FOREWORD

Communicable diseases contribute significantly to the disease burden in Kenya. These conditions are preventable through immunisation, proper environmental management or observing basic hygiene. The existing environmental problems relate to the low level of safe drinking water, poor environmental sanitation and refuse disposal, environmental pollution and food contamination. As a result water-borne diseases such typhoid fever and cholera have become major threats. The country also faces a new threat from re-emerging communicable disease that previously showed a declining trend for example tuberculosis with the advent of HIV infection. As a result, preventive and Promotive services have formed the major emphasis of Kenyans health policy as a means to reduce the burden of disease.

The Kenya Health Policy Framework (1994) identified communicable and vector borne diseases as the most important causes of morbidity and mortality nationwide. Malaria, Respiratory and Diarrhoeal diseases account for over 52% of disease burden to Kenyans. The Ministry of Health, through the National Health Sector Strategic Plan (1999 – 2004) has placed Communicable Diseases Control as one of the High Priority Health Packages for strategic interventions.

Decline in health sector funding, inefficient utilisation of resources, centralised decision making and inequitable resource allocation have negatively impacted on the implementation of public health intervention for disease control. Worsening poverty levels, increasing burden of disease and rapid population growth further compounds the situation.

The ministry of health currently collects data on communicable disease through routine HIS. Over the years the ability of the information system to provide timely and quality data on occurrences of disease has declined. This has led to failure to predict disease outbreaks and delay in detection and response.

The Ministry proposes to strengthen communicable diseases surveillance through an integrated approach. WHO/AFRO recommends the strategy of Integrated Disease Surveillance and Response (IDSR). The implementation of this strategy will play a vital role in control of communicable diseases and it has four pillars;

(1) epidemic preparedness and response,
(2) data management,
(3) laboratory surveillance and,
(4) training and supervision.

A functional IDSR will contribute to the reduction of morbidity, disability and mortality from communicable diseases by helping to improve prediction, early detection and control of epidemics. This will also contribute to better health planning, allocation of resources and improvement in monitoring and evaluation of public health interventions. Therefore the need to ensure that IDSR implementation is high on National health priorities and that adequate resources are made available

Ownership of the strategy by all other disease control programmes and all other

stakeholders is the key to IDSR sustainability. Within the frame work of a well-articulated IDSR vision, creating and maintaining effective systems for sharing information on priority communicable diseases is essential to effective communicable disease control.

The Technical guidelines set forth general guidance on surveillance and response and are adapted to address priority communicable diseases. They will be used by health staff in the surveillance coordination at all levels of the health care system.

DR. RICHARD O. MUGA (MBS)
DIRECTOR OF MEDICAL SERVICES

ACKNOWLEDGEMENTS

These national guidelines have been adapted from generic guidelines that were developed by WHO AFRO in collaboration with Centres for Disease Control and Prevention, Atlanta. Their contribution in providing the generic guidelines is greatly appreciated. The preparation and production of IDSR Technical Guidelines has been made possible through financial and technical assistance of WHO-AFRO through WHO Kenya Country Office Nairobi.

The Ministry of Health wishes to acknowledge and express special gratitude to the following Integrated Disease Surveillance and Response Working group for their contributions in the review and adaptation of the Technical Guidelines.

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We wish to acknowledge many others who contributed in one way or another directly and indirectly to the entire process and whom we may not have mentioned here by name.

Special thanks go to Dr. Naftali N. Agata – WHO Horn of Africa, Addis Ababa for his contribution and support towards the process of adaptation of the technical guidelines for Kenya.

