Ministry of Health

Malaria Epidemic Preparedness and Response in Kenya

Trainers Guide

DIVISION OF NATIONAL MALARIA PROGRAMME

Komesha Malaria
Okoa Maisha

Ministry of Health

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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 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 PowerPoint slides and an implementation guide outlining the objectives and guide content, The implementation guide can be scoped and adapted to address the knowledge and skill needs of every level of healthcare in Kenya. The guide 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

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We thank the USAID- and PMI-funded MEASURE Evaluation project staff based in Kenya and at the University of North Carolina at Chapel Hill, for providing technical and logistical support for the development of this guide. We thank our consultant, Stephen Munga, for his tireless effort in directing this process, and Skilan Ortiz for his valuable inputs in reviewing the guide.

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 guide for use by healthcare providers and health managers in all areas prone to malaria epidemics.

Purpose of This Guide

The guide consists of a PowerPoint slide deck and implementation guide, which help trainers to prepare for EPR training and will guide them in its delivery. This trainers guide discusses what is to be covered in the presentations and how to deliver the course content and conduct interactive activities with the participants. The guide offers instructions for the trainers and provides key talking points below the slides. Each trainer should have a personal copy of the guide and, when not facilitating, follow along page by page.

Target Audience

This guide is designed to be used by health managers to build capacity for malaria EPR at the county, sub-county and health facility level. Policymakers and other stakeholders at the national and country levels will also find the guide useful in understanding the concepts of malaria EPR and how they are applied in the local context.

Objectives of the Course

The overall objective of the EPR training course is to build the capacity of healthcare workers to routinely monitor, detect, and respond to malaria epidemics. The specific objectives of the course are to enable health care providers and managers to do 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 Organisation

The course has eight modules, each with several units. The modules and units are best covered in sequential order. The course is designed for classroom delivery and has components for facilitators/trainers and participants. The facilitator component has training slides, instructions, and notes to assist the facilitator in delivering the course. 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 contributing 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

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.

Course Facilitators

Facilitators should have completed a training of trainers guide on malaria surveillance and participated in malaria EPR data review and planning workshops. Facilitators must demonstrate a good grasp of the malaria surveillance systems and basic principles and concepts of EPR. Prior training in malaria case management and monitoring and evaluation is highly recommended.

Course Participants

The course participants should be frontline healthcare workers and managers who routinely generate, process, transmit, and use malaria surveillance data for decision making. Participants should have taken the malaria surveillance training. 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 bring the following to the course:

- Five-year retrospective data on weekly numbers of confirmed malaria cases reported through the integrated disease surveillance and response platform 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.

- Weekly number of confirmed malaria cases reported in the five selected health facilities in the current year
- 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.
- 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 and on the stakeholders supporting malaria-related activities

Course Facilitation Methods

The course will use teaching and learning methods that are appropriate for adult learners. These will include the following:

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

Conducting Training Activities and Exercises

When participants are discussing an issue in small groups or doing a group exercise, facilitators should move around the groups and listen to the discussions before giving their input. If participants are doing a group exercise, the facilitators should watch carefully what the group is doing before asking questions to lead them into identifying errors or gaps and guiding them to find solutions. Additional information and useful tips for facilitators are provided before the slides section of this guide.

Small-Group Exercises

This training includes a group project that is assigned on the first day and submitted on the last day of the guide. The group project involves preparing a plan for malaria EPR. Each group should be assigned a facilitator to guide them through the project. Several other small-group activities are included in this training. These activities enable the participants to practice the skills learnt, such as how to set epidemic monitoring thresholds. Before each small group activity, the facilitator should ensure that participants understand the instructions by asking if anyone has any questions and clarifying issues, as necessary.

When facilitating small-group activities, the facilitator should consider the following:

- Move around the groups to clarify any questions and keep them on task.
- Provide constructive feedback as necessary to help participants understand and perform the activities.
- Make sure that small group activities are implemented as intended.
- Know when to end an activity, keeping in mind that the time allocations for each of the sections are estimates.
- Assess how far each group is with the task and make adjustments accordingly.

Performance Assessment and Certification

A pretest and posttest will be administered at the beginning and end of the course. Scores of the pretest and posttest will be compared to determine knowledge and skills gained from 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. Participants 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 understanding of 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.

Participants will sign in at the beginning and end of each workshop day. A certificate of completion will be awarded to participants who will have taken all the course modules.

Materials Required

Facilitators should liaise with the course organisers to prepare the course materials and have them transported to the training venue. Facilitators should arrive at the training venue early enough to ensure that the materials needed are available and to familiarise themselves with the venue.

Materials required are as follows:

- LCD projector
- Laptop
- Reliable internet connection
- Training programme
- Flipcharts and marker pens
- Basic stationery: notebooks, pens

- Printed sets of the participants' PowerPoint slides
- Pretest and posttest assessments
- EPR guidelines
- Daily evaluation forms
- End-of-workshop evaluation forms
- Folder with module exercises and instructions on group work session
- Flash disks with additional reference materials

Note: Other relevant learning materials are outlined against the respective units.

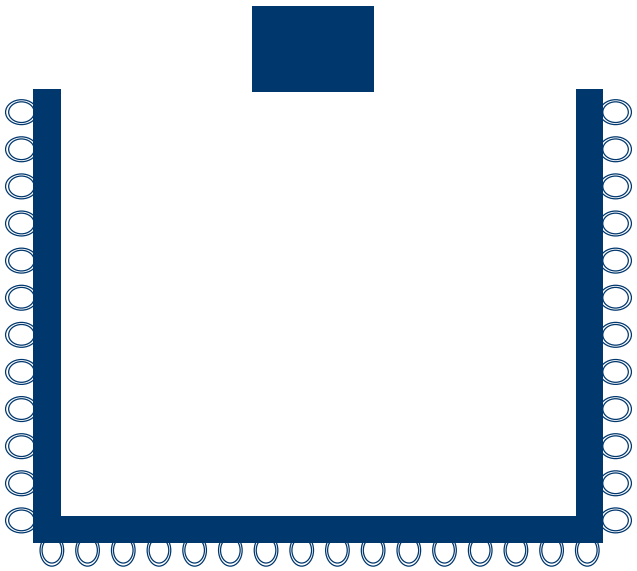
Room Requirements

This course requires one large general session room that will accommodate up to 40 people with enough space to allow both participants and facilitators to spread out and work in groups. The room should be well lit and free from outside noise that could disturb and interfere with participants' concentration.

Room Setup

The classroom should be configured to seat the participants at tables—with three to five participants per table. This will foster collaboration on activities and promote group discussion. The tables should be organised so that all participants can easily view the module presentation.

Sample Classroom Layout



DESCRIPTION OF GUIDE MODULES

This section describes objectives, content, mode of delivery, and materials required for each module. References and recommended reading for each module are also given.

Module 1: Introduction to Malaria Epidemic Preparedness and Response

Objectives

By the end of this module, participants should be able to:

- Outline malaria epidemiology in Kenya
- Describe four types of malaria epidemics
- Identify human and natural factors that can contribute to or trigger malaria epidemics
- Explain three basic concepts of malaria EPR

Lesson Plan Guide: Module 1 (2 Hours)

Unit	Content	Mode of delivery	Materials required	Time
Unit 1	Introduction to malaria epidemiology in Kenya: prevalence, epidemiological zones, endemicity map	Lecture and discussion	Pretest EPR training slides	30 min
Unit 2	Malaria epidemics: definition, types of epidemics	Lecture and discussion	EPR training slides	30 min
Unit 3	Factors contributing to malaria epidemics: natural and human factors	Lecture and discussion	EPR training slides	30 min
Unit 4	Basic concepts of malaria epidemic preparedness and response	Lecture and discussion	EPR training slides	30 min

References and recommended reading

Gilles, H. M., Warrell, D. A., editors. (1993). Bruce-Chwatt's essential malariology. Third Edition. Sevenoaks, UK: Hodder Arnold Publications.

Guintran, J.-O., Delacollette, C., & Peter Trigg, P. (2006). *Systems for early detection of malaria epidemics in Africa. Analysis of current practices and future priorities.* Geneva, Switzerland: World Health Organization. Retrieved from https://www.who.int/malaria/publications/atoz/9789241594882/en/.

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Mulambalah, C. S. (2018). An evolving malaria epidemic in Kenya: A regional alert. *CHRISMED Journal of Health and Research, 5,162.* Retrieved from http://www.cjhr.org/article.asp?issn=2348-3334;year=2018;volume=5;issue=2;spage=162;epage=162;aulast=Mulambalah.

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World Health Organization (WHO). (2018). *Malaria surveillance, monitoring & evaluation: A reference manual*. Geneva, Switzerland: WHO. Retrieved from who.int/malaria/publications/atoz/9789241565578/en/.

Module 2: Prediction, Detection, and Verification of Malaria Epidemics

Objectives

By the end of this module, participants should be able to:

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

Lesson Plan Guide: Module 2 (2 Hr, 30 Min)

Unit	Content	Mode of delivery	Materials required	Time
Unit 1	Demonstrate the concept and rationale of an early warning and detection system: ◆ Aim of early warning ◆ Methods of prediction and detection	Lecture and discussion	EPR training slides	30 min
Unit 2	Describe how to detect a malaria epidemic in a timely manner: ◆ Illustration of early warning system continuum by time and action	Demonstration and discussion	Early warning illustration—in the EPR training slides	60 min
Unit 3	Data verification for confirmation of malaria epidemics: Describe how to rapidly verify a malaria epidemic Data verification and analysis by time, place, and person	Lecture, demonstration, and discussion	EPR training slides	60 min

References and recommended reading

Guintran, J.-O., Delacollette, C., & Trigg, P. (2006). *Systems for early detection of malaria epidemics in Africa, an analysis of current practices and future priorities*. Geneva, Switzerland: World Health Organization. Retrieved from https://www.who.int/malaria/publications/atoz/9789241594882/en/.

Merkord, C. L., Liu, Y.., Mihretie, A., Gebrehiwot, T., Awoke, W., Bayabil, E., Henebry, G. M., Kassa, G. T., Lake, M., & Wimberly, M. C. (2017). Integrating malaria surveillance with climate data for outbreak detection and forecasting: The EPIDEMIA system. *Malaria Journal*, *16*(1), 89. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/28231803.

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World Health Organization (WHO). (2014). *Early detection, assessment and response to acute public health events*. Geneva, Switzerland: WHO. Retrieved from https://apps.who.int/iris/handle/10665/112667.

Module 3: Malaria Surveillance In The Context Of Epidemic Preparedness and Response

Objectives

By the end of this module, participants should be to:

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

Lesson Plan Guide: Module 3 (4 Hours)

Unit	Content	Mode of delivery	Materials required	Time
Unit 1: Malaria case detection and definitions	Definition of public health surveillance Case definitions: ◆ Suspected malaria ◆ Confirmed malaria Classification of malaria: ◆ Severe malaria ◆ Case detection methods and recording	Overview lecture and discussions	Case definition chart for priority diseases Malaria rapid diagnostic test kits	30 min
Unit 2: Malaria surveillance data reporting	Data capture, collation, and reporting Ministry of Health data collection tools Malaria epidemiological indicators	Overview lecture and demo	MOH registers and summary tools MOH 204A/B, MOH 705 A/B, MOH 505 Tally sheets Kenya health information system online platform https://hiskenya.org	60 min

Unit	Content	Mode of delivery	Materials required	Time
Unit 3: Malaria data analysis, epidemic detection methods, and threshold setting	Epidemic detection methods and threshold setting	Overview lecture and practical exercise	Laptops with spreadsheet functionality Automated threshold setting Excel template Retrospective health facility data	90 min
Unit 4: Data analysis, interpretation, and dissemination	Data analysis Data presentation Data interpretation Data sharing and feedback	Overview lecture Small group exercises	Training slides Handout on effective presentation	30 minutes
Unit 5: Data demand and use	Barriers to data demand and use	Class discussion	Training slides	15 minutes

References and recommended reading

Ministry of Health (MOH), National Malaria Control Programme. (2019). *Kenya malaria strategy 2019–2023*. Nairobi, Kenya: MOH. Retrieved from http://fountainafrica.org/wp-content/uploads/2020/01/Kenya-Malaria-Strategy-2019-2023.pdf.

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World Health Organization (WHO). (2018). *Malaria surveillance, monitoring & evaluation: A reference manual*. Geneva, Switzerland: WHO.

World Health Organization (WHO). (2019). *World malaria report*. Geneva, Switzerland: WHO.

Module 4: Basic Concepts of Malaria Entomology

Objectives

By the end of this module, participants should 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

Lesson Plan Guide: Module 4 (2.5 Hours)

Unit	Content	Mode of delivery	Materials required	Time
Unit 1: Introduction to malaria entomology	The role of mosquitoes in malaria transmission	Overview lecture and discussion	Training slides	60 min
Unit 2: Malaria vector surveys and key indicators in entomological surveillance	• Types of malaria vector surveys • Mosquito sampling techniques • Key malaria entomological indicators	Overview lecture and demonstration	Mosquito and larvae sampling tools: • Light traps • Aspirators for hand collection • Pyrethrum spray catches • Human landing catches • Window (entry/exit) trap	90 min

References and recommended reading

United States Agency for International Development (USAID). (2012). *Training manual on entomology for entomology and vector control technicians*. Washington, DC, USA: USAID.

World Health Organization (WHO). (2013). *Malaria entomology and vector control manual*. Geneva, Switzerland: WHO. Retrieved from https://apps.who.int/iris/bitstream/handle/10665/85890/9789241505819_eng.pdf.

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Module 5: Malaria Epidemic Preparedness

Objectives

By the end of this module, participants should 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 Team and rapid response teams

Lesson Plan Guide: Module 5 (2.5 Hours)

Unit	Content	Mode of delivery	Materials required	Time
Unit 1: Introduction to malaria epidemic prevention strategies	• Malaria prevention • Malaria epidemic notification	Overview lecture and discussion	Sample of a malaria notification	75 min
Unit 2: Emergency commodities for malaria EPR	• Quantification and procurement of commodities for EPR • Appropriate placement of essential and emergency commodities	Overview lecture, discussion and demo	Stock status report	30 min
Unit 3: Coordination structures and capacity to prepare and respond	Rapid assessment for malaria epidemic preparedness	Overview lecture and discussion	Rapid assessment checklist	45 min

References and recommended reading

Republic of Kenya, Ministry of Public Health and Sanitation (MOPHS). (2012). *Integrated disease surveillance and response in Kenya. technical guidelines, 2nd edition.* Nairobi, Kenya: MOPHS.

Ministry of Health (MOH). (2020). *Guidelines for malaria epidemic preparedness and response.* Nairobi, Kenya: MOH.

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Module 6: Malaria Epidemic Response

Objectives

By the end of this module, participants should be able to:

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

Lesson Plan Guide: Module 6 (3 Hours)

Unit	Content	Mode of delivery	Materials required	Time
Unit 1	Malaria Epidemic/outbreak Investigation	Lecture and discussion	• EPR training slides	45 min
Unit 2	Epidemic Response interventions • Response interventions • Monitoring of epidemic response • Coordination and communication during response	Lecture, discussion, demonstration	• Line listing template • SITREP template	75 min

References and recommended reading

Ministry of Health (MOH). 2020. *Guidelines for malaria epidemic preparedness and response.* Nairobi, Kenya: MOH.

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World Health Organization (WHO). (2019). *World malaria report.* Geneva, Switzerland: WHO. Retrieved from https://www.who.int/publications-detail/world-malaria-report-2019.

Module 7: Post-Epidemic Evaluation

Objectives

By the end of this module, the participants should be able to:

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

Lesson Plan Guide: Module 7 (1 Hour, 15 Minutes)

Unit	Content	Mode of delivery	Materials required	Time
Unit 1	Declaration of end of epidemic	Lecture and discussions, brainstorming session	Sample of an end of epidemic declaration	15 minutes
Unit 2	Post-epidemic evaluation	Lecture and discussions, brainstorming session	Sample post-epidemic evaluation report	35 minutes
Unit 3	Documenting, report writing, and disseminating malaria post-epidemic report	Lecture and discussions	Post-epidemic report template	25 minutes

References and recommended reading

Ministry of Health (MOH). (2020). *Guidelines for malaria epidemic preparedness and response.* Nairobi, Kenya: MOH.

National Malaria Control Programme (NMCP)/Kenya, Kenya National Bureau of Statistics (KNBS), & ICF International. (2016). *Kenya malaria indicator survey* 2015. Nairobi, Kenya: NMCP, KNBS, & ICF International. Retrieved from https://dhsprogram.com/pubs/pdf/MIS22/MIS22.pdf.

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Module 8: Malaria EPR Planning

Objectives

By the end of the module, participants should be able to:

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

Lesson Plan Guide: Module 8 (6.5 Hours)

Unit	Content	Mode of Delivery	Materials required	Time
Unit 1	Introduction to the EPR planning process	Overview lecture and discussion	EPR training slides manual	30 minutes
Unit 2	Develop a malaria EPR plan	Practicum	EPR planning template	7 hours
Unit 3	Adoption and implementation of a malaria EPR plan	Lecture and discussions	Sample of previously completed plan	30 minutes

References and recommended reading

Ministry of Health (MOH). (2020). *Guidelines for malaria epidemic preparedness and response.* Nairobi, Kenya: MOH.

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PRETEST AND POSTTEST

EPR Training Manual Pretest And Posttest

The pretest will be administered before beginning the training. The scores of the pretest are recorded for each participant. The posttest is administered in the morning of the last day of the training and scores for each participant are recorded against the pretest scores. The percentage change between the pretest and posttest is obtained. The change in scores is used to determine whether the training had an impact on the participants' knowledge on malaria EPR.

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

D. MOH 711

E. 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 post-epidemic 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 post-epidemic 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

Answers

Q1 A

Q2 D

Q3 C

Q4 C

Q5 B

Q6 B

Q7 D

Q8 E

Q9 B

Q10 B

Q11 C

Q12 C

Q13 C

Q14 C

Q15 E

Q16 A

Q17 D

Training Programme

The EPR training 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
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

Time	Monday	Tuesday	Wednesday	Thursday	Friday
11–11:30 a.m. Break					
11:30 a.m.–12 p.m.	**Module 1** Unit 4: Basic concepts 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: Post-epidemic 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: Post-epidemic evaluation report and dissemination	EPR planning presentations and feedback
1–2 p.m. Lunch					
2–3 p.m.	**Module 2** Unit 2: Timely detection of malaria epidemics	**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
3–4 p.m.	**Module 2** Unit 3: Verification of malaria data for epidemic confirmation	**Module 3** Unit 4: Malaria data analysis, presentation, interpretation, data sharing, feedback, and dissemination	**Module 6** Unit 1: Epidemic/ outbreak investigation	EPR planning practicum	EPR plan presentations and feedback

Time	Monday	Tuesday	Wednesday	Thursday	Friday
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

ADDITIONAL INFORMATION FOR FACILITATORS

Tips on Effective Training Facilitation

This section provides tips on facilitation to help you deliver this training guide effectively. The content of the training is important, but so are your facilitation skills. In addition, your enthusiasm and the way you relate to the training participants will be critical to the participants' success in understanding the concepts taught in this guide and their ability to apply the concepts in their day-to-day work.

Facilitator's Preparation

To prepare to deliver this guide effectively, be sure to do the following tasks prior to the beginning of the guide:

- Obtain a list of participants and ensure that they meet the training requirements.
- Read this facilitators guide and make sure that you have the necessary equipment and materials to present the modules.
- Prepare the participant training materials (folder with handouts and individual and group assignments) and other training aids (e.g., facilitator and participant agendas, copies of PowerPoint slides for participants, handouts, and participant evaluation forms).
- Thoroughly review all training materials in the facilitators' presentation, work through all of the learning activities, and prepare for potential questions and answers.
- Meet with co-facilitators to review discussion questions and associated facilitator notes, and to practice transitioning between the assigned topics and activities that will be conducted during the training.
- Use the training programme to decide on the sessions for each facilitator.
- Review the timing of each module and unit so that each facilitator is comfortable with the amount of time they have to cover each topic.
- Customise the curriculum by adding your own stories and "lessons learnt," as appropriate. Facilitators are expected to draw on their own knowledge and expertise in the subject area to enrich the training, including relevant personal experiences. This will help you to explain the concepts in your own words.
- Make notes in the margins of your printout of the slides while preparing to deliver the guide content. These notes should indicate how you plan to integrate your unique perspectives and expertise in the session topics.
- Consider how to address issues of culture within the content and context of your presentations. Be prepared to facilitate a discussion with the participants to explore how diverse cultural perspectives may impact content presented during the training session.
- Decide in advance what should be written on the flip charts for the activities that will be conducted during the training.

Good Practices for Facilitators

Facilitators do a number of things to ensure that the classroom environment supports participant learning. Experienced facilitators typically observe the following best practices:

Acknowledge and respect diverse personalities.

- Articulate classroom expectations and norms for participants, and establish ground rules to guide participant interactions and maintain a safe environment at the beginning of the guide.
  Example: All electronic devices either should be turned off or in silent mode, and computers should be used only for taking notes, not answering email.
- Build on the existing skills, experiences, and knowledge of training participants rather than assume that they are coming from a position with a lack of knowledge.

Focus on participants' strengths rather than their weaknesses.

- Do not act as the expert but rather as a guide, and facilitate the learning process in a professional manner.
- Help the group move along, provide information, and help the participants learn specific skills.
- Follow module activities as outlined in this guide and help participants stay as focused as possible on the topics and activities described in each session.

Provide a lot of encouragement to the participants.

- Model the skills being taught (e.g., starting conversations, correcting misinformation).
- Follow the agenda and time schedule, but adjust as necessary to the specific needs of the class. Example: Watch for nonverbal signs, including glazed eyes or shifting in seats, as indicators that a break is needed. It is important to respect break-time boundaries.

Share your diverse, real-world experiences, expertise, and knowledge throughout the guide.

- Lead and facilitate class discussions. During discussions, draw connections between the points discussed and key concepts and instructional points.
- Do not make up answers to questions if you are unsure of the correct or appropriate answer.
  When a participant asks you a question to which you do not know the answer, either tell the participant that you do not know the answer or explain that you will find the answer and get back to the participant.

- Move around as you make points or facilitate discussions. Do not lock yourself behind a podium or table, and ensure that you face the participants when you speak.
  By eliminating physical barriers between you and the participants, you create a more dynamic presence in the classroom, and you will elicit more participation from the participants.

Adapt the guide material when needed.

Feel free to modify discussion questions to support the learning objectives and meet the needs of your class. If a discussion question in the training modules does not work well with the flow of the existing discussion in the classroom, modify it to suit the circumstances and enhance participant comprehension of the teaching points.

Qualities of Effective Facilitators

Before the training, you should review the following characteristics of effective facilitators, and refer to them and incorporate them throughout the delivery of the training.

Provide a supportive learning environment

- Handle sensitive issues and conflicts; be nonjudgmental.
- Know the influence of your own attitude and practices.

Be a good communicator.

- Use words that are easily understood by the participants.
- Encourage discussion, observe, and listen.
- Be approachable.
- Speak clearly.
- Use respectful language.
- Allow participants the opportunity to self-reflect.

Display warmth.

- Establish relationships with group members.
- Like and build trust with training participants rather than fear them.

Be organised

- Clearly outline objectives and goals.
- Practice facilitating to be ready to deliver the training.
- Categorise information efficiently so that you can retrieve it easily.
- Have a working knowledge of multimedia devices (e.g., overhead projector, liquid crystal display (LCD) projector, laptop computer).

Be enthusiastic

- Improve your sensitisation practices.
- Be enthusiastic about the people and the process.
- Be ready to conduct role-plays.
- Allow participants to practice using the skills learned in various activities (e.g., role-play exercises).

