds appropriate to the epidemiological context
- Recognize the beginning of an epidemic—a few days to 2 weeks
- Recognize the epidemic upon crossing the established thresholds
- Do a quick verification to confirm the epidemic
- If confirmed, initiate the response

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Notes

Early Detection—Weekly Malaria Surveillance

Aim—to detect evolution of epidemics as early as possible (within 2 weeks)

- Good sentinel case surveillance systems—detect unusual increases in the number of malaria cases
- Monitoring weekly cases against established thresholds
- Thresholds detect deviations from what's normal using 5–9 years of data

Weekly thresholds have very short lead times (1–3 weeks) to effectively plan preventive measures

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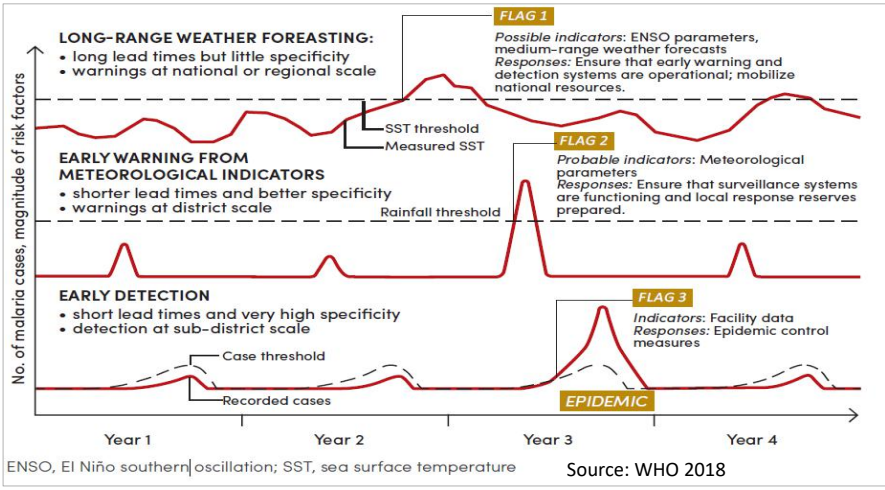
Notes

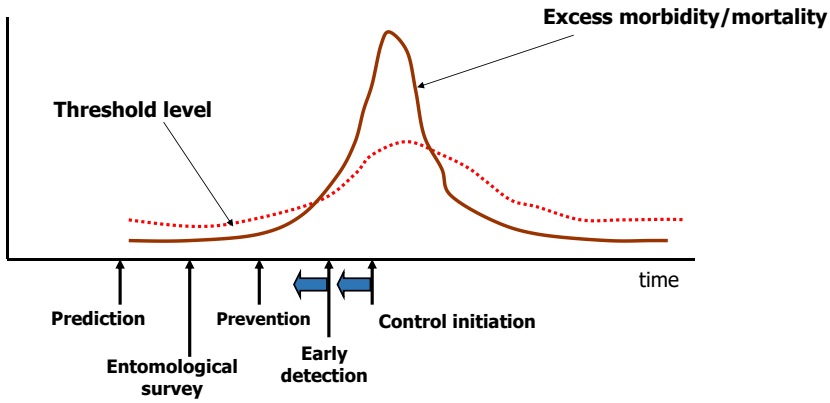
Model System for Forecasting, Early Warning and Early Detection of Epidemics



Source: WHO 2018

Notes

Summary: Prediction and Early Detection of Malaria Epidemics



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Notes

Module 2: Learning Unit 2
Timely Detection of Malaria Epidemics

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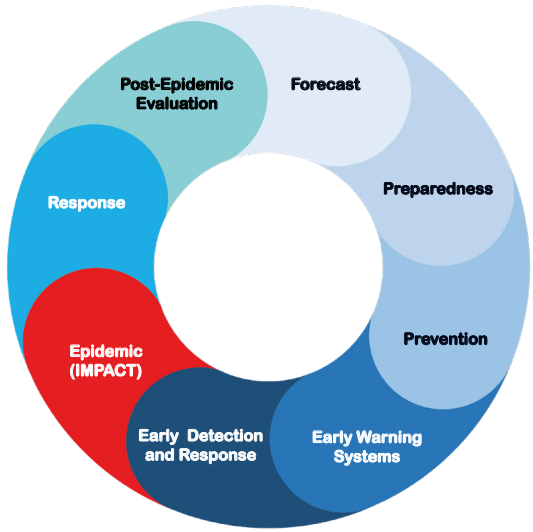
Notes

Epidemic Cycle for Sustained Action



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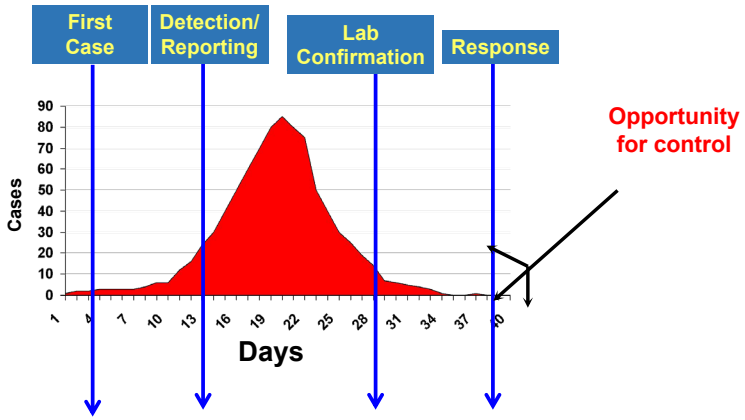
Notes

Scenario 1: Outbreak Detection and Response



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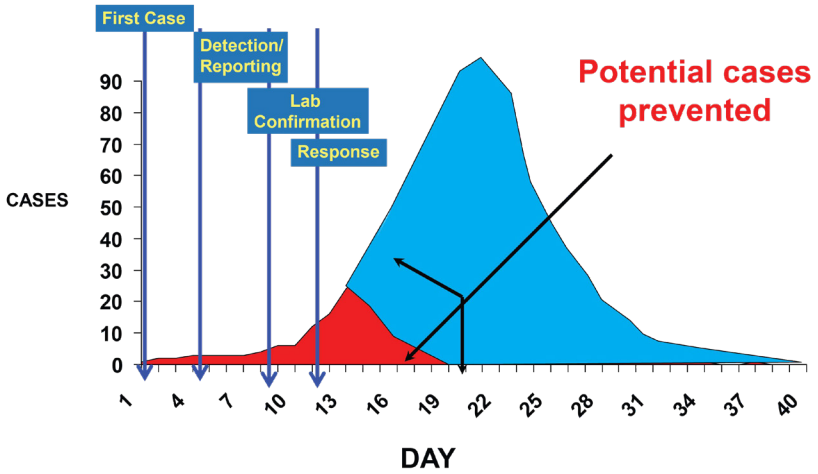
Scenario 2: Outbreak Detection and Response



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Module 2: Learning Unit 3
Verification of Malaria Data for Epidemic Confirmation

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Notes

Data Quality Verification

Verify the quality of data by checking the following:

- Timeliness, accuracy, and completeness of the data
- Consistency—compare variables
- Plausibility (value within acceptable range)
- Duplicates
- Outliers (run basic frequencies, proportions, and mean)

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Notes

Data Audit and Verification Processes (1)

- Deploy a multidisciplinary rapid assessment team
- Team composition — clinician, epidemiologist, entomologist, and laboratory personnel
- Rapidly verify the data management process
- Ensure availability of a formal process to address incomplete and inaccurate submitted reports
- Ensure availability of appropriate data collection and reporting tools

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Notes

Data Audit and Verification Processes (2)

Verify data reported at the source —compare reported data against the source documents

Check the following:

- Completeness of data in the source document
- Data entry or data manipulation errors
- Misinterpretation or inaccurate application of indicator definitions

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Notes

Data Audit and Verification Processes (3)

- Undertake rapid laboratory investigations at the peripheral level
- Randomly collect external quality assurance (EQA) specimen from the outpatient department and affected community

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Notes

Data Analysis for Malaria Epidemic Verification

Ensure malaria case line listing is done; analyse and interpret the data

Indicators to analyse:

- Weekly number of suspected cases tested
- Weekly number of confirmed cases
- Incidence rate (cases per 1,000 of population at risk)
- Test positivity rate (no. positive/no. tested*100)
- Weekly number of in-patient malaria cases (admissions)
- Weekly number of deaths due to malaria

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Notes

Key Messages to Remember

- Importance of early warning, forecasting and prediction
- Prediction factors to monitor; meteorological, parasite and entomological
- Basic data qualities: timeliness, accuracy, completeness, consistency, and plausibility

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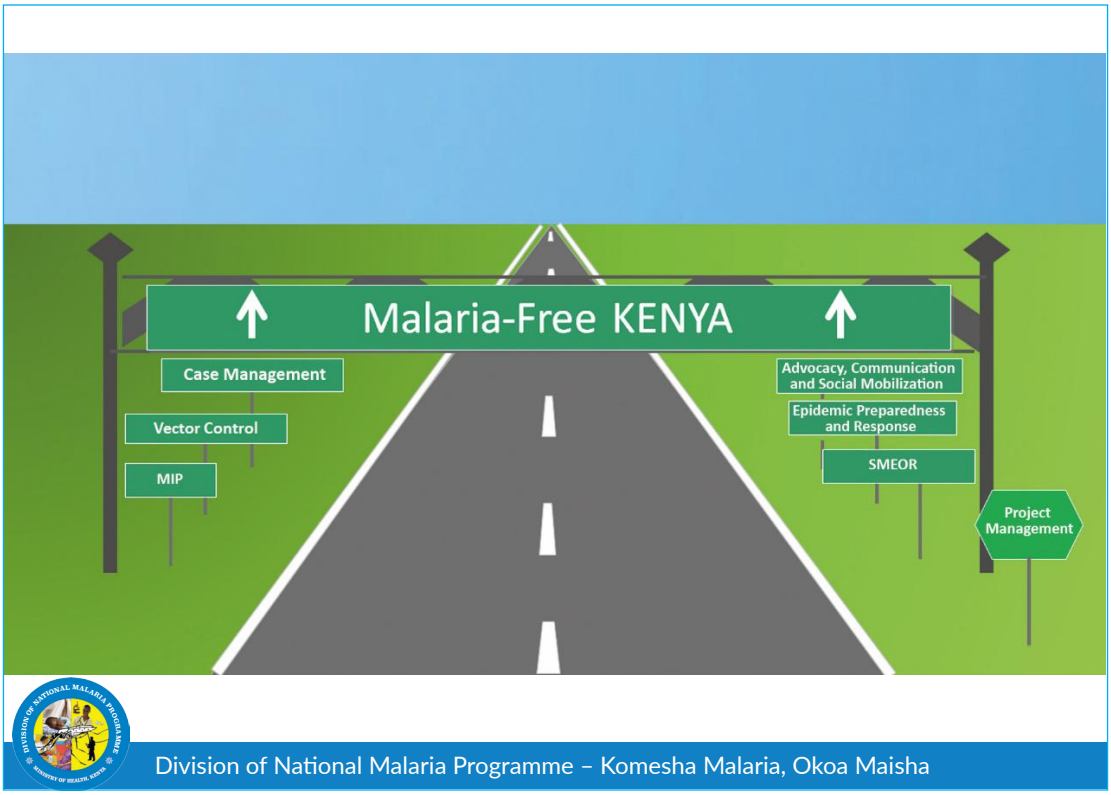
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Ministry of Health

Module 3

Malaria Surveillance in the Context of Epidemic Preparedness and Response

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Notes

Learning Objectives

By the end of this module, you will be able to:

- Set and routinely monitor malaria epidemic thresholds
- Define key malaria epidemiological indicators
- Analyse and interpret malaria data

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Notes

Module 3 Outline

Unit 1: Malaria case definitions and detection

Unit 2: Malaria surveillance data reporting

Unit 3: Epidemic detection methods and threshold setting

Unit 4: Malaria data analysis, interpretation, and dissemination

Unit 5: Data demand and use

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Notes

Module 3: Learning Unit 1
Malaria Case Definitions and Detection

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Notes

Case Definitions

Suspected malaria is defined as:

Any person presenting with an illness suspected by a healthcare worker to be due to malaria, generally on the basis of history/presence of fever with or without other symptoms, such as chills, joint pains, nausea, and vomiting

Confirmed malaria case is defined as:

Any person in whom the presence of malaria parasites in the blood has been confirmed by a diagnostic test

Notes

Classification of Malaria

Severe malaria

A person with *P. falciparum* in the peripheral blood with accompanying **signs and symptoms of severe disease** (vital organ dysfunction), which manifest in one or more of the following: coma (cerebral malaria), metabolic acidosis, severe anaemia, hypoglycaemia, acute renal failure, or acute pulmonary oedema

Notes

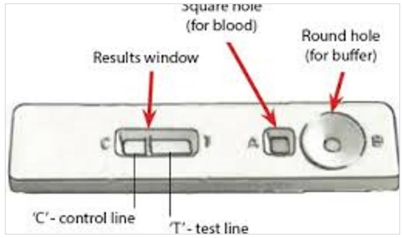
Malaria Case Detection

Routinely, two main methods are used to detect malaria:

Microscopy

- Reference standard
- Species identification
- Parasite density

Malaria Rapid Diagnostic Test (mRDT)



Control and test band lines formed if malaria parasite antigens are present in the blood sample

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Notes

Procedures for Malaria Microscopy and mRDT

Malaria Microscopy

- Specimen collection
- Specimen processing
- Blood slide examination
- Blood slide reporting
- Results interpretation

mRDT

- Specimen collection
- Buffer addition
- Timing
- Results interpretation

Biosafety should be observed while undertaking the above procedures!

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Notes

Interpretation of Results and Reporting

Malaria microscopy

- Report on parasites seen
- Development stage and species
- Parasite density = $\frac{\text{no. of parasites counted x 8000}}{\text{WBC counted}}$ reported = parasite/µl

mRDT results

- Report test result as mRDT negative or mRDT positive or invalid (invalid results should be repeated)
- Report results in appropriate patient card, OPD register, and daily activity register

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Notes

Module 3: Learning Unit 2
Malaria Surveillance Data Reporting

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Notes

Group Activity (10 minutes)

- Name different types of data
- Explain briefly each type of data mentioned

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Notes

Definition of Surveillance

Surveillance is the ongoing, systematic collection, analysis, interpretation, and dissemination of data regarding a health-related event for use in public health action to reduce morbidity and mortality and to improve health

Types of surveillance

- Passive surveillance
- Active surveillance
- Sentinel surveillance

Notes

Data Collection Processes

Data can be collected:

- Routinely (continuously)
- Periodically (nonroutine)

Group Activity (5 minutes)

- Give examples of data collected routinely and periodically

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Notes

Data Collection Processes

Routine

- Health management information system (HMIS)
- IDSR (surveillance)
- Administrative systems
- Vital registration systems

Nonroutine

- Health facility surveys
- Rapid assessments
- Household surveys
- Census
- Key informant interviews
- Focus groups
- Direct observations
- Research and special studies
- Special programme reporting systems (e.g., beyond zero mobile clinics)

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Notes

Health Facility Reporting Tools

Base Registers	Summary Tools
MOH 204A Outpatient < 5 yrs Register	MOH 705A OP Summary Sheet Under 5yrs MOH 505 Weekly Surveillance Tool
MOH 204B Outpatient >= 5 yrs Register	MOH 705B OP Summary Sheet Over 5yrs MOH 505 Weekly Surveillance Tool
MOH 240 Lab Register	MOH 706 Laboratory Summary MOH 505 Weekly Surveillance Tool
MOH 405 ANC Register	MOH 711 Facility Integrated
MOH 511 CWC	MOH 711 Facility Integrated
MOH 301 In-patient Register	MOH 505 Weekly Surveillance Tool
MOH 645 Daily Activity Register	Malaria Commodity Form
MOH 701A Tally sheets MOH 701B MOH 704 Tally sheet	MOH 705A and 705 B MOH 711 Facility Integrated

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Notes

Malaria Data Elements

Malaria column in OPD register (MOH 204A/B)— Coded 1 to 5 as follows:

1 = Presenting with symptoms but NOT tested

2 = RDT tested (-ve)

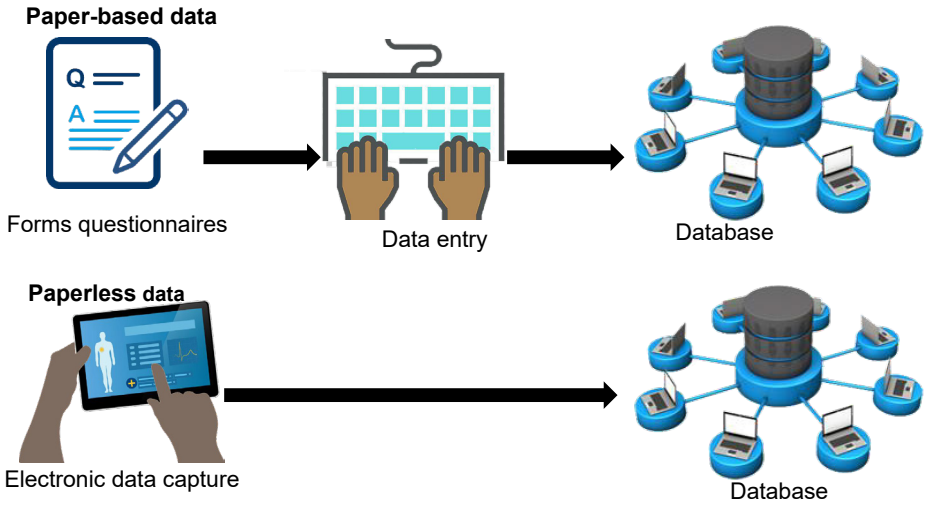
3 = Microscopy tested (-ve)

4 = RDT tested (+ve)

5 = Microscopy tested (+ve)

Notes

Data Capture



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Notes

Reporting of Surveillance Data

Surveillance for priority diseases (IDSR) should be done at all levels (e.g., malaria, polio).

Frequency of reporting:

- Immediately –coronavirus
- Weekly– malaria
- Monthly– monthly reports
- Quarterly– entomological surveillance

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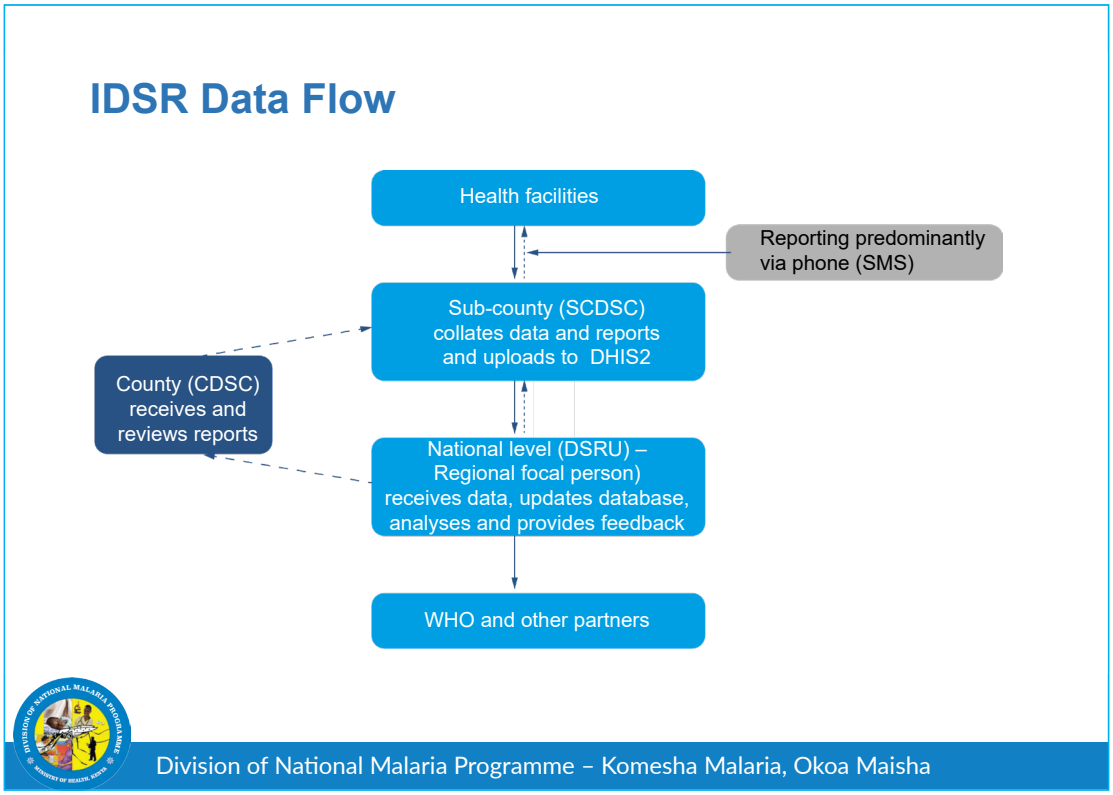
Notes

Weekly IDSR Data

- Epidemiological week: **Monday** to **Sunday**
- Cases summarised in the weekly surveillance tool (MOH 505)
- Data sent to the sub-county disease surveillance coordinator by **Monday of every week**
- Data collated and entered in the Kenya Health Information Software, (KHIS) system by **Wednesday every week**

Notes


IDSR Data Flow
Health facilities
Reporting predominantly via phone (SMS)
Sub-county (SCDSC) collates data and reports and uploads to DHIS2
County (CDSC) receives and reviews reports
National level (DSRU) – Regional focal person) receives data, updates database, analyses and provides feedback
WHO and other partners
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Notes

IDSR Weekly Epidemic Monitoring Form

2020 | MINISTRY OF HEALTH | MoH 505

IDSR Weekly Epidemic Monitoring Form

County_____ Sub-County_____ Health Facility_____ Epi Week____ Week ending_____ Month_____ Year_____

No. of Health Facilities/Sites that reported _____ No. of Health Facilities/Sites expected to report _____

Diseases, Conditions or Events	< 5 years		≥ 5 years		Diseases, Conditions or Events	< 5 years		≥ 5 years	
	Cases	Deaths	Cases	Deaths		Cases	Deaths	Cases	Deaths
AEFI*					Meningococcal Meningitis				
Acute Jaundice					Neonatal deaths	[redacted]		[redacted]	[redacted]
Acute Malnutrition					Neonatal Tetanus				
AFP (Poliomyelitis)**					Plague				
Anthrax					Rabies				
Cholera					Rift Valley Fever				
Dengue					SARI (Cluster ≥3 cases)				
Dysentery (Bacillary)					Suspected MDR/XDR TB				
Guinea Worm Disease					Typhoid				
Measles					VHF*****				
Suspected Malaria***									
Deaths due to Malaria****	[redacted]		[redacted]		Yellow Fever				
Maternal deaths	[redacted]				Others (Specify)******				

Laboratory Surveillance

Disease	Microscopy			mRDT				Disease	Laboratory diagnosis	
Malaria	< 5 years		≥ 5 years	< 5 years		≥ 5 years		**Shigella Dysentry**	< 5 years	≥ 5 years
Tested								Tested		
Positive								Positive		
Bacterial Meningitis	No. CSF	No. contaminated	No. Tested	+ve Nm	+ve Sp	+ve H influenza		**Tuberculosis (MDR/XDR)**	< 5 years	≥ 5 years
[redacted]								Tested		
								Positive		
No. of CSF Sub-Typed	+ve NmA	+ve NmB	+ve NmC 135	+ve NmX	+ve NmY	Indeterminate	HiB	**Typhoid**	< 5 years	≥ 5 years
								Tested		
[redacted]										

*Adverse Events Following Immunization
**AFP (Poliomyelitis) = Acute Flaccid Paralysis
***Suspected malaria = all tallied as code 1, 2, 3, 4 & 5 in the outpatient register column 'T' in MOH 204A and column 'R' in MOH 204B
Malaria microscopy tested = all tallied as code 3 & 5 in the outpatient register column 'T' in MOH 204A and column 'R' in MOH 204B
Malaria microscopy positive = all tallied code 5 in the outpatient register column 'T' in MOH 204A and column 'R' in MOH 204B
Malaria RDT tested = all tallied as code 2 & 4 in the outpatient register column 'T' in MOH 204A and column 'R' in MOH 204B
Malaria RDT positive = all tallied code 4 in the outpatient register column 'T' in MOH 204A and column 'R' in MOH 204B
****Deaths due to malaria - to be obtained from the MOH death reporting form available in event tracker.
*****Viral Haemorrhagic Fever: May be due to Ebola, Marburg, Rift Valley Fever, Crimean Congo Haemorrhagic Fever
******Any public health disease, condition or event of National or International concern (infectious, zoonotic, foodborne, chemical, radio nuclear or due to unknown condition)

Reported by: _____Designation _____ Sign _____ Date _____

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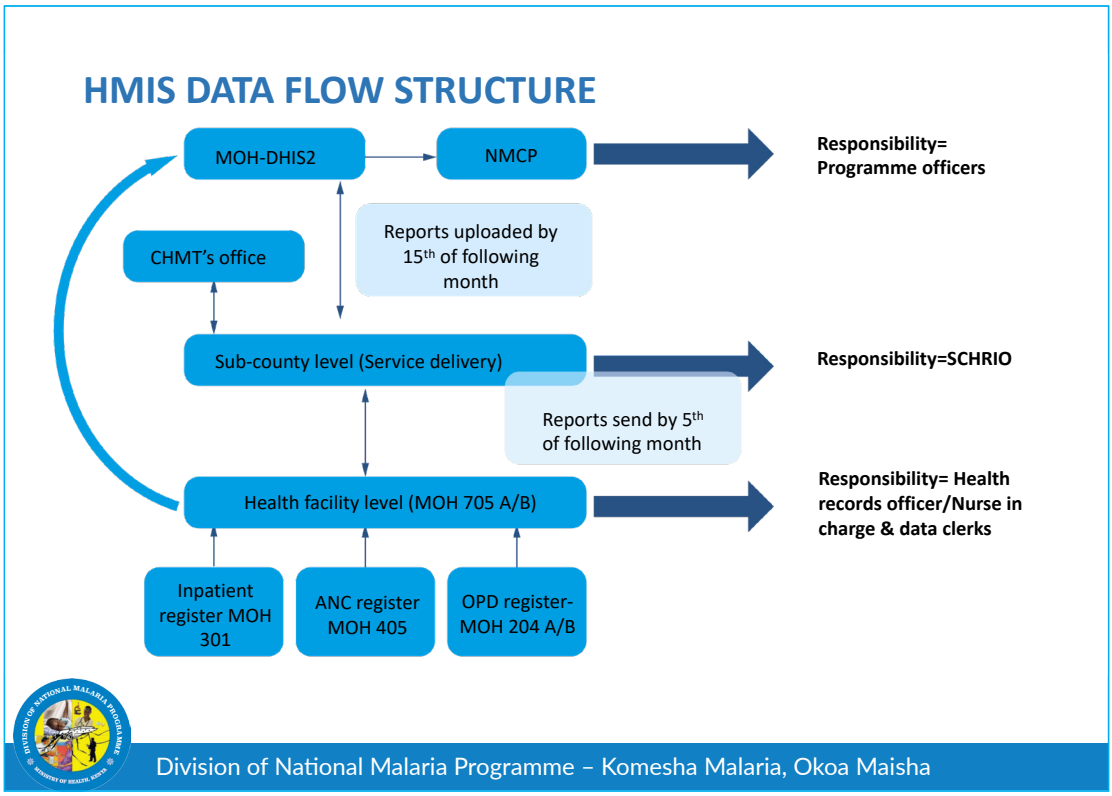
Notes

HMIS Data

Monthly reporting (HMIS) includes the following:

- Deaths recorded
- Total number of cases seen
- Commodity management through logistics management information system (LMIS)
- Community health information system (CHIS)
- Laboratory monthly summary data

Notes


HMIS DATA FLOW STRUCTURE
MOH-DHIS2
NMCP
Responsibility= Programme officers
CHMT's office
Reports uploaded by 15th of following month
Sub-county level (Service delivery)
Responsibility=SCHRIO
Reports send by 5th of following month
Health facility level (MOH 705 A/B)
Responsibility= Health records officer/Nurse in charge & data clerks
Inpatient register MOH 301
ANC register MOH 405
OPD register- MOH 204 A/B
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Notes

Demonstration of the OPD Register and Reporting Tools

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Notes

Malaria Surveillance Epidemiological Indicators

Malaria epidemiological indicators include:

1. Malaria incidence rate
2. Annual blood examination rate
3. Malaria test positivity rate
4. Percentage of suspected malaria cases tested
5. Inpatient malaria deaths (per 100,000 persons per year)
6. Total inpatient malaria cases (per 10,000 persons per year)
7. Proportion of health facilities reporting malaria data

Notes

Indicator Definitions and Data Sources 1

INDICATOR	CALCULATION	NUMERATOR	DENOMINATOR	DATA SOURCE	SUMMARY TOOL
Malaria incidence rate (per 1,000)	No. confirmed malaria cases /Total Population * 1,000	No. of confirmed malaria cases	Total population	MOH 204A/B	MOH 705 A/B MOH 505
% of suspected malaria cases tested	No. suspected malaria cases who received a parasitological test/Total no. suspected malaria cases	No. suspected malaria cases who received a parasitological test	Total no. suspected cases of malaria	MOH 204A/B	MOH 705 A/B MOH 505
Malaria test positivity rate	No. confirmed malaria cases/Total no. of suspected cases tested*100	No. confirmed malaria cases	Total no. of suspected cases tested	MOH 204A/B MOH 240	MOH 705 A/B MOH 505 MOH 706
Annual blood examination rate	Number of suspected malaria cases **tested** by microscopy or RDT reported by health facilities per year/ Total population	Number of suspected malaria cases **tested** by microscopy or RDT reported by health facilities	Total population	MOH 204A/B MOH 240	MOH 705 A/B MOH 505 MOH 706

Notes

Indicators Definitions And Data Sources 2

INDICATOR	CALCULATION	NUMERATOR	DENOMINATOR	DATA SOURCES
Total in-patient malaria cases (per 10,000 persons per year)	Total no. inpatient cases with a confirmed diagnosis of malaria at discharge/ Total population*10,000	Total number of in-patient cases with a confirmed diagnosis of malaria at discharge	Total population	Tracker MOH 717
Total in-patient malaria deaths (per 100,000 persons per year)	No. of reported deaths due to malaria / Total population*100,000	Number of deaths due to malaria reported	Total population	Tracker MOH 717
Proportion of expected health facility reports received on time	No. of facility reports received on time/No. of facilities expected to report*100	Number of facility reports received on time	Number of facilities expected to report	MOH 505, MOH 705A/B Malaria commodity form MOH 706 MOH 711
Proportion of health facilities reporting in-patient data	No. of facility reports received with in-patient data/No. of facilities offering admission services*100	No. of facility reports received with in-patient data	No. of facilities offering admission services	Tracker MOH 717

Notes

Module 3: Learning Unit 3
Epidemic Detection Methods and Threshold Setting

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Notes

Introduction: Malaria Epidemic Thresholds (1)

A threshold is a marker that gives an indication of occurrence or change

- Malaria threshold is the critical level at which the **number of reported cases** in a given time and place **must be exceeded** for a certain reaction or specific actions to be taken

- A malaria epidemic threshold is reached when there is an increase above the expected cases seen over a period of time in weekly summary reporting

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Notes

Introduction: Malaria Epidemic Thresholds (2)

Importance of thresholds:

- Malaria epidemic thresholds are an important management tool and are based on weekly confirmed malaria data
- They help health workers and healthcare managers decide when to take action and what that action will be
- Thresholds are used as an **evidence-based tool to declare an epidemic**

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Notes

Methods of Calculating Thresholds for Malaria (1)

Constant case count

- Constant all year
- Used where there is little or no malaria/not much variation, such as in:
    a. Elimination settings
    b. Seasonal transmission zones
- An epidemic occurs if the number has exceeded the determined threshold in areas in the elimination phase

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Notes

Methods of Calculating Thresholds for Malaria (2)

Third quartile:

- Calculates thresholds as the third or upper quartile value of the number of cases per week for at least the past 5 years
- Epidemic years are included in the calculation of this type of threshold.

Cullen method:

- Sets a threshold from the mean+ 2 SD of the 5 or more previous years' number of cases for the week
- Epidemic years **must not** be factored into the calculation of threshold.

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Notes

Threshold Calculation Methods Used in Kenya

- Third quartile—used as **ALERT** threshold

Action if ALERT surpassed—notify the sub-county for early investigation

- Mean + 1.5 SD threshold (Cullen method)—used as **ACTION** threshold

Response activities initiated if ACTION threshold is surpassed

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Notes

Alert Threshold

- It signals an unexplained increase in number of cases
- It provides an early warning to launch investigations on a possible epidemic.
- The health worker should prioritise areas for intensified control measures in the event that the increase reaches epidemic levels

Notes

Response to an Alert Threshold

- Review past data and reporting.
- All patients presenting to the health facility with fever/history of fever should be suspected for malaria
- Test all suspected cases for malaria
- Actively monitor trends in malaria incidence
- Alert sub-county Public Health Emergency Management Committee (PHEMC) of a potential epidemic

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Notes

Possible Reasons for Increase in Cases

- Change in reporting procedures/surveillance system
- Change in case definition
- Improvements in diagnostic procedures
- Increased awareness
- Increased access to healthcare

- New clinician—may see more referred cases, test more often, or report more consistently
- Laboratory or diagnostic error
- Batch reporting
- Change in denominator
- **True increase in cases**

NB: Investigate before declaring an epidemic!

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Notes

Action Threshold

- It is reached when there is a steady increase above the alert threshold
- **It confirms a real epidemic (after investigations triggered by the alert threshold).**
- Appropriate response actions should be initiated following confirmation of an epidemic

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Notes

Response to an Action Threshold

- Ensure adequate stocks of medicines, nonpharmaceuticals, and laboratory supplies at all levels
- Improve case detection and management through on-the-job training (OJT)
- Provide enhanced surveillance: line listing of cases, situation reports, sample collection for quality assurance
- Enhance public awareness and social and behaviour change (SBC)
- Provide focalised IRS
- Provide targeted distribution of LLINs

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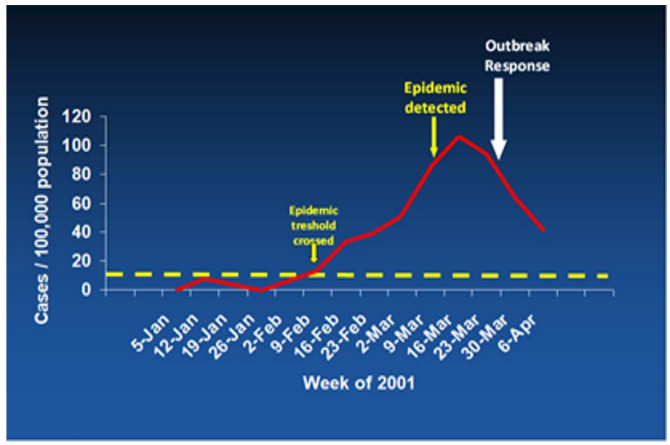
Notes

Group Activity—What happened in the scenario shown here?



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Notes

Exercise: Calculation of Thresholds (1)

1. Enter the weekly confirmed malaria cases for the 5 previous years and current year.
2. Use the Excel formula functions to calculate the alert and action thresholds as follows:

Alert threshold

=QUARTILE (specify cell range, 3)

Enter and drag to get the values for the 52 weeks.

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Notes

Exercise: Calculation of Thresholds (2)

1. Calculate the action threshold using the Excel formula function as follows:

   = AVERAGE(specify cell range) +1.5*STDEV(specify cell range)

   Enter and drag to get the values for the 52 weeks

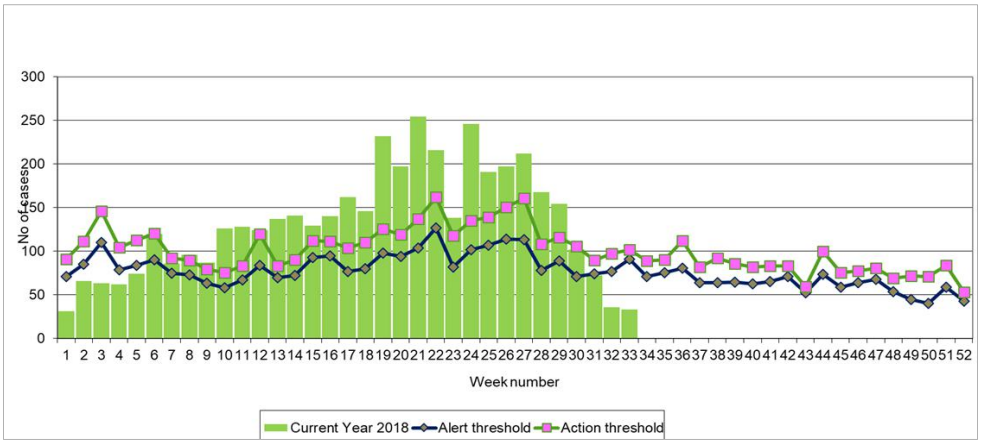
2. Plot the line graphs for the alert and action thresholds

   Plot the values for the current year (year of interest) as bar graph on the same graph.

3. Take note on any alert or action thresholds crossed

Notes

Example of a Health Facility's Weekly Thresholds



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Notes

Thresholds Using Automated Excel Template

Repeat the exercise using the automated Excel template

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Notes

Module 3: Learning Unit 4
Malaria Data Analysis, Interpretation, and Dissemination

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Notes

Data Analysis

Data analysis refers to:

- Transforming data into information
- Summarizing data in tables, graphs, or narrative

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Notes

Data Presentation: Tables

Table showing frequency distribution and percentages

Percent contribution of reported malaria cases by year between 2008 and 2015, Country X

Year	Number of malaria cases (n)	Relative frequency (%)
2008	4 216 531	8
2009	3 262 931	6
2010	3 319 339	7
2011	5 338 008	10
2012	7 545 541	15
2013	9 181 224	18
2014	8 926 058	17
2015	9 610 691	19
Total	51 400 323	100.0

Source: World Malaria Report

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Notes

Data Presentation: Graphs

- **Bar chart:** Comparisons, categories of data
- **Histogram:** Represents relative frequency of continuous data
- **Line graph:** Displays trends over time, continuous data
- **Pie chart:** Shows percentages or proportional share

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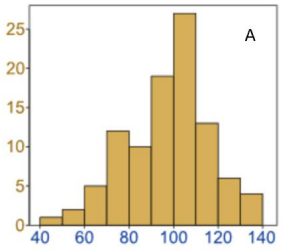
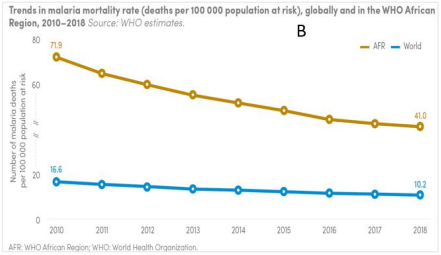
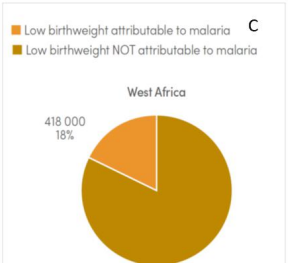
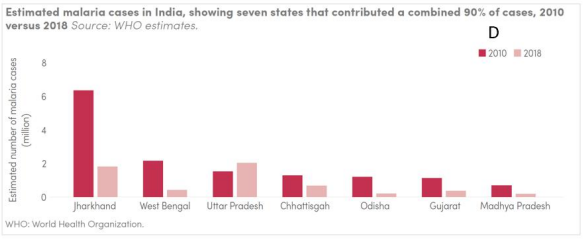
Notes

Which is which?