TRAINING SLIDES

Ministry of Health

Malaria Epidemic Preparedness and Response Training Slides for Facilitators

Division of National Malaria Programme – Komesha Malaria, Okoa Maisha

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

Division of National Malaria Programme – Komesha Malaria, Okoa Maisha

Purpose of this Course

- This course is designed to build capacity and equip health workers and key stakeholders involved in malaria epidemic preparedness and response with skills to routinely:
  - Monitor
  - Detect
  - Prepare for and
  - Respond to malaria epidemics
- The course has 8 modules

Division of National Malaria Programme – Komesha Malaria, Okoa Maisha

- Before displaying this slide, ask the participants to state their expectations for this course as a co-facilitator writes them on a flip chart.
- Align the participants' expectations to the overall purpose of the course outlined on this slide

Ministry of Health

Module 1

Introduction to Malaria Epidemic Preparedness and Response

Division of National Malaria Programme – Komesha Malaria, Okoa Maisha

This module introduces you to:

- Basic malaria epidemiology in Kenya
- Key concepts of malaria epidemic preparedness and response

Learning Objectives

By the end of this module, participants should 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

Division of National Malaria Programme – Komesha Malaria, Okoa Maisha

Explain that by the end of the module, participants should be able to:

- Describe the basic malaria epidemiology
- Identify and describe 4 different types of malaria epidemics
- Name and explain human and natural factors that may contribute to malaria epidemics
- Identify and explain 3 key aspects of malaria epidemic preparedness and response

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

Division of National Malaria Programme – Komesha Malaria, Okoa Maisha

Explain the module's learning units as follows:

- Unit 1 will introduce you to malaria epidemiology in Kenya—including prevalence, epidemiological zones, epidemiological map, and the Kenya Malaria Strategy (KMS) 2019-2023
- Unit 2 will describe the four different types of malaria epidemics
- Unit 3 will present factors contributing to malaria epidemics:
  - Natural factors: Rainfall, temperature, humidity
  - Human factors: Population movement, new settlements, floods, conflicts, constructions
  - Health systems: Infrastructure, commodities, human resources for health (HRH)
- Unit 4 will introduce you to the concept of malaria epidemic preparedness and response and post-epidemic evaluation

Module 1: Learning Unit 1
Introduction to Malaria Epidemiology

Division of National Malaria Programme – Komesha Malaria, Okoa Maisha

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

Division of National Malaria Programme – Komesha Malaria, Okoa Maisha

EXPLAIN

- Endemic: For malaria, it is where the occurrence of malaria is present throughout the year; there might be seasonal variations

Differentiate the definition of epidemic and outbreak in the context of malaria

- Epidemic: A sudden increase in cases at a given place beyond what is expected to be normal at that time against a set threshold for that area
- Outbreak: Conventionally, outbreaks are epidemics with small caseloads; can also be defined as a sudden occurrence of malaria in areas that have never experienced the disease before or have eliminated it and are limited geographically

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

Division of National Malaria Programme – Komesha Malaria, Okoa Maisha

Give examples of case definitions:

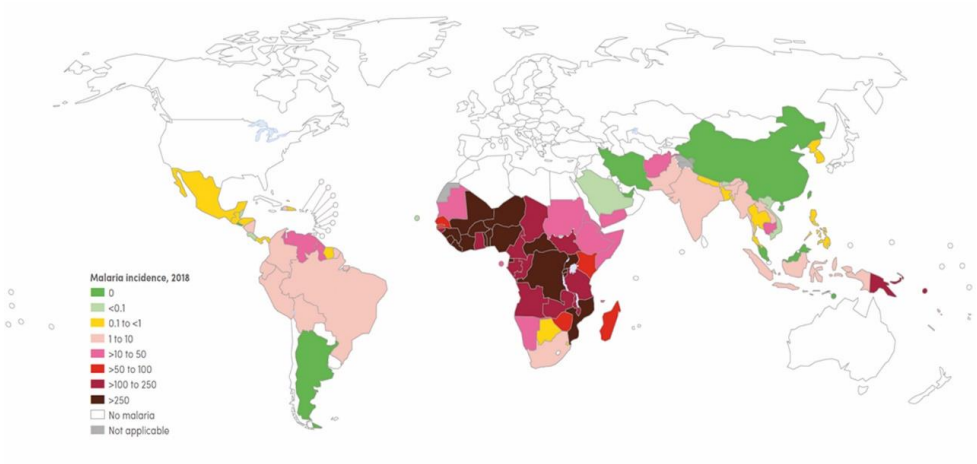
Suspected malaria

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

Confirmed malaria case

- Any person who tests positive for malaria, either by microscopy or rapid diagnostic test (RDT)

Malaria Case Incidence Rate, by Country, 2018

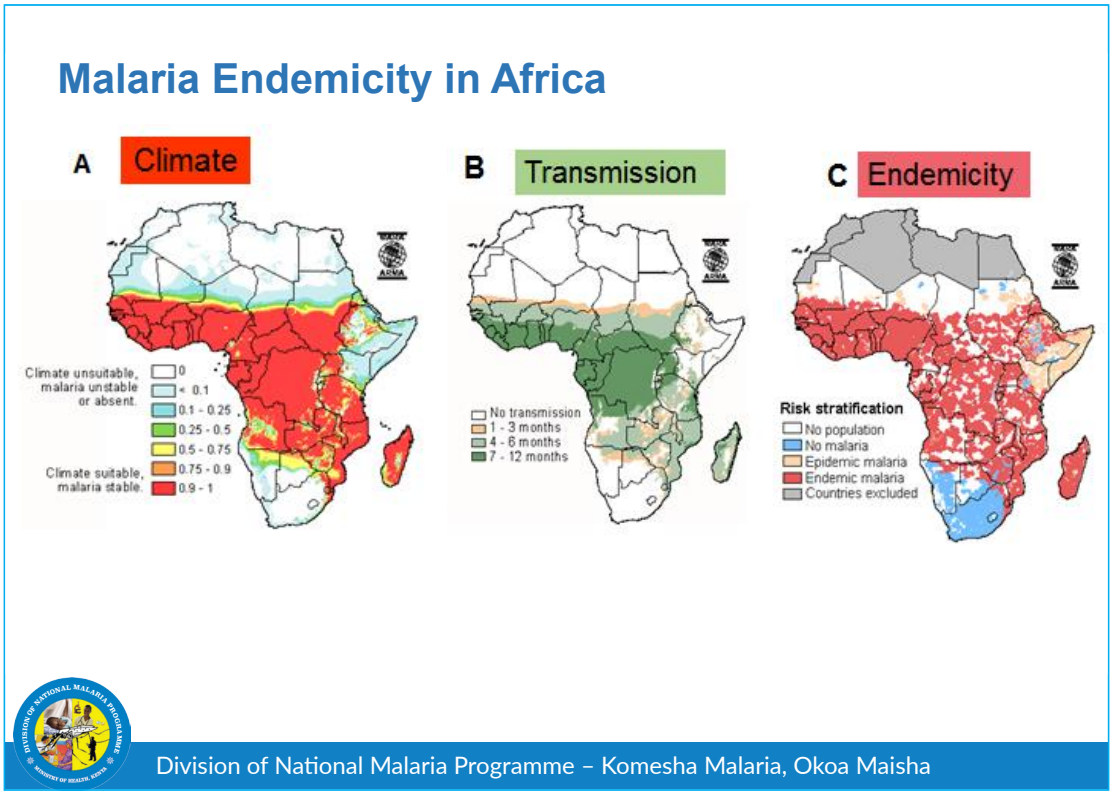


Source: World Malaria Report 2019

Division of National Malaria Programme – Komesha Malaria, Okoa Maisha

Explain the following:

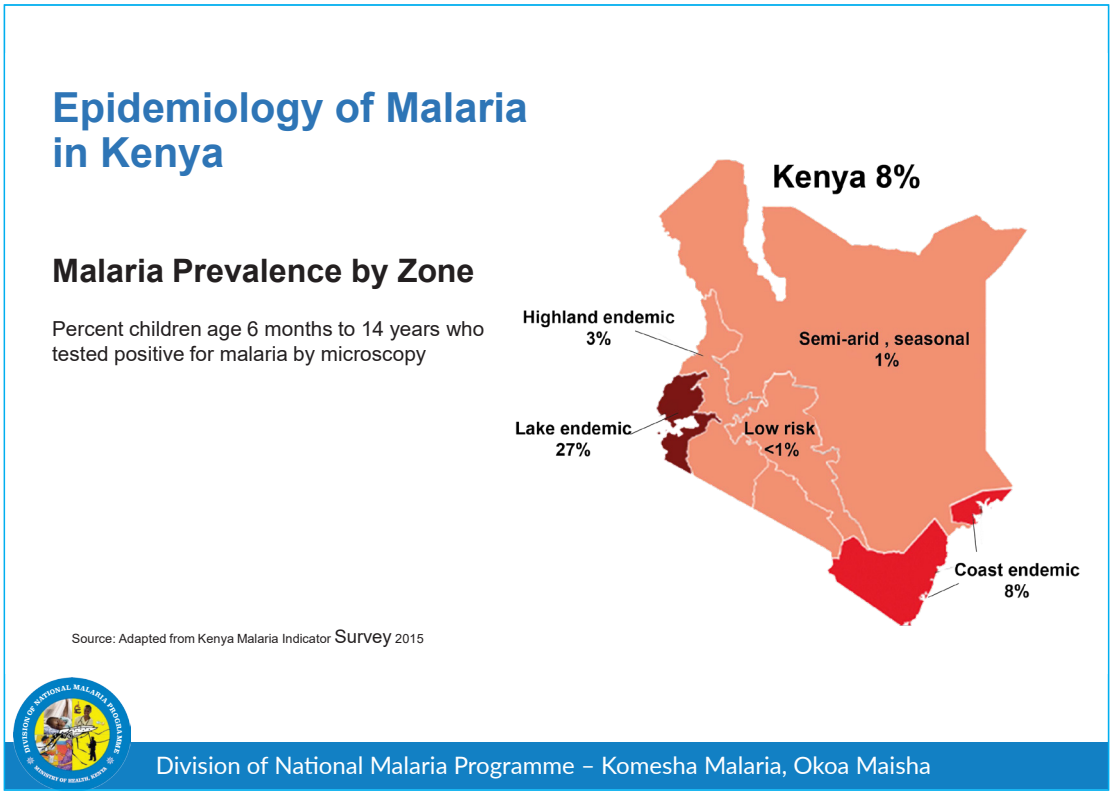
- Malaria case incidence refers to cases per 1,000 population at risk
- Estimated malaria cases worldwide in 2018 were 228 million cases, 93% of them in the World Health Organization (WHO) African region
- 405,000 estimated malaria deaths occurred in 2018; 67% of them occurred in children under 5 years of age
- Overall, 94% of deaths were in the WHO Africa region



Display one map at a time. Ask the participants to explain what they can see on each map.

Explain the following:

- The endemic areas are along the sub-Saharan region
- Map A shows areas in Africa with a suitable climate for malaria transmission
- Map B shows areas where malaria is transmitted and the duration in a year when the disease can be transmitted
- Map C shows where malaria is endemic and epidemic in Africa



Explain the zones as follows:

- Lake endemic: Areas around Lake Victoria have the highest disease burden, with transmission throughout the year
- Coast endemic: Moderate transmission throughout the year
- Western highlands: Peak transmission usually takes place after the long rains and can lead to epidemics.
- Semi-arid/seasonal transmission: Areas in the eastern and northern part of the country. Very low prevalence. Malaria occurs after a heavy rainfall season
- Low transmission: Areas around Nairobi, Nakuru, and Central Regions. There is minimal malaria risk

Malaria parasites in Kenya

Plasmodium falciparum: Predominant species in Kenya (98.2% of infections)

Plasmodium malariae and *Plasmodium ovale* (1.8%)

- Plasmodium vivax: None identified

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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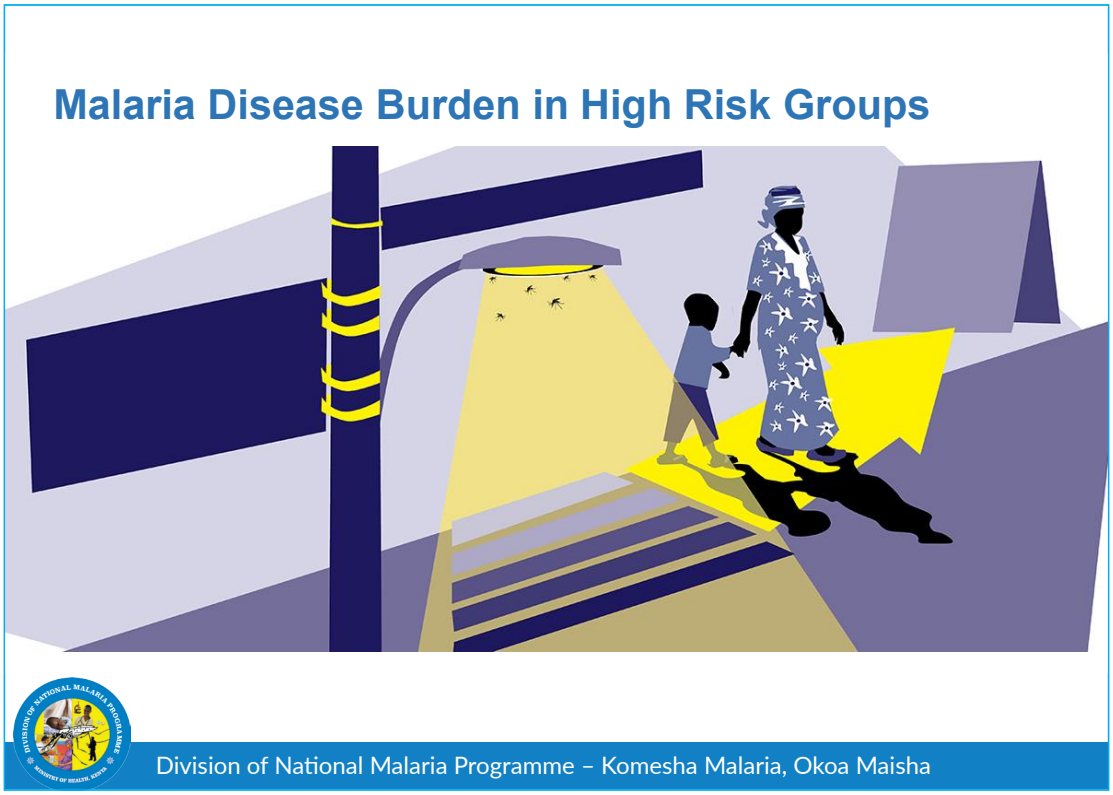
Explain the following:

- Malaria parasites are transmitted by female *anopheles* mosquitoes
- Climatic factors influence distribution of malaria by creating favourable breeding sites for mosquitoes
- Warmer temperatures reduce the sporogonic life cycle of the malaria parasites, hence increased transmission
- Development activities (e.g., road construction, mining, and agriculture) can increase the number and size of breeding sites
- Control measures like LLIN and IRS reduce the vector density and hence transmission



Ask the participants to explain what they see on the picture and how it relates to malaria disease burden

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

Division of National Malaria Programme – Komesha Malaria, Okoa Maisha

EXPLAIN

- The burden of malaria in the various vulnerable groups
- Implications to service delivery

NB. Ensure that you quote the latest statistics on disease burden and provide updated economic cost of malaria (where available).

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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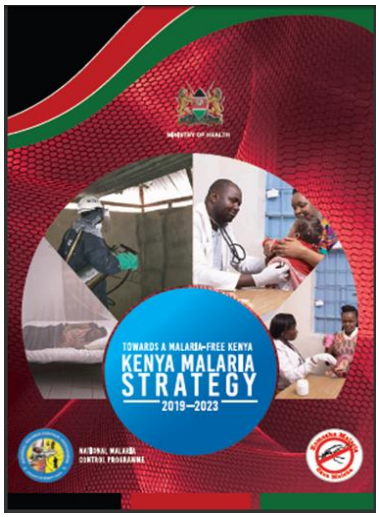
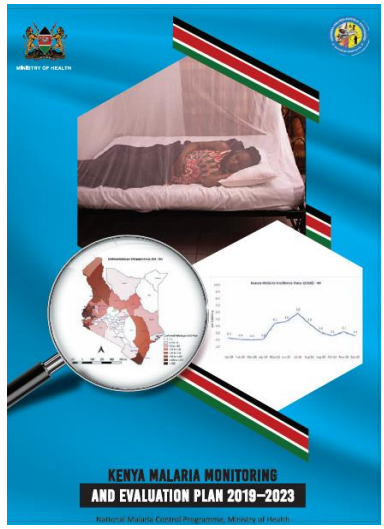
- Explain that these are key interventions recommended per epidemiological zone
- Ask the participants to name the malaria interventions applied in the areas in which they work

Kenya Malaria Strategy (KMS) 2019–2023





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- Ask the participants if they have seen the latest KMS and its Monitoring and Evaluation (M&E) Plan
- Display the slide showing the current versions of the Strategy and M&E Plan

Emphasise:

- The goal of the strategy to reduce malaria incidence and deaths by 75% can be achieved by all players in malaria control
- Every participant has a role in achieving this goal, applying appropriate malaria interventions in their place of work; for example, clinicians adhere to testing before treating for malaria and ensuring all cases are recorded and tracked (T3 approach); Kenyans use appropriate preventive measures in their homes (e.g., ensuring they sleep under a mosquito net)

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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EXPLAIN

- Objective 1 is about prevention through using LLINs, IRS, and IPTp for pregnant women in selected areas
- Objective 2 is about case management (e.g., testing and treating positive cases with recommended antimalarials)
- Objective 3 is new (first time in the strategy); certain areas where malaria prevalence is very low are recommended for elimination

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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EXPLAIN

- Objective 4 is about social behaviour change for increased use
- Objective 5 is about surveillance, monitoring, evaluation, and operations research (SMEOR)
- Objective 6 is programme management, which drives all the other objectives

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

Division of National Malaria Programme – Komesha Malaria, Okoa Maisha

EXPLAIN

- EPR falls under the fifth strategic objective of the Kenya Malaria Strategy 2019-2023.
- Seven key EPR activities are outlined in the KMS 2019-2023
- In the subsequent modules, you will learn more about basic EPR concepts and activities

Module 1: Learning Unit 2
Introduction to Malaria Epidemics

Division of National Malaria Programme – Komesha Malaria, Okoa Maisha

This unit introduces the participants to malaria epidemics, definitions, and types.

Definition of Malaria Epidemic

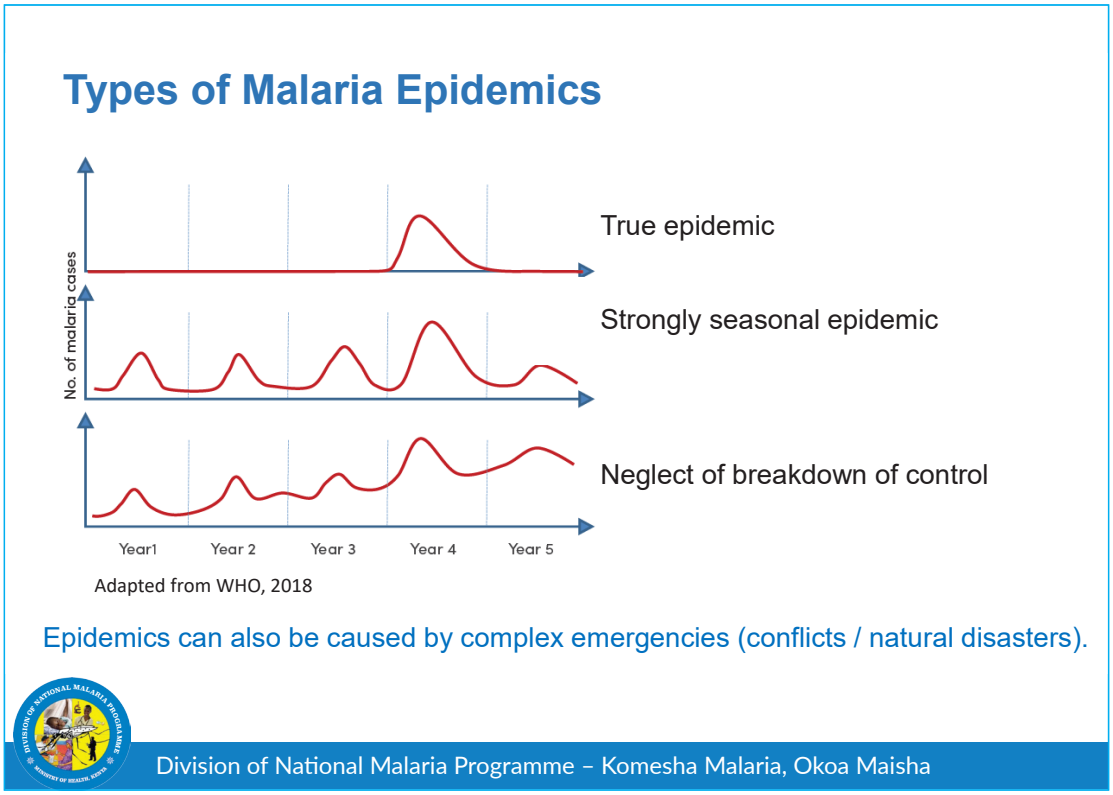
It is a **sudden increase in malaria cases** at a given place beyond what is expected to be normal at that time against a set threshold for that area

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

Division of National Malaria Programme – Komesha Malaria, Okoa Maisha

EXPLAIN

- The importance of thresholds in determining what is to be termed an epidemic
- Outbreak and epidemic are terms used as synonyms, although epidemic tends to be of a higher magnitude than an outbreak
- Malaria upsurges (normal seasonal increases) are common and should NOT be confused with an epidemic



Explain the following about each type of epidemic:

- True epidemics: Are infrequent; occur after heavy rains and flooding, especially in arid and semi-arid zones
- Strongly seasonal epidemics: Predictable transmission; usually occur after the long and short rains
- Neglect/breakdown of control: Re-emergence of malaria if gains are not sustained
- Complex emergencies: Occur because of population movements caused by political instability or natural calamities

Malaria Epidemic-Prone Areas in Kenya

- 26 counties
- 127 sub-counties

Division of National Malaria Programme – Komesha Malaria, Okoa Maisha

EXPLAIN

Referring to map on slide Epidemiology of malaria in Kenya (page 43), explain that malaria epidemics in Kenya occur in two zones:

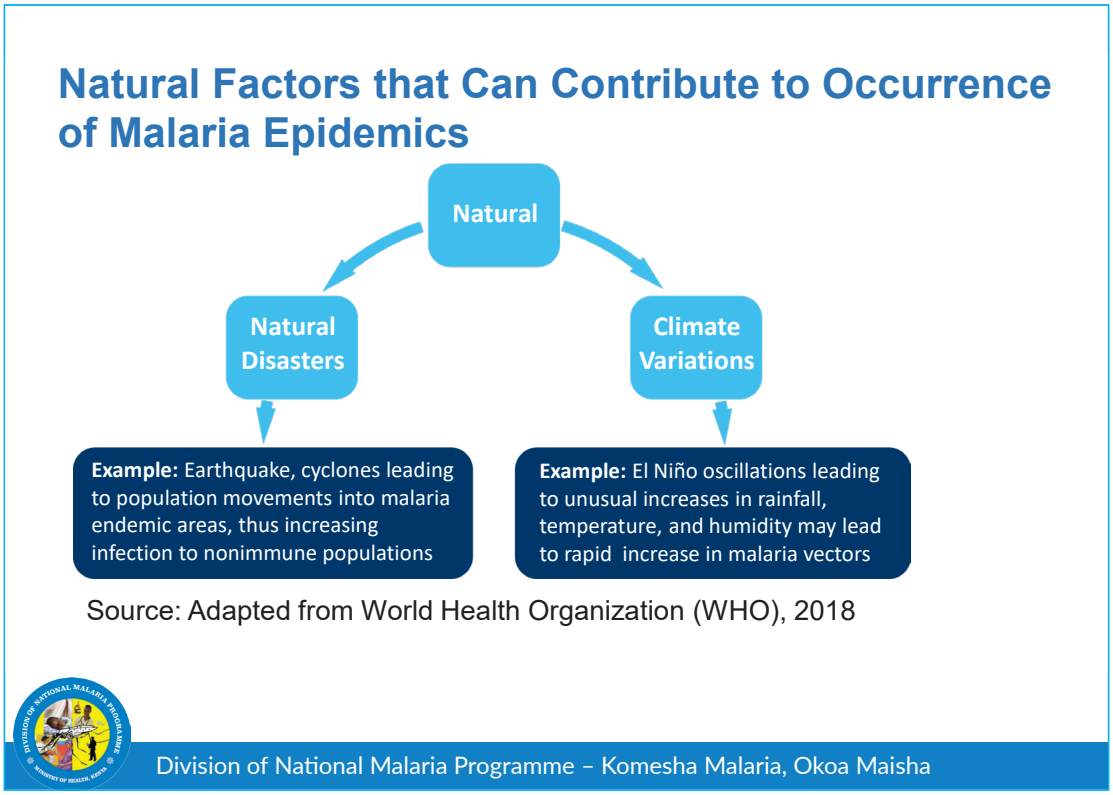
- Highland epidemic: Highlands west of the Rift Valley
- Seasonal/low transmission areas: northern, northeastern, and southeastern Kenya

Ask the participants to identify some counties in the Western Highlands and seasonal transmission zones.