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Notes

Data Presentation: Maps

Types of maps that are used in field epidemiology:

- Spot map: Uses dots or other symbols to show where each case/patient lived or was exposed
- Area map: Choropleth map; can be used to show rates of disease in different areas by using different shades or colours
- Geospatial map: Method of processing spatial data applying analytical methods to terrestrial or geographic data sets, including use of a geographic information system (GIS)

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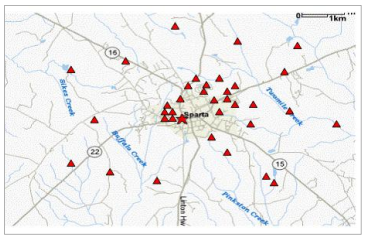
Notes

Name the Types of Maps Shown

A



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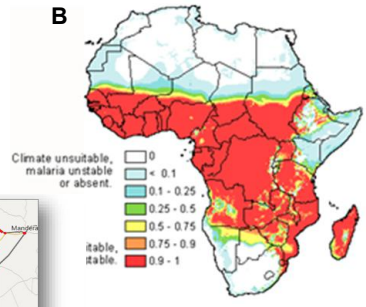

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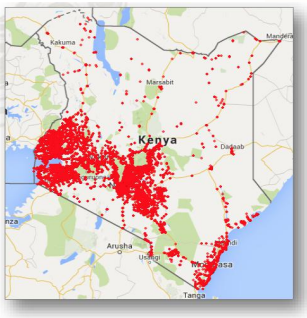

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Notes

Exercise (5 minutes)

How would you present the following?

1. Prevalence of malaria in 3 countries over a 30-year period
2. Data comparing prevalence of malaria in 10 different countries
3. Data on reasons why people are not using LLINs
4. Distribution of patients tested for malaria, by parasite density

Explain reasons for your answers

Notes

Effective Presentation (10 minutes)

Read through the handout on effective presentation and summarise the key points

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Notes

Data Interpretation

Interpreting data involves the following:

- Adding meaning to information
- Making connections and comparisons
- Exploring causes and consequences

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Notes

Considerations in Interpreting Data

1. Does the indicator meet the target?
2. What is the programmatic relevance of the finding?
3. What are the potential reasons for the finding?
4. How does the finding compare (trends, group differences)?
5. What other data should be reviewed to understand the finding (triangulation)?
6. Is there a need to conduct further analysis?

Notes

Data Dissemination

What is data dissemination?

What are the different ways of disseminating data?

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Notes

Ways of Disseminating Data

- Bulletins (e.g., malaria surveillance bulletin)
- Supervision reports by the county and sub-county health teams
- Feedback reports from data quality audits
- Scientific forums (e.g., conferences and workshops)

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Notes

Data Sharing

What is data sharing?

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Notes

Methods of Sharing Surveillance Data

- Internal meetings within a health facility
- Aggregated service provision data from facilities in a sub-county/county
- Supervising agency meetings with health management teams
- Stakeholder meetings

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Notes

What is Feedback?

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Notes

Types of Feedback

- Written
  - Short program reports
  - Quarterly data review
  - Biannual data reviews

- Oral
  - Face-to-face
  - Debrief sessions after supportive supervision

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Notes

Module 3: Learning Unit 5
Data Demand and Use

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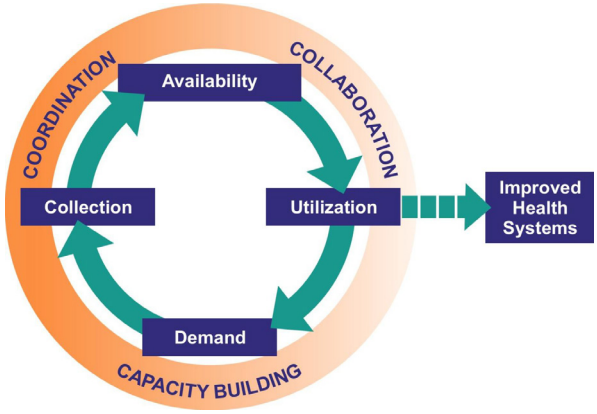
Notes

What is data demand and use?



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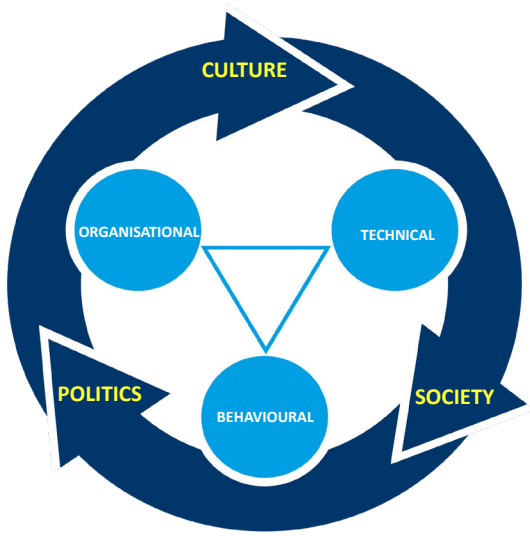
Notes

What Determines Data Demand and Use?



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Notes

Importance of Data Demand and Use

Why is data demand and use so important?

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Notes

Barriers to Data Demand and Use

Barriers	Examples
Technical constraints	– Technical skills – Availability of computers – Data system design – Definition of indicators – Lack of data quality assurance protocols
Organisational constraints	– Structural—roads, telecommunications – Organisational—clarity of roles, support, flow of information – External influence
Individual constraints	– Decision-maker attitudes – Staff motivation – Lack of data use culture

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Notes

Key Messages to Remember

- Ensure that all malaria cases managed at health facilities are reported
- Analyse and review malaria data at all levels
- Update malaria thresholds on a weekly basis
- Share updated thresholds with the relevant stakeholders
- Employ surveillance to inform timely public health action

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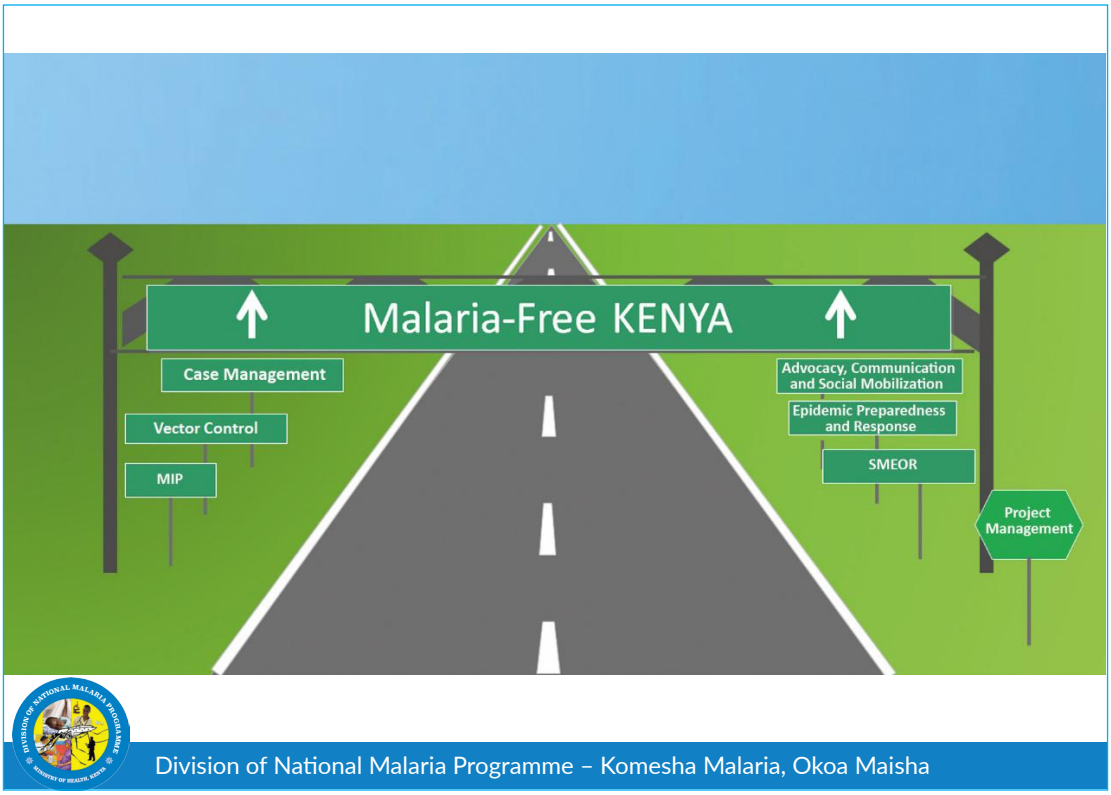
Notes


Malaria-Free KENYA
Case Management
Vector Control
MIP
Advocacy, Communication and Social Mobilization
Epidemic Preparedness and Response
SMEOR
Project Management
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Notes

Ministry of Health

Module 4

Basic Concepts of Malaria Entomology

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Notes

Learning Objectives

By the end of this module, you will be able to:

- Describe the role of mosquitoes in malaria transmission
- Describe different types of mosquito surveys and key indicators, and their role in malaria prevention

Notes

Module 4 Outline

Unit 1: Introduction to Malaria Entomology

Unit 2: Mosquito Surveys and Key Entomological Indicators

Notes

Module 4: Learning Unit 1
Introduction to Malaria Entomology

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Notes

Activity (10 minutes)

Question and Answer Session

- What is entomology?
- What is malaria entomology?

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Definition of Malaria Entomology

- Malaria entomology is the study of the **biology** and **ecology** of mosquitoes (*Anopheles species*) that transmit malaria parasite (*Plasmodium spp*)

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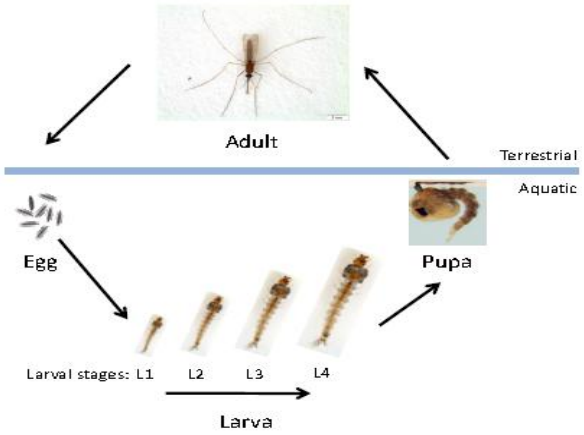
Notes

Stages of Mosquito Life Cycle



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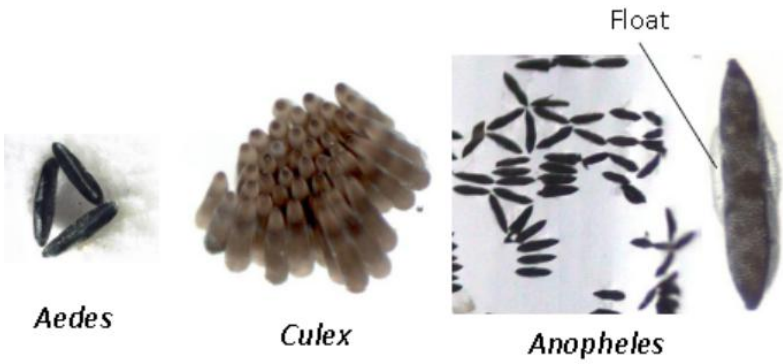
Notes

Differentiating Between Anophelines and Culicines

1. The Eggs



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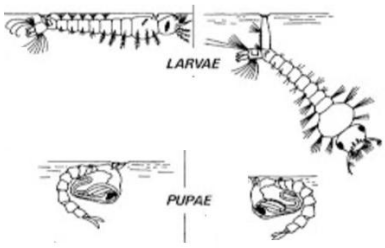
Notes

Differentiating Between Anophelines and Culicines

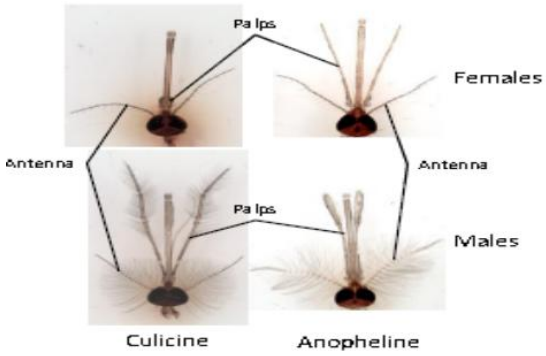
2. The larvae and pupae



Notes

Differentiating Between Anophelines and Culicines

3. The Adult Head



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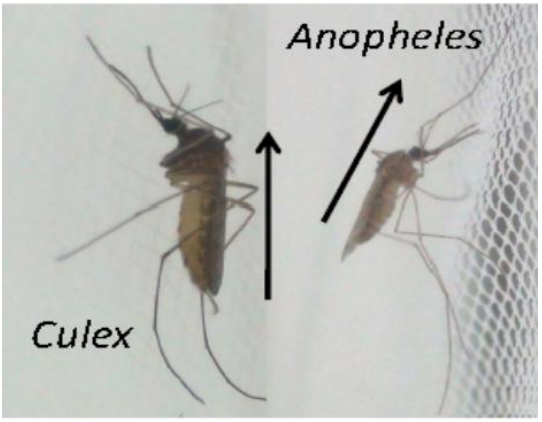
Notes

Differentiating Between Anophelines and Culicines

4. The Adults: Resting Position



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Notes

Bio-ecological Traits of Malaria Vectors

Bio-ecological traits in breeding:

- A female mosquito enters a house in search of a blood meal—sits on the wall to orientate
- After biting, the mosquitoes usually rest on the wall to digest the blood meal
- The female becomes gravid and searches for a suitable water body on which to lay eggs

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Notes

Bio-ecological Traits of Malaria Vectors

Bio-ecological traits in feeding:

- **Feeding preferences** (host choice): Humans or other animals?
- **Time of feeding**: Early evening or late at night?
- **Place of feeding**: Indoors or outdoors?
- **Resting behaviour**: Indoors or outdoors?

Mosquito feeding and resting behaviour influences the choice of intervention

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Notes

Module 4: Learning Unit 2
Mosquito Surveys and Key Entomological Indicators

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Notes

Brainstorming (15 minutes)

- What is vector surveillance?
- Why vector surveillance?
- What is the use of vector surveillance data?
- How do you collect vector surveillance data?

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Notes

Definition of Vector Surveillance

Vector surveillance is a continuous, systematic collection, analysis, and interpretation of **entomological data** for planning, implementation, monitoring, and evaluation of vector control interventions.

Notes

Discussion question (10 minutes)

- Why is vector surveillance important?
- What is vector surveillance data used for?

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Notes

Types of Entomological Surveys (1)

There are **four** main types of mosquito surveys:

- **Preliminary surveys:** Original, basic, and short-term and used to gather baseline data, usually for the purpose of planning a vector control intervention
- **Regular or trend observations:** Routine or long-term observations (longitudinal or operational surveys of monitoring) carried out regularly (e.g., to evaluate the impact of control measures)

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Notes

Types of Entomological Surveys (2)

- **Spot checks:** Carried out in randomly chosen localities other than the fixed monitoring stations

- **Foci investigations:** Carried out in areas of new or persistent malaria transmission to investigate reasons for disease transmission, or why implemented interventions are ineffective in reducing disease burden

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Notes

Methods of Mosquito Sampling

- Mosquito sampling method depends on the purpose and the desired outcome.
- There are different sampling methods for the collection of adults and larvae

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Notes

Sampling Methods for Adults and Larvae

Adults

- Pyrethrum spray catches (PSC)
- Hand collection using aspirators
- Light traps
- Window (entry/exit) trap
- Human landing catches

Larvae

- Dipping
- Pippetting

Notes

Pyrethrum Spray Collection

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Notes

Hand Collections and Main Materials Used

1. mouth aspirator, 2. mechanical aspirator, 3. flashlight, 4. spare batteries,
5. adhesive tape, 6. rubber bands, 7. paper-cups with netting, 8. cotton wool

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Notes

Light Trap

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Notes

Window (Exit/Entry) Trap

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Notes

Human Landing Catch

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Notes

Larval Sampling

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Notes

Key Indicators From Mosquito Samples (1)

Indicators obtained from mosquito samples include:

Vector Density

Number of vector species per house per night or number of vector species per person per night

Human Blood Index (HBI)

Proportion of the blood meals of a mosquito population obtained from man

Notes

Key Indicators From Mosquito Samples (2)

Sporozoite rate
Proportion of mosquitoes positive for *Plasmodium* sporozoites

Entomological inoculation rate (EIR)
Probability of getting an infective bite per person per night per year

= HBI x sporozoite/mean number of sleepers/house

Notes

Larval Indicators

Habitat occupancy
Percentage of positive larval/pupae habitats

Larval density
The average number of larvae/pupae per dip

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Notes

Key Messages to Remember

- Malaria entomological data are as good as epidemiological data in informing policies on malaria prevention
- Malaria entomological data guide the choice of vector control interventions
- EIR is an indicator that defines whether malaria in an area is locally transmitted/indigenous

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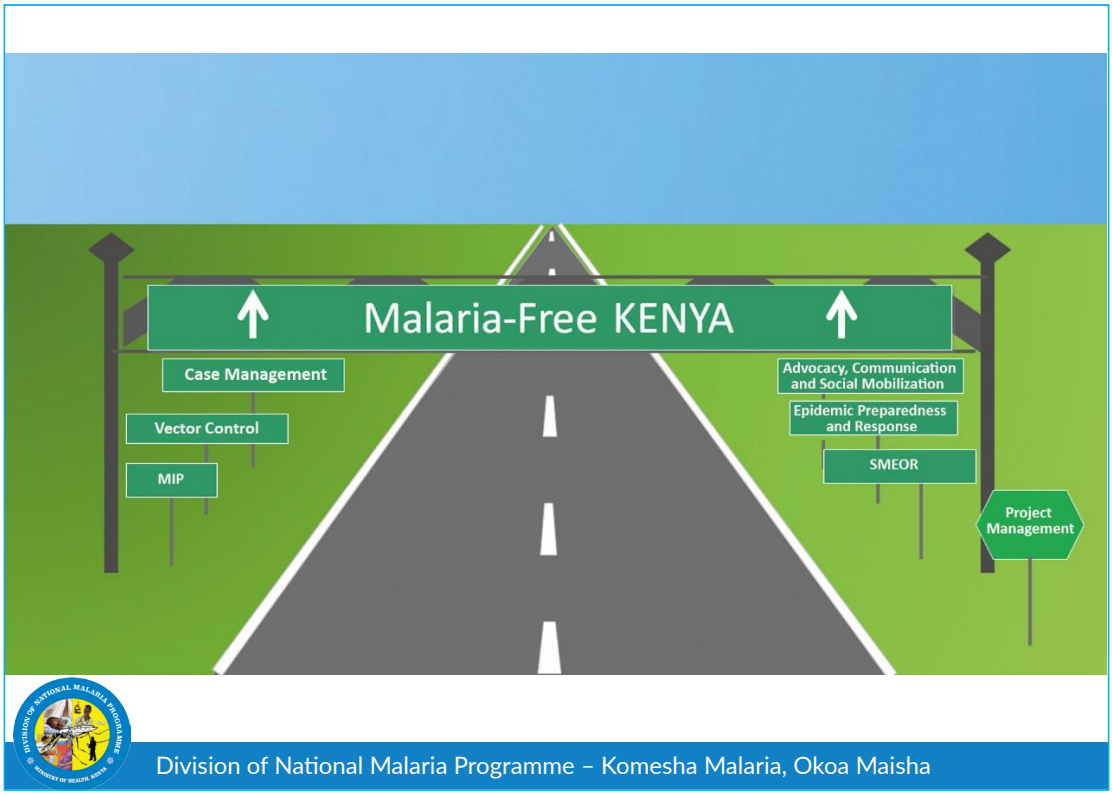
Notes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Notes

Ministry of Health

Module 5

Malaria Epidemic Prevention Strategies

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Notes

Learning Objectives

By the end of this module, you will be able to:

- Describe malaria epidemic prevention strategies
- Select, quantify, procure, and distribute essential and emergency malaria commodities
- Describe the composition, roles, and responsibilities of the sub-county Public Health Emergency Management Committee (PHEMC) and Rapid Response Teams (RRT)

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Notes

Module 5 Outline

Unit 1: Introduction to Malaria Epidemic Prevention Strategies

Unit 2: Emergency commodities for malaria EPR

Unit 3: Coordination Structures and Capacity to Prepare and Respond to Malaria Epidemics

Notes

Module 5: Learning Unit 1
Introduction to Malaria Epidemic Prevention Strategies

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Notes

Epidemic Prevention Strategies

- The main epidemic prevention strategies are:
  - Vector control
  - Effective case management
  - Surveillance
  - Social and behaviour change
- Epidemic prevention strategies are geared towards reduction of morbidity and mortality

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Notes

Vector Control

The recommended vector control tools are:

- Use of LLINs
- Indoor residual spraying (IRS)
- Larval source management (LSM)

High coverage (>80%) is required for effective vector control

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Notes

Social and Behaviour Change

Community, household, and personal action are key to malaria prevention

There are three types of targets for SBC messages:

- Primary targets
- Secondary targets
- Tertiary targets

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Notes

Primary Targets

Include heads of households and caregivers of children under 5 years

Key messages for primary targets include:

- Need for all members of households to sleep under an LLIN
- Seek prompt treatment for anyone with signs and symptoms of malaria
- Complete malaria medicines as advised (even when feeling better)
- Prevent breeding of mosquitoes

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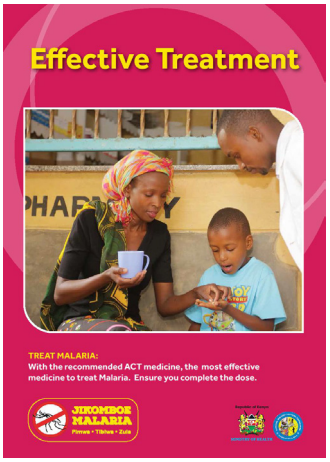
Notes

SBC Materials for Primary Targets



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Notes

Channels of Communication for Primary Audience

- **Interpersonal channels include:**
  - Household visits by community health volunteers
  - Provider to client at the health facility
  - Health talks at health facilities
- **Community-based channels include:**
  - Posters
  - Churches
  - Cultural gatherings, community dialogue days
  - Outreaches
- **Mass media**

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Notes

Secondary Targets

Include health workers, community health extension workers/ community health assistants (CHEWs/CHAs)

Key messages for secondary targets include:

- Importance of compiling data
- Educating the community on prevention, control, signs, and symptoms
- Managing malaria commodities

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Notes

Channels of Communication for Secondary Audience

- Interpersonal communication
- Meetings
- Peer-to-peer communication
- Trainings
- On-the-job trainings
- Mass media
- Test messages
- Social media, WhatsApp, Facebook
- Emails

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Notes

Tertiary Targets

Include administrative and community leaders

Key messages for the tertiary targets include:

- Sensitisation of leaders on the need for preparedness
- Sharing reports and feedback
- Advocacy for resource allocation
- Importance of supporting epidemic prevention and control activities
- Mobilising people for personal and community protection
- Mapping of malaria stakeholders in the county

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Notes

Channels of Communication for Tertiary Audience

- Interpersonal communication
- Meetings with county leadership and local leaders
- Mass media
- Emails
- Social media channels
- Malaria bulletins and newsletters
- Fact sheets, social and behavior change (SBC) communication, and media briefs

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Notes

Module 5: Learning Unit 2
Emergency commodities for malaria EPR

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Notes

Quantification of Essential and Emergency Malaria Commodities (1)

Importance of quantifying malaria commodities:

- Malaria epidemics require quick response to prevent high morbidity and potential mortality
- Accurate quantification of commodity need is essential to support timely and effective response

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Notes

Quantification of Essential and Emergency Malaria Commodities (2)

- Quantification is undertaken at all levels based on the commodity needs
- It should cover pharmaceuticals, non-pharmaceuticals, information, education, and communication (IEC) materials and services, and operational logistics.
- It should be guided by the EPR plan and other assessments done as part of preparedness and early response

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Notes

Procurement of Commodities

- Procurement of commodities within the public sector is guided by the Public Procurement and Asset Disposal Act 2015 with the revision as provided.

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Notes

Good Procurement of Practices (1)

Good procurement practices include:

- **Costed procurement plan—** prepared for all requirements
- **Country-level specifications—** provided for all goods and services in the procurement plan
- **Training and maintenance—** included for specialised equipment
- **Approvals for procurement—** done early enough to ensure timely delivery

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Notes

Good Procurement of Practices (2)

- **Assessment of need—**should precede the procurement processes
- **Monitor stock levels and anticipated consumption—**to inform re-supply and emergency procurement if necessary
- **Extraneous factors—**consider other factors that may hamper delivery of supplies (e.g., weather)

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Notes

The Rule of RIGHT in Procurement

- The **Right** quality
- The **Right** quantity
- At the **Right** price
- At the **Right** time

- In the **Right** place
- From the **Right** source
- In the **Right** size/formulation

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Notes

Commodity Stocking

- **Sensitise health workers** on the importance of stocking adequate commodities at all times
- **Buffer stocks** should also be retained at all levels

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Notes

Selection of Pharmaceuticals

Antimalarials: Based on the treatment guidelines

- first-and second-line treatment
- treatment for severe malaria
- dosage for all categories (children, adults and pregnant women)

Other essential medicines to provide treatment for complications in severe cases

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Notes

Selection of Non-pharmaceuticals

- **Reagents** for malaria microscopy
- **mRDT** for lower-level health facilities and the community level
- **Ancillary supplies** to support the delivery of appropriate care to all malaria cases
- **Referral** services
- **Logistics** and facilitation for teams to initiate, monitor, and support community-level activities

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Notes

Module 5: Learning Unit 3
Coordination Structures And Capacity To Prepare And Respond To Malaria Epidemics

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Notes

Public Health Emergency Management Committee (PHEMC)

- PHEMC is a coordinating committee composed of technical and nontechnical members from health and other sectors

- It is mandated to develop and oversee the implementation of emergency preparedness strategies, action plans, and procedures

Notes

Teams for Outbreak Preparedness

- Sub-county Public Health Emergency Management Committee (PHEMC)
- Sub-county/county rapid response team (RRT)

Notes

Responsibilities of the PHEMC (1)

The responsibilities of the PHEMC are to:

- **Develop** a sub-county emergency preparedness and response plan
- **Establish** a community communications plan for sharing information with communities
- **Mobilise resources** for emergency prevention and control
- **Support the procurement** of emergency material stockpiles
- **Enhance linkages** with community surveillance informants

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Notes

Responsibilities of the PHEMC (2)

- Coordinate **community risk mapping** activities
- **Coordinate training** of community, health facility, sub-county, and county personnel in emergency preparedness and response
- Coordinate **post-emergency evaluation and** disseminate findings to stakeholders
- **Stakeholder mapping—**Identify who, where, when, and what they do

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Notes

Responsibilities of PHEMC in Epidemic Phases

Before an outbreak

- Mobilise human, material, and financial resources
- Produce and distribute relevant guidelines

During an outbreak

- Mobilise human, material, and financial resources
- Coordinate implementation of a plan of action
- Monitor implementation of outbreak control measures

After an outbreak

- Conduct epidemic review and write report
- Sustain preventive measures

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Notes

Membership of PHEMC

Health Sector

- County Director for Health
- Sub-County Medical Officer of Health
- Pharmacist
- Epidemiologist
- Clinical Officer
- Medical Laboratory Technologist
- Disease Surveillance Officer
- Health Records & Information Officer
- Public Health Officer
- Public Health Nurse
- Health Education Officer
- Nutritionist

Other Sectors

- County Commissioner/Governor
- Sub-county Commissioner
- Wildlife Experts
- Veterinary Officer
- County/Sub-County Water Engineer
- Police/Other Public Safety Officers
- Local Media Representatives

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Notes

Responsibilities of the Rapid Response Team (1)

- **Investigate** rumours, reported outbreaks, and other public health emergencies
- **Propose appropriate strategies** and control measures, including risk communications activities
- **Initiate** the implementation of the control measures, including capacity building

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Notes

Responsibilities of the Rapid Response Team (2)

- Carry out outbreak **investigations**
- Prepare **detailed investigation reports**
- Contribute to the **final evaluation** of the outbreak response
- Provide **technical support** to health facilities during outbreaks and epidemics

Notes

Assessment for Malaria Epidemic Preparedness

Objectives of rapid assessment are:

- To assess the vulnerability to malaria epidemics in the regions
- To establish preparedness and readiness of sub-counties/counties to mitigate and contain detected outbreaks
- To assess in-county capacity and resource needs for response to potential epidemics

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Notes

When to Conduct Malaria Epidemic Assessment

Epidemic assessment is conducted:

- On a routine basis when the situation on the ground is normal, without any epidemic
- When there is an impending epidemic

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Notes

What Is Assessed

- Coordination—availability of EPR plans, guidelines, work plans
- Surveillance—threshold monitoring, entomological surveillance, meteorological information
- Social and behaviour change—pre-designed SBC packages
- Commodities for malaria—availability, forecasting, and quantification

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Notes

Reasons For Malaria Epidemic Assessment

- To identify gaps and necessary action to be taken
- To inform the managers on the status of malaria epidemic preparedness
- To plan the implementation of EPR activities
- To provide relevant information to stakeholders and international organisations to mobilise additional resources

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Notes

Key Messages to Remember

- Prepare an epidemic preparedness plan to strengthen ability to respond to an outbreak
- Preparedness reduces morbidity and mortality if an epidemic occurs
- Establish an emergency management committee to increase communication between stakeholders before and during an emergency
- Maintain adequate stocks of medicines, reagents, and supplies

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Notes

Practicum on Filling Preparedness Checklist

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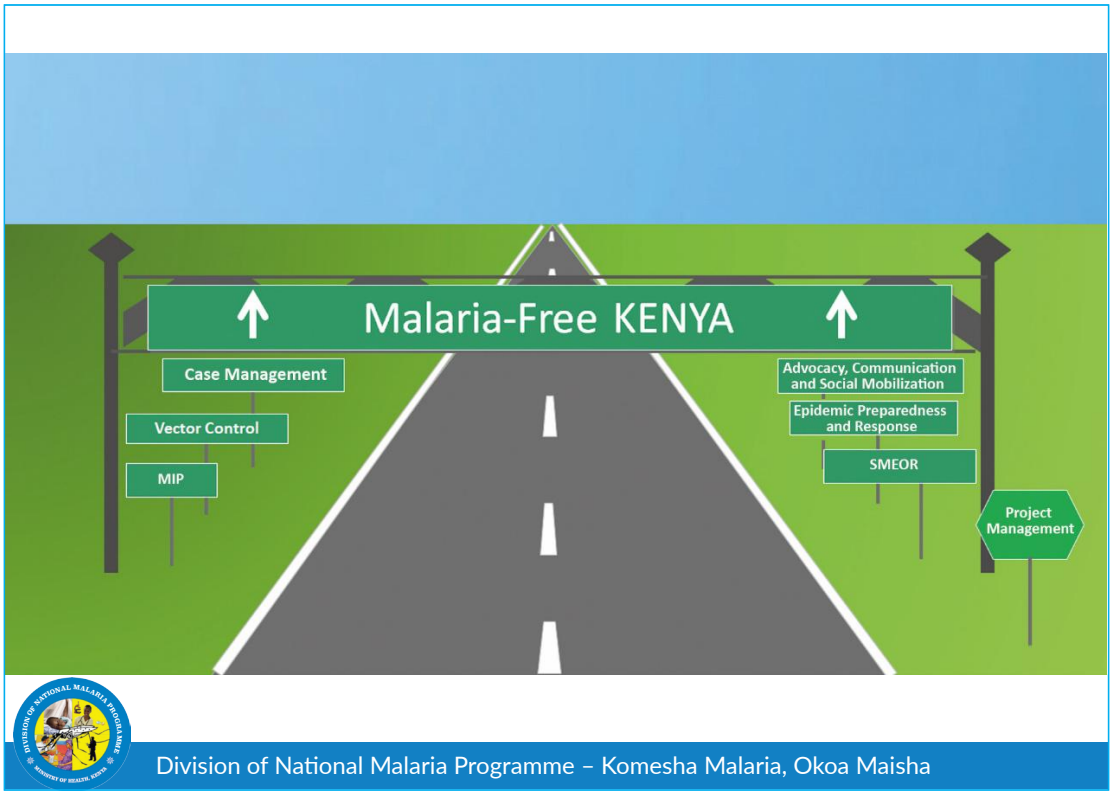
Notes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Notes

Ministry of Health

Module 6
Malaria Epidemic Response

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Notes

Learning Objectives

By the end of this module, you will be able to:

- Conduct malaria outbreak/epidemic investigation
- Respond to malaria epidemics in an effective and timely manner
- Coordinate malaria epidemic response activities

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Notes

Module 6 Outline

Unit 1: Malaria Epidemic/Outbreak Investigation

Unit 2: Monitoring Epidemic Response

Notes

Module 6: Learning Unit 1
Malaria Epidemic/Outbreak Investigation

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Notes

Confirming an Epidemic

- An epidemic is confirmed if the **defined action threshold** has been surpassed
- Epidemic **investigation** is critical to **confirm the magnitude** of the epidemic and inform what response actions to undertake
- Investigation prior to response entails a **comprehensive evaluation** of a specific public health issue

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Notes

Epidemic Investigation

- Epidemic/outbreak investigation focuses on the following characteristics:
    - **Population** groups affected
    - Key **settings** and contexts
    - **Time** of occurrence
    - **Risk** factors
- It identifies existing resources and opportunities for intervention
- It helps in planning, developing and implementing interventions

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Notes

Steps of Outbreak Investigation

- **Confirm** the existence of an outbreak
- **Verify** the diagnosis
- **Establish** the case definition; identify and count additional cases
- **Tabulate** the data by person, place, and time (line listing)
- **Develop** hypotheses on causes of outbreak
- **Evaluate** the hypotheses
- **Implement** control and prevention measures
- **Communicate** the findings

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Notes

Composition of the Outbreak Investigation Team

The team should have the following experts:

- Clinician
- Laboratory personnel
- Epidemiologist
- Surveillance officer
- Environmental health officer
- Entomologist

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Notes

Reasons for Outbreak Investigation

Outbreak investigation is conducted to:

- **Verify/**confirm the outbreak
- Determine the **magnitude** of the epidemic
- **Describe** the outbreak in terms of time, place, and person
- Identify the **risk factors**
- **Assess local response** capacity and immediate needs
- Identify **appropriate** public health **response**
- Measure the epidemic's current and **potential health impact**

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Notes

When to Conduct an Outbreak Investigation

Investigate when:

- An unusual **increase** in number of cases or deaths is reported in routine data
- An unusually **large number** of cases are seen in the health facility
- Alert or action **thresholds** have been surpassed
- Communities report **rumours** of strange events or deaths
- A cluster of illnesses, events of public health concern, or deaths occur for which the **cause is unexplained** or unusual

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Notes

Module 6: Learning Unit 2
Epidemic Response Interventions

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Notes

Epidemic Response Interventions

Response interventions include:

- Prompt and appropriate **diagnosis and treatment**
- Acceptance and use of appropriate **vector control** interventions
- **SBC**, including community mobilisation and sensitisation
- **Surveillance** and monitoring

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Notes

Diagnosis and Treatment (1)

In order to conduct proper diagnosis and treatment:

- All facilities must have **diagnostic capacity** (microscopy or mRDT)
- All suspected cases should be tested
- External quality assurance (EQA) should be undertaken

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Notes

Diagnosis and Treatment (2)

- Establishment of **temporary treatment centres** should be considered (to increase coverage of and access to health services)

- At least 80% of cases should have appropriate care and treatment (within 24 hours)

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Notes

Vector Control Interventions

- Targeted LLIN distribution
- Focalised IRS
- Larval source management

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Notes

SBC for Malaria Epidemic Response (1)

SBC messages at patient/community level should focus on:

- Importance of **using LLINs** by all household members
- Need for **environmental manipulation**
- **Signs** and symptoms of malaria
- **Health-seeking behaviour—**need to seek treatment promptly
- **Adherence to treatment—**complete all doses even if the patient feels better

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Notes

SBC for Malaria Epidemic Response (2)

At health worker/management level, SBC messages should focus on:

- Adherence to **treatment guidelines**
- **Early referral** of fever cases from community to the health facility
- Sensitisation of community and county leadership
- Sharing of epidemic reports
- **Advocacy** for resource allocation

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Notes

Surveillance During Epidemics (1)

To conduct surveillance during epidemics:

- Formulate outbreak **case definition**
- **Detect** sudden changes in disease occurrence and distribution
- **Monitor** trends and patterns
- Generate hypotheses and stimulate research

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Notes

Surveillance During Epidemics (2)

- Monitor changes in infectious agents
- Detect changes in health practices
- Evaluate control measures
- Facilitate planning

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Notes

Enhanced Surveillance During a Malaria Outbreak

- Use of standard case definition
- Review of records
- Active case search in the community
- Laboratory surveillance
- Conduct survey in private pharmacies and clinics

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Notes

Line Listing (1)

- A line list is a rectangular database on a spreadsheet that summarizes the important details on cases during an epidemic
- **MOH 503** is used when the outbreak has been confirmed to line-list all the suspected cases
- This should be done daily at the health facility level or a temporary treatment centre and forwarded daily to the next level

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Notes

Line Listing (2)

- All relevant variables in a line list should be filled to enable analysis of **time, place, and person**

  Person—name, age, sex, patient status (inpatient, outpatient)

  Place—village, ward, sub-county

  Time—date of onset, date seen in facility

- The line list also captures clinical details—lab tests (RDT/culture), lab results, outcome (alive or dead), and comments

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Notes

Health Facility Line Listing Form (MOH 503)

2012 MINISTRY OF PUBLIC HEALTH AND SANITATION MOH 503
IDSR Health Facility Line-listing Form

Health Facility: _____ District: _____ County: _____
Disease/Condition/Event: _____ Date received at District: _____

A	B	C		D	E	F	G	H	I	J			K		L
No	Names	Patient Status (tick as appropriate)		Village or Town and Neighbourhood *(Indicate major landmarks)*	Sex	Age[1]	Date seen at health facility	Date of onset of illness	No. of doses of vaccine (Exclude doses given within 14 days of onset)[2]	Lab Tests			Outcome		Comments
		Out patient	In patient							Specimen taken (Yes/No) If yes, date collected		Lab results	A- Alive	D- Dead	
										Date	Type				
(1)															
(2)															
(3)															
(4)															
(5)															
(6)															
(7)															
(8)															
(9)															

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Notes

Example of a Line Listing

		Signs/Symptoms			Labs	Demographics	
Case #	Date of Symptom Onset	Diarrhea	Vomiting	Fever >37°C	MPS	Age	Gender
1	22/10/05	Y	Y	Not done	Y	19	M
2	25/10/05	N	Y	N	N	17	M
3	22/10/05	N	Y	N	Y	23	F
4	27/10/05	Y	?	?	Pending	18	?
5	23/10/05	N	Y	N	Y	21	M
6	21/10/05	Y	Y	Y	Not submitted	18	F

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Notes

Line-Listing Data Analysis

- **Time** (epidemic curve)
  - When were the cases infected? (ideal)
  - When did they get ill (more practical)

- **Place** (spot map, shaded map)
  - Where were they infected? (ideal)
  - Where do they live or work? (more practical)

- **Person**
  - Who was infected? (age, occupation)
  - What do the cases have in common?