Module 1: Learning Unit 3
Factors Contributing to Malaria Epidemics

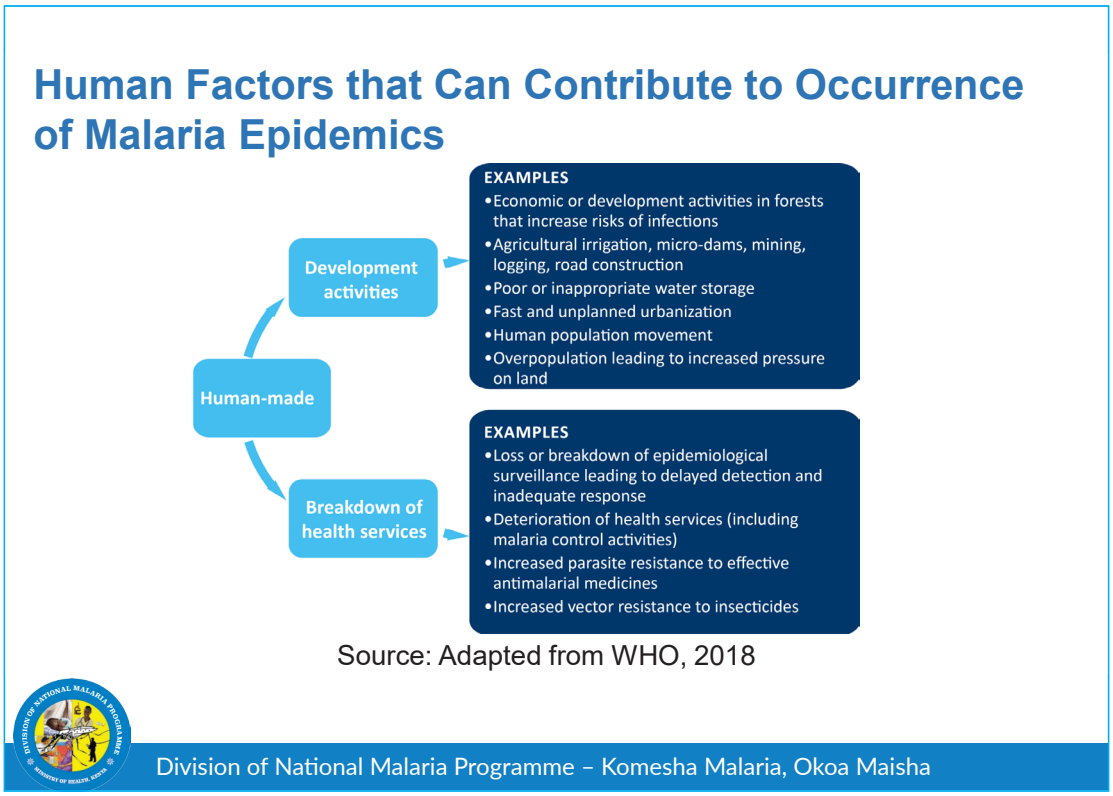
Division of National Malaria Programme – Komesha Malaria, Okoa Maisha

This unit introduces the learner to factors that contribute to malaria epidemics.



EXPLAIN

- How natural factors in the diagrams can contribute to malaria epidemics
- Ask participants to identify a recent malaria epidemic in their work environments
- Ask them to identify some of the natural factors that may have contributed to the epidemic



EXPLAIN

- How human factors in the diagrams can contribute to malaria epidemics
- Ask participants to identify a recent malaria epidemic in their work environments.
- Ask them to identify some of the human factors that may have contributed to the epidemic (e.g., irrigation schemes in Turkana and Baringo [Marigat])

Group Activity (5 minutes)

What are the consequences of malaria epidemics?

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- Prompt participants to brainstorm on the consequences of epidemics as a co-facilitator writes them down on a flip chart
- Facilitators and participants can reference a recent malaria epidemic and highlight some of the consequences

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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- Add the contributions of the participants to any of the factors not listed on the slide
- Emphasise the far-reaching consequences of epidemics and stress the interrelated nature of the consequences

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

Division of National Malaria Programme – Komesha Malaria, Okoa Maisha

This unit presents the basic concepts of malaria epidemic preparedness and response.

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

Division of National Malaria Programme – Komesha Malaria, Okoa Maisha

Explain that malaria EPR consists of four components or phases, as follows:

- Epidemic preparedness
- Rapid (pre-epidemic) assessment
- Epidemic response
- Post-epidemic evaluation

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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Explain that epidemic preparedness consists of activities that ensure that health workers and the health system are ready to manage potential malaria outbreaks

Get the participants into groups of 5 to 6 people. Ask each group to come up with ideas on some of the activities that should be implemented for malaria EPR

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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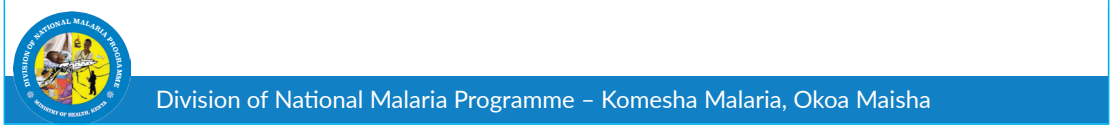
Explain and emphasise the following:

- Importance of continuous surveillance and monitoring of malaria trends for early detection
- The need to set and update epidemic monitoring thresholds
- Identify and map hotspots



Explain the composition of the RRT (clinician, laboratory technologist, pharmacist, public health officer, surveillance officer)

Emphasise:

- The importance of ensuring availability of commodities (e.g., buffer stocks)
- The importance of pre-epidemic assessment to establish preparedness in the event of an epidemic

Malaria Epidemic Response

Rapid response is essential to avert excess morbidity and mortality.

Group activity (10 minutes)

Participants outline actions/activities undertaken to respond to a malaria epidemic

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Explain that malaria epidemic response is directed towards two main aspects:

- Diagnosis and treatment of malaria cases detected
- Vector control interventions such as LLINs and IRS (where feasible)

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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Explain the following:

- Rapid assessment is an investigation conducted to quickly verify the epidemic
- Notification consists of informing stakeholders about an epidemic
- Declaration is usually a formal statement about the epidemic, usually made by a senior person in the Ministry of Health

Prompt the participants to explain epidemic notification in their duty stations.

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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EXPLAIN

- SBC messages should be culturally sensitive and passed through available channels
- Declaration of the end of a malaria epidemic is made when malaria incidence in a locality is back to the normal expected ranges for a specific time

Post-Epidemic Evaluation

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

Group activity (10 minutes)

Participants to brainstorm on post-epidemic evaluation activities

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Prompt the participants to say why post-epidemic evaluation is important.

- Ask them to name some post-epidemic activities, based on their work experience
- A co-facilitator will write the responses on a flip chart

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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Emphasise:

- The importance of documentation in the post-epidemic assessment
- Learning lessons to improve preparedness and response
- Making recommendations and following through to ensure that they are implemented

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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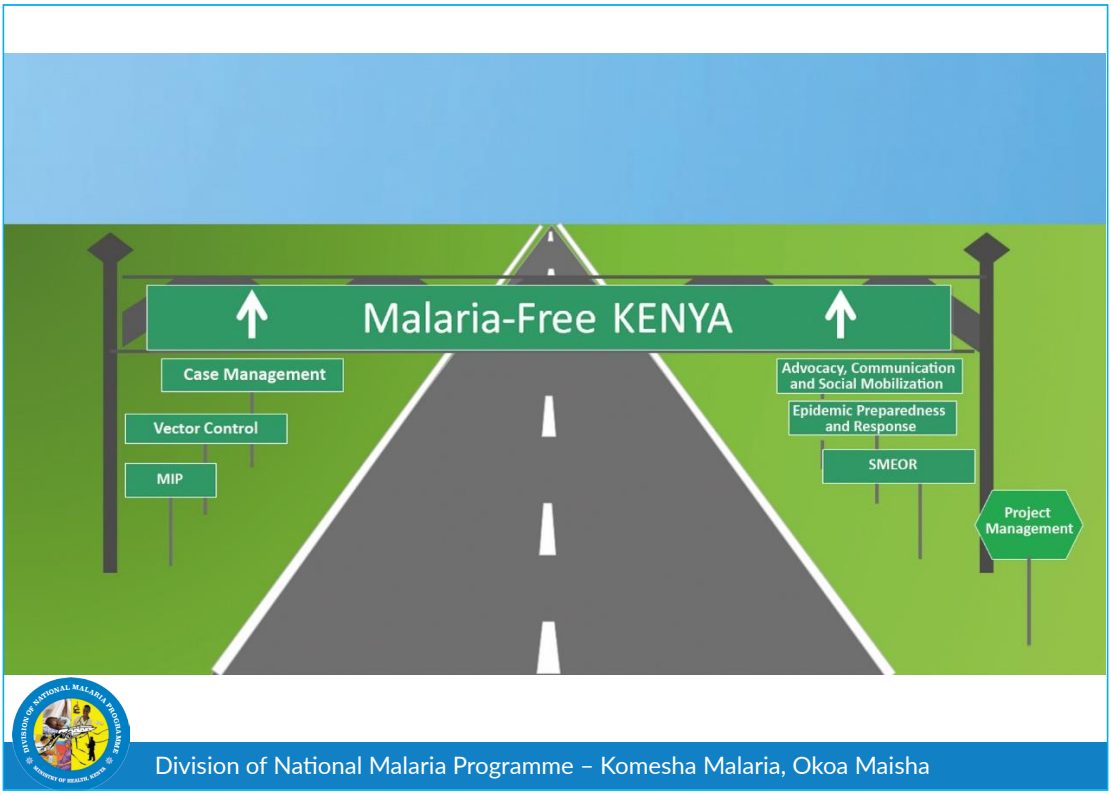
Ask the participants to make brief points in their notebooks on the messages displayed on the slide as important take-home messages


Malaria-Free KENYA
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Ministry of Health

Module 2

Prediction, Detection, and Verification of Malaria Epidemics

Division of National Malaria Programme – Komesha Malaria, Okoa Maisha

This module explains methods of predicting, detecting, and verifying malaria epidemics.

Learning Objectives

By the end of this module, participants should 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

Division of National Malaria Programme – Komesha Malaria, Okoa Maisha

Explain that this module should equip the participant with knowledge and practical skills on how to detect and verify a malaria epidemic.

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

Division of National Malaria Programme – Komesha Malaria, Okoa Maisha

This module has three units: malaria early warning systems, timely detection of malaria epidemics, and verification of data for malaria to confirm an epidemic.

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

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Ask the participants to say what early warning is.

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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EXPLAIN

- Vulnerability assessment involves determining knowledge and awareness levels of risk, socioeconomic status, demographics, cultural practices, etc
- Forecasting entails the use of climatic information to predict weather patterns that may contribute to increased risk of malaria transmission
- Forecasting is usually long-range (six months and above)
- Prediction is usually short-term (three months and below)

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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Explain that these factors do not predict an epidemic, but they are indicative of increased risk and probability of severe malaria disease.

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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Explain the differences between forecasting, early warning, and early detection

- Developments in climate science mean that El Niño events can predict epidemics months before they occur
- Application: Can help authorities prepare methods for infection prevention, procure drugs and supplies, and build community awareness

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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- Explain that early warning uses meteorological data
- It is typically available monthly or for 10 days
- Ask the participants to name situations in which they have used such information

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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- Explain that prediction has shorter lead times compared to seasonal forecasting
- Prediction is more reliable because it is based on direct observation
- Prediction allows for preventive interventions (e.g., vector control and personal protection)

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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- Explain that predicting entomological factors mentioned can inform prediction of malaria epidemic (e.g., increase vector and larval density)

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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Explain that monitoring parasite-related factors, such as malaria positives cases and increased uptake of antimalarials, can be useful in predicting the occurrence of a malaria epidemic.

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

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Explain that significant movement of nonimmune population to a malaria-endemic region may lead to an increased number of malaria cases.

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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EXPLAIN

- Assessment of the prediction factors (previous 3 slides) helps us recognize the beginning of an epidemic
- An epidemic should be recognised within a few days of its onset, to reduce morbidity and prevent mortality
- Monitoring the weekly number of confirmed malaria cases is very important for early detection
- Evidence is needed to confirm an epidemic, hence the need to use thresholds and to conduct quick assessment for verification

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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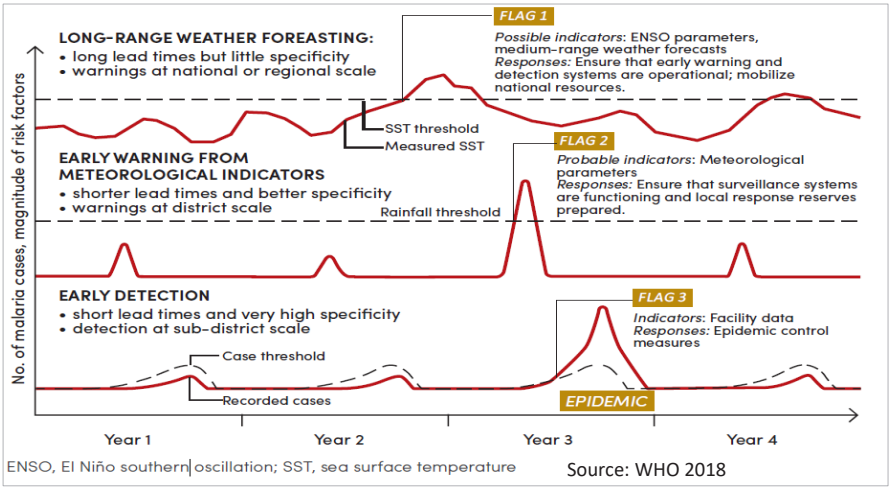
EXPLAIN

- In Kenya, sentinel health facilities have been identified to set epidemic monitoring thresholds
- Confirmed malaria cases are monitored weekly, and action is taken if the cases surpass the established thresholds

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



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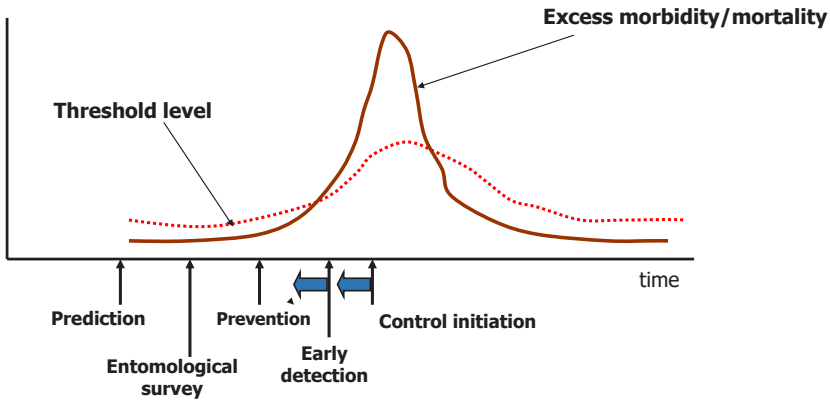
- The upper red graph provides information on long-range weather forecasting and an indication of onset of rains, based on increased sea surface temperature (SST)
- The middle graph indicates the onset of rains subsequent to long-range forecasting (LRF)
- The lower graph depicts an increase of cases within the threshold and also beyond the threshold (year 3)

Summary: Prediction and Early Detection of Malaria Epidemics



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Ask the participants to interpret the figure.

Key things to remember:

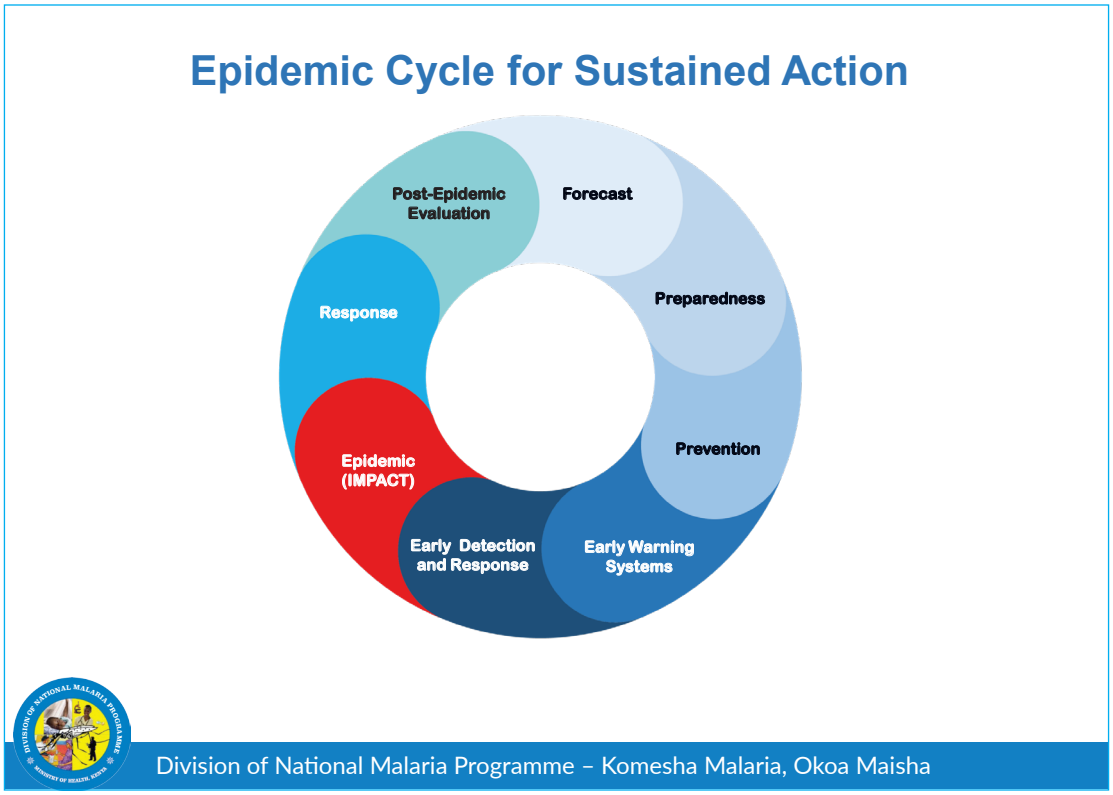
- Forecasting malaria epidemics >6 months
- Prediction: 3-6 months
- Early detection: 2-4 weeks

Module 2: Learning Unit 2
Timely Detection of Malaria Epidemics

Division of National Malaria Programme – Komesha Malaria, Okoa Maisha

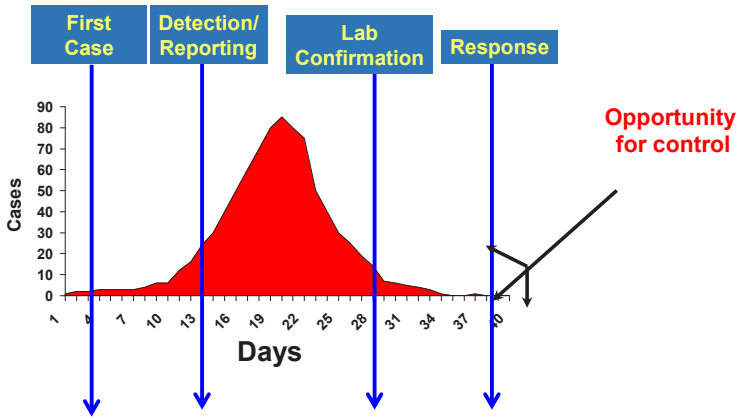
This unit will cover the malaria epidemic cycle and illustrate early warning and epidemic detection.

- Emphasise the importance of high-quality and timely data for early detection and response
- Timely response is key to averting excess morbidity and mortality



Ask the participants to explain the stages in the epidemic cycle. Probe them to explain what each step entails.

Scenario 1: Outbreak Detection and Response



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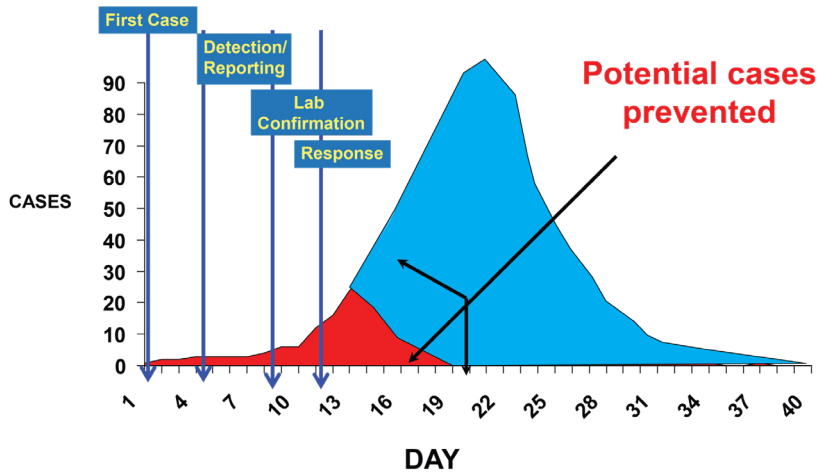
- Ask the participants to interpret the epi-curve based on untimely detection and response to the outbreak
- Probe the participants to identify the missed opportunities in the figure (e.g., late detection—day 15 and lab confirmation after 28 days)

Scenario 2: Outbreak Detection and Response



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This slide presents the ideal sequence of events.

- Ask the participants to compare scenario 1 in the previous slide and scenario 2 on this slide
- Emphasise the blue part that shows potential cases prevented

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

Division of National Malaria Programme – Komesha Malaria, Okoa Maisha

This unit will cover the following:

- Data quality verification
- Data audit and verification processes
- Laboratory testing
- Data analysis by time, place, and person

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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Explain the basic data quality terms:

Completeness: no missing data

Consistency: data are comparable

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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- Explain the rapid assessment team's purpose: to confirm that the cases reported are indeed positive malaria cases
- Explain the team's composition: epidemiologist, clinician, laboratory personnel, entomologist
- Others: nurse, surveillance officer, pharmacist
- The rapid assessment team verifies that the cases reported are positive malaria cases and that indeed there is an increase over and above what is normal for that place and time

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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Highlight the key aspects to check during the data verification (e.g., completeness, indicator definitions and data sources, and data entry and manipulation errors).

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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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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- Emphasise the importance of line listing and analysis of data to obtain the indicators outlined on the slide
- Weekly analysis of data reported to generate the indicators mentioned is important to monitor trends and determine the end of the epidemic
- Analysis of data is important to determine commodity needs and mobilise resources to control the epidemic. For example:
  - Establish additional treatment centres if cases are still increasing
  - Deploy additional personnel

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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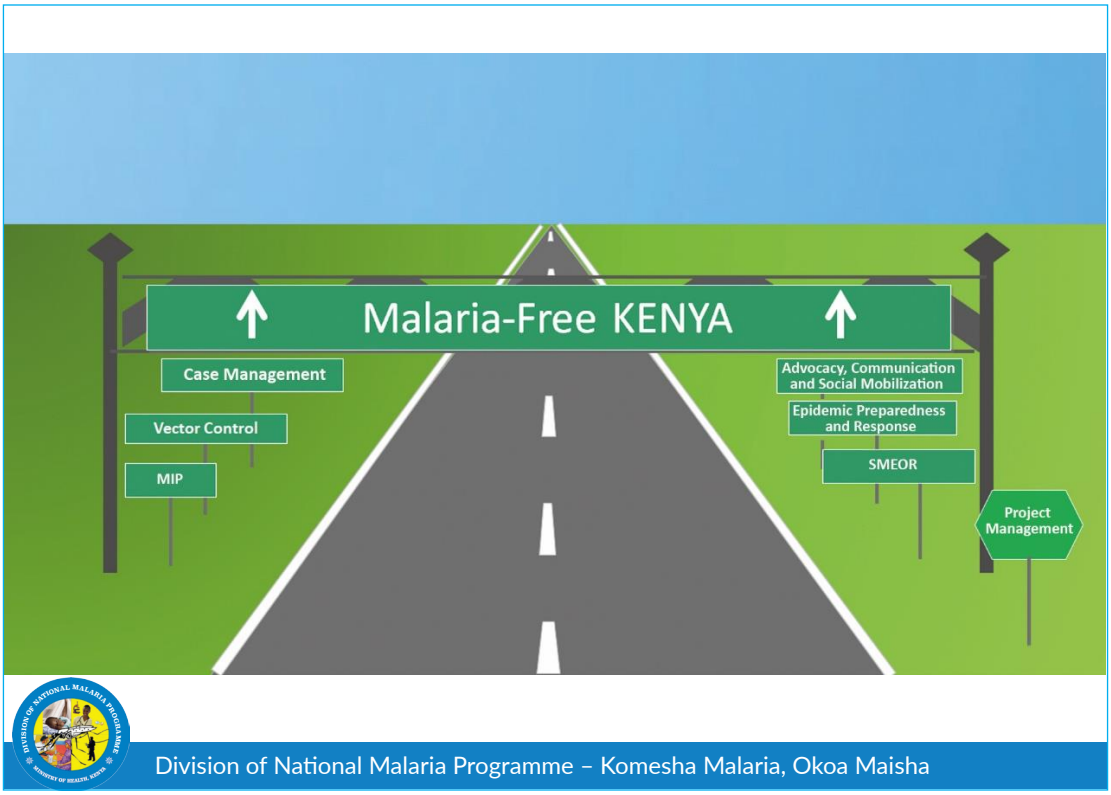
Take-home message from Module 2:

- Data quality for early detection
- Need to verify data to confirm epidemic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Division of National Malaria Programme – Komesha Malaria, Okoa Maisha

Ministry of Health

Module 3

Malaria Surveillance in the Context of Epidemic Preparedness and Response

Division of National Malaria Programme – Komesha Malaria, Okoa Maisha

This module is about surveillance: a key component in epidemic preparedness and response.

Learning Objectives

By the end of this module, participants should be able to:

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

Division of National Malaria Programme – Komesha Malaria, Okoa Maisha

By the end of this module, participants should be able to set and monitor thresholds to detect malaria epidemics.