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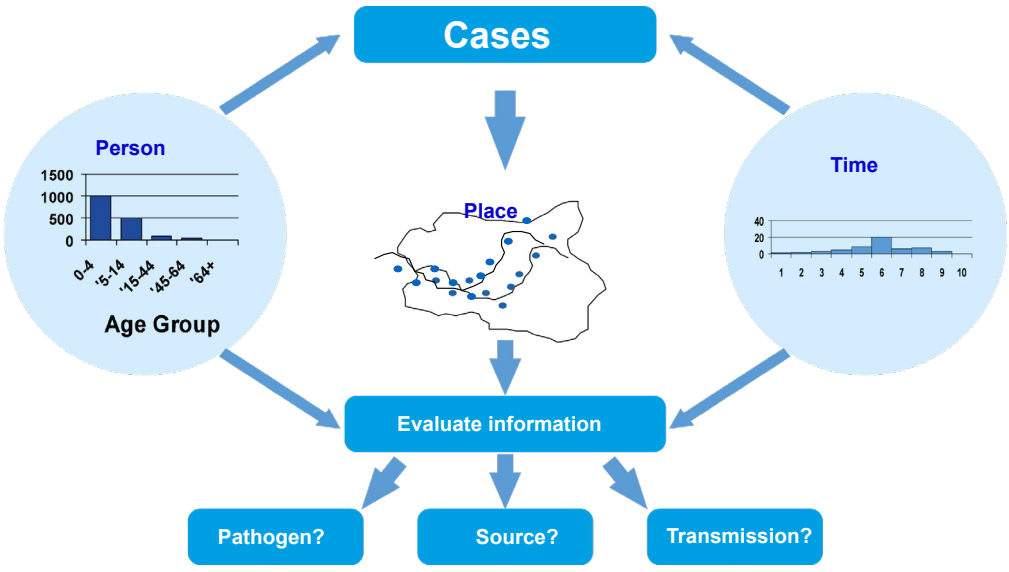
Notes



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Notes

Monitoring Epidemic Response

Use the standard case definition to:

- Conduct active surveillance at community and private facilities
- Enhance routine surveillance at health facilities
- Continuously monitor the thresholds

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Notes

Disease Outbreak Situation Reports (SITREPs)

- SITREPs are a summary of the outbreak situation of the affected area
- They are based on analysis of the line listing

Information summarized in the SITREPs include:

- Areas affected
- Cumulative cases
- Laboratory confirmed cases
- Number of deaths and case fatality rate (CFR)

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Notes

Information Summarised in the SITREPs

Other information in summarised in SITREPS include:

- Epidemic curves
- Maps
- Age analysis
- Interventions taken
- Planned actions
- Challenges encountered

Notes

Coordination of Response Activities

Partner linkages and coordination is key during response. For effective coordination:

- **Hold weekly meetings** to review the epidemic situation, morbidity and mortality trends
- Examine the **stock levels** and flow of resources
- **Assess constraints** in the overall containment of the epidemic
- Use the emerging information for **fast re-planning** if necessary
- Frequently **provide feedback** to all levels

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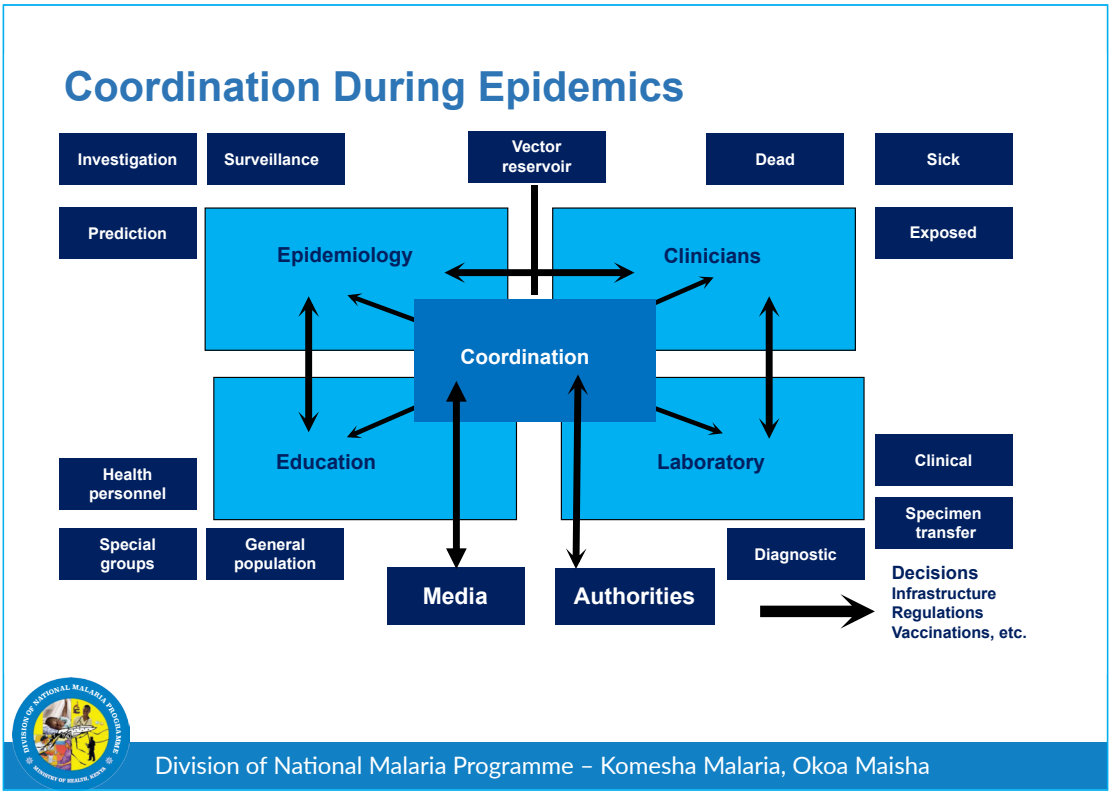
Notes


Coordination During Epidemics
Investigation
Surveillance
Vector reservoir
Dead
Sick
Prediction
Epidemiology
Clinicians
Exposed
Coordination
Education
Laboratory
Health personnel
Clinical
Specimen transfer
Special groups
General population
Diagnostic
Media
Authorities
Decisions
Infrastructure
Regulations
Vaccinations, etc.
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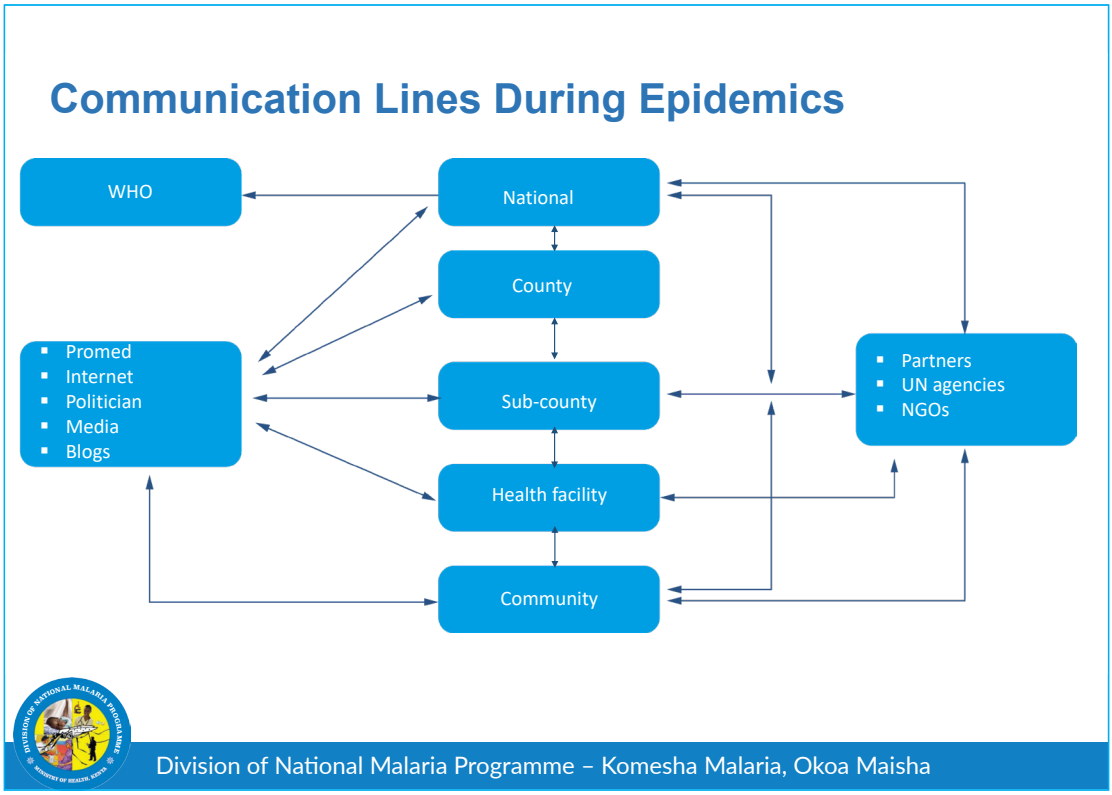
Notes


Communication Lines During Epidemics
WHO
National
County
Promed
Internet
Politician
Media
Blogs
Sub-county
Partners
UN agencies
NGOs
Health facility
Community
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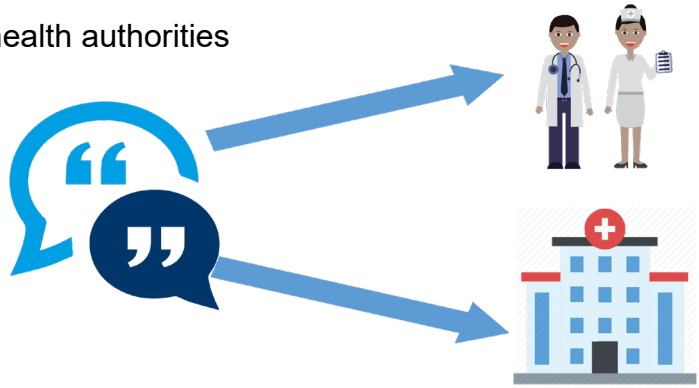
Notes

Communicating Findings

Communicate findings back to healthcare providers and other public health authorities



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Notes

Resources for Response

Resources should be mobilised at all levels:

- National, county, sub-county, health facility and community
- The Division of Disease Surveillance and Response (DDSR) at the national level reviews and identifies additional needs for response.
- DDSR and the Division of the National Malaria Programme (DNMP) rapidly mobilise additional commodities (emergency buffer stocks) and distribute them immediately to the affected areas

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Notes

Resources Required

- Personnel
- Equipment
- Commodities
- Laboratory supplies
- Vector control material
- Emergency response funds

Rapid Response Team

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Notes

Key Messages to Remember

- Field investigation should be done before confirming an epidemic
- Prompt diagnosis and treatment are critical for epidemic response
- Coordination is key for effective response to epidemics

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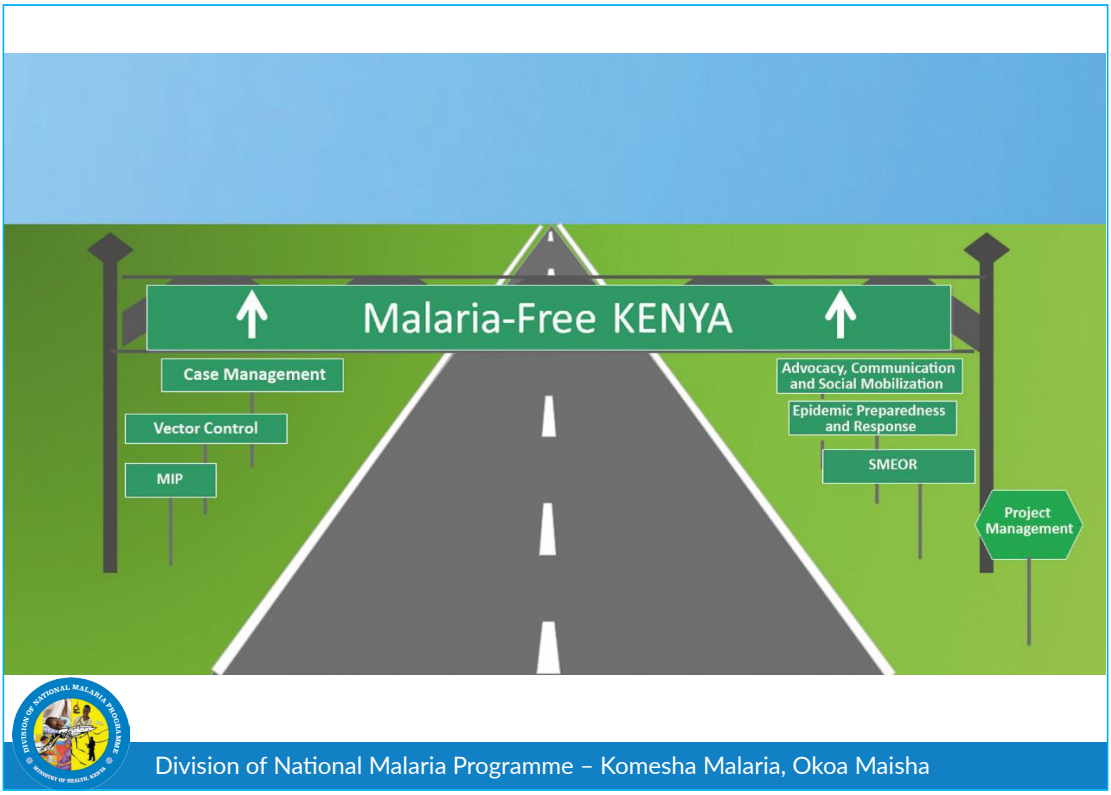
Notes


Malaria-Free KENYA
Case Management
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Notes

Ministry of Health

Module 7
Post-Epidemic Evaluation

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Notes

Learning Objectives

By the end of this module, you will be able to:

1. Demonstrate understanding of malaria post-epidemic evaluation
2. Demonstrate understanding of components of a post-epidemic evaluation report
3. Describe the steps and channels of disseminating a post-epidemic evaluation report

Notes

Module 7 Outline

Unit 1: Declaration of End of Epidemic

Unit 2: Post-epidemic Evaluation

Unit 3: Documentation and Dissemination of the Malaria Epidemic Report

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Notes

Module 7: Learning Unit 1
Declaration of End of Epidemic

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Notes

Declaration of the End

- Declaration of the end of an epidemic is an official statement informing all relevant stakeholders of the successful control of the epidemic.

- When do you declare the end of an epidemic?

(brainstorm, 5 minutes)

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Notes

Factors to Consider Before the Declaration

- Confirmed malaria cases—below alert threshold for at least 21 days
- Test positivity rate—back to normal rates in the area
- Number of patients presenting with fever—back to expected numbers
- Workload—resumed to normal levels
- Minimal admissions due to severe malaria cases
- Consumption of antimalarial commodities—reduced to normal levels

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Notes

Process of Declaration

- The county outbreak management committee confirms that the outbreak has been successfully controlled
- The committee advises the County Executive Committee to declare the end of the epidemic
- The declaration information is communicated to the national Ministry of Health
- The Director General, upon verification, declares the end of the epidemic and communicates the same information to WHO

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Notes

Information Declared

END OF EPIDEMIC DECLARATION

Date of epidemic onset:

Duration of the epidemic:

Total number of cases line listed during the epidemic:

Case fatality rate (CFR):

Locations of the outbreak:

Most affected population:

Interventions taken during the outbreak:

Lessons learnt and recommendations:

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Notes

Reasons to Declare the End of an Epidemic

An epidemic is declared over in order to:

- **Give assurance** to the affected community and reduce panic
- **Scale down** the epidemic control activities
- **Enable re-focusing efforts** to other public health activities
- **Redirect** resources to other areas of need
- **Allow** post-epidemic evaluation activities to begin

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Notes

Module 7: Learning Unit 2
Post-epidemic Evaluation

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Notes

Why conduct post-epidemic evaluation?

(brainstorm, 5 minutes)

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Notes

Introduction to Post-epidemic Evaluation (1)

- Post-epidemic evaluation is an assessment conducted after the end of an epidemic to identify **successes** and **failures** of preparedness and response activities.

- It indicates whether:
  - The early warning detection systems provided the desired information for prompt action
  - Preparedness and response activities yielded the expected impact

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Notes

Introduction to Post-epidemic Evaluation (2)

- Post-epidemic evaluation entails review and documentation of:
  - Activities to control the epidemic
  - Processes for epidemic management

- **Purpose:** To provide lessons to improve preparedness and response activities

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Notes

Areas of Focus in a Post-epidemic Evaluation

Post-epidemic evaluation should focus on:

- Early warning, detection, and surveillance activities
- Epidemic preparedness
- Organisation and coordination of the outbreak response
- Diagnostics and case management, including referral systems
- Commodities and supplies
- Targeted vector control activities
- Social and behaviour change

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Notes

Reasons for Post-epidemic Evaluation

Post-epidemic evaluation is conducted in order to:

- **Assess** the overall outbreak preparedness and response
- **Identify** strengths, weaknesses, opportunities, and threats
- **Provide accountability** for resources used to contain the epidemic
- **Identify lessons** and **recommendations** to improve the preparedness plan and advocate the necessary support
- **Generate** questions for further research

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Notes

Composition of Post-epidemic Evaluation Team

The team should comprise of:

- Epidemiologist
- Entomologist
- Clinician
- Medical laboratory specialist
- Medical statistician
- Environmental health specialist
- Health promotion specialist
- Representatives from stakeholders

The team retrospectively assesses events and information before, during, and after the epidemic.

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Notes

Post-epidemic Assessment Process and Tools

- Post-epidemic assessment should be done across the **different levels of the health system**
- A **post-epidemic review meeting** is held to discuss the processes, outcome, and impact of response activities
- Experiences, **lessons learnt,** and **recommendations** are documented.
- A **detailed post-epidemic assessment tool** is used to assess all technical, logistical, and coordination aspects.

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Notes

Post-epidemic Action Plan

Post-epidemic activity	Responsible person	Budget	Timelines
Activity 1			
Activity 2			

Notes

Module 7: Learning Unit 3
Documentation and Dissemination of the Malaria Epidemic Report

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Notes

Post-epidemic Evaluation Report

If it is not documented... it was not done!

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Notes

Post-epidemic Report Format (1)

1.0 Background

- Aim and Objectives of the Evaluation

2.0 Epidemic Context

- Factors that contributed to the epidemic
- Onset and end of the epidemic
- Affected population
- Nature and scope of response

3.0 Prevention and pre-epidemic preparedness

- Routine prevention strategies
- Stock Status (three months) before onset

4.0 Surveillance, Monitoring and Evaluation

- Pre-epidemic phase – threshold monitorong, alert thresholds,
- Epidemic phase – line listing, SITREPS
- Post-epidemic phase – end of epidemic declaration, post epidemic assessment – by who, when, tools used, results, dissemination of findings

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Notes

Post-epidemic Report Format (2)

5.0 Response activities undertaken to control the epidemic

- Testing
- Treatment
- Temporary treatment established
- Other response measures undertaken

6.0 Partnerships, Collaboration and Coordination structures

- Partner support – all levels
- Resources mobilised
- Total cost to ccontrol the epidemic
- Effectiveness of rapid response teams and outbreak committees

7.0 Recommendations
8.0 Conclusions
9.0 Annexes

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Notes

A Demonstration of Post-Epidemic Assessment

Conduct a mock post-epidemic assessment using a predesigned checklist (15 minutes)

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Notes

Dissemination of Post-Epidemic Report

- **Dissemination meeting should:**
  - Involve all key stakeholders
  - Present the findings and recommendations
  - Action points and way forward

- **Share the report with:**
  - Stakeholders present
  - Healthcare levels
  - National Ministry of Health, DNMP, DDSR
  - The Ministry of Health to share with WHO

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Notes

Keys Messages to Remember

- **Declare** the end of every malaria epidemic
- **Evaluate—**conduct a post-epidemic evaluation of every epidemic
- **Document** the post-epidemic evaluation and disseminate to all stakeholders
- **Recommendations—**use them to improve future planning and response

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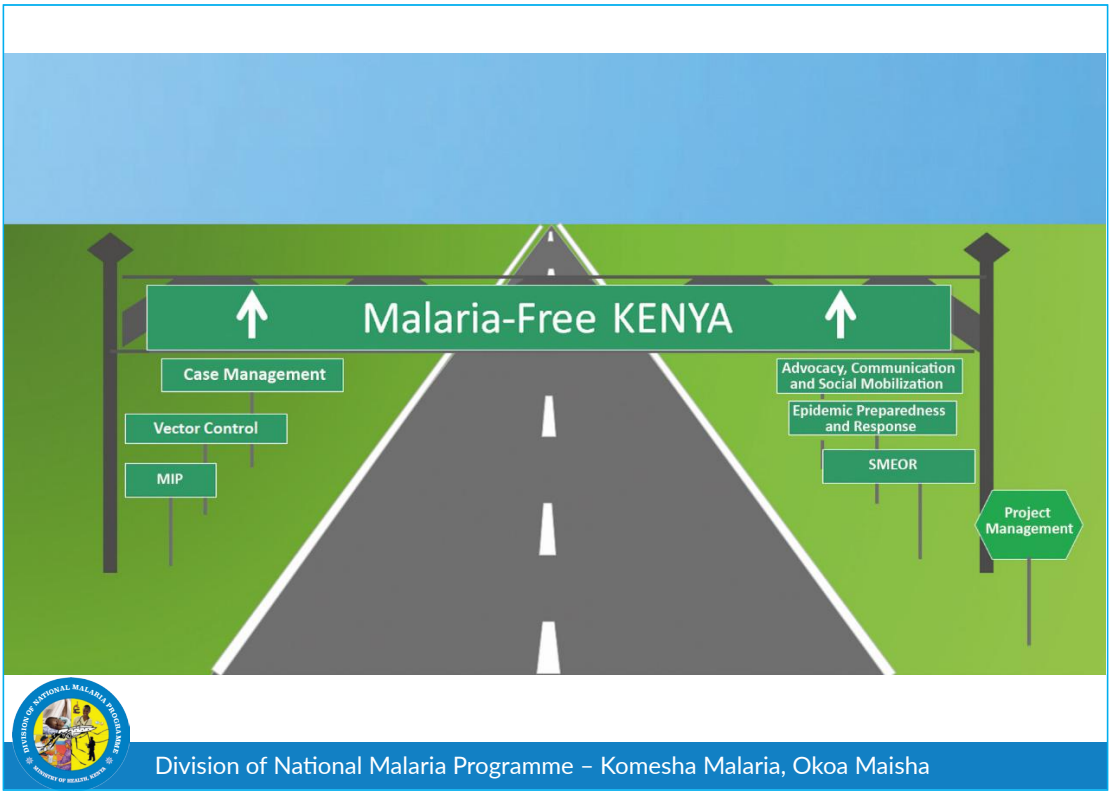
Notes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Notes

Ministry of Health

Module 8
Malaria EPR Planning

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Notes

Learning Objectives

By the end of this module, you will be able to:

- Describe the components of an EPR plan
- Develop a malaria EPR plan
- Demonstrate understanding of the processes involved in adoption and implementation of a malaria EPR plan

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Notes

Module 8 Outline

Unit 1: Introduction to EPR Planning

Unit 2: Development of a Malaria EPR Plan

Unit 3: Adoption and Implementation of a Malaria EPR Plan

Notes

Module 8: Learning Unit 1
Introduction to EPR Planning

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Notes

Introduction

Planning is a key component of project management.

It helps to:

- Set short-term organisational goals and performance objectives
- Develop annual and multiyear plans
- Allocate adequate resources and time (money, people, and materials)
- Anticipate and minimise risks
- Monitor and evaluate the programme

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Notes

What is Malaria EPR Planning?

Brainstorming session (5 minutes)

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Notes

Malaria EPR Planning

- Planning is the process of deciding **who, when, what, where, and how** to do certain activities to achieve desired goals

- EPR planning should include all the phases of the epidemic cycle:
  a. Pre-epidemic phase
  b. Response phase
  c. Post-epidemic phase

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Notes

Why Develop a Malaria EPR Plan?

Brainstorming

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Notes

Who Should Prepare the EPR Plan, and When?

The following teams in epidemic prone areas should prepare EPR plans:

- County health management teams (CHMTs)
- Sub-county health management teams (SCHMTs)
- EPR plans should be prepared at least **1 month** before the county annual work plan is developed

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Notes

EPR Planning Steps

- Step 1: Preparation (call a meeting, set up teams, agree on timelines)
- Step 2: Carry out a situation analysis
- Step 3: Develop the EPR plan
- Step 4: Build consensus and finalise the plan

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Notes

Preparation for EPR Planning

Before starting the EPR planning process:

- Organise and communicate the intent to conduct EPR plan review/development
- Gather relevant information and reference materials
- Request technical assistance if necessary

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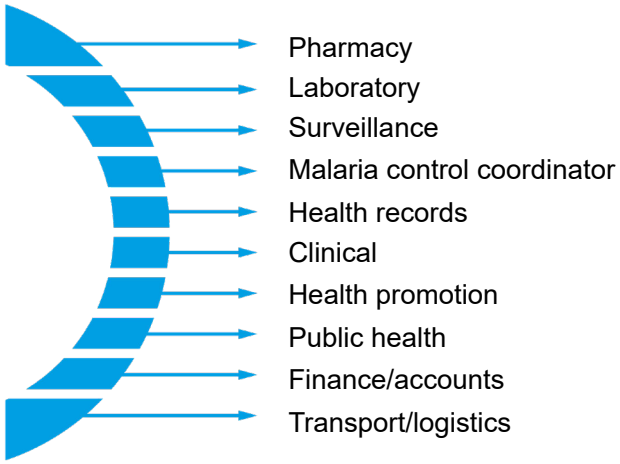
Notes

Step 1: Set Up EPR Planning Team

SCHMT/CHMT representation:



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Notes

Step 2: Conduct Situational Analysis

- Conduct SWOT analysis

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Notes

Module 8: Learning Unit 2
Development of the Malaria EPR Plan

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Notes

Aspects to Consider in EPR Planning

Important considerations in EPR planning include:

- Identifying the hotspots
- Understanding the local characteristics of the epidemic
- Appropriate response activities
- Resources needed

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Notes

Hotspots and Prevention

- Identify and map hotspots
- Sensitise and train health workers
- Sensitise the catchment population of the hotspot area
- Promote the use of vector control interventions to prevent infections in the identified hotspot areas

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Notes

Characterise the Epidemics

Consider the following characteristics of the epidemics:

- Frequency of occurrence
- Magnitude—population affected and cases reported
- Outreach/treatment centres to increase access
- Active surveillance in affected areas
- Diagnostic and treatment needs
- Referral system

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Notes

Response Activities (1)

- Appropriate vector control activities:
  - Targeted LLIN distribution
  - Focalised IRS
- SBC communication strategies:
  - SBC messages for EPR

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Notes

Response Activities (2)

- Enhanced surveillance and monitoring of ongoing response activities
- Coordinate response by:
  - Training response team and health workers
  - Ensuring availability of appropriate tools and guidelines
  - Enhancing communication across all stakeholders

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Notes

Resource Considerations

The following resources should be considered:

- Emergency response funds
- Personnel
- Commodities (antimalarial drugs, RDTs, IV fluids, syringes, etc.)
- Laboratory supplies
- Equipment
- Logistics (vehicles, fuel, allowances)
- Insecticides and spray equipment for focalised IRS
- LLINs for targeted distribution

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Notes

Components of Malaria EPR Plan (1)

A good and comprehensive EPR plan should have the following sections:

- Introduction
- Problem statement
- Objectives
- Strategies
- Targets/priorities
- Activities and tasks/sub-activities

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Notes

Components of Malaria EPR Plan (2)

- Implementers/stakeholders
- Timelines
- Monitoring and evaluation indicators
- Budget, including logistics, commodities, supplies, and other resources

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Notes

Strategies & Activities of EPR Plan

	STRATEGIES	ACTIVITIES
1	Preparedness	Review of surveillance data; mapping of hot spots
		Rapid assessment for preparedness
		Ensuring availability of buffer stocks and transport logistics
2	Response	Rapid assessment for response
		Setting up temporary treatment sites
		Distribution of case management of commodities
		Targeted IRS
		SBC; community sensitisation
		Surveillance and monitoring
3	Post Epidemic	Conducting post-epidemic rapid assessment
		Post-epidemic evaluation
		Documentation and report writing

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Notes

Group Project: Development of an EPR Plan

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Notes

Module 8: Learning Unit 3
Adoption and Implementation of Malaria EPR Plan

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Notes

Adoption of the EPR Plan

To adopt the EPR plan:

- Discuss the plan with the SCHMT/CHMT for approval
- Share the approved plan with other stakeholders for ownership
- Build consensus on the EPR plan with the stakeholders
- The EPR plan should be endorsed by the relevant authorities (CHMT, CEC, Chief Officer)

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Notes

Incorporation of EPR Plan in Annual Work Plans

- Incorporate the EPR plan in the annual work plan (AWP)/county integrated development plans (CIDPs)
- Mobilise resources to implement the EPR plan

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Notes

Implementation of the EPR Plan

- Implementation transforms the strategies into actions to achieve the desired goals
- Seek the approval processes that are necessary for implementation
- Implement the planned activities as scheduled
- Continuously monitor implementation of the plan

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Notes

Key Messages to Remember

- Understand the components of an EPR plan
- Use the situation analysis report information in planning
- Ensure that the approved EPR plan is incorporated in the county AWP for resource allocation

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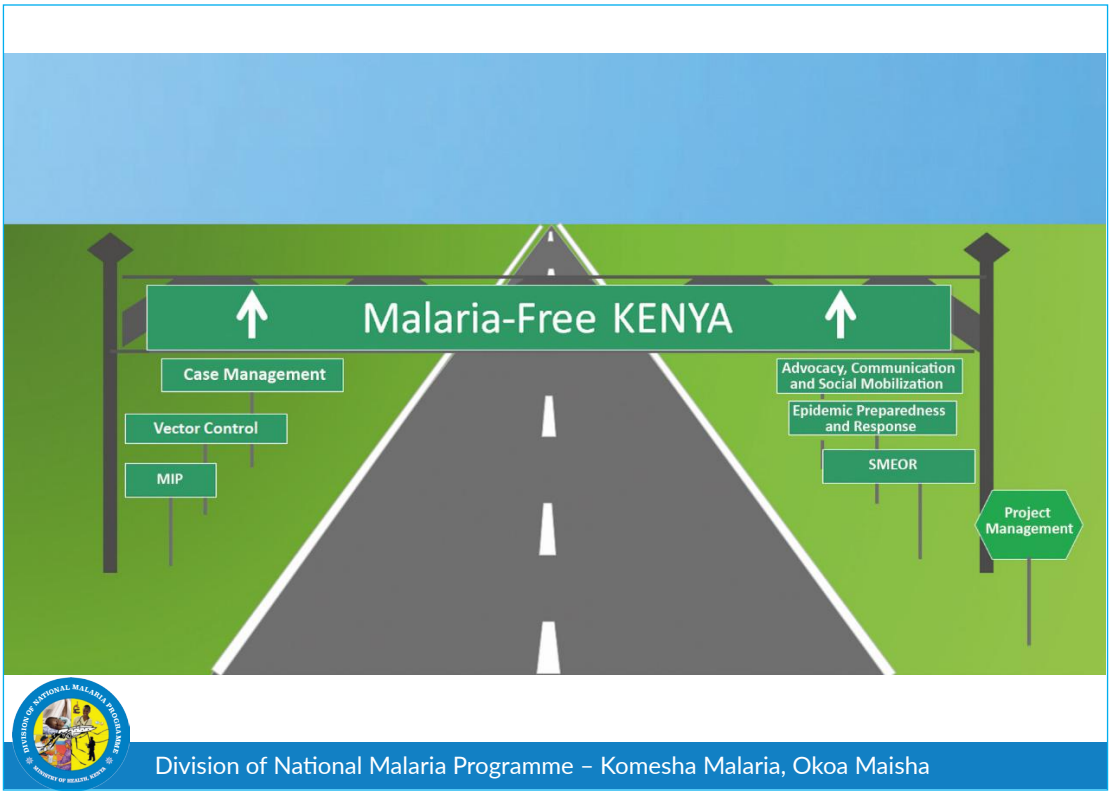
Notes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We thank the United States Agency for International Development (USAID), U.S. President's Malaria Initiative (PMI), for its support of this training guide through the USAID- and PMI-funded MEASURE Evaluation project, based at the University of North Carolina (USA).

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Notes

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ANNEX 1 OUT PATIENT REGISTER

Date (DD/MM/YYYY)	OPD No. (New)	OPD No. (Revisit)	Referred From 1=CU, 2=From other facility, 3= Within,4=N/A	Full Names (THREE names)	Age in Years	Sex	County/Sub-county	Village / Estate / Landmark	Patient/ Parent/Caregiver's Telephone No.	Weight	Height	BMI (Kg/m^2)	Temp (oC)	BP	Visual Acuity "RE (Right Eye) LE (Left Eye)	TB Screening 1. presumed TB 2. No signs 3. On TB treatment 4. Not done	Malaria 1.Presenting with symptoms NOT Tested 2. RDT Tested(-ve) 3. Microscopy Tested (-ve) 4. RDT Tested (+ve) 5. Microscopy Tested (+ve)	Diagnosis	Treatment/Prescription	Referred to (1=CU 2=In other H/F, 3=within the facility) 4=N/A)	Remarks/Outcome
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	V	W

	Female:	Male:
No. of New patients:		
No. of Re-attendants:		

Referrals	From Other Health Facility:	
	From Community Unit:	
	From Within the facility	
	To Community Unit:	
	To Other Health Facility:	
	To Within the facili	

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IDSR Weekly Epidemic Monitoring Form

County_____ **Sub-County**_____ **Health Facility**_____ **Epi Week**____ **Week ending**_____ **Month**_____ **Year**_____

No. of Health Facilities/Sites that reported _____ **No. of Health Facilities/Sites expected to report** _____

Diseases, Conditions or Events	< 5 years		≥ 5 years		Diseases, Conditions or Events	< 5 years		≥ 5 years	
	Cases	Deaths	Cases	Deaths		Cases	Deaths	Cases	Deaths
AEFI*					Meningococcal Meningitis				
Acute Jaundice					Neonatal deaths				
Acute Malnutrition					Neonatal Tetanus				
AFP (Poliomyelitis)**					Plague				
Anthrax					Rabies				
Cholera					Rift Valley Fever				
Dengue					SARI (Cluster ≥3 cases)				
Dysentery (Bacillary)					Suspected MDR/XDR TB				
Guinea Worm Disease					Typhoid				
Measles					VHF*****				
Suspected Malaria***									
Deaths due to Malaria****					Yellow Fever				
Maternal deaths					Others (Specify)******				

Laboratory Surveillance

Disease	Microscopy		mRDT		Disease	Laboratory diagnosis	
Malaria	< 5 years	≥ 5 years	< 5 years	≥ 5 years	**Shigella Dysentry**	< 5 years	≥ 5 years
Tested					Tested		
Positive					Positive		

Bacterial Meningitis	No. CSF	No. contaminated	No. Tested	+ve Nm	+ve Sp	+ve H influenza	Tuberculosis (MDR/XDR)	< 5 years	≥ 5 years
							Tested		
							Positive		

No. of CSF Sub-Typed	+ve NmA	+ve NmB	+ve NmC 135	+ve NmX	+ve NmY	Indeterminate	HiB	Typhoid	< 5 years	≥ 5 years
								Tested		

*Adverse Events Following Immunization
**AFP (Poliomyelitis) =Acute Flaccid Paralysis
***Suspected malaria = all tallied as code 1, 2, 3, 4 & 5 in the outpatient register column 'T' in MOH 204A and column 'R' in MOH 204B
Malaria microscopy tested = all tallied as code 3 & 5 in the outpatient register column 'T' in MOH 204A and column 'R' in MOH 204B
Malaria microscopy positive = all tallied code 5 in the outpatient register column 'T' in MOH 204A and column 'R' in MOH 204B
Malaria RDT tested = all tallied as code 2 & 4 in the outpatient register column 'T' in MOH 204A and column 'R' in MOH 204B
Malaria RDT positive = all tallied code 4 in the outpatient register column 'T' in MOH 204A and column 'R' in MOH 204B
****Deaths due to malaria - to be obtained from the MOH death reporting form available in event tracker.
*****Viral Haemorrhagic Fever: May be due to Ebola, Marburg, Rift Valley Fever, Crimean Congo Haemorrhagic Fever
******Any public health disease, condition or event of National or International concern (infectious, zoonotic, foodborne, chemical, radio nuclear or due to unknown condition)

Reported by: _____ **Designation** _____ **Sign** _____ **Date** _____

ANNEX 3 RAPID ASSESSMENT CHECKLISTS

RAPID ASSESSMENT AT COMMUNITY LEVEL

Date:	[_____|_____|_____] [dd|mm|yyyy]
County:	Sub-county:
Name of Community Health Unit:	Name of Link Health Facility:
Interviewer/Supervision Team	
Name	Designation
1.	
2.	
3.	
4.	
5.	
Respondents	
Name	Designation
1.	
2.	
3.	

General Instructions

This checklist has three sections corresponding to the different phases of an epidemic/ outbreak. The pre-epidemic section is to be completed if the visit is conducted before an outbreak occurs.

The epidemic section is to be completed during an on-going outbreak. The pre-outbreak section may also be completed to assess how prepared the affected region was before the outbreak occurred.

The post-epidemic section is to be completed after an outbreak is over. The pre-outbreak and epidemic sections may also be completed to assess preparedness and response activities of a past epidemic.

SCORING SCHEME

- Every correct response is awarded one mark (a score of 1).
- For every question that requires verification, availability of evidence is considered an additional mark.
- Qualitative questions shall not be scored but will be used by the assessing teams to identify facts for further action

Maximum possible score for the Community-level Rapid Assessment Tool = 97

Reviewed by: _____Date: _____

SECTION 1: PRE-EPIDEMIC PHASE

1 Coordination structures (Maximum possible score: 7)

a. Do you have a community health committee (CHC)? ☐ Yes ☐ No
(If no, skip to Q1c.)

b. If yes, how regularly do they meet? (Verify with minutes.)

☐ Weekly ☐ Monthly ☐ Quarterly

☐ Other (specify)_____

c. Do you hold monthly community health volunteer (CHV) review meetings? ☐ Yes ☐ No

(If no, skip to Q1f.)

d. Is malaria part of the agenda of the CHV review meeting? ☐ Yes ☐ No

e. Has malaria EPR been part of the agenda of the CHC meeting? ☐ Yes ☐ No

f. Have the CHVs been sensitised on malaria EPR? ☐ Yes ☐ No

g. Are there stakeholders supporting community malaria EPR activities? ☐ Yes ☐ No

2 Surveillance (Maximum possible score: 15)

a. Do you have updated lay case definition surveillance charts? ☐ Yes ☐ No

b. Are the following community health information systems tools available?
(If no, to skip to Q2d.)

MOH 513 (Household register) ☐ Yes ☐ No

MOH 514 (CHV monthly reporting tool) ☐ Yes ☐ No

MOH 515 (CHEWS summary) ☐ Yes ☐ No

MOH 516 (Chalkboard) ☐ Yes ☐ No

MOH 100 (Referral tool) ☐ Yes ☐ No

c. If yes, are malaria data captured using the tools? ☐ Yes ☐ No

d. Do you regularly collect malaria data from the households? ☐ Yes ☐ No
(If no, skip to Q2g.)

e. If yes, are reports regularly submitted to the CHA? ☐ Yes ☐ No

f. Do you get regular feedback on the reports submitted to the CHA? ☐ Yes ☐ No

g. Are there ways to monitor and report population and natural events that can be used to predict malaria epidemics? ☐ Yes ☐ No

h. Is the CHU undertaking community case management for malaria? ☐ Yes ☐ No
(If no, skip to Q2j.)

i. If yes, do you use the CHU daily activity register for malaria commodities? ☐ Yes ☐ No

j. Do you submit a monthly report using the monthly summary form MOH 513 for malaria commodities? ☐ Yes ☐ No

3 Social and behaviour change (Maximum possible score: 11)

a. Do you have malaria SBC materials? (Verify.) ☐ Yes ☐ No

b. Are the SBC materials that you have adequate? ☐ Yes ☐ No

c. What channels of communication do you use in the community? (Tick all that apply.)

☐ House visits
☐ Community social meetings
☐ Community dialogue days
☐ Chiefs barazas
☐ School visit
☐ Radio
☐ IEC materials
☐ Other (specify)_____

4 What challenges do you experience with preparedness for malaria epidemics? (List.)

_____

_____

_____

5 How best can these challenges be addressed? (List.)

_____

_____

_____

SECTION 2: EPIDEMIC PHASE

1. Outbreak notification (Maximum possible score: 5)

a. How did you get to know about the current outbreak? *(Tick all that apply.)*

☐ Health facility
☐ Community
☐ Media
☐ MOH/County/Sub-county
☐ Other *(specify)* _____

2 Coordination of response (Maximum possible score: 12)

a. Are community outbreak meetings being held? (Check minutes to verify.) ☐ Yes ☐ No

(If no, skip to Q2d.)

b. If yes, who attends?