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

Division of National Malaria Programme – Komesha Malaria, Okoa Maisha

This module has three main components:

- Malaria case definition and detection
- Malaria surveillance data reporting
- Data analysis and threshold setting

Module 3: Learning Unit 1
Malaria Case Definitions and Detection

Division of National Malaria Programme – Komesha Malaria, Okoa Maisha

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

Division of National Malaria Programme – Komesha Malaria, Okoa Maisha

Explain malaria case definitions for surveillance.

- Definitions are in line with the treatment guidelines that stipulate that all suspected cases be tested and only the positive cases be treated with the recommended first-line medicine
- All the tested cases ideally should emanate from the suspected cases. Confirmed malaria cases ideally should emanate from the cases tested

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

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Defining severe malaria:

There is no standard definition for severe malaria. The case definition for severe malaria is as a result of the discharge diagnosis. If left untreated, severe malaria is fatal in most of the cases.

Probe the participants to classify malaria.

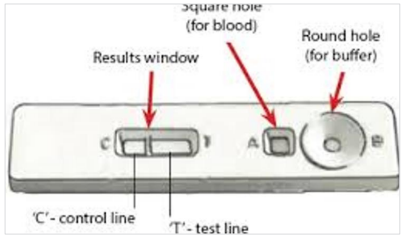
Malaria Case Detection

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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Demonstrate a malaria rapid diagnostic test (mRDT) to the participants.

- Explain the rationale for malaria parasitological diagnosis (i.e., to differentiate malaria cases from other febrile diseases with similar signs and symptoms [mRDTs and microscopy])

Microscopy

- Microscopy is the reference standard, but mRDTs are widely used at peripheral health facilities where microscopy is not available.
- It is the reference standard for detection of malaria parasitaemia (gold standard).
- Has sensitivity >90% if performed well
- Used to confirm diagnosis, monitor treatment outcome, confirm epidemics, and in clinical trials of drugs and vaccines
- Importance: species identification, parasitaemia density, parasite clearance rate through quantification, and useful in detecting treatment failure, which may be through drug resistance

mRDT

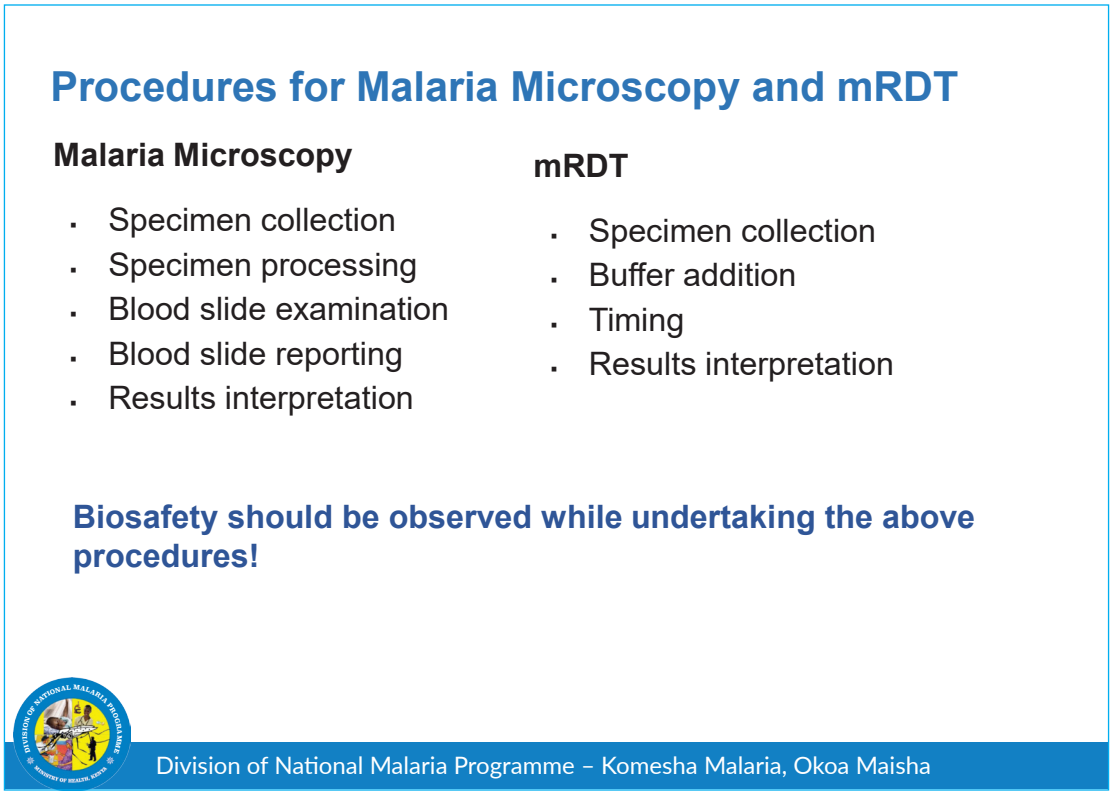
The test contains a strip with antibodies against malaria parasites.

If malaria parasite antigens are present, two bands are formed: a control band and a positive band.

In the absence of malaria parasite antigens, only the control band is formed.

Other diagnostic methods used in nonroutine settings (e.g., research settings) are the following:

- Enzyme linked immunosorbent assay (ELISA)
- Polymerase chain reaction (PCR)



Procedures for both mRDT and microscopy

Patient reassurance

Microscopy

- Biosafety—proper site sterilization of the puncture site
- Use capillary to put blood on the slide. Avoid getting blood directly from the finger
- Dry the specimen in air devoid of dust particles.
- Place and strictly use giemsa stain, not field stain
- Prepare both thick and thin films: thick film is for parasite concentration and speciation
- Use power 100/ oil emulsion objectives

mRDT

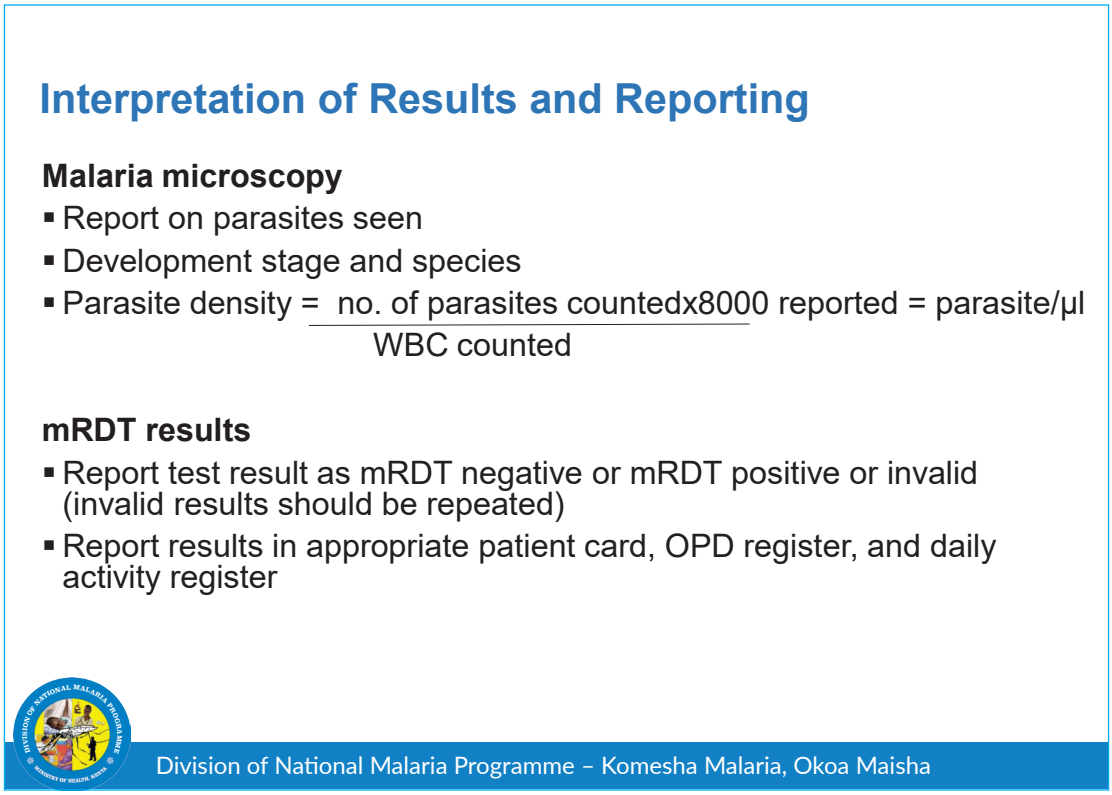
Use provided pipettes in the kit, which are graduated.

Avoid touching buffer container tips to the specimen wells.

Cover the buffer container after every single use.

For timing, follow manufacturer's guidance.

Keenly observe the control line (second line).



The facilitator will highlight how to interpret results from tests using malaria microscopy and mRDTs.

Thin film will differentiate the species *plasmodium ovale*, *vivax*, *malariae*, *and falciparum* and also the stages of development gametocytes.

Report parasite count per microliter of blood. Avoid reporting++++++

When the parasitaemia is high count, the number of parasitized RBCs divide by total number of parasitized and nonparasitized RBCs in 10 fields X 5 million - thin film

Module 3: Learning Unit 2
Malaria Surveillance Data Reporting

Division of National Malaria Programme – Komesha Malaria, Okoa Maisha

This unit covers malaria data reporting and the tools used.

Group Activity (10 minutes)

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

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The facilitator will highlight the following types of data after the participants answer:

- Survey data—scientifically designed so that results can be generalised; sampling is key. Used to track impact indicators. Ask participants to name examples of surveys.
- Surveillance data, routinely collected, data for action
- Service data
- Routine data
- Primary data, collected firsthand
- Secondary data

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

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- From the viewpoint of the health department, surveillance can be active or passive. Passive means the physician takes the initiative to send in the report; the health department sits back in its easy chair and waits for reports to come in. This is the most common type of surveillance
- For diseases of special interest, or during an outbreak or special event, the health department may actually solicit reports from healthcare providers by, say, calling hospitals, clinics, and physician practices once a week to ask whether they have seen any cases of disease X
- Sentinel surveillance is based on selected samples chosen to represent the relevant experience of particular groups, but not necessarily that of the entire population
- Often, sentinel surveillance is set up at a hospital or among physicians most likely to see the cases of interest and who have a particular interest in that disease

Data Collection Processes

Data can be collected:

- Routinely (continuously)
- Periodically (nonroutine)

Group Activity (5 minutes)

- Participants to give examples of data collected routinely and periodically

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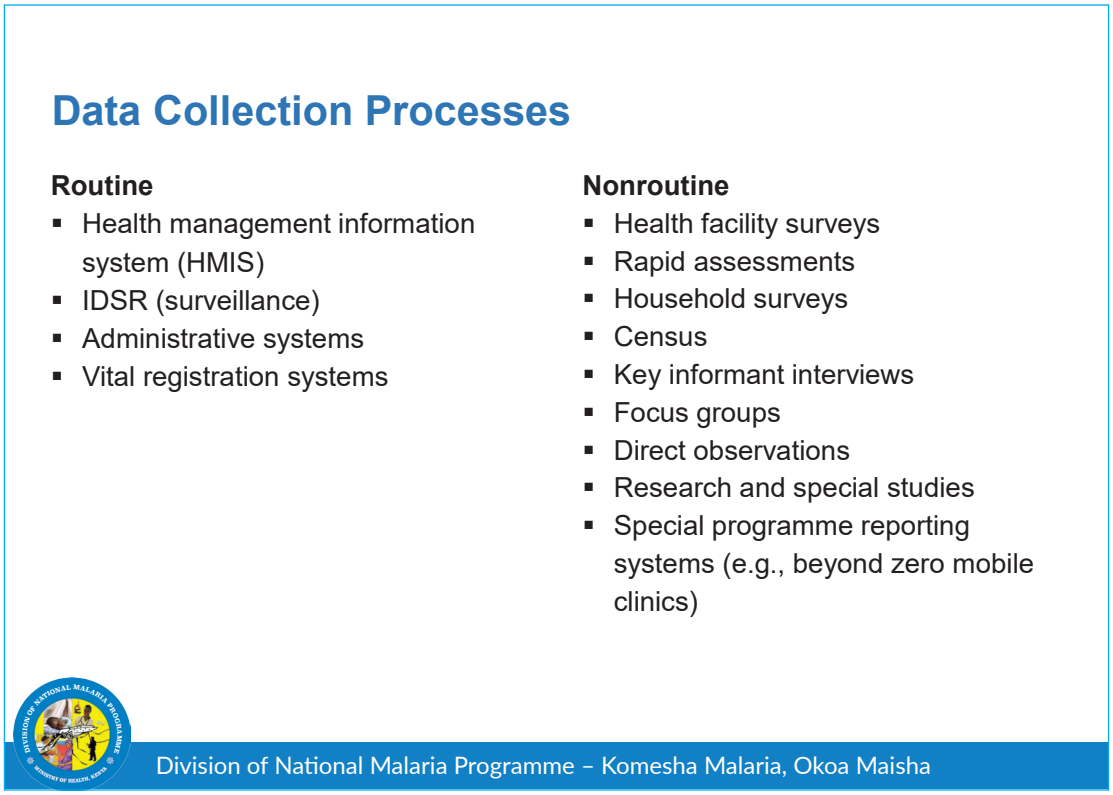
- There are two types of data collection process: routine (data are continuously collected) and nonroutine (data are periodically collected)
- Draw a table with two columns on the flip chart
- Ask participants to give examples of routine and nonroutine data as a co-facilitator writes them down on the flip chart



Show this slide to the participants and highlight any data types that may not have been mentioned.

Describe:

- HMIS routine—monthly reporting of health facilities summaries
- IDSR—weekly reporting of notifiable diseases including malaria
- Vital registration—births, deaths
- Administrative systems—collected by governments or other organisations for nonstatistical reasons to provide overviews on registration, transactions, and record keeping.
- Rapid assessments—fact-finding mission done when need arises to assess a situation
- Key informant interviews—interviews with experts/opinion leaders

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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Explain that the table on the slide shows the base registers and their corresponding summary tools.

- Emphasise that tally sheets are important for tracking the number of cases seen by disease or condition
- Explain that inpatient data can also be used for weekly surveillance

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)

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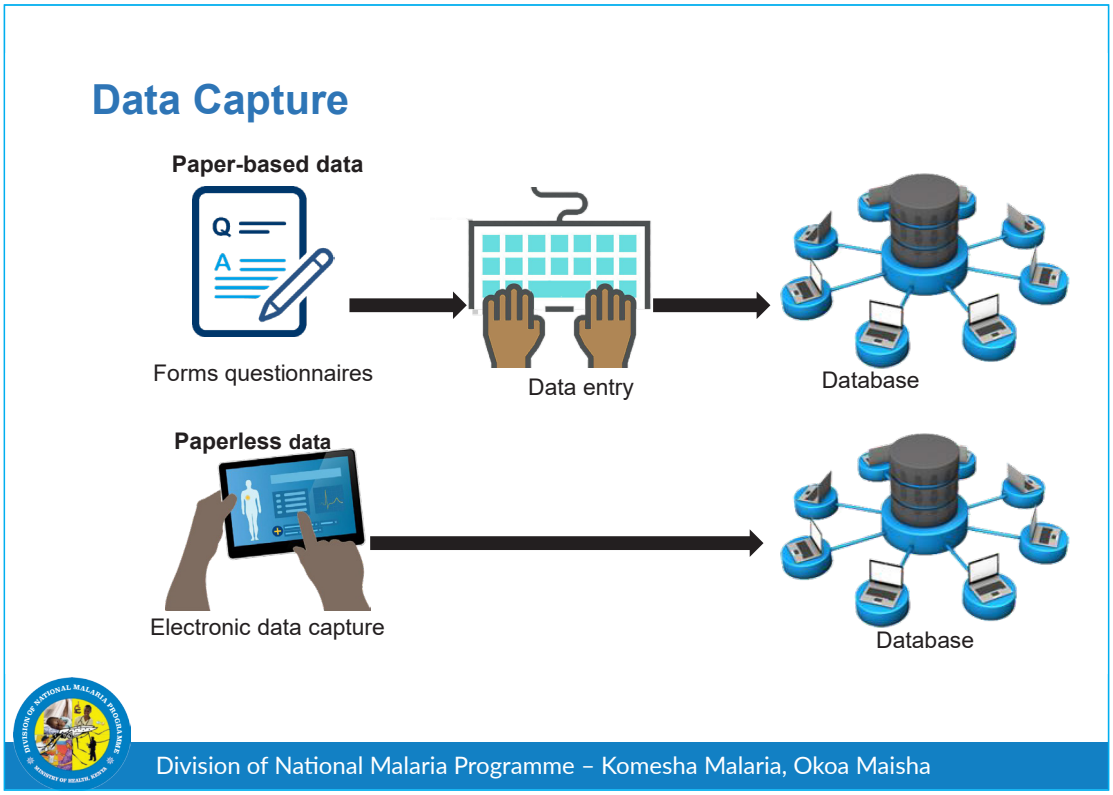
- Participants should know that the OPD register has been revised to incorporate suspected malaria test results in line with the standard case definition
- Explain to the participants how to fill the register and corresponding monthly summaries
- Give examples of mock data and ask the participants to complete the column with the right code
- Review the answers with the class.



- Ask the participants to describe what they can see on the slide. Check how they explain the data flow from the health facilities to higher levels
- Differentiate between paper-based and paperless data-capture approaches

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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This slide introduces the levels of reporting and shows the importance of reporting.

- The slide introduces the frequencies of reporting and the modes in which the reports are transmitted
- Inform the participants that what is reported to each level and frequency of reporting are usually guided by national policy
- Reporting is done manually or electronically
- If a disease is identified at a local level but not reported to the next level, an opportunity for timely response is lost.

Explain that in malaria elimination settings:

- Immediate notification of cases to the field team is done
- Case-based data are shared to the next level

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**

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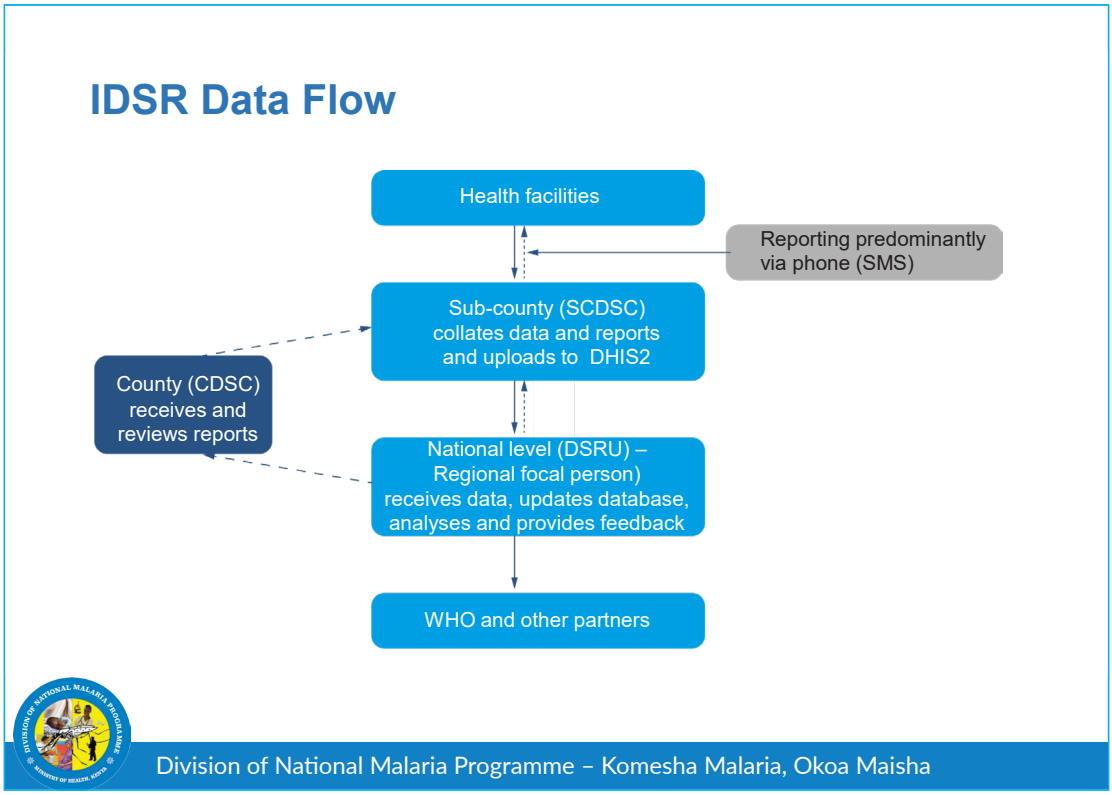
- Ask the participants to explain how they report the weekly malaria surveillance data.
- Demonstrate to the participants how to access IDSR data in the DHIS2 platform.



Explain that weekly surveillance data are analysed weekly by the Disease Surveillance and Response Unit. The information generated is shared with stakeholders at national and international levels.

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]		[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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- Distribute copies of the IDSR weekly reporting form
- Ask the participants to identify malaria data elements on the form
- Ask them which data sources they use to fill in the malaria data elements
- Review the answers together in a class discussion

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

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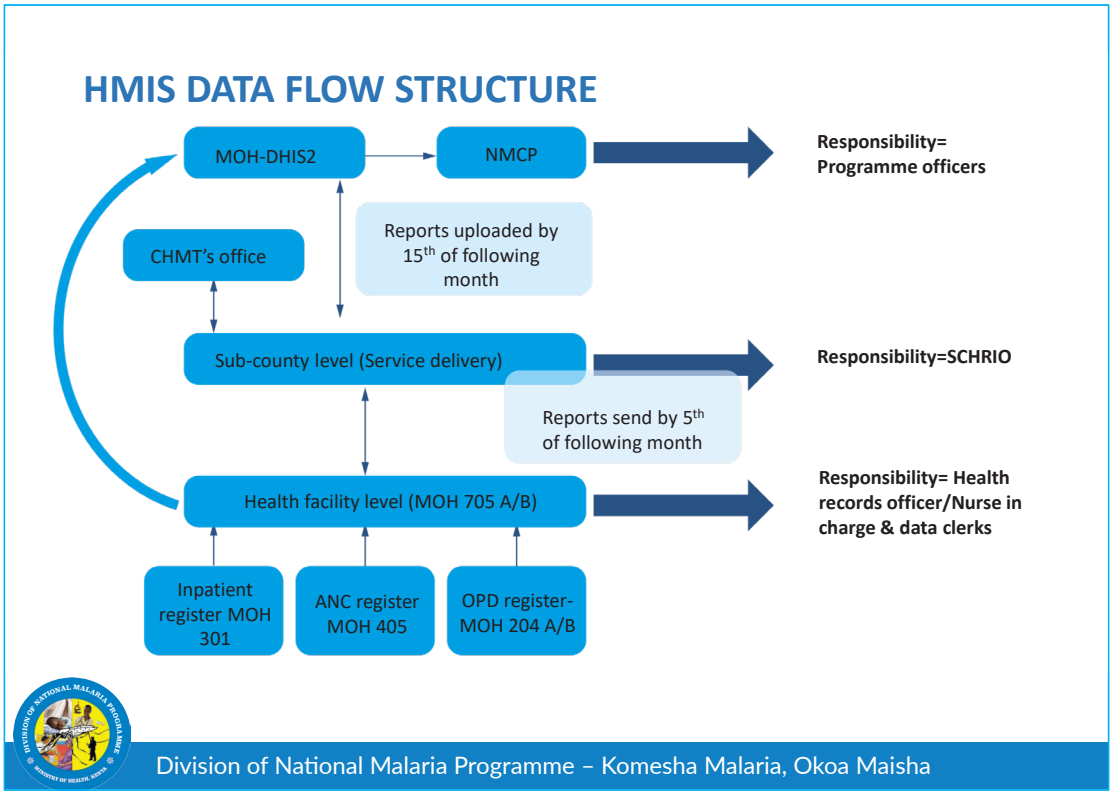
- Ask the participants to name some of the data elements reported monthly through the DHIS2 platform
- Highlight the laboratory and commodity data that are also reported through the DHIS2 platform



Review the data flow structure illustrated on this slide.

Refer to Handout Facility Reporting Form (705 A/B) and Sub-county Reporting Form (MOH 105).

Ask participants to familiarize themselves with data reporting requirements at each level. HMIS data are collected on a monthly basis.

Demonstration of the OPD Register and Reporting Tools

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The facilitator will show the participants the OPD registers, and the columns where malaria elements are recorded.

Show the summary reporting tool, too. Participants practice completing the OPD registers and summary tools with test data.

Facilitators will prepare test data, mock registers, and summary tools for the exercise beforehand.

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

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- Before displaying the slide, ask the participants to name malaria surveillance epidemiological indicators
- Display the slide and highlight any of the indicators that were not mentioned by the participants

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

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- For calculations, the facilitator can use demonstrations to calculate, especially for the malaria test positivity rate percentage of suspected malaria cases tested
- Emphasise the listed key indicators, how they are calculated, the numerator and denominator, the data source, and the summary tool where it is reported

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

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- Participants to practice calculating the indicators shown on the slide using data from DHIS2
- Get some participants to volunteer to demonstrate how they calculated the indicators

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

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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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- Highlight the definition of malaria threshold
- Emphasise the idea of cases exceeding a set maximum expected prior to taking specific actions

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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EXPLAIN

A situation analysis commonly referred to as rapid assessment should be conducted to guide the response actions (i.e., **who** is at risk, **what** are the risks, **when** should action be taken, and **where**)

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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EXPLAIN

- An absolute count of cases per week in health facilities, community, or sub-county can be used to alert to the initial stages of an epidemic and prompt action
- Different cutoff numbers can be used for different levels
- Emphasise that absolute case counts are used in places with little or no malaria

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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Third quartile:

This means that three-quarters (75%) of the time, we expected the number of cases to be below the threshold.

Emphasise that epidemic years are NOT included when using the Cullen method, because the threshold will be inflated owing to the high numbers.

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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Use a set of test data to demonstrate how the third quartile (alert threshold) and Cullen method (action threshold) are calculated.

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

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- Differentiates between alert and action, in relation to epidemic detection and response
- Explain that each epidemic-prone sub-county has five sentinel health facilities that set thresholds and monitor the number of positive cases reported every week. The sentinel sites are supposed to be representative of the malaria epidemiology in the sub-county

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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- Highlight key actions to be taken during the alert phase
- Emphasise the need to monitor cases

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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- Emphasise that an increase in cases does not necessarily point to an epidemic
- Many factors can lead to an apparent increase in cases, including improvements in reporting or even change in personnel
- Other factors can contribute to the increase, and cases need to be verified for confirmation

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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- At this point, public health action needs to be taken, because the epidemic threshold has been surpassed
- Emphasise the need to do a rapid investigation to confirm the true increase in cases

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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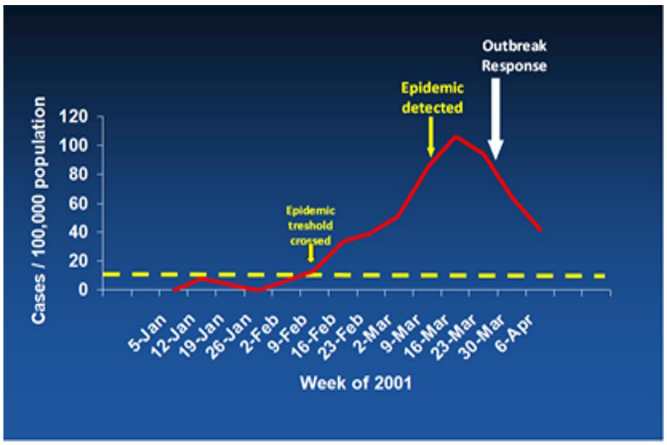
- Before displaying the slide, engage the participants in outlining response activities that should be undertaken during an outbreak
- Display the slide and highlight any activity not mentioned by the participants
- Emphasise that effective case management (diagnosis and treatment) is critical for epidemic response, hence the need to ensure continuous availability of commodities

Group Activity—What happened in the scenario shown here?



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- Engage the participants to analyse the figure
- Help participants understand the idea of cases surpassing the established threshold
- Emphasise that even without any intervention, a malaria epidemic will eventually subside but with devastating consequences of very high mortality and morbidity

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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- Ask the participants to key in the weekly five-year retrospective data and current year for their respective work stations.
- The facilitator should emphasise the use of the 52-week data of five retrospective years as baseline data in calculation and plotting of threshold graphs

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

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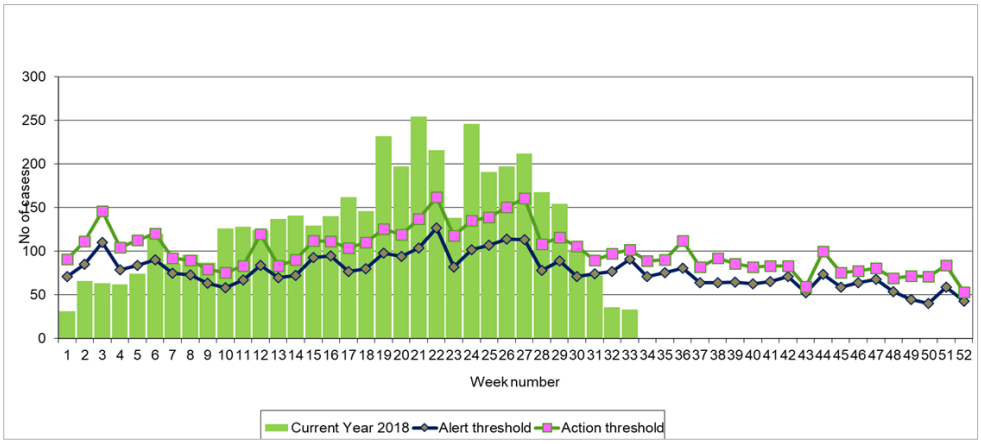
- Take the participants through each step slowly until they all understand the concept and are able to apply it to obtain the threshold and plot the graph
- The co-facilitators should move around supporting the groups. Make sure that each participant is able to correctly apply the formula and plot the graphs on their own

Example of a Health Facility's Weekly Thresholds



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The facilitator will engage the participants in analysing the graph:

- When was the alert threshold crossed?
- What should have been done then?
- When was the action threshold crossed?
- What actions should have been undertaken?
- Ask the participants what they think about EPR for this facility.
- Was it adequate? Why or why not ?

Thresholds Using Automated Excel Template

Participants will repeat the exercise using the automated

Excel template

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The facilitator will take the participants through the exercise using the automated Excel sheet. Ensure that the participants understand the concept by doing it manually before using the automated Excel sheet.

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

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Data Analysis

Data analysis refers to:

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

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EXPLAIN

- Analysis is summarizing the data and turning them into information. Data on their own are generally not useful for the decision-making process
- Analysis will vary in complexity.
- Most data analysis is quite simple, but some is much more complicated and requires a great deal of expertise
- Interpretation is the process of making sense of the information. What does it mean for your program

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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EXPLAIN

- Tables are a simple way to summarize data
- Data are presented as absolute numbers or percentages

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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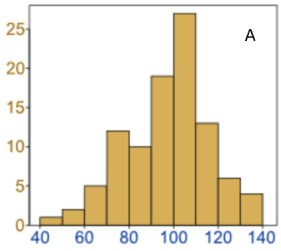
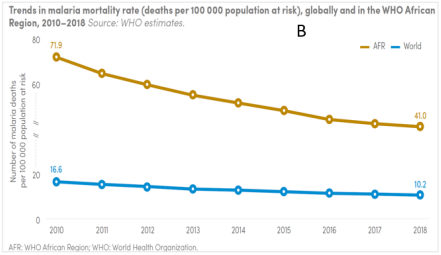
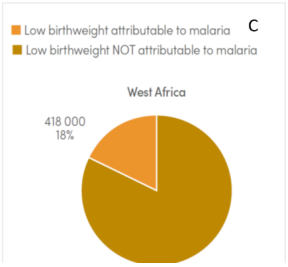
EXPLAIN

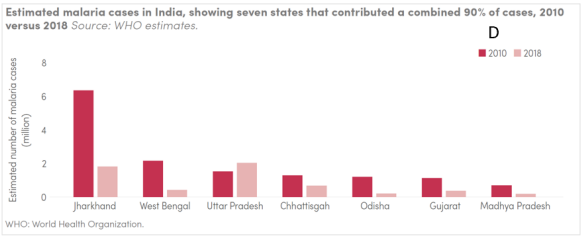
- Graphs MUST have titles and axis labels
- The most informative graphs are simple and self-explanatory:

Which is which?









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Correct answers: A=histogram, B=line graph, C=pie chart, and D=bar graph

Ask the participants to explain the difference between a bar graph and a histogram.

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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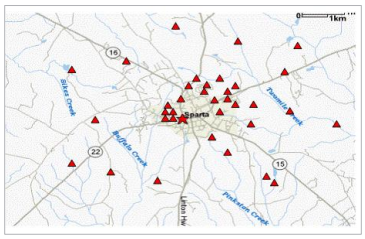
EXPLAIN

A **map** is a symbolic representation of selected characteristics of a place, usually drawn on a flat surface.

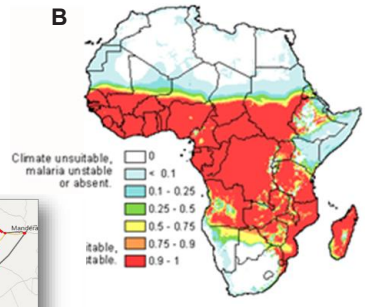
A geographic information system (GIS) is a computer system for the input, editing, storage, retrieval, analysis, synthesis, and output of location-based information.

Name the Types of Maps Shown

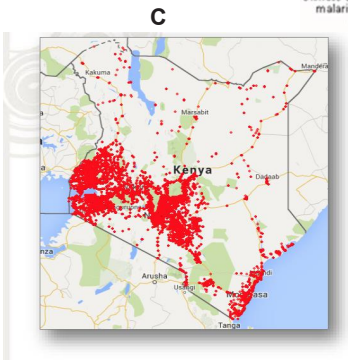
A



B



C



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- Ask the participants to name the types of maps shown on the slide.
- Answers: A=spot map, B=choropleth/area map, C=geospatial map

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

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Give the participants 5 minutes to discuss how they would present the 4 types of scenarios given and explain their answers.

Sample a few pairs to give their answers to the class. Engage the class in a discussion on the best way to present each scenario and why.

Answers

- Line graph
- Bar chart
- Bar chart/table
- Maps

Effective Presentation (10 minutes)

- Divide participants into groups of three
- Each group reviews the handout on presentation do's and don'ts
- Each group presents the key points on effective presentation from the handout

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Summarize the following key points of a good presentation from the handout:

- 6x6 means maximum of 6 bullets per slide and 6 words per line
- Consistency in colour and font size
- Avoid overcrowding the slides
- 1 minute per slide

Data Interpretation

Interpreting data involves the following:

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

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In short, data interpretation asks the following questions:

- What does the data tell you?
- What does it all mean?

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?

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When interpreting data, we may ask these questions:

- What is the relevance of the unmet target for the program?
- Is it because we are not meeting our coverage or efficiency goals?
- Is our quality of care poor?
- What could be causing this?
- How are we doing in comparison with other health facilities? Sub-county?
- What are the potential reasons for the finding?
- Do data quality issues play a role in what we are observing?
- What other data should be reviewed to understand the finding (triangulation)?
- Is there a need to conduct further analysis?

Data Dissemination

What is data dissemination?

What are the different ways of disseminating data?

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Ask the participants to say what they think about data dissemination.

- Explain that data dissemination is the act of spreading information generated from data so that they can be used to improve the quality of data and make decisions
- Prompt the participants to name different ways of disseminating data
- For example, ask them if they have data review meetings, what happens in those meetings, and how often they have such meetings

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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- Guide the participants to identify ways in which monthly data review meetings, data quality assessments, and support supervision can be forums for data dissemination
- Explain that surveillance bulletins are an important channel of disseminating data

Data Sharing

What is data sharing?

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EXPLAIN

- Difference between data sharing and dissemination
- Dissemination is widespread
- Data sharing is internal and open to discussion
- Data sharing is the practice of making data available for other users (e.g., a health records officer making data available in DHIS2)

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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Ask the participants how they share data.

EXPLAIN

- Internal meetings; different departments share information
- Health facilities in a sub-county share aggregated service provision data
- Supervising agencies review and discuss information
- Stakeholder meetings review and discuss challenges and opportunities

What is Feedback?

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Ask the participants to define feedback.

- Emphasise that feedback is two-way
- Feedback is the information sent to an entity (health workers) about their prior behaviour
- The purpose is so that they may adjust their current and future behaviour to achieve the desired result

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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Ask the participants to give examples of feedback they have received.

Module 3: Learning Unit 5
Data Demand and Use

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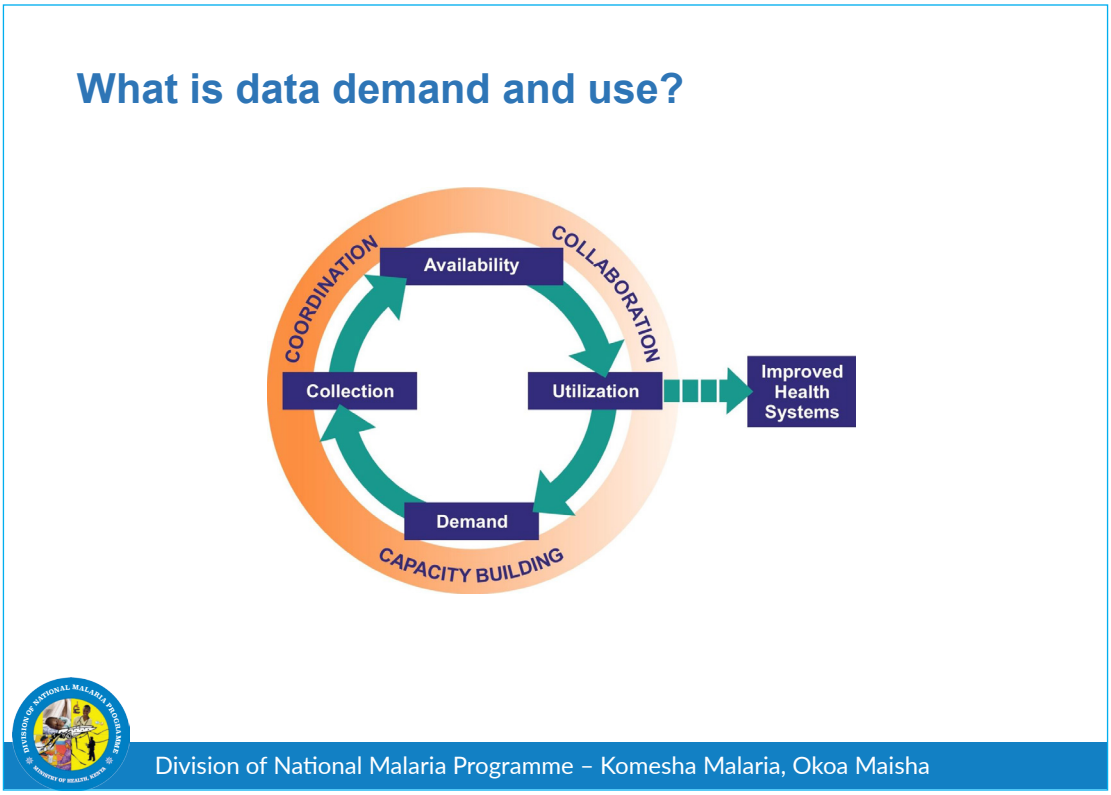
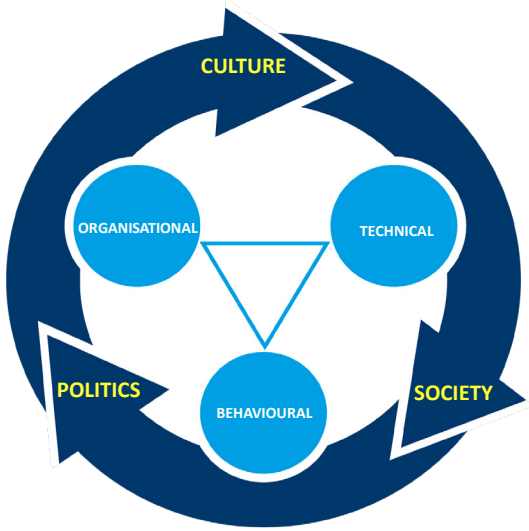
This unit is about data demand and use.



EXPLAIN

- Data demand and use emphasises the use of data at the point of generation
- Demanding additional data continues the cycle of data demand and use
- The framework shows a cycle in which improved data collection, analysis, availability, interpretation, and use continuously generate more demand for and sustained use of data
- This eventually leads to improved accountability and improved health decision making

What Determines Data Demand and Use?



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- Explain that political, cultural, and social contexts are important determinants of data demand and information use
- Decision making, sharing of information, and data collection and reporting all occur within these contexts

Importance of Data Demand and Use

Why is data demand and use so important?

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Explain that data demand and use is important for the following reasons:

- Mobilise resources—commodity, infrastructure
- Increase financial investments for service delivery
- Increase accountability
- Improve HMIS at all levels
- Increase demand for evaluation and other research
- Ask more questions

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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- Allow 5 minutes for participants to discuss barriers to data use
- Elaborate on the barriers
- Ask the participants to brainstorm on the probable local solutions to the barriers

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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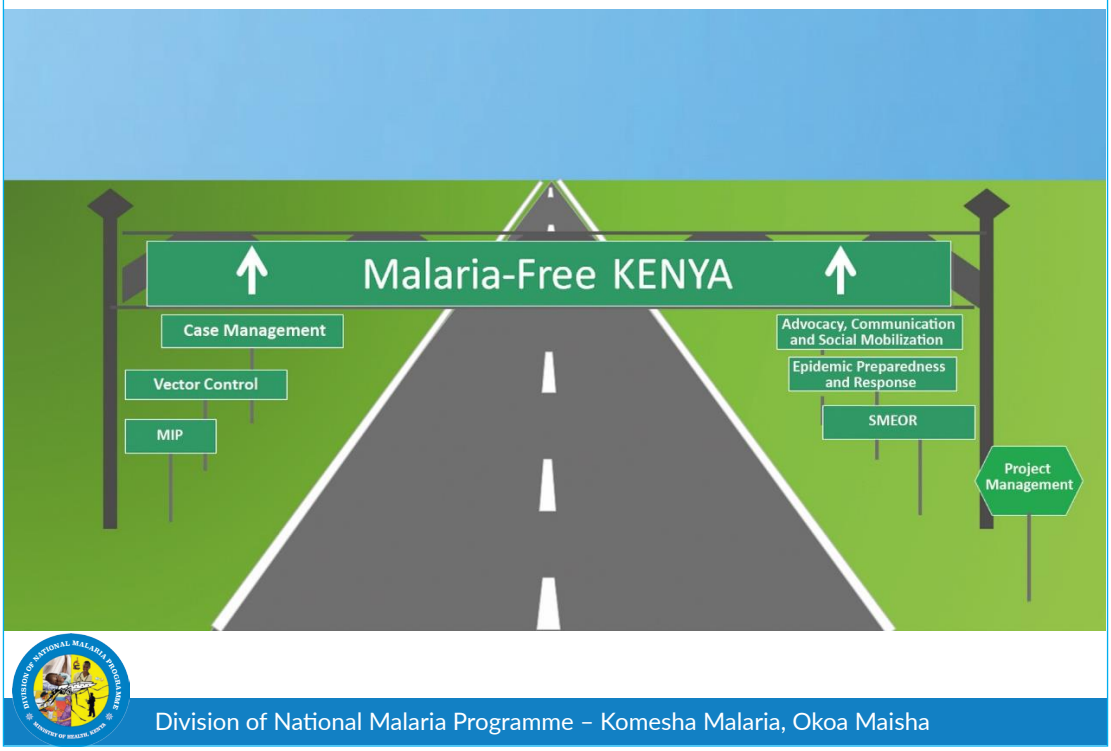
Key take-home message:

Surveillance = data for action to inform timely public health action



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Ministry of Health

Module 4

Basic Concepts of Malaria Entomology

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This module is about the mosquito vectors that transmit malaria parasites.

Learning Objectives

By the end of this module, participants should 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

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This module is about malaria entomological surveillance and key indicators

Module 4 Outline

Unit 1: Introduction to Malaria Entomology

Unit 2: Mosquito Surveys and Key Entomological Indicators

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This module consists of two units: an introduction to malaria entomology and malaria vector surveys and key indicators

Module 4: Learning Unit 1
Introduction to Malaria Entomology

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Activity (10 minutes)

Question and Answer Session

- What is entomology?
- What is malaria entomology?

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- Use this slide to articulate the correct definition of malaria entomology
- Emphasise that entomology is the study of insects, “Entom” means insects, “logy” means study of
- Malaria entomology is the study of insects that transmit malaria (i.e., mosquitoes).
- Underscore the role of mosquitoes in malaria transmission

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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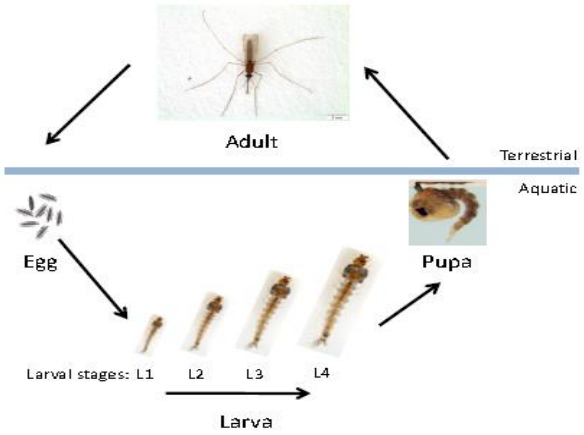
- Give a concise definition of malaria entomology
- Underscore the fact that only female Anopheles mosquitoes transmit malaria
- Emphasise that even within the Anopheles, not all of them are malaria vectors

Stages of Mosquito Life Cycle



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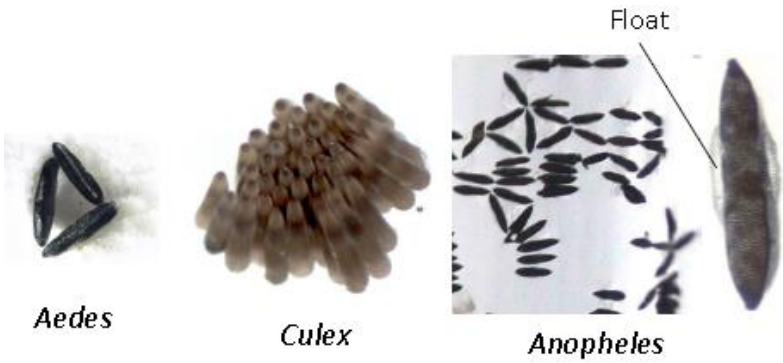
- Highlight the aquatic and terrestrial stages, which are influenced by environmental factors (temperature, precipitation)
- Temperature is one of the drivers of epidemics. It enhances maturity of the mosquitoes

Differentiating Between Anophelines and Culicines

1. The Eggs



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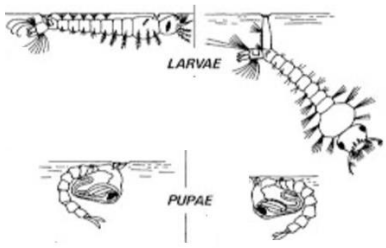
- The eggs are small and may not be visible in water
- Malaria vector eggs—anopheles eggs—have floaters, and nonmalaria vector eggs are packs
- Emphasise the features that differentiate potential malaria vectors and nonvectors at the egg stage

Differentiating Between Anophelines and Culicines

2. The larvae and pupae



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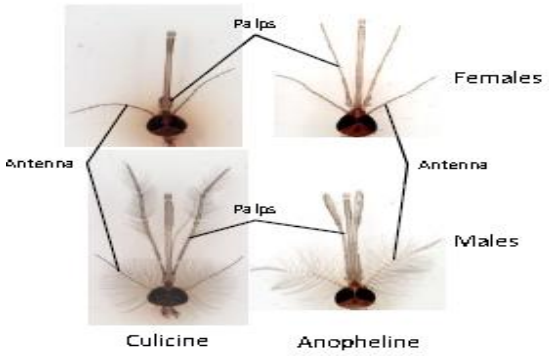
- This stage is visible in water
- Larvae of the malaria vector lie flat, parallel to the water surface
- Larvae of the nonmalaria vector are not parallel to water surface
- Emphasise the differentiating features of potential malaria vectors and nonvectors at the larval and pupa stages

Differentiating Between Anophelines and Culicines

3. The Adult Head



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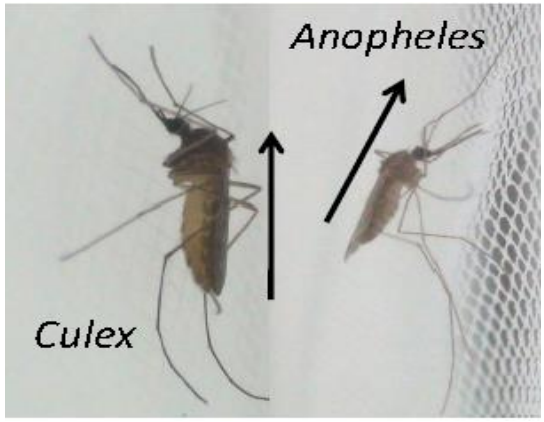
- The adult head can be used to differentiate between the malaria vector and a nonmalaria vector
- The head of a malaria vector has a probosis (for feeding), palps, and antenna
- The palps and probosis are the same length
- Guide the participants in identifying the parts in the image provided
- Emphasise the differentiating features of potential malaria vectors and nonvectors at the adult stage based on the features on their heads

Differentiating Between Anophelines and Culicines

4. The Adults: Resting Position



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- Emphasise the features that differentiate potential malaria vectors and nonvectors at the adult stage based on the resting position
- Malaria vectors rest at an angle (45 degrees) to the wall

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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- Emphasise the behaviour of malaria vectors
- Feeding (on humans, animals, birds; feeding indoors or outdoors)
- Resting (indoors or outdoors), laying eggs

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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- Emphasise where feeding occurs (indoor or outdoors)
- What mosquitoes feed on (humans, animals, or birds)
- When the mosquito feeds (peak times10 pm–12am and 3am)
- Emphasise the need to understand the mosquito behaviour because this influences the choice of intervention (e.g., indoor resting mosquitos can be controlled by use of IRS and LLINs; outdoor biting can be controlled by larval source managament)

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

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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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- Use this slide to evaluate participants' understanding of the meaning of surveillance
- Bring vector surveillance into the context of IDSR—vector surveillance is routine, but its reporting is periodic
- Emphasise that vector surveillance data can and should be collected

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.