Cadre	Yes	No
Clinical		
Laboratory		
Surveillance		
Pharmacy		
Community health assistant		
Public health officer		
Others (specify) _____		

c. How frequent are the community outbreak meetings held? (Check minutes to verify.)

☐ Daily ☐ Weekly ☐ Monthly
☐ Other (specify)_____

d. Is there any stakeholder support during the outbreak? ☐ Yes ☐ No

3 Mobilisation of resources (Maximum possible score: 4)

a. Have you received any support for the emergency malaria EPR supplies from the link health facility? ☐ Yes ☐ No
(If no, skip to Q4.)

b. If yes, how much of the following emergency malaria EPR supplies did you receive?

Name	Adequate	Inadequate	None
(i) ACT			
(ii) mRDTs			

c. Were the supplies delivered timely for the response? ☐ Yes ☐ No

4 Field response (Maximum possible score: 20)

a. Were the CHVs sensitised on the outbreak? ☐ Yes ☐ No
(If no, skip to Q4d.)

b. How many days after the onset of the outbreak were the CHVs sensitised?
☐ Within 1 week ☐ Within 2 weeks ☐ Within 1 month
☐ Other (specify)_____

c. Did you have enough CHVs required for the response? ☐ Yes ☐ No

d. Where do people first seek care when they get sick from malaria in this community?
☐ Health facility ☐ Private clinics ☐ Traditional herbalists
☐ Others (specify)_____

e. Were there temporary treatment centres set up during the outbreak? ☐ Yes ☐ No
(If no, skip to Q4i.)

f. If yes, did the temporary treatment centres have adequate healthcare workers?
☐ Yes ☐ No

g. Did the temporary treatment centre have adequate emergency malaria EPR commodities? ☐ Yes ☐ No

h. Was your CHU supported by RRTs during the outbreak? ☐ Yes ☐ No
(If no, skip to Q4k.)

i. If yes, which level did they come from? (Tick as applicable.)
☐ National
☐ County
☐ Sub-county
☐ Health facility

j. How many days after the onset of the outbreak did the first RRT support arrive?
☐ Within 1 day
☐ Within 3 days
☐ Within 1 week
☐ After 1 week

k. Were the following activities undertaken during the response?

Activity	Yes	No
Testing (mRDTs/microscopy)		
Treatment		
Case referrals		
Focalised IRS		
Targeted distribution of ITNs		
Environmental modification		
Others (specify) _____		

5 Enhanced surveillance (Maximum possible score: 9)

a. Did you get an outbreak malaria lay case definition? ☐ Yes ☐ No

b. If no, did you develop and use any outbreak case definition? ☐ Yes ☐ No

c. Was active case search undertaken? ☐ Yes ☐ No

d. Were outbreak case reports made daily? ☐ Yes ☐ No
(If no, skip to Q5i.)

e. If yes, were the reports sent to the health facility? ☐ Yes ☐ No

f. Did you get feedback from the health facility on the submitted reports? ☐ Yes ☐ No

g. Did you analyse the daily report? ☐ Yes ☐ No

h. If yes, did you share the analysis with the community? ☐ Yes ☐ No

i. Were mosquito breeding sites monitored during the outbreak? ☐ Yes ☐ No

6 Social behaviour change (SBC) activities (Maximum possible score: 7)

a. Did you disseminate SBC messages during the outbreak response to the community? ☐ Yes ☐ No

(If no, skip to Q6c.)

b. If yes, what channels were used? (Tick all that apply.)

☐ Interpersonal communications

☐ Community networks—CHVs, churches, barazas, schools

☐ IEC materials

☐ Others (specify)_____

c. Did you receive any IEC materials from the health facility? (If no, skip to Q7.) ☐ Yes ☐ No

d. Did you distribute malaria IEC materials to the community? ☐ Yes ☐ No

7 What challenges did you face in responding to the outbreak? (List.)

_____

_____

_____

8 How best do you think these challenges could be addressed? (List.)

_____

_____

SECTION 3: POST-EPIDEMIC PHASE *(Maximum possible score: 7)*

1 How did you detect the end of the outbreak?

- ☐ Case counts
- ☐ Other (specify) _____

2 Was the end of the outbreak officially declared ? ☐ Yes ☐ No

3 If yes, who made the declaration?

- ☐ Cabinet Secretary for Health
- ☐ Director General for Health
- ☐ CEC
- ☐ CDH
- ☐ SCMOH
- ☐ Health Facility In-charge
- ☐ Others (specify) _____

4 Did you have a post-outbreak review meeting in the CU? ☐ Yes ☐ No

5 Did you prepare a post-outbreak report? (Verify with report.) ☐ Yes ☐ No

(If no, skip to Q9.)

6 If yes, with whom was the post-outbreak report shared?

_____

_____

7 What were the recommendations in the report?

_____

_____

8 Are recommendations being implemented by the following teams?

EPR	☐ N/A	☐ Yes	☐ No
Case management	☐ N/A	☐ Yes	☐ No
Vector control	☐ N/A	☐ Yes	☐ No
SBC	☐ N/A	☐ Yes	☐ No

9 What challenges did you experience during the post-epidemic activities? (List.)

10 How best can these challenges be addressed? (List.)

SECTION 4: OTHER COMMENTS

Do you have any other comments regarding the outbreak that have not been mentioned in the evaluation?

General comments by the interviewer:

How was the process? Was it difficult or easy to manage? Why? Were the participants comfortable or uncomfortable? Why?

RAPID ASSESSMENT AT HEALTH FACILITY LEVEL

Date:	[_____|_____|_____] [dd|mm|yyyy]	
County:	Sub-county:	
MFL No.:	Name of Health Facility:	
Interviewer/Supervision Team		
Name	Division/Organisation	Designation
1.		
2.		
3.		
4.		
5.		
Respondents		
Name	Department/Section	Designation
1.		
2.		
3.		

General Instructions

This checklist has three sections corresponding to the different phases of an epidemic/ outbreak. The pre-epidemic section is to be completed if the visit is conducted before an outbreak occurs.

The epidemic section is to be completed during an on-going outbreak. The pre-outbreak section may also be completed to assess how prepared the affected region was before the outbreak occurred.

The post-epidemic section is to be completed after an outbreak is over. The pre-outbreak and epidemic sections may also be completed to assess preparedness and response activities of a past epidemic.

SCORING SCHEME

Every correct response is awarded one mark (a score of 1).

For every question that requires verification, availability of evidence is considered an additional mark.

Qualitative questions shall not be scored but will be used by the assessing teams to identify facts for further action.

Maximum possible score for the Health Facility-level Rapid Assessment Tool: 121

Reviewed by: _____Date: _____

SECTION 1: PRE-EPIDEMIC PHASE

1. Coordination structures (Maximum possible score: 16)

a. Do you have a health facility work plan (WP)? (Verify.) ☐ Yes ☐ No

(If no, skip to Q1e.)

b. If yes, has the WP been endorsed? ☐ Yes ☐ No

c. Is malaria EPR factored in the health facility WP? ☐ Yes ☐ No

d. Is the implementation of the plan on course? ☐ Yes ☐ No

e. Do you have the current national malaria EPR guidelines? ☐ Yes ☐ No

f. Do you have a health facility disease surveillance focal person? ☐ Yes ☐ No

g. Do you have a health facility outbreak committee? ☐ Yes ☐ No

(If no, skip to Q1k.)

h. If yes, list the members:

Cadre	Yes	No
Clinician		
Laboratory officer		
Surveillance officer		
Pharmacist		
Environmental health officer		
Others (specify) _____		

i. Has the health facility outbreak committee been trained on malaria EPR? ☐ Yes ☐ No

j. Are there facility-level stakeholders supporting malaria EPR? ☐ Yes ☐ No

2. Surveillance (officer responsible for disease surveillance) (Maximum possible score: 16)

a. Do you receive regular meteorological information? ☐ Yes ☐ No

(If no, skip to Q2c.)

b. If yes, do you use the information to forecast malaria outbreaks? ☐ Yes ☐ No

c. Have you prepared the malaria threshold chart for the current year? ☐ Yes ☐ No

(If no, skip to Q2h.)

d. If yes, do you regularly update the threshold charts? ☐ Yes ☐ No

e. Do you interpret and share feedback with the healthcare workers in the facility? ☐ Yes ☐ No

f. Do you regularly share updated weekly malaria thresholds with the higher levels? ☐ Yes ☐ No

(If no, skip to Q2h.)

g. If yes, do you receive feedback? ☐ Yes ☐ No

h. Do you have the MOH 505 weekly summary tool? ☐ Yes ☐ No

(If no, skip to Q2l.)

i. If yes, do you use it to make weekly reports? ☐ Yes ☐ No

j. Do you get regular feedback on the weekly reports? ☐ Yes ☐ No

k. Is the feedback regularly shared with the rest of the healthcare workers? ☐ Yes ☐ No

l. Do you have the updated standard case definition chart? ☐ Yes ☐ No

m. Are there systems in place to monitor and report events in the facility that can be used to predict malaria epidemics (e.g., increased antimalarial prescriptions, test positivity rates, blood transfusion of febrile cases)? ☐ Yes ☐ No

n. Do you have the current national malaria case management guidelines? (Verify.) ☐ Yes ☐ No

(If no, skip to Q3.)

o. If yes, do you use it to guide case detection? ☐ Yes ☐ No

3. Availability of malaria commodities (Maximum possible score: 6)

a. How many months of stock (MoS) do you have?

Name	MoS
(i) ACT	
(ii) Artesunate	
(iii) mRDTs	
(iv)Microscopy reagents	

b. Do you have a facility procurement plan? ☐ Yes ☐ No

(If no, skip to Q4.)

c. Have commodities for malaria epidemics been factored in the plan? ☐ Yes ☐ No

4. Pre-outbreak response (Maximum possible score: 8)

a. Have the reported malaria cases ever reached the alert levels? ☐ Yes ☐ No

(If no, skip to Q5.)

b. If yes, were the following done?

Activity	Yes	No
Feedback to the affected areas		
Data quality assessment		
Description of the cases (time, place, and persons)		
Submission of malaria microscopy slides for EQA		
Focalised IRS		
Targeted distribution of ITNs		
Environmental modification		
EQA=external quality assurance, IRS=indoor residual spraying, ITNs=Insecticide treated nets		

5. Social and behaviour change (SBC) activities (Maximum possible score: 2)

a. Do you have pre-designed malaria epidemic SBC messages? ☐ Yes ☐ No

b. Do you have IEC materials for malaria EPR? ☐ Yes ☐ No

6. What challenges do/did you experience with preparedness for malaria epidemics? (List.)

_____

_____

7. How best can these challenges be addressed? (List.)

_____

_____

SECTION 2: EPIDEMIC PHASE

1. Outbreak notification (Maximum possible score: 4)

a. How did you get to know about the current outbreak? (Tick all that apply.)

☐ Surveillance (malaria thresholds)
☐ Healthcare workers (clinicians, pharmacy, laboratory, etc.)
☐ County/sub-county
☐ Community—CHVs, leaders, etc.
☐ Media
☐ Ministry of Health
☐ Other (specify)_____

b. How many days had the outbreak been on by the time you became aware of it?

☐ Within 1 week ☐ Within 2 weeks ☐ Within a month
☐ Other (specify)_____

c. Who made the official declaration of the outbreak? (Tick where applicable.)

☐ Cabinet Secretary of Health
☐ Director General of Health
☐ County Executive Committee/County Officer of Health
☐ County Director of Health
☐ Other (specify)_____

d. How did you receive the declaration?

☐ Circular
☐ E-mail
☐ Other (specify)_____

2. Coordination of response (Maximum possible score: 11)

a. Has the health facility outbreak committee been formed? ☐ Yes ☐ No

(If no, skip to Q2d.)

b. If yes, who are the members?

Cadre	Yes	No
Clinician		
Laboratory officer		
Surveillance officer		
Pharmacist		
Environmental health officer		
Health records information officer		
Others (specify) _____		

c. How frequently is the outbreak committee meeting?

☐ Daily ☐ Weekly ☐ Every 2 weeks

☐ Other (specify)_____

d. Was there stakeholder support during the outbreak? ☐ Yes ☐ No

3. Mobilisation of resources (Maximum possible score: 16)

a. What was the three-month stock status of the following routine malaria supplies at the onset of the outbreak?

Name	Adequate	Inadequate	None
(i) ACT			
(ii) Artesunate			
(iii) mRDTs			
(iv) Microscopy reagents			

b. Did you make requests/orders for additional supplies to cater to the outbreak?

☐ Yes ☐ No

(If no, skip to 3e.)

c. How many days after the onset of the outbreak did you make the requests?

☐ Immediately ☐ Within 7 days ☐ Within 2 weeks

☐ Other (specify)_____

d. If yes, did you forward the requests to the county/sub-county? ☐ Yes ☐ No

e. Did you get any malaria EPR supplies from the MOH? ☐ Yes ☐ No

f. What was the stock status of the following malaria EPR supplies delivered compared to your request?

Name	Adequate	Inadequate	None
(i) ACT			
(ii) Artesunate			
(iii) mRDTs			
(iv) Microscopy reagents			

g. Were the supplies delivered timely for the response? ☐ Yes ☐ No

h. Did you have adequate funds for the operations during the outbreak? ☐ Yes ☐ No

i. What proportion of the budgeted emergency fund was available for response? (Verify amount budgeted from the EPR plan.) (Amount available for response/budgeted emergency fund)

---

4. Field response (Maximum possible score: 20)

a. Were the healthcare workers (HCWs) sensitised on the outbreak? ☐ Yes ☐ No

b. How many days after the outbreak were the HCWs sensitised?

☐ Immediately ☐ Within 7 days ☐ Within 2 weeks

☐ Other, specify_____

c. Did you have enough HCWs required for the response? ☐ Yes ☐ No

d. Were there temporary treatment centres set up during the outbreak? ☐ Yes ☐ No

e. Was your health facility supported by the sub-county/county/national RRTs during the outbreak? ☐ Yes ☐ No

(If no skip, to Q4h.)

f. If yes, which cadre as per the following levels? (Tick as appropriate.)

Cadre	Sub-county		County		National	
	Yes	No	Yes	No	Yes	No
Clinicians						
Laboratory officers						
Nurses						
Surveillance officers						
Pharmacists						
Environmental health officers						
Health promotion officers						
Epidemiologists						
Entomologists						
Community health services						

Cadre	Sub-county		County		National	
	Yes	No	Yes	No	Yes	No
Others (specify) _____						

g. How many days after the onset of the outbreak did the first RRT support arrive?

☐ Immediately ☐ Within 7 days ☐ Within 2 weeks

☐ Other, specify_____

h. Were the following activities undertaken during response?

Activity	Yes	No
Testing		
Treatment		
Submission of malaria slides for EQA		

5. Enhanced surveillance (Maximum possible score: 7)

a. Was there a working malaria outbreak case definition from the sub-county/county/national MOH? (Tick as appropriate.)

i. Sub-county ☐

ii. County ☐

iii. National/MOH ☐

b. If no, did you develop and use an outbreak case definition? ☐ Yes ☐ No

c. Were malaria outbreak line lists updated daily? (MOH503) ☐ Yes ☐ No

(If no, skip to Q6.)

d. If yes, were the line lists shared with the sub-county/county? ☐ Yes ☐ No

e. Did you get feedback on the shared line lists? ☐ Yes ☐ No

f. Did you prepare daily situation reports (SITREPS) from updated line lists? ☐ Yes ☐ No

g. If yes, did you share the SITREPS with the HCWs? ☐ Yes ☐ No

6. Social and behaviour change (SBC) activities (Maximum possible score: 6)

a. Did you adapt and use the pre-designed SBC messages at the health facility? ☐ Yes ☐ No

b. What channels of communication were used?

☐ Interpersonal communications

☐ Health talks

☐ Community networks—CHVs, churches, barazas, schools

☐ Others (specify)_____

c. Did you distribute malaria IEC materials to the outbreak region? ☐ Yes ☐ No

7. What challenges did you face in responding to the outbreak? (List.)

_____

_____

_____

8. How best do you think these challenges could be addressed? (List.)

_____

_____

_____

SECTION 3: POST-EPIDEMIC PHASE *(Maximum possible score: 9)*

1. How did you detect the end of the outbreak? (More than one parameter can be used.)

a. Case counts

b. Laboratory confirmation

c. Using malaria thresholds

d. Others (specify)_____

2. Was the end of outbreak officially declared? ☐ Yes ☐ No
(If no, skip to Q5.)

3. If yes, who made the declaration?

a. Cabinet Secretary of Health

b. Director General of Health

c. County Executive Committee/County Officer of Health

d. County Director of Health

e. Other (specify)_____

4. How did you receive the declaration?

☐ Circular
☐ E-mail
☐ Other (specify)_____

5. Did you have a post-outbreak review meeting? ☐ Yes ☐ No

(If no, skip to Q9.)

6. How many days after the end of the outbreak was the review meeting held?

☐ Immediately ☐ Within 7 days ☐ Within 2 weeks

☐ Other, specify_____

7. Was a post-outbreak report prepared? (Verify check report) ☐ Yes ☐ No

8. If yes, with whom was the post-outbreak report shared?

_____

_____

_____

9. What were the report recommendations?

10. Are report recommendations being implemented by the following teams?

EPR	☐ N/A	☐ Yes	☐ No
Case management	☐ N/A	☐ Yes	☐ No
Vector control	☐ N/A	☐ Yes	☐ No
SBC	☐ N/A	☐ Yes	☐ No

11. What challenges did you experience during the post-epidemic activities? (List.)

12. How best can these challenges be addressed? (List.)

SECTION 4: OTHER COMMENTS

Do you have any other comments regarding the outbreak that have not been mentioned in the evaluation?

General comments by the interviewer:

How was the process? Was it difficult or easy to manage? Why? Were the participants comfortable or uncomfortable? Why?

RAPID ASSESSMENT AT SUB-COUNTY AND COUNTY LEVEL

Date:	**[_____|_____|_____] [dd|mm|yyyy]**	
County:	**Sub-county:**	
Interviewer/Supervision Team		
Name	**Organisation**	**Designation**
1.		
2.		
3.		
Respondents		
Name	**Organisation**	**Designation**
1.		
2.		
3.		

General Instructions

This checklist is to be completed by the relevant members of the county/sub-county health management team.

This checklist has three sections corresponding to the different phases of an epidemic/ outbreak. The pre-epidemic section is to be completed if the visit is conducted before an outbreak occurs.

The epidemic section is to be completed during an ongoing outbreak. The pre-outbreak section may also be completed to assess how prepared the affected region was before the outbreak occurred.

The post-epidemic section is to be completed after an outbreak is over. The pre-outbreak and epidemic sections may also be completed to assess preparedness and response activities of a past epidemic.

SCORING SCHEME

- Every correct response is awarded one mark (a score of 1).
- For every question that requires verification, availability of evidence is considered an additional mark.
- Qualitative questions shall not be scored but will be used by the assessing team to identify common facts for further action.