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- Use this slide to articulate the correct definition of vector surveillance
- Enrich the definition by involving the participants

Discussion question (10 minutes)

- Why vector surveillance
- The importance of vector surveillance data

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Ask the participants to say what they think vector surveillance is important for.

Importance

High vector density and sporozoite rate means increased malaria transmission

Emphasise on the role of data in appropriate targeting of vector control interventions (e.g., targeted IRS in response to an outbreak)

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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- Preliminary surveys get baseline data
- Regular identification of sites for routine surveillance
- Highlight the different types of mosquito surveys and their applications
- For regular or trend observations, several sentinel sites to represent different epidemiological zones may be used

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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This slide emphasises the two methods of rapid assessment of malaria vectors during malaria epidemics:

- Spot checks: Select other sites other than the sentinel site for monitoring
- Foci investigations are conducted to understand changes in malaria transmission dynamics
- Spot checks and foci surveys are used during malaria epidemics for rapid assessment

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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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

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- This slide gives a summary of the most common mosquito sampling methods
- Collected specimens are recorded using the annexed reporting and recording tools (show the participants the tools)

Pyrethrum Spray Collection

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- Emphasise the practical bit of Pyrethrum Spray Collection
- Samples collected are preserved for further processing
- Indoor resting mosquitoes: Resting mosquitoes are knocked down using aerosols and collected on white calico sheets
- Main purpose is to establish:
  - Densities
  - Species composition
  - Physiological status
  - Human blood index
  - Infection rates

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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- Highlight the materials and methods used for hand collection (e.g., mouth aspirator which has a glass, a rubber end, and a sieve between them)
- A torch is needed for light to aid in the search for mosquitoes
- If possible, participants should be shown the actual materials
- Demonstrate how to use a mouth aspirator

Light Trap

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- This slide give a visual presentation of a light trap. If possible, the actual light trap should be shown to the participants
- Light traps are used to collect mosquitos either indoors or outdoors
- Light traps use motor and light powered by a battery (six volts)
- Light attracts the mosquitoes while the motor exacts negative pressure that pulls the mosquitoes into the light trap
- Demonstrate using a light trap

Window (Exit/Entry) Trap

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- This slide shows a visual representation of an exit trap fitted on a window.
- The method collects live specimens
- It can be placed inside or outside
- Mainly used to understand the mosquito behaviour in terms of indoor resting and biting mosquitoes than outdoor biting and resting mosquitoes

Human Landing Catch

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- This slide highlights the techniques used in the human landing catch.
- Collect the mosquito in the act of feeding
- Collect the mosquito from the skin before it lands
- Requires skilled personnel to do this
- Hand aspirator used
- Done on hourly basis
- Demonstrate how to do HLC

Larval Sampling

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- This slide highlights how larval sampling is done using a standard dipper
- A dipper is used where there are large water bodies
- Pipetting methods are used in sites with small water volumes (e.g., animal hoof prints)
- The facilitator should demonstrate how to use a standard larval dipper

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

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- The number of mosquito vector species per house, per night, per person
- HBI is the number of mosquitoes that fed on a human. It is obtained through enzyme linked immune-absorption assays (ELISA) technique. The two indicators are obtained through ELISA tests

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

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- Sporozoite rate indicates the number of infected mosquitoes that are carrying the malaria parasite
- This indicator is used to define local transmission of malaria
- EIR is determined by crucial mass of mosquitoes, which must carry some sporozoites with high human blood index
- Emphasise that EIR is a measure of malaria transmission in an area and can be used to define whether malaria in an area is indigenous

Larval Indicators

Habitat occupancy
Percentage of positive larval/pupae habitats

Larval density
The average number of larvae/pupae per dip

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- Entomological inoculation rate (EIR) is a measure of malaria transmission in an area
- Unlike the sporozoite rate, it is used to define whether malaria in an area is indigenous
- Larviciding reduces habitat occupancy but not necessarily larval density

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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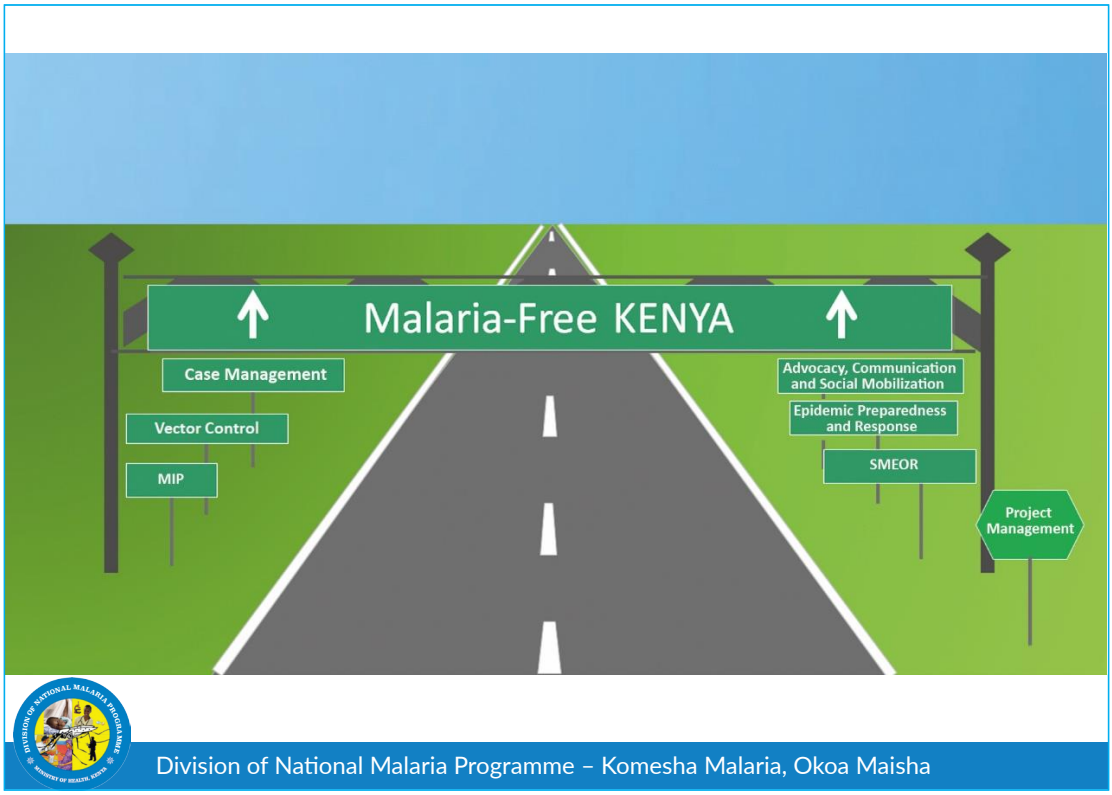
Key take-home message:

Malaria entomology is key for determining whether malaria in an area is locally transmitted and for guiding the choice of vector control interventions.


Malaria-Free KENYA
Case Management
Vector Control
MIP
Advocacy, Communication and Social Mobilization
Epidemic Preparedness and Response
SMEOR
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Ministry of Health

Module 5

Malaria Epidemic Prevention Strategies

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This module introduces malaria epidemic strategies

Learning Objectives

By the end of this module, participants should 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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The main objective of this module is to enable participants to apply epidemic preparedness strategies in their duty stations.

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

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This module has three units: an introduction to epidemic prevention strategies, commodity security for epidemic preparedness, and coordination of epidemics.

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

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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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- Focus on the implementation of preventive measures that are applicable to preparedness and early response
- For each intervention, discuss the importance of assessing the suitability, timing of implementation, and coverage
- Bring out the importance of community acceptance in the process
- Community-level ownership yields results and may reduce some implementation costs

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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- LLINs—long-lasting insecticidal nets
- LSM—applicable where mosquito breeding sites are few, fixed, and findable
- High coverage, acceptance, and use are critical success factors for vector control

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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- Personal, household, and community actions are key for malaria prevention
- High community coverage increases the protection of individuals

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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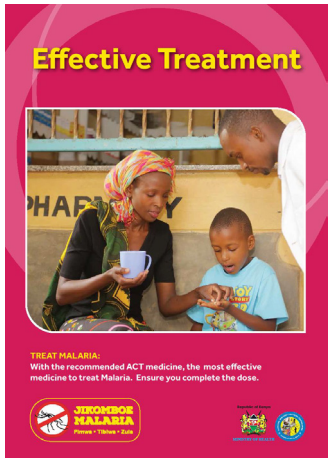
- Different messages are directed to different target groups
- Primary target refers to the community and household members
- The community health volunteers are responsible for passing the messages during community dialogue days and at barazas, churches, and mosques
- The messages inform people about prevention and where and when to seek treatment

SBC Materials for Primary Targets



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Ask the participants to describe the SBC messages on the posters

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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- Highlight that there are different channels of relaying messages for the primary target audience
- Choose the most effective channel for the locality and target audience

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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- These messages target health workers at the health facility level and CHEWs/CHAs providing care at the community level
- Messages for health workers focus on data and educating the public on prevention, treatment, signs, and symptoms, and managing commodity stocks

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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- Notice the differences in communication channels for the secondary audience
- Identify the most appropriate channel for the target group and locality

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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- Targets county leadership: community health management team (CHMT), county executive committee (CEC) members, chief officers, members of county assembly (MCAs)
- Community leaders: village elders, chiefs, local nongovernmental organizations, civil societies
- Other stakeholders

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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Identify and use the most appropriate channel for the target group and locality

Module 5: Learning Unit 2
Emergency commodities for malaria EPR

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This unit is about securing malaria commodity availability.

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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- Quantification is essentially an estimate of the quantity of need for commodity/service
- The estimate can be derived from various sources, including past experience, documented standards, historical information, needs assessments, etc
- Outline the processes of quantification, beginning with identifying the following:
  - What is needed and why
  - How many
  - Where
  - In what format
  - The anticipated lead time

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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- Important to include all requirements for pharmaceuticals and nonpharmaceuticals
- Good practice to use data to inform quantification and procurement
- Emphasise using most recent information to provide a better picture of the needs

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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This statement is important to bring out the guiding principles for public sector procurement.

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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- Accuracy and comprehensiveness of the information in the procurement plan will assist with expediting procurement
- Specifications of goods and services should be based on most recent country-level standards to ensure uniformity and quality
- Cost-effectiveness is part of the assessment of the various options when procurement is considered

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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Have a contingency plan for other factors that may delay or hamper the delivery of essential supplies (weather, logistics, conflict, commodity availability and manufacturing cycles, funding, regulations, etc.)

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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- The right quality—Meets or exceeds the specifications provided (accurate specifications is the key component for this)
- The right quantity—There is also a need to qualify the quantities to reduce ambiguity due to packaging and other descriptions
- The right price—Should be based on market analysis, contracting frameworks, historical information. This brings about the issue of value for money
- The right time—Both to start the procurement process and the time the commodity/service is needed at the point of use
- The right place—This speaks to the point of delivery, can have cost variances due to logistics involved, clarity must be provided as to locations and quantities
- From the right source—Certain commodities/services may need to be obtained from certified suppliers
- In the right size /formulation—Various products come in different sizes and formulations (child/adults)

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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- Commodity consumption during epidemics is usually erratic and in certain cases abnormally high
- Frequent monitoring of this provides good information for re-supply and or procurement.
- Positioning of commodities is important for logistics
- The positioning should take cognizance of accessibility, storage capacity, etc
- Buffer stocks: based on the current commodity management method adopted
- For medicines, there is an in-built "buffer" within the agreed stocking levels (3 months + additional 3 months)
- Certain commodities have a short shelf-life, and buffer stocks may run the risk of expiries

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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Ask the participants to discuss some of the key items that need to be included in the procurement plan for malaria emergency commodities and supplies as a co-facilitator lists them on a flip chart.

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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Ask the participants to identify other nonpharmaceuticals that may be required for malaria EPR.

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

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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

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The committee should be active both at the sub-county and county levels.

Teams for Outbreak Preparedness

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

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- PHEMC includes all the stakeholders in the sub-county
- RRT is a small team drawn from the PHEMC that has the technical capacity to investigate and confirm the epidemic
- Both teams should be in place for preparedness

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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Resources can be mobilised from the community, health facility, sub-county, county, and other partners.

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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- Training materials should include technical materials for health workers and abridged version for lay people
- Post-epidemic evaluation should be conducted at all levels of service delivery

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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- Resources can be mobilised from the community, health facility, sub-county, county, and other partners. PHEMC plays a key role in all phases of EPR
- It should be before, during, and after an outbreak

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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The membership takes a multisectoral approach at both county and sub-county levels.

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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Emphasise the role of investigating and initiating response measures as the most critical.

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

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Emphasise the technical assistance role, investigating and conducting post-epidemic evaluation.

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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Should be conducted routinely at all levels to assess preparedness with special reference to:

- Thresholds
- Commodities
- Reporting
- Training
- Guidelines and other policy documents

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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- Best done when there is an impending epidemic to assess what measures should be put in place if the situation becomes an epidemic
- Can be done when there is no epidemic

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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- A standard checklist should be used to conduct the assessment
- The rapid assessment checklist is annexed in this manual

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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Emphasise identifying gaps and acting on them

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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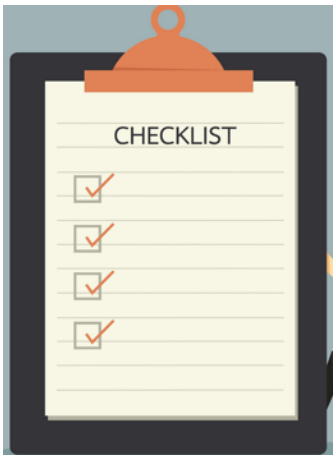
Emphasise the following take-home messages:

- Need to have a costed and implementable EPR plan
- Need for a functional emergency management committee
- Need for commodity security at all times

Practicum on Filling Preparedness Checklist



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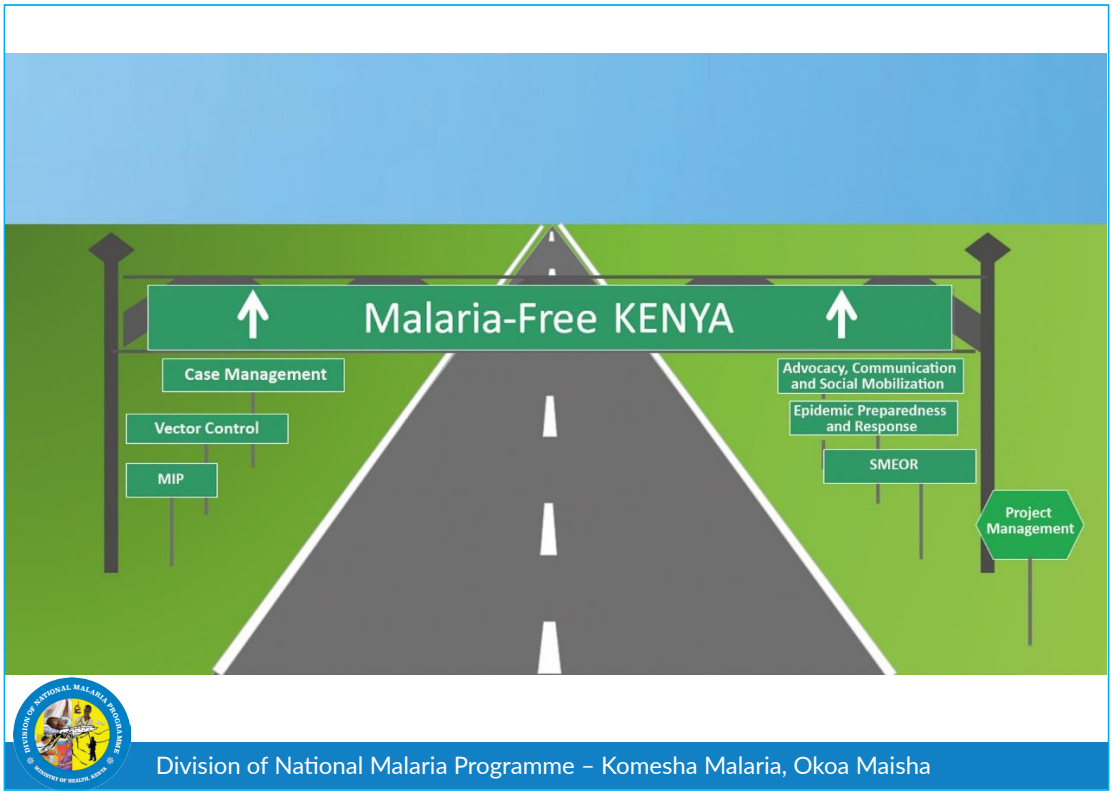
Get the participants into small groups to practice completing the rapid assessment checklist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Ministry of Health

Module 6
Malaria Epidemic Response

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This module is about responding to malaria epidemics.

Learning Objectives

By the end of this module, participants should 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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The main objective of this module is to enable the participants to investigate, confirm, and effectively respond to malaria epidemics.

Module 6 Outline

Unit 1: Malaria Epidemic/Outbreak Investigation

Unit 2: Monitoring Epidemic Response

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This module has two learning units, as outlined on the slide.

Module 6: Learning Unit 1
Malaria Epidemic/Outbreak Investigation

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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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- Briefly recall the topic on malaria thresholds (e.g., ask the participants to say what an action threshold is and briefly explain the formula for obtaining it)
- Ask the participants to say why they think it is important to investigate before confirming an epidemic (prompt the participants to mention some of the reasons that can lead to an apparent increase in malaria cases [e.g., the increase could be the result of erroneous reporting, change in clinician])

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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This should be done when there are rumours or reports of a suspected outbreak in order to verify and confirm an outbreak.

- Clinical and public health features influence the decision: What is the morbidity / mortality? Is it one case or 1,000? What is the case-fatality rate? Do we see an unusual presentation–rare disease, change in pattern, new disease?
- Control: Prevent additional cases; prevention–prevent future outbreaks
- Research opportunities: Identify new risk factors; define natural history and spectrum of the disease; measure impact of control measures or clinical interventions; etc
- Programme considerations: An outbreak may represent a failure or gap in a public health programme. Need to investigate to determine why
- Public/political / legal concern: Health department needs to be "responsibly responsive"
- Training: Important that an inexperienced epidemiologist accompanies senior epidemiologist to gain experience and feel more comfortable conducting an investigation the next time

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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Explain that:

- There is no one "right" list, but everyone needs a checklist to ensure a systematic approach and to ensure that you do not miss any key steps
- This order is CONCEPTUAL

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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- Clinician—signs, symptoms, and management of patients
- Lab personnel—sample collection and analysis
- Epidemiologist—characterise the outbreak (time, place, and person) and propose response measures
- Surveillance officer—data collection, management, and analysis
- Environmental health officer—environmental risk factors and how to modify
- Entomologist—adult mosquito collection and identification of species that transmit malaria and identification of mosquito breeding sites

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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An outbreak is an unexpected event, hence:

- Need to investigate quickly
- Pressure for answers
- Multiple agencies
- Media spotlight

Because of all these, field investigation is needed.

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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- An increase in malaria cases or deaths in routine health data may be because of normal seasonal upsurges
- Thresholds are a more scientific, evidence-based method of determining when an increase in cases is a true epidemic

Module 6: Learning Unit 2
Epidemic Response Interventions

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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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- Early response to epidemics is key to reducing morbidity and mortality
- The first priority response intervention is case management, diagnosis, and treatment
- An epidemic case definition is developed and adopted to determine who is a case

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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External quality assurance during epidemics entails the following:

- 10 slides taken to the county malaria reference laboratory
- 25% of all slides in the county sent to the national malaria reference laboratory
- 10% of all slides examined during the outbreak should be submitted to the national malaria reference laboratory

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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- Temporary treatment centres/outreach clinics should be considered in remote or isolated communities
- SBC messages emphasising prompt treatment (within 24 hours) for all suspected cases should be deployed though appropriate channels

Vector Control Interventions

- Targeted LLIN distribution
- Focalised IRS
- Larval source management

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- Where appropriate, focalised IRS can be applied. The behaviour of the local mosquito transmitting the malaria parasite must be well known (i.e., one that bites and rests indoors)
- Coverage of the focalised IRS must be high >85%, with the right insecticide, the right equipment, and well-trained sprayers
- Targeted distribution of LLINs may also be done, but local acceptance must be high
- Larval source management may be applied where breeding sites are few and identifiable.
- Timing of the vector control interventions is critical (e.g., focalised IRS should be done within 2 weeks of onset of the epidemic)
- To reduce transmission, vector control interventions that target adult mosquitoes are recommended

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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- Emphasise the importance of sleeping under an LLIN in all seasons
- Use environmental manipulation, such as control of breeding sites by removing plastics, tyres, and containers that can collect water during the rainy seasons
- Community members should be sensitised on the importance of promptly seeking treatment when unwell

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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SBC messaging for malaria epidemic response should focus on the following:

- Health worker adherence to treatment guidelines is critical for effective case management and to prevent onward transmission
- Early referral of fever cases is needed from the community to the health facilities
- Advocacy of resource allocation should be done at all levels, from the community to the national level

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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- Remind the participants of the definition of surveillance (i.e., systematic, ongoing, collection, analysis, interpretation dissemination and use of data to improve public health practice)
- It is important to develop an outbreak case definition to characterise the epidemic
- Surveillance is key—a lot of data are collected (line listing and situation reports) to monitor trends during the epidemic

Surveillance During Epidemics (2)

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

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- Enhanced surveillance during epidemics monitors changes in the infectious agents
- Surveillance during epidemic response facilitates planning
- Monitoring trends in cases generates evidence to determine when the epidemic is over

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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- A case definition is a standard set of criteria for deciding whether to classify a person as having a particular disease, injury, or other health-related condition.
- Outbreak case definition should specify:
  - Symptoms or laboratory results (clinical information)
  - Timeframe
  - Affected population (person)
  - Location (place)

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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A line listing is a rectangular database or grid similar to a spreadsheet, containing rows and columns. Each row represents data for a single case. Each column represents a variable.

Q. Where do the data come from?

A. From a variety of sources. The most common ones are:

- Telephone reports
- Laboratory slips
- Case report forms
- Other (medical records? individual interviews?)

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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- Currently the tool is not hosted in DHIS2; it is shared by email from the national level (disease surveillance and response unit) to the counties affected
- Note that the filling of the line list depends on the disease reported, which is subject to adding or omitting some of the variables

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	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	*(Indicate major landmarks)*						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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- Allow the participants 5 minutes to familiarise themselves with the form
- Ask the participants to identify the person, place, and time variables on the line listing form

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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Here is an example of a line listing:

- As you can see, there are 6 cases listed only by number, thereby protecting the identity of the patients
- Also included is the date of onset of the symptoms, the signs and symptoms of the illness, any lab work that was performed, and demographics of the patients in the form of age and gender
- These data will be used to correctly identify the disease and the population at risk and determine whether there is an outbreak

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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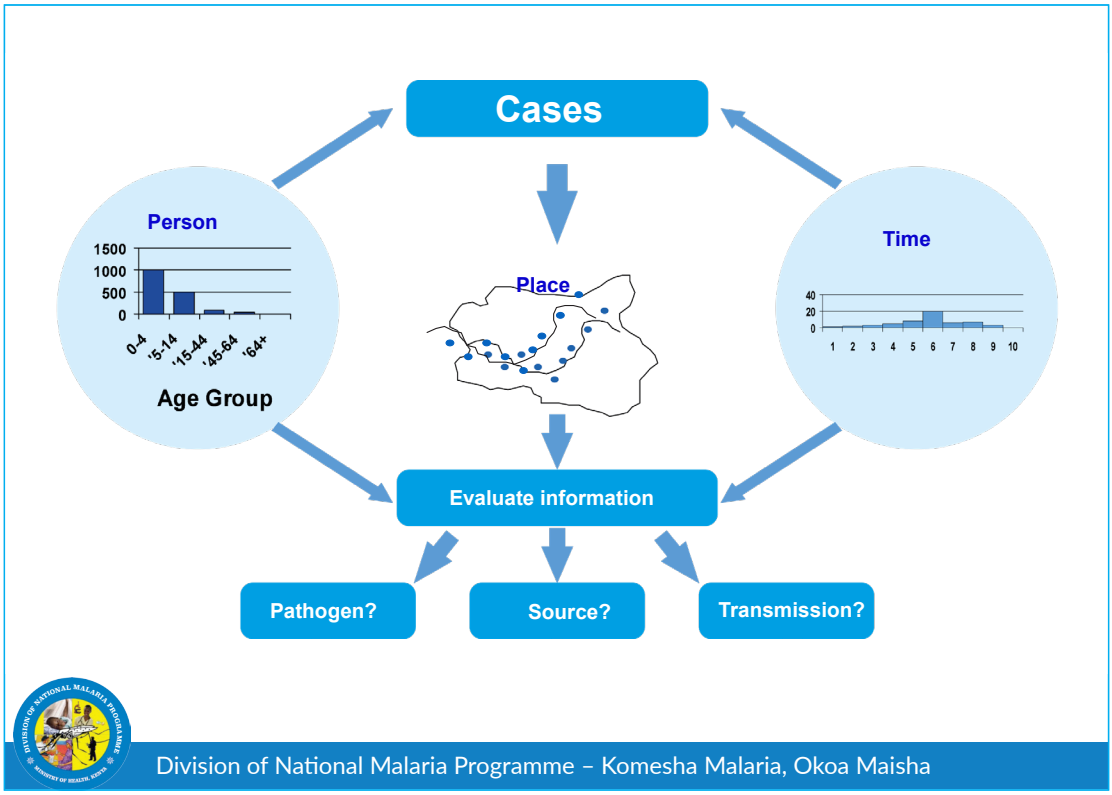
Data are analysed on the principle of time, place, and person.



- The figure displayed on the slide illustrates analysis by person, place, and time
- Allow 5 minutes for the participants to study the illustration
- Explain the importance of the information generated in epidemic response. For example:
  - Determining the age groups affected helps stock the respective AL weight bands
  - Knowing the places affected helps deploy additional healthcare providers or establish temporary treatment centres, identify risk factors in the area

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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- Active surveillance is detecting symptomatic cases not detected by passive surveillance and asymptomatic cases in the community
- Routine monitoring is enhanced by using line listing
- Monitor thresholds to assess trends and determine the end of the epidemic

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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Emphasise the importance of analysing the daily line listing and preparing situation reports in monitoring the epidemic and informing response actions

Information Summarised in the SITREPs

Other information in summarised in SITREPS include:

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

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The SITREPs also show:

- Map of the affected areas
- Epidemic curves
- Age analysis of affected population

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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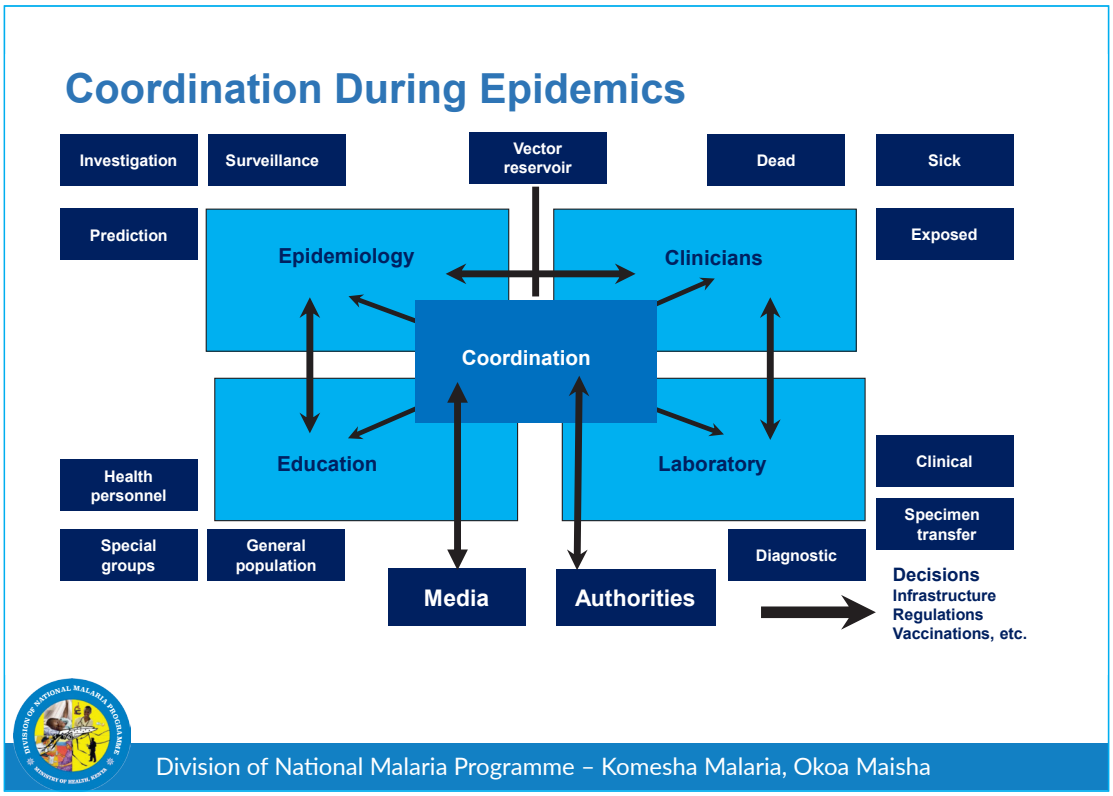
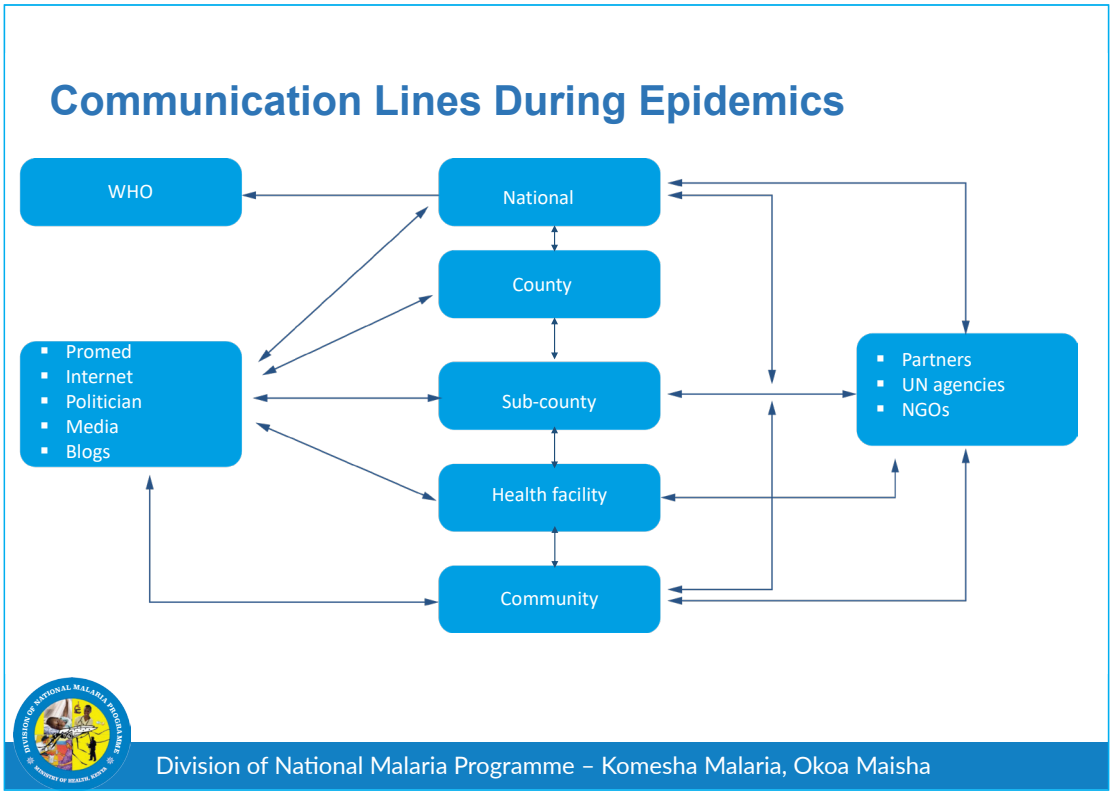
- Coordination is critical for effective response to epidemics, directing resources where they are most needed and avoiding duplication
- Weekly meetings with all relevant stakeholders should be held until the epidemic is contained
- Stock status should be closely monitored to ensure availability of commodities needed and avoid stockouts



- This figure shows coordination interlinkages among various players and institutions during an outbreak/epidemic.
- It shows how communication and interdependence among players facilitates appropriate decisions in a coordinated manner
- Emphasise the need of a multisectoral approach for the coordinating body
- Epidemiologists will provide information on prediction, investigation and surveillance
- Health education will be provided to health personnel, special groups and general population
- Clinicians will provide information on incidence, mortalities and suspected cases
- Laboratory officers will be responsible for diagnosis
- Emphasise on some shared responsibilities e.g. between clinicians and lab personnel
- The coordinating body will then provide information to the media and other stakeholders to be used for decision making



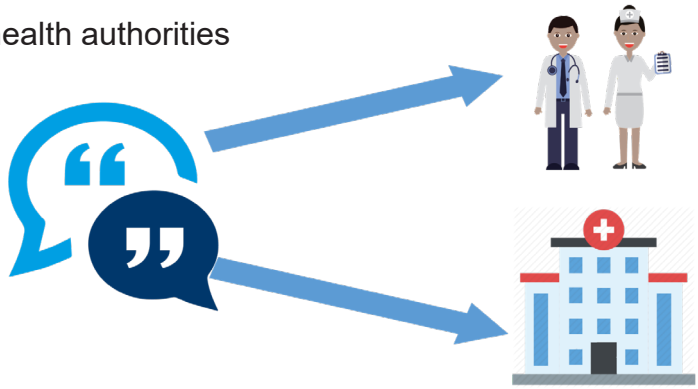
- This figure shows interlinkages of information gathering and sharing
- Communities can share information with grassroot NGOs and vice versa
- Health facilities can receive information from any source, verify it and escalate to higher levels, this applies to other levels of the health system

Emphasise that:

- Communication is an important aspect of coordination
- Feedback loops should be provided across all levels
- Epidemics usually attract a lot of attention by the media
- Regular media briefs should be made by senior MOH personnel to convey the correct facts about the epidemic (e.g., number of cases, deaths, and response measures in place)

Communicating Findings

Communicate findings back to healthcare providers and other public health authorities



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- Healthcare providers and the general public are important stakeholders
- Appropriate communication channels should be used to inform and educate the general public
- Health workers should be sensitised on what to say to the affected persons and the general public

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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- Epidemic response is the mandate of the Division of Disease Surveillance and Response (DDSR)
- DDSR should coordinate with the Division of the National Malaria Programme (DNMP) to provide technical and other support required in the affected areas
- The two departments should mobilise whatever additional resources are required to respond promptly
- DNMP should act fast to ensure that emergency commodities are dispatched to the affected areas

Resources Required

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

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- **Personnel:** Clinicians, epidemiologists, public health officers, nurses, entomologists, health promotion/education officers, HIS staff, laboratory personnel, partners, and the affected communities
- **Equipment:** Functioning vehicles with fuel and spares, functioning microscopes, functioning spray machinery
- **Commodities:** antimalarial drugs and medical supplies: drugs, intravenous fluids, syringes, needles, giving sets, etc.
- **Laboratory supplies:** Slides, lancets and reagents, mRDTs
- **Vector Control materials:** LLINs, insecticides, spray equipment
- **Emergency response funds:** For logistics

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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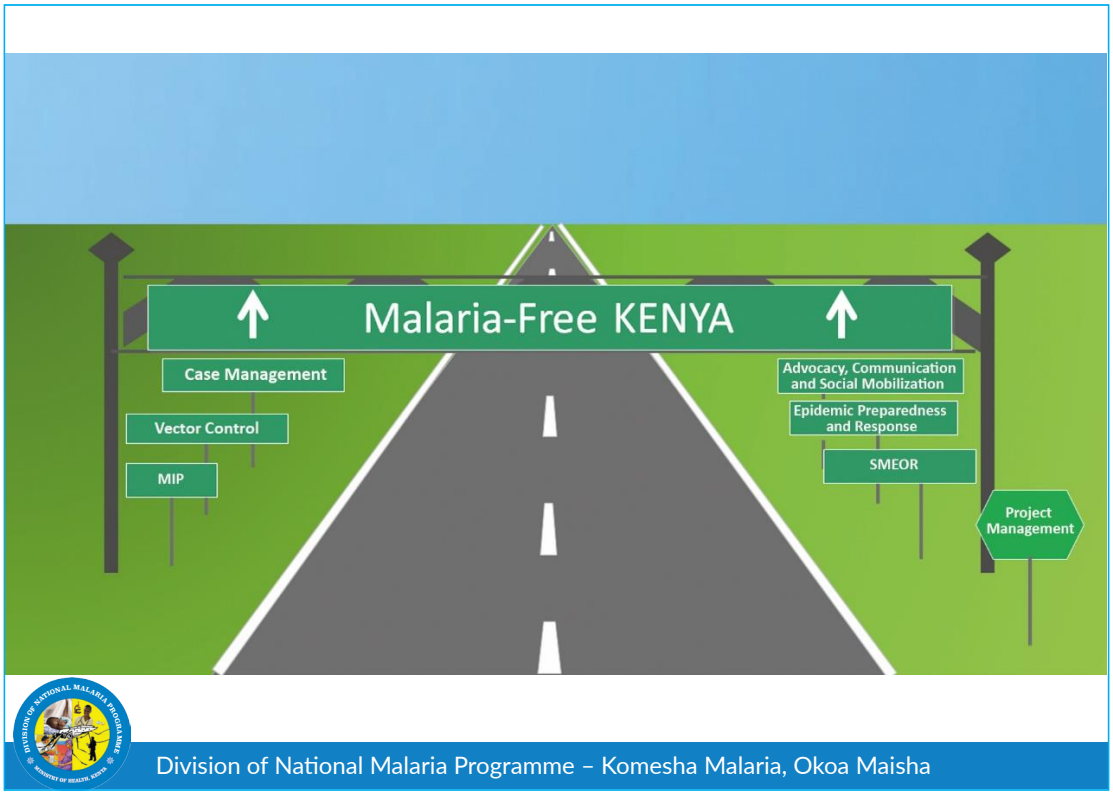
Take-home message:

- Investigation, prompt response, and coordination are the key words for epidemic response


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

Module 7
Post-Epidemic Evaluation

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This module is about post-epidemic assessment conducted after an epidemic.

The purpose of the assessment is to document what was done, best practices, and lessons learnt.

Learning Objectives

By the end of this module, participants should 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

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Emphasise that participants should be able to apply the knowledge gained from this module to conduct post-epidemic evaluation in their respective counties or sub-counties.

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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This module consists of 3 learning units: declaration of end of epidemic, post-epidemic evaluation, and documentation and dissemination of findings.

Module 7: Learning Unit 1
Declaration of End of Epidemic

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Explain that a formal statement declaring that the epidemic/outbreak is over is made after ascertaining that the number of cases reported has normalised as per the disease pattern on the affected area.

Declaration of the End of End of Epidemic

- 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?

(Participants to brainstorm, 5 minutes)

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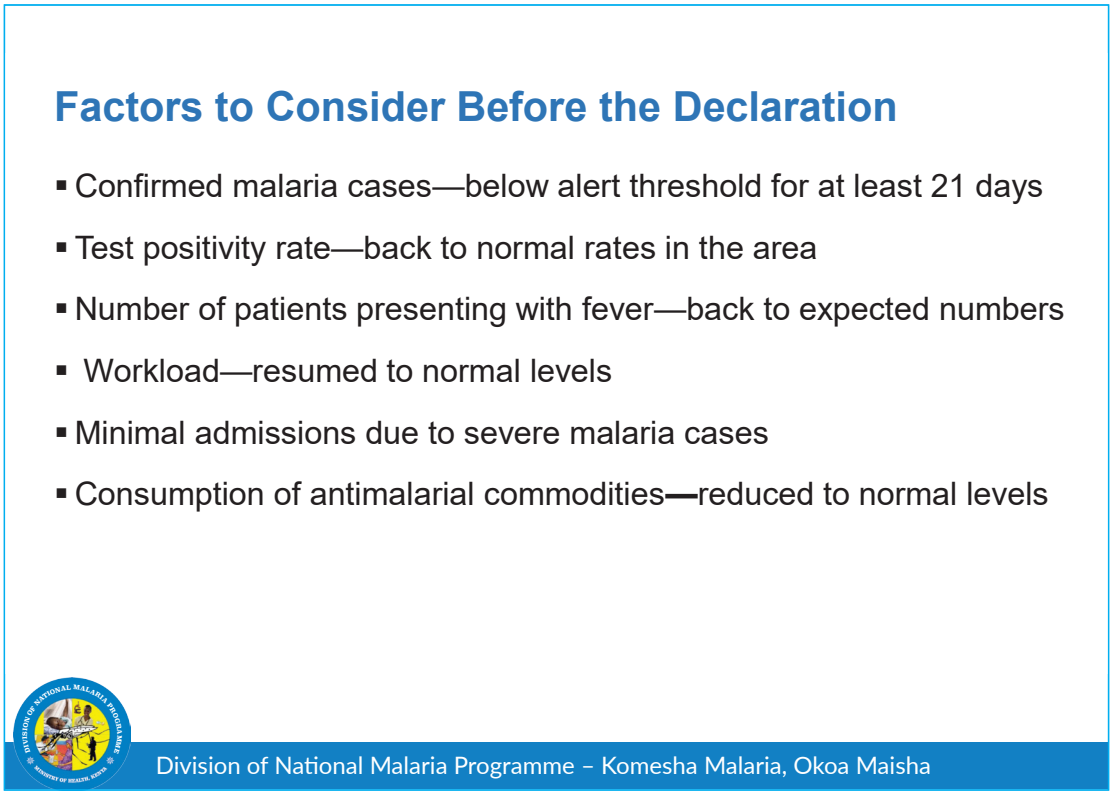
- Allow participants 5 minutes to discuss the question
- Facilitate a general class discussion; ask one of the participants to volunteer to write the answers on a flip chart
- The response to the question is not about time but what to consider to determine that an epidemic has been successfully controlled at a particular time



EXPLAIN

- Continuous monitoring of thresholds for at least 3 weeks before declaring the epidemic is over (i.e., that cases should be below the alert threshold) is important
- Highlight the importance of monitoring the other factors (i.e., test positivity rate, number of patients presenting with fever, and usual consumption of malaria commodities and normal workloads) as other pointers to the end of the epidemic. (All these indicators should have come to normal levels.)

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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EXPLAIN

- The outbreak management committee (a subset of the rapid response team) uses surveillance information to confirm that cases have come below the alert threshold for 3 consecutive weeks and advises the relevant authorities accordingly
- Ask the participants if they remember the composition of the outbreak committee: surveillance coordinator, clinician, laboratory officer, pharmacist, epidemiologist, environmental health officer

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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EXPLAIN

- The importance of information required to declare the end of an epidemic (These are indicators used to assess and monitor the trend, severity, and magnitude of the epidemic.)
- How to calculate inpatient case fatality rate (CFR): Total number of inpatient malaria deaths/Total severe malaria admissions * 100 (CFR is an indicator that measures the quality of care.)

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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Explain the importance of declaring the end of malaria epidemic

- Emphasise the need to reassure affected communities, refocus resources/efforts, and allow for post-epidemic evaluation

Module 7: Learning Unit 2
Post-epidemic Evaluation

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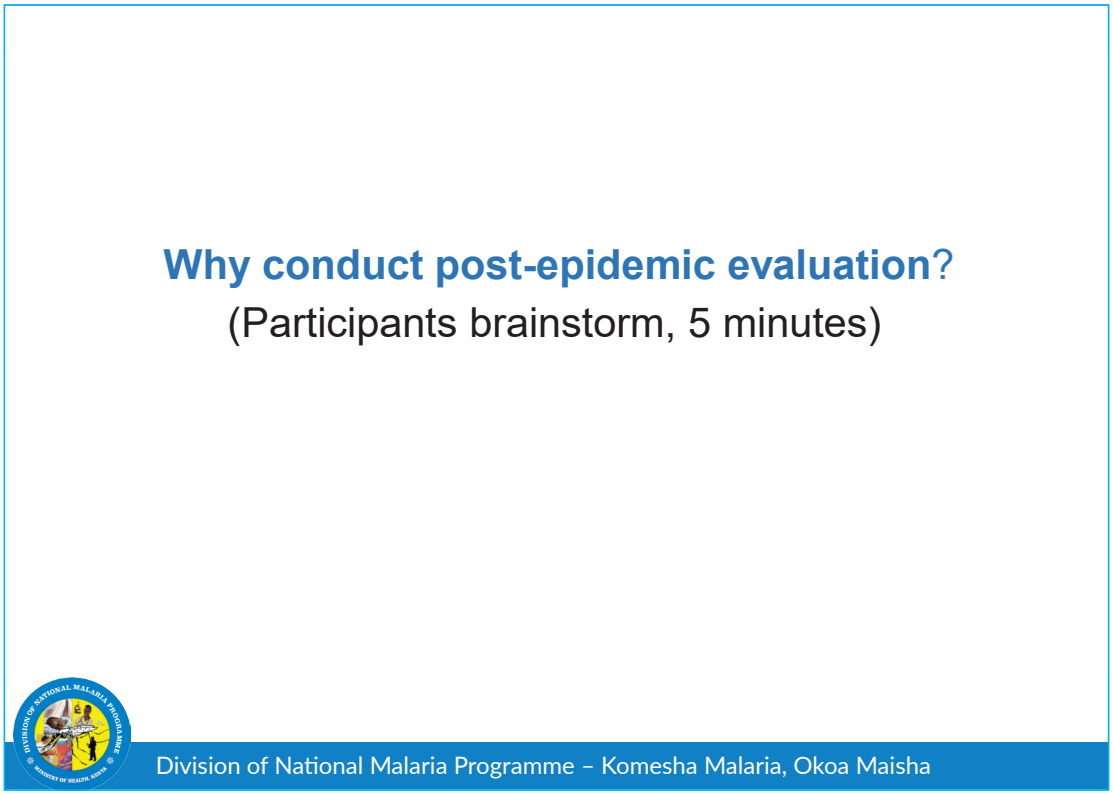

Pose the question to the participants, allow them to think for 2-3 minutes, and then call on one volunteer participant to write down the key reasons and share with the whole class.

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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- Highlight the importance of post-epidemic evaluation in identifying successes and failures
- Emphasise the importance of reviewing and documenting what happened for the purposes of learning lessons for improvements

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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EXPLAIN

- What is post-epidemic evaluation? Highlight the importance of post-epidemic evaluation in identifying successes and failures
- Emphasise the importance of reviewing and documenting what happened for the purposes of learning lessons for improvements

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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The evaluation should focus on the following areas:

- The need to always have an epidemic preparedness and response plan at all levels
- Effectiveness of the early warning and detection systems
- Availability of resources and capacity
- Roles and responsibilities of stakeholders before, during, and after the epidemic
- Impact of the epidemic
- Impact of the interventions (success and failure)

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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Explain that all the reasons indicated on the slide will inform proper EPR planning and implementation.

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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- The post-epidemic evaluation team may comprise all or part of the membership of the county/sub-county Public Health Emergency Committee
- The facilitator should emphasise the need for teamwork in the post-epidemic evaluation

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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EXPLAIN

- The importance of using an assessment tool to ensure that all the aspects of the epidemic are comprehensively evaluated
- It is important to evaluate across all levels of the health system, from the affected community, link health facility, referral health facilities, sub-county, county, and national levels
- Importance of sharing the findings of the evaluation at the post-epidemic review meetings, including stakeholders

Post-epidemic Action Plan

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

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Explain the importance of:

- Developing a post-epidemic action plan identifying key activities to be implemented to enhance future preparedness and response
- Assigning responsible persons and timelines
- Identifying and mobilising resources to accomplish the planned tasks

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

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Post-epidemic Evaluation Report

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

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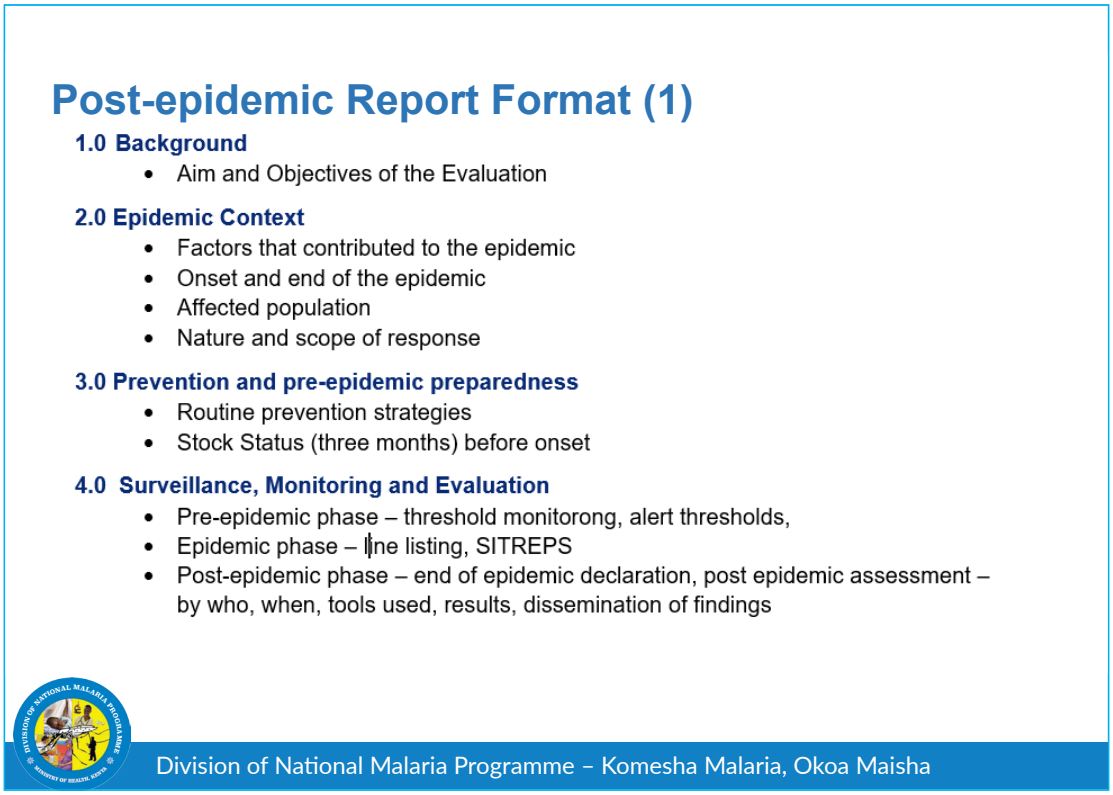
Emphasise the importance of documentation: It is the ONLY evidence that something was done!