Maximum possible score for the County/Sub-county-level Rapid Assessment Tool: 111

Reviewed by: _____Date: _____

SECTION 1: PRE-EPIDEMIC PHASE

1. Coordination structures (Maximum possible score: 21)

a. Do you have county/sub-county malaria focal persons? ☐ Yes ☐ No

b. Do you have a county/sub-county outbreak rapid response team (RRT)? ☐ Yes ☐ No

(If no, skip to Q1e.)

c. If yes, list the members:

Cadre	Yes	No
Clinical		
Laboratory		
Surveillance		
Pharmacy		
Environmental health		
Others (specify) _____		

d. Has the county/sub-county RRT been trained on malaria EPR? ☐ Yes ☐ No

e. Is there a county/sub-county stakeholder group for malaria? ☐ Yes ☐ No
(If no, skip to Q1h.)

f. Is malaria EPR discussed in the stakeholder meetings? ☐ Yes ☐ No

g. If yes, how frequently do the stakeholders meet? (Verify, check minutes.)
☐ Weekly ☐ Monthly ☐ Quarterly

h. Is there a County/Sub-county Public Health Emergency Management Committee (PHEMC)? ☐ Yes ☐ No

(If no, skip to Q1j.)

i. If yes, how often does the PHEMC meet? (Verify.)
☐ Weekly ☐ Monthly ☐ Quarterly

j. Do you have the current national malaria EPR guidelines? (Verify.) ☐ Yes ☐ No

k. Is there a costed county/sub-county malaria EPR plan? (Verify.) ☐ Yes ☐ No

(If no, skip to Q2.)

l. If yes, has the plan been endorsed? ☐ Yes ☐ No

If yes, is the implementation of the plan on course? ☐ Yes ☐ No

2. Surveillance (Maximum possible score: 14)

a. Do you receive regular meteorological information? ☐ Yes ☐ No

(If no, skip to Q2c.)

b. If yes, do you use the information to predict malaria outbreaks? ☐ Yes ☐ No

c. Do you routinely conduct malaria entomological surveillance? ☐ Yes ☐ No

(If no, skip to Q2e.)

d. Do you use the entomological surveillance results to predict malaria outbreaks? ☐ Yes ☐ No

e. Do you regularly receive weekly malaria data from the facilities/sub-counties? (Verify.) ☐ Yes ☐ No

f. Do you regularly receive weekly malaria data from sentinel facilities? (Verify.) ☐ Yes ☐ No

g. Does the county regularly receive updated weekly threshold graphs from sub counties? (Verify.) ☐ Yes ☐ No

(If no, skip to Q2k.)

h. If yes, do you regularly review the thresholds and give feedback? (Ask to see the latest feedback shared.) ☐ Yes ☐ No

i. Do you regularly share updated weekly malaria thresholds with the higher levels? (Ask to see the latest shared weekly thresholds.) ☐ Yes ☐ No

j. If yes, do you receive feedback? ☐ Yes ☐ No

k. Do you monitor population dynamics and natural events that can be used to predict malaria epidemics? ☐ Yes ☐ No

3. Emergency commodities for malaria epidemic preparedness (Maximum possible score: 2)

a. Was forecasting of emergency commodities for malaria epidemics done in the past 12 months? ☐ Yes ☐ No

b. Was quantification for emergency commodities for malaria epidemics done in the past 3 months? ☐ Yes ☐ No

4. Pre-outbreak response (Maximum possible score: 8)

a. Have malaria cases reported reached the set alert threshold levels? (If no, skip to Q5.) ☐ Yes ☐ No

b. If yes, were the following activities done?

Activity	Yes	No
Feedback to the affected areas		
Data quality audit		
Description of the cases		
Submission of malaria microscopy slides for EQA		
Focalised IRS		
Targeted distribution of ITNs		
Environmental modification		
EQA=external quality assurance, IRS=indoor residual spraying ITNs =insecticide-treated nets		

5. Social and behaviour change (SBC) activities (Maximum possible score: 2)

a. Do you have pre-designed malaria epidemic SBC messages? ☐ Yes ☐ No

b. Do you have IEC materials for malaria EPR? ☐ Yes ☐ No

6. What challenges do you experience with preparedness for malaria epidemics? (List.)

_____

_____

7. How best can these challenges be addressed? (List.)

_____

_____

SECTION 2: EPIDEMIC PHASE

1. Outbreak notification (Maximum possible score: 4)

a. How did you get to know about the current outbreak? (Tick all that apply.)

☐ Malaria thresholds
☐ Health facility
☐ Community
☐ Media
☐ Ministry of Health (national level)
☐ Other (specify)_____

b. How long did it take you to realize there is an outbreak?

☐ 1 week ☐ 2 weeks ☐ 1 Month
☐ Other (specify)_____

c. Who made the official notification of the outbreak?

☐ County Executive Committee Member for Health
☐ Chief Officer of Health
☐ County Director of Health
☐ Subcounty Medical Officer of Health
☐ Disease Surveillance Coordinator
☐ Health Facility In-charge
☐ Other (specify)_____

d. Who made the official declaration of the outbreak?

☐ Cabinet Secretary
☐ Director General of Health
☐ County Governor
☐ County Executive Committee Member for Health
☐ Chief Officer of Health
☐ County Director of Health
☐ Other (specify)_____

2. Coordination of response (Maximum possible score: 10)

a. Has the county/sub-county Public Health Emergency Management Committee (PHEMC) been formed? ☐ Yes ☐ No

(If no, skip to Q2d.)

b. If yes, who are the members?

Cadre	Yes	No
Clinical		
Laboratory		
Surveillance		
Pharmacy		
Environmental health		
Others (specify)		

c. How frequently is the PHEMC meeting held?

d. Is there stakeholder support during the outbreak? ☐ Yes ☐ No

3. Mobilisation of resources (Maximum possible score: 16)

a. What was the three-month stock status of the following routine malaria supplies at the onset of the outbreak?

Name	Adequate	Inadequate	None
(i) ACT			
(ii) Artesunate			
(iii) mRDTs			
(iv) Microscopy reagents			

b. Have you received requests for emergency malaria EPR supplies from the outbreak area? ☐ Yes ☐ No

(If no, skip to Q3f.)

c. If yes, how many days after the onset of the outbreak did you receive the requests?

☐ Within one week ☐ Within 2 weeks ☐ within a month

☐ Other (specify)_____

d. If yes to Q3b, did you process and forward the requests to the MOH? ☐ Yes ☐ No

(If no, skip to Q3f.)

e. If yes, how many days after receiving the requests did you forward them?

☐ Within 1 week ☐ Within 2 weeks ☐ Within a month

☐ Other (specify) _____

f. Have you received any emergency malaria EPR supplies from the MOH? ☐ Yes ☐ No

(If no, skip to Q3i.)

g. If yes, what was the stock status of the following emergency malaria EPR supplies delivered compared to your request?

Name	Adequate	Inadequate	None
(i) ACT			
(ii) Artesunate			
(iii) mRDTs			
(iv) Microscopy reagents			

h. Were the supplies delivered in time (within 1 week) for the response? ☐ Yes ☐ No

i. Do you have adequate funds for the operations during the outbreak? ☐ Yes ☐ No

j. What proportion of the budgeted emergency fund is available for response? (Amount available for response/budgeted emergency fund)

---

4. Field response (Maximum possible score: 34)

a. Have the rapid response team (RRT) members been deployed to the field to provide support? ☐ Yes ☐ No

(If no, skip to Q4d.)

b. If yes, who are the members?

Cadre	Yes	No
Clinical		
Laboratory		
Nurse		
Surveillance		
Pharmacy		
Environmental health		
Health promotion		
Epidemiologist		
Entomologist		
Community health services		

Cadre	Yes	No
Others (specify)		

c. How many days after the outbreak notification were the RRT members deployed to the field?

☐ Within 1 week ☐ Within 2 weeks ☐ Within a month

☐ Other (specify)_____

d. Has your county/sub-county been supported by the national RRTs during the outbreak?

☐ Yes ☐ No

(If no, skip to Q4g.)

e. If yes, who were the members?

Cadre	Yes	No
Clinical		
Laboratory		
Nurse		
Surveillance		
Pharmacy		
Environmental health		
Health promotion		
Epidemiologist		
Entomologist		
Community health services		
Others (specify)		

f. How many days after the notification of the outbreak did the national RRT provide support?

☐ Within 1 week ☐ Within 2 weeks ☐ Within a month

☐ Other (specify)_____

g. Are the following activities being undertaken during the response?

Activity	Yes	No
Testing		
Treatment		
Submission of malaria slides for EQA		
Identification of breeding habitats and malaria vector surveillance		
Focalised IRS		

Activity	Yes	No
Targeted distribution of ITNs		
Environmental modification		
Others (specify)		

5. Enhanced surveillance (Maximum possible score: 9)

a. Do you have a malaria outbreak case definition? ☐ Yes ☐ No

b. If no, have you developed and disseminated an outbreak case definition to the affected areas? ☐ Yes ☐ No

c. Is active case search being undertaken? ☐ Yes ☐ No

d. Are updated line lists (MOH503) from the outbreak region received daily? (Ask to see the latest line lists received and tick yes if available.) ☐ Yes ☐ No

(If no, skip to Q5g.)

e. If yes, are the line lists shared with the national MOH? ☐ Yes ☐ No

f. Have you received any feedback from the national MOH on the shared line lists? (Ask to see evidence of feedback.) ☐ Yes ☐ No

g. Are you preparing daily situation reports (SITREPs) from the line lists received? (Ask to see the latest SITREPs and tick yes if available.) ☐ Yes ☐ No

(If no, skip to Q5i.)

h. If yes, did you share the SITREPs with the outbreak sites? ☐ Yes ☐ No

i. Has vector surveillance been enhanced during the outbreak? ☐ Yes ☐ No

6. Social and behaviour change (SBC) activities (Maximum possible score: 7)

a. Have you adapted and deployed the pre-designed SBC messages to the affected population? ☐ Yes ☐ No

b. If yes, what channels were used?

☐ Interpersonal communications

☐ Health talks

☐ Mass media (radios, television, newspapers)

☐ Community networks—CHVs, churches, barazas, schools

☐ Others (specify)_____

c. Have you distributed malaria IEC materials to the outbreak region? ☐ Yes ☐ No

7. What challenges are you facing in responding to the outbreak? (List.)

_____

_____

8. How best do you think these challenges could be addressed? (List.)

_____

_____

SECTION 3: POST-EPIDEMIC PHASE (Maximum possible score: 7)

1. Was the end of outbreak officially declared? ☐ Yes ☐ No

2. If yes, who made the declaration?

☐ Cabinet Secretary
☐ Director General of Health
☐ County Executive Committee/County Officer of Health
☐ County Director of Health
☐ Others (specify)_____

3. Did you hold a post-outbreak review meeting? ☐ Yes ☐ No

How many days after the end of the outbreak was the review meeting held?

☐ Within 1 week ☐ Within 2 weeks ☐ Within a month
☐ Other (specify)_____

4. Was a post-outbreak report prepared? (Verify.) ☐ Yes ☐ No

5. If yes, with whom was the post-outbreak report shared?

_____

_____

6. What were the report recommendations?

_____

_____

7. Were report recommendations implemented? ☐ Yes ☐ No

8. Which specific recommendations were implemented?

_____

_____

9. What challenges did you experience during the post-epidemic activities? (List.)

_____

10. How best can these challenges be addressed? (List.)

_____

_____

SECTION 4: OTHER COMMENTS

Do you have any other comments regarding the outbreak that have not been mentioned in the evaluation?

General comments by the interviewer:

How was the process? Was it difficult or easy to manage? Why? Were the participants comfortable or uncomfortable? Why?

RAPID ASSESSMENT AT NATIONAL LEVEL

Date:	**[_____|_____|_____] [dd|mm|yyyy]**	
Interviewer/Supervision Team		
Name	**Organisation**	**Designation**
1.		
2.		
3.		
Respondents		
Name	**Organisation**	**Designation**
1.		
2.		
3.		

General Instructions

This checklist is to be completed by the head of the programme or focal person for malaria epidemic preparedness and response.

This checklist has three sections corresponding to the different phases of an epidemic/outbreak. The pre-epidemic section is to be completed if the visit is conducted before an outbreak occurs.

The epidemic section is to be completed during an ongoing outbreak. The pre-outbreak section may also be completed to assess how prepared the affected region was before the outbreak occurred.

The post-epidemic section is to be completed after an outbreak is over. The pre-outbreak and epidemic sections may also be completed to assess preparedness and response activities of a past epidemic.

SCORING SCHEME

- Every correct response is awarded one mark (a score of 1).
- For every question that requires verification, availability of evidence is considered an additional mark.
- Qualitative questions shall not be scored but will be used by the assessing team to identify common facts for further action.

Maximum possible score for the National-level Rapid Assessment Tool: 121

Reviewed by: _____Date: _____

SECTION 1: PRE-EPIDEMIC PHASE

1. Coordination structures (Maximum possible score: 20)

a. Does the programme have a malaria EPR focal person? ☐ Yes ☐ No

b. Does the programme have updated malaria EPR guidelines? (Verify and tick yes if available.) ☐ Yes ☐ No

c. If yes, has the plan been approved? (Verify and tick yes if approved.) ☐ Yes ☐ No

d. Is there a costed national malaria EPR plan? (Verify and tick yes if available.)

☐ Yes ☐ No

(If no, skip to Q1g.)

e. Has the plan been approved? (Verify and tick yes if approved.) ☐ Yes ☐ No

f. Is the implementation of the plan on course? ☐ Yes ☐ No

g. Is there a national outbreak rapid response team (RRT)? ☐ Yes ☐ No

(If no, skip to Q1j.)

h. If yes, who are the members?

Cadre	Yes	No
Clinical		
Laboratory		
Surveillance		
Pharmacy		
Environmental health		
Others Specify		

i. Has the national RRT been trained on malaria EPR? ☐ Yes ☐ No

j. Is there a national stakeholder group for malaria EPR? ☐ Yes ☐ No

k. If yes, how frequently do they meet? (Verify, check minutes.)

☐ Monthly ☐ Quarterly

☐ Other, specify_____

2. Surveillance (Maximum possible score: 9)

a. Do you receive regular meteorological information? ☐ Yes ☐ No

(If no, skip to Q2c.)

b. If yes, do you use the information to forecast malaria outbreaks? ☐ Yes ☐ No

c. Do you routinely conduct entomological surveillance? ☐ Yes ☐ No

(If no, skip to Q2e.)

d. If yes, do you use the routine entomological surveillance results to predict malaria outbreaks? ☐ Yes ☐ No

e. Do you receive updated weekly malaria thresholds from the sentinel surveillance sites? (Verify and tick yes if thresholds are received.) ☐ Yes ☐ No

(If no, skip to Q2g .)

f. Do you regularly review the thresholds and give feedback? (Verify and tick yes if feedback was given.) ☐ Yes ☐ No

g. Are there programmes in place to monitor and report population and natural events that can be used to predict malaria epidemics? ☐ Yes ☐ No

3. Emergency commodities for malaria epidemics (Maximum possible score: 3)

a. Is forecasting of emergency commodities for malaria epidemics done? ☐ Yes ☐ No

b. Has quantification for emergency commodities for malaria epidemics been done?

☐ Yes ☐ No

c. Is there a plan to procure emergency commodities for malaria epidemics?

☐ Yes ☐ No

4. Pre-outbreak response (Maximum possible score: 8)

a. Have malaria cases reported reached the set alert threshold levels? ☐ Yes ☐ No

(If, no skip to Q5.)

b. If yes, were the following done?

Activity	Yes	No	N/A
Feedback to the affected areas			
Data quality audit			
Description of the cases (time, place, and persons)			
Submission of slides for EQA			
Focalised IRS			
Targeted distribution of ITNs			
Environmental modification			
EQA=external quality assurance, IRS=indoor residual spraying, TNs=Insecticide-treated nets			

5. Social and behaviour change (SBC) activities (Maximum possible score: 5)

a. Do you have pre-designed malaria epidemic SBC messages? (Verify.) ☐ Yes ☐ No

b. Have you developed IEC materials for malaria EPR? (Verify.) ☐ Yes ☐ No

c. If yes, have they been procured? ☐ Yes ☐ No

6. What challenges did you experience with preparedness for malaria epidemics? (List.)

_____

_____

_____

7. How best can these challenges be addressed? (List.)

_____

_____

_____

_____

SECTION 2: EPIDEMIC PHASE

1. Outbreak notification (Maximum possible score: 3)

a. How did you get to know about the current outbreak?

☐ Thresholds
☐ Media
☐ County/sub-county
☐ Health facility
☐ Community
☐ Other (specify)_____

b. How many days had the outbreak been on by the time you were made aware of it?

☐ Within one week ☐ Within 2 weeks ☐ Within a month
☐ Other (specify)_____

c. Who made the official declaration of the outbreak?

☐ Cabinet Secretary of Health
☐ Director General of Health
☐ County Director of Health
☐ Others (specify)_____

2. Coordination of response (Maximum possible score: 9)

a. Has a national outbreak taskforce (NTF) been formed? ☐ Yes ☐ No

(If no, skip to Q2d.)

b. If yes, who are the members? Name institutions/departments in the task force.

Name of institution/department	Name of institution/department

c. How frequently is the NTF meeting? (Verify, check minutes.)

☐ Weekly ☐ Monthly ☐ Quarterly
☐ Other (specify)_____

d. Is there stakeholder support during the outbreak? ☐ Yes ☐ No

3. Mobilisation of resources (Maximum possible score: 11)

a. Have you received orders for emergency malaria EPR supplies from the affected region? ☐ Yes ☐ No

(If no, skip to Q3c.)

b. If yes, what was your stock status for the following emergency malaria EPR supplies at the time you received the orders?

Name	Adequate	Inadequate	None
(i) ACT			
(ii) Artesunate			
(iii) mRDTs			
(iv) Microscopy reagents			
(iv) Insecticides for IRS			
(v) ITNs			

c. Do you have adequate funds for operations during the outbreak? (Verify, check budgets. ☐ Yes ☐ No

d. What proportion of the budgeted emergency fund is available for response? (Amount available for response/budgeted emergency fund)

---

4. Field response (Maximum possible score: 17)

a. Have rapid response team members been deployed to the field to provide support? ☐ Yes ☐ No

(If no, skip to Q4d.)

b. If yes, who are the members?

Cadre	Yes	No
Clinical		
Laboratory		
Surveillance		
Epidemiologist		
Entomologist		
Pharmacy		
Environmental health		
Others (specify)		

c. How many days after the outbreak notification were the RRT members deployed to the field?

☐ Within 1 week ☐ Within 2 weeks ☐ Within a month

☐ Other (specify)_____

d. Are the following activities being undertaken during response?

Activity	Yes	No	N/A
Testing			
Treatment			
Received slide microscopy for EQA			
Focalised IRS			
Targeted distribution of ITNs			
Environmental modification			
Others (specify)			

5. Enhanced surveillance (Maximum possible score: 7)

a. Is there a working malaria outbreak case definition? ☐ Yes ☐ No

b. Is active case search being undertaken? ☐ Yes ☐ No

c. Are updated line lists (MOH503) from the affected region received daily? (Verify, check line lists.) ☐ Yes ☐ No

d. Are situation reports (SITREPS) developed daily and shared with all the stakeholders? (Verify, check SITREPS.) ☐ Yes ☐ No

e. Has vector surveillance been enhanced during the outbreak? ☐ Yes ☐ No

6. Social and behaviour change activities (Maximum possible score: 9)

a. Have you developed and disseminated SBC messages for the affected population? (Verify.) ☐ Yes ☐ No

b. If yes, what channels are used?

☐ Interpersonal communication

☐ Health talks

☐ Mass media (radios, television, newspapers)

☐ Community networks—CHVs, churches, barazas, schools

☐ Posters, banners, fliers, brochures

☐ Others (specify)_____

c. Have you distributed malaria IEC materials to the affected region? ☐ Yes ☐ No

7. What challenges are you facing in responding to the outbreak? (List.)

8. How best do you think these challenges could be addressed? (List.)

SECTION 3: POST-EPIDEMIC PHASE (Maximum possible score: 9)

1. Was the end of the outbreak officially declared? ☐ Yes ☐ No

(If no, skip to Q10.)

2. If yes, who made the declaration? _____

3. Did you have a post-outbreak review meeting? ☐ Yes ☐ No

4. How many days after the end of the outbreak was the review meeting held?

☐ Within 1 week ☐ Within 2 weeks ☐ Within a month

☐ Other (specify)_____

5. Was a post-outbreak report prepared? ☐ Yes ☐ No

6. If yes, with whom was the post-outbreak report shared?

_____

7. What were the report recommendations?

_____

_____

_____

8. Have the recommendations been implemented? ☐ Yes ☐ No

9. If yes, which specific recommendations have been implemented?

_____

_____

_____

10. What challenges did you experience during the post-epidemic activities? (List.)

_____

_____

_____

11. How best can these challenges be addressed? (List.)

_____

_____

SECTION 4: OTHER COMMENTS

Do you have any other comments regarding the outbreak that have not been mentioned in the evaluation?

General comments by the interviewer:

How was the process? Was it difficult or easy to manage? Why? Were the participants comfortable or uncomfortable? Why?

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