Explain the different sections of the post-epidemic evaluation report.

For each section, engage the participants on examples of the information that should be included.

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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- Briefly explain the sections of the post-epidemic report format displayed on the slide
- Ask the participants to give examples of possible recommendations from a post-epidemic assessment

A Demonstration of Post-Epidemic Assessment

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

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Referring to the malaria post-epidemic section of the rapid assessment tool:

- Divide the participants into groups based on their counties
- Participants identify a past epidemic in their counties
- Participants apply the post-epidemic assessment checklist for the identified epidemic
- Engage the participants to discuss what they documented in the checklist
- Emphasise documenting lessons learnt, recommendations, and follow-up action points

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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This slide highlights the importance of disseminating the malaria post-epidemic evaluation report to the stakeholders and healthcare workers.

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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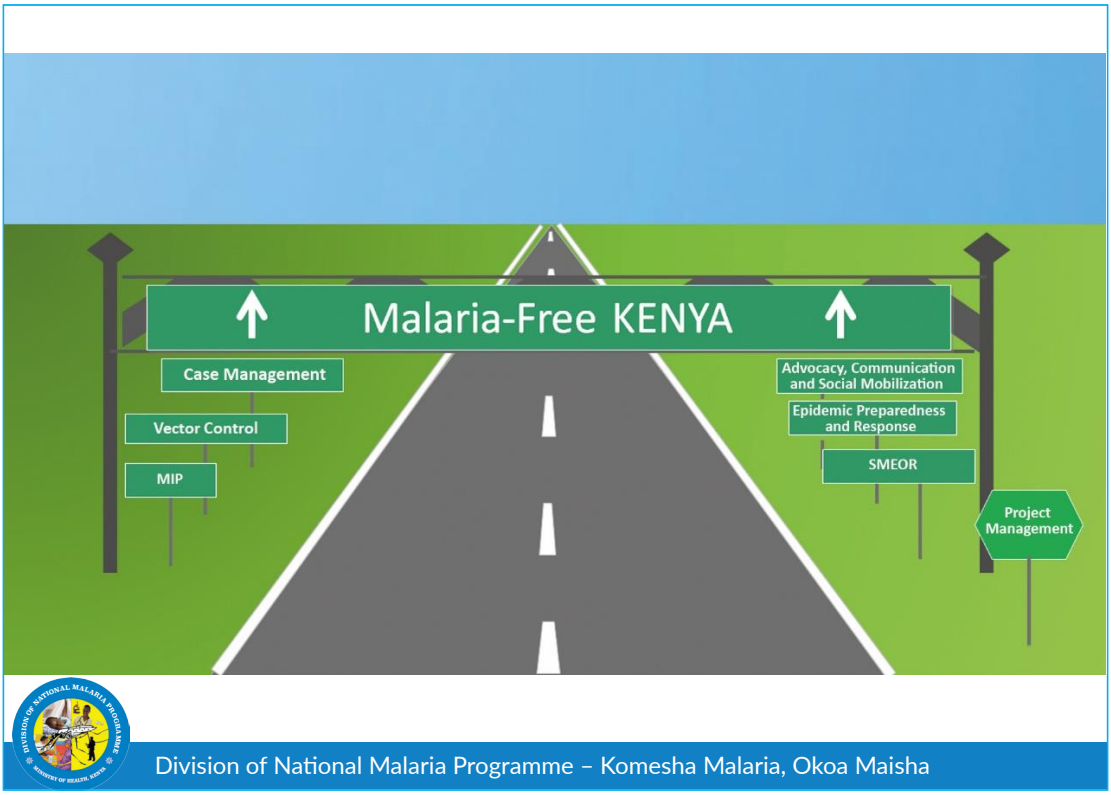
Emphasise the key words: declarations, post-epidemic evaluation, documentation, and recommendations.


Malaria-Free KENYA
Case Management
Vector Control
MIP
Advocacy, Communication and Social Mobilization
Epidemic Preparedness and Response
SMEOR
Project Management
Division of National Malaria Programme – Komesha Malaria, Okoa Maisha

Ministry of Health

Module 8
Malaria EPR Planning

Division of National Malaria Programme – Komesha Malaria, Okoa Maisha

Learning Objectives

By the end of this module, participants should 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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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

Module 8: Learning Unit 1
Introduction to EPR Planning

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This unit introduces malaria EPR planning and some basic principles of planning in general

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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- Explain each of the bullets with practical examples
- The key aspect in best practice of planning is timeliness

What is Malaria EPR Planning?

Brainstorming session (5 minutes)

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- In groups of 2, allow the participants to discuss and brainstorm on EPR planning
- Give 3 minutes for the participants to come up with 3 key points on EPR planning

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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Remind the participants of the 3 phases of an epidemic:

- Pre-epidemic phase: period before the epidemic is detected
- Response phase: when the epidemic is going on
- Post-epidemic phase: when the epidemic has ended

The facilitator should see to it that the following are captured:

- Ensure adequate preparedness to respond to malaria epidemics effectively and in a timely fashion
- Maintain proper stocks of drugs, vaccines, reagents, and supplies
- Inform the disease outbreak management committee on coordination and communication between stakeholders before and during an emergency
- Enable resource mobilisation
- Appropriate allocation and efficient use of resources as a basis for monitoring performance

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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- It is the responsibility of the CHMTs and SCMHTs to prepare the EPR plan
- Enough time should be dedicated to gather the information needed and prepare the plan
- The EPR plan should be prepared early enough to be included in the annual work plans (AWPs) for resource allocation
- The AWP planning cycle is between April and May. Hence EPR plans should be completed by March at the latest

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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Emphasise ensuring that the process is aligned to the AWP.

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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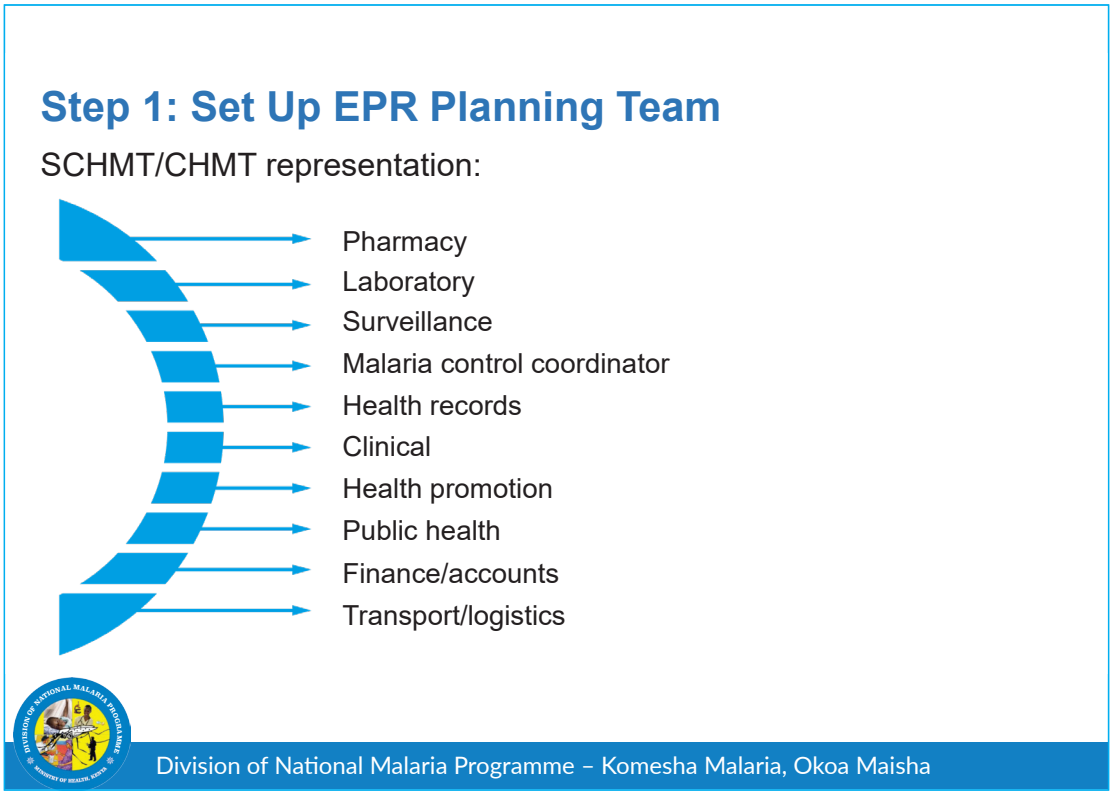
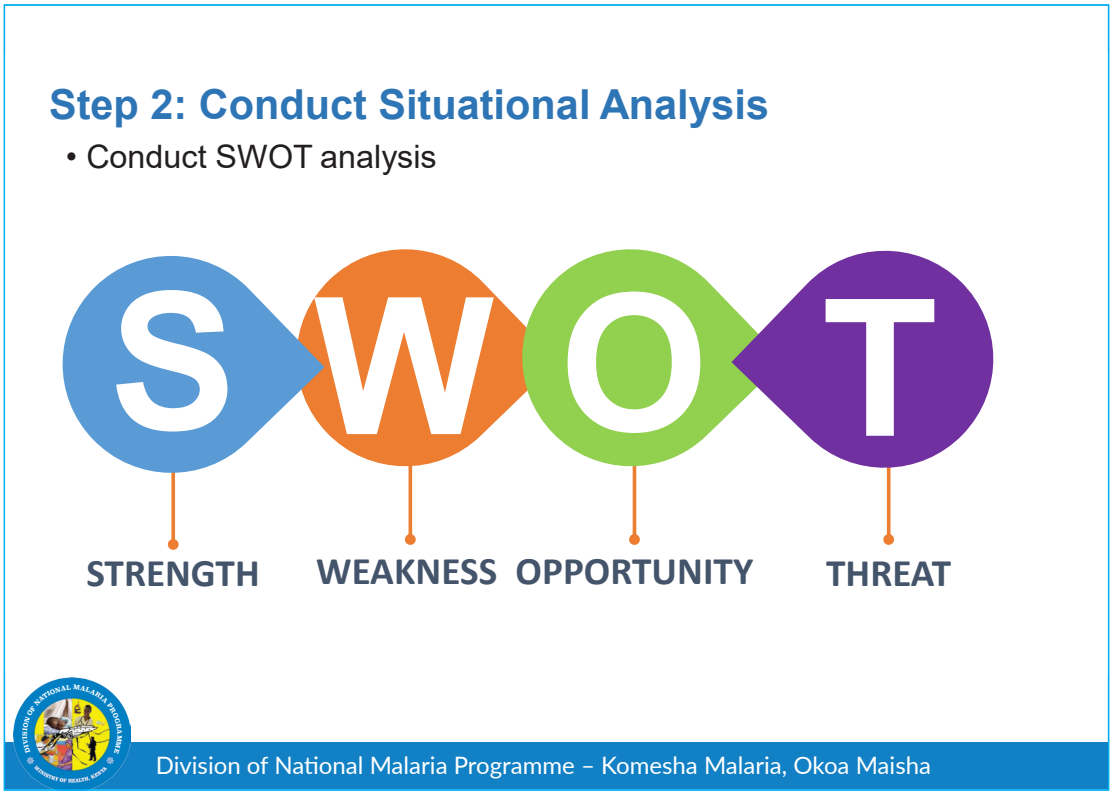
- To be able to collate and analyze information in readiness to plan
- Relevant materials for EPR planning (e.g., previous EPR plans, malaria data for the previous years, reports on previous malaria epidemics)
- To put in place an appropriate team to undertake planning
- Obtain the resources needed (e.g., funds to attend annual EPR planning meetings)



- The team should comprise members with the relevant skills, competencies, and responsibilities for satisfactory EPR planning
- Engage the participants to state the role of the team representation displayed on the slide



- Engage the participants in identifying the strengths, weaknesses, opportunities and threats of malaria EPR

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

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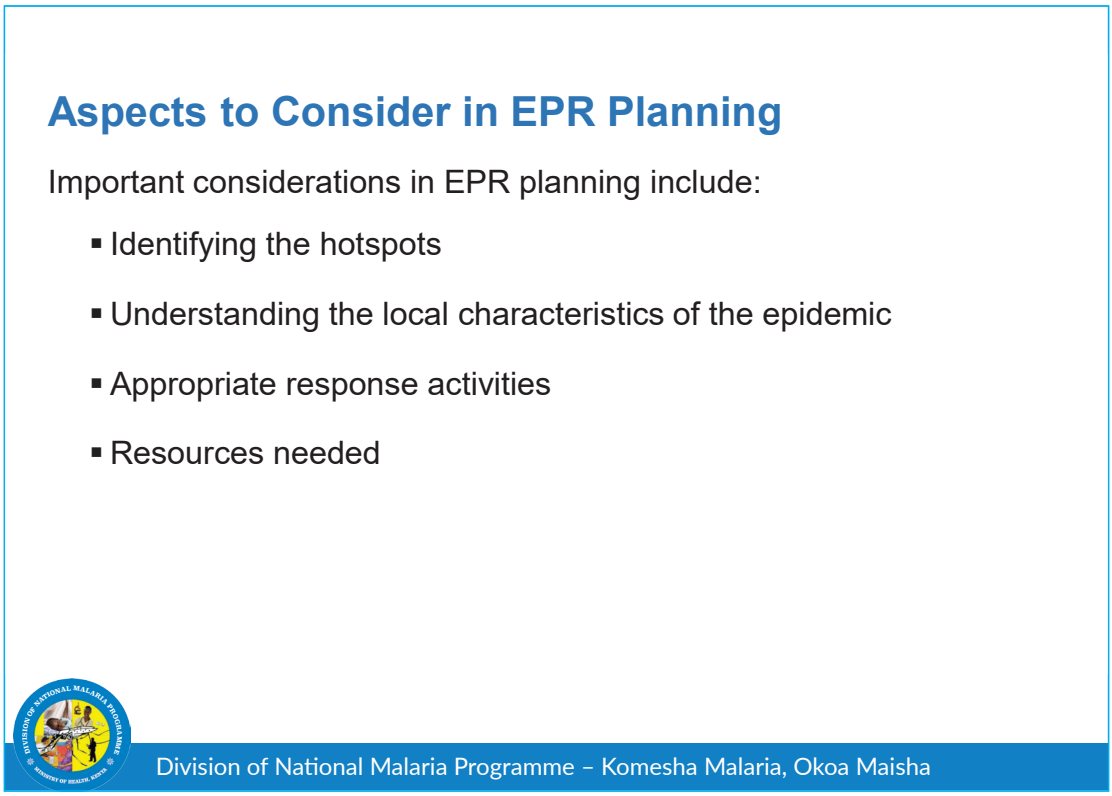
- Assess strengths, weaknesses, opportunities, and threats (SWOT) on the EPR components
- Analyse malaria disease trends to identify hotspots
- Identify challenges and make recommendations for inclusion in the EPR



This section describes aspects to be considered in developing the EPR plan. This includes:

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

The following slides elaborate on these considerations.

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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The EPR plan should consider the following:

- A map of hotspot areas and their description (e.g., population, number of households)
- Vector control interventions and where they should be applied
- Plan to sensitise and train health workers

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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- Considering the frequency and magnitude of epidemics is important for costing and allocating resources
- EPR should identify areas where active surveillance can be done
- Commodity needs (diagnostics and treatment) are based on estimates from routine data

Response Activities (1)

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

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EPR plan should consider:

- Resources for appropriate targeted vector control interventions
- Standard SBC messages that can be easily adapted and disseminated to the affected areas

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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- Coordination mechanisms (e.g., meetings for malaria stakeholders, training for rapid response teams)
- Health worker training and sensitisation
- Relevant EPR tools and guidelines

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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The EPR plan should consider:

- Personnel needed to respond to epidemic
- Commodity requirements and laboratory supplies
- Funds for logistic support

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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- Distribute a copy of a past EPR plan to the participants
- Allow the participants 10-15 minutes to read the plan
- Briefly explain what each section should entail

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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- Distribute the EPR planning template to the participants
- Explain the cost assumptions tab of the template
- Demonstrate how to complete the template with one EPR activity

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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Explain the broad EPR activities shown on the table.

- Give examples of tasks under some of the activities
- Engage the participants to identify tasks under one of the response activities

Group Project: Development of an EPR Plan

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- Using the information shared in the preceding slides and the costing template provided, each sub-county/county team will undertake to develop a malaria EPR plan
- Each team will be assigned a facilitator to support them in the project
- Groups will present their plans on the last day

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

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It is not enough to prepare the EPR plan; it should be endorsed, adopted, implemented, and monitored.

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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- A completed EPR plan should be taken through an approval and adoption process to translate it into an official document for use
- The endorsement and approval should engage all relevant county decision makers for concurrence and buy-in

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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- It is the responsibility of the malaria control coordinator at the county and sub-county levels to ensure that the EPR plan is captured in the AWP
- Counties should lobby to have malaria as a sub-programme with its own budget

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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- Document EPR activities implemented
- Monitor the performance of EPR Indicators
- Discuss EPR activities in malaria stakeholder meetings

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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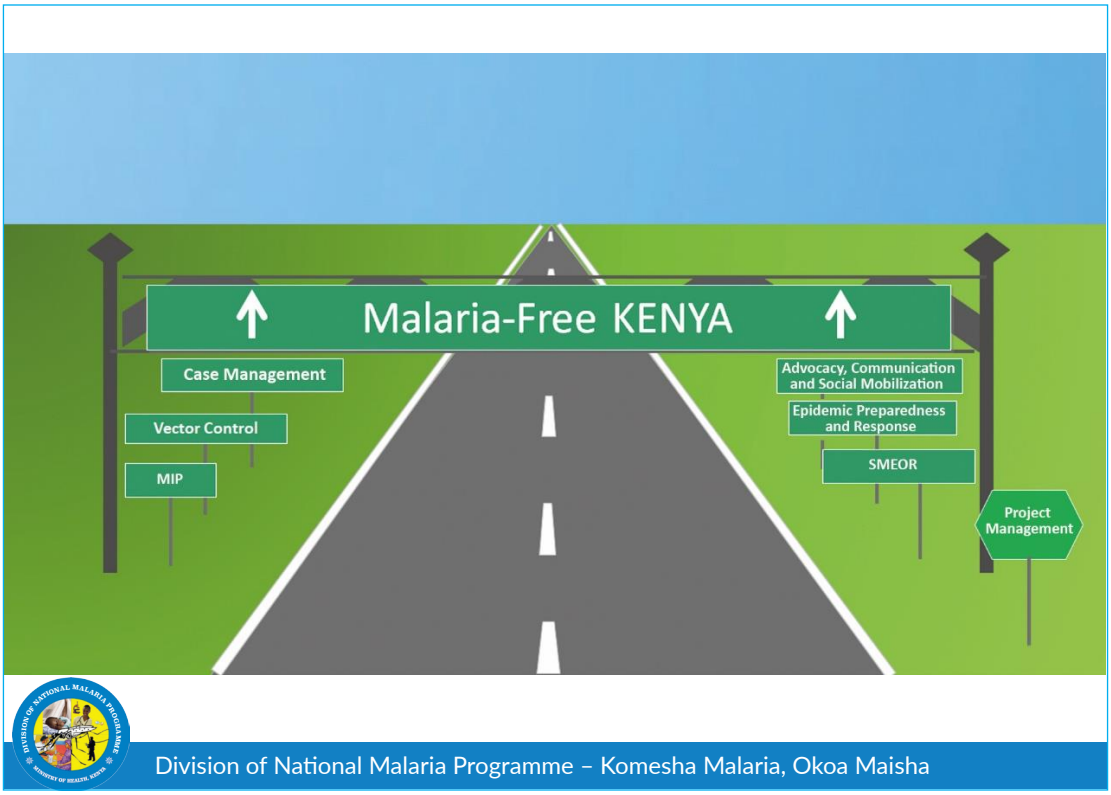
Remind the participants of the important take-home messages.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END OF DAY EVALUATION

Did you learn anything new from today's sessions? ☐ Yes ☐ No

If Yes, write down any new thing you learnt from today's sessions

_____

_____

_____

Is there anything in today's sessions that was not clear to you? ☐ Yes ☐ No

If Yes, please write down the topics/ areas you would like clarified or explained further.

_____

_____

_____

What did you like most from today's sessions?

_____

_____

_____

Please suggest/comment on anything else that needs to be improved from today's sessions.

_____

_____

_____

OVERALL WORKSHOP EVALUATION FORM

The information collected in this form will be used for training improvement purposes. Please respond honestly. All information you provide is CONFIDENTIAL.

Workshop Venue: _____ Workshop dates:_____

1 How able are you to put what you've learned from the training into practice?

(a) I am still unclear about what to do, and/or why to do it.

(b) I need more guidance before I know how to use what I learned.

(c) I need more experience to be good at using what I learned.

(d) I can be successful now in using what I learned.

2 Now that you have completed the training, how well do you feel you understand the concepts taught?

(a) I am still confused about the concepts.

(b) I am now somewhat familiar with the concepts.

(c) I have an understanding of the concepts.

(d) I am fully ready to use the concepts in my work.

3 Regarding the skills taught during the training, how motivated are you to utilize these skills in your work?

(a) I am NOT motivated and will NOT make this a priority when I return to my worksite.

(b) I am slightly motivated, but will make this a low priority when I return to my worksite.

(c) I am motivated and will make this a moderate priority when I return to my worksite.

(d) I am VERY motivated and will make this a high priority when I return to my worksite.

4 Do you plan to share the information you have learned at this training with other colleagues?

(a) No

(b) Maybe

(c) Yes

If yes or maybe, what topics do you plan to share?

_____

_____

_____

5 What topics/aspects of the workshop did you find most useful to you

6 What topics/aspects of the training could be improved?

7 Please list topics that were not covered in this workshop that you would like to see covered in future workshops, by order of preference.

8 The main objectives of this workshop were twofold:

a To build capacity of healthcare workers and managers to set thresholds to detect malaria epidemics

b Develop epidemic preparedness and response plans in order to take appropriate actions to avert epidemics.

Please explain if you think the workshop met its objectives. If you think it did not, please explain how it could be improved.

9 (a) How was the overall workshop administration/organizational logistics? *(Please circle the number corresponding to your rating)*

Not satisfactory **Excellent**

1 2 3 4 5 6 7 8 9 10

(b) What recommendations would you make to improve the workshop organization (training venue, meals, lodging, preworkshop communication, workshop administration?)

Is there anything else you want to tell us regarding the training?

Thank you for your honest and detailed feedback. Congratulations on finishing the training!

ANNEX 1 OUT PATIENT REGISTER

MOH 204B_OP Over 5yrs_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=to 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 'I' in MOH 204A and column 'R' in MOH 204B
Malaria microscopy tested = all tallied as code 3 & 5 in the outpatient register column 'I' in MOH 204A and column 'R' in MOH 204B
Malaria microscopy positive = all tallied code 5 in the outpatient register column 'I' in MOH 204A and column 'R' in MOH 204B
Malaria RDT tested = all tallied as code 2 & 4 in the outpatient register column 'I' in MOH 204A and column 'R' in MOH 204B
Malaria RDT positive = all tallied code 4 in the outpatient register column 'I' 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)? (If no, skip to Q1c.) ☐ Yes ☐ No

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? (If no, skip to Q2g.) ☐ Yes ☐ No

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? (If no, skip to Q2j.) ☐ Yes ☐ No

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.) (If no, skip to Q5g.) ☐ Yes ☐ No

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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