Finally the ministry wishes to acknowledge the participation of the following Ministry of Health Divisions and programmes:

(1) Disease Outbreak and Management Unit (DOMU)
(2) Kenya Expanded Programme on Immunisation (KEPI),
(3) Integrated Management of Childhood Illnesses (IMCI),
(4) Division of Malaria Control,
(5) National AIDS and STI TB/Leprosy Control Programme,
(6) National Public Health Laboratory Services (NPHLS)
(7) Health Management Information System (HMIS)
(8) Division of Non-Communicable Diseases Control

LIST OF ABBREVIATIONS

AFP	-	Acute Flaccid Paralysis
AIDS	-	Acquired Immune Deficiency Syndrome
CBO	-	Community Based Organization
CDC	-	Centres for Disease Prevention and Control
CDSR	-	Communicable Disease Surveillance and Response
CFR	-	Case Fatality Rate
CORPS	-	Community Own Resource Persons
CSF	-	Cerebral Spinal Fluid
DHMT	-	District Health Management Team
DMOH	-	District Medical Officer of Health
DOMU	-	Disease Outbreak Management Unit
DOTS	-	Directly Observed Treatment Short-course
GoK	-	Government of Kenya
HIB	-	Haemophilus Influenza Type B.
HIV/AIDS	-	Human Immuno-Deficiency Virus
HMIS	-	Health Management Information System
HSV	-	Herpes Simplex Virus
IDS	-	Integrated Disease Surveillance
IDSR	-	Integrated Disease Surveillance and Response
IDU	-	Intravenous Drug users
IgM	-	Immunoglobulin M.
IMCI	-	Integrated Management for Childhood illnesses
KEMRI	-	Kenya Medical and Research Institute
KEPI	-	Kenya Expanded Programme of Immunization
MDT	-	Multi Drug Therapy
MoH	-	Ministry of Health
NGO	-	Non-Governmental Organization
NIDs	-	National Immunization Days
NNT	-	Neonatal Tetanus
NPHLS	-	National Public Health Laboratories
OPV	-	Oral Polio Vaccine
ORS	-	Oral Rehydration solution
PID.	-	Pelvic Inflammatory Disease
PIDS & RT	-	Provincial Integrated Disease Surveillance & Response
PTB	-	Pulmonary Tuberculosis
RSV	-	Respiratory Synctival Virus
SNIDs	-	Sub-National Immunization Days
STI	-	Sexually Transmitted Infections
TB	-	Tuberculosis
UNAIDS	-	United Nations Programme on AIDS
USA	-	United States of America
VAPP	-	Vaccine Associated Paralytic Poliomyelitis
VCR	-	Video Cassette Recorder
VHF	-	Viral Haemorrhagic Fever
WHO	-	World Health Organization
WHO-AFRO	-	World Health Organization – Africa Regional Office
WHO-KCO	-	World Health Organization – Kenya Country Office

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Introduction

Background Information

The Ministry of Health developed the Kenya Health Policy Framework of 1994 that defined the priority packages, which included the communicable diseases. As a follow up, Kenya developed a five-year Health Sector Reform Strategic Plan in 1999, where communicable diseases control was identified as one of the priority packages for implementation within a decentralised system.

In September 1998, the 48th Regional Committee for Africa met in Harare. Through resolution AFRO/RC48/R2, Member States adopted integrated disease surveillance as a regional strategy for early detection and efficacious response to priority communicable diseases for African region.

Communicable diseases are the most common causes of death, disability and illness in Kenya. While these diseases present a large threat to the well being of the Kenyan communities, there are well-known interventions that are available for controlling and preventing them. Surveillance data will guide health personnel and the community in the decision-making needed to implement the proper strategies for disease control and lead to activities for preventing future cases.

Disease surveillance is a watchful, vigilant approach to information gathering that serves to improve or maintain the health of the population. A functional disease surveillance system is essential for identifying and defining problems and taking action. District and local health teams are equipped to set priorities, plan interventions, mobilise and allocate resources and predict or provide early detection of outbreaks using surveillance data.

Currently, there is a general weakness in the collection, analysis, utilisation and transmission of surveillance data for communicable diseases at different levels of the health system. As a result, the opportunity to take action with an appropriate public health response and save lives is lost. Even in cases where adequate information is collected, it is often not available for use at the local level.

What is integrated disease surveillance and Response (IDSR)?

IDSR is a comprehensive strategy for capturing health information of communicable disease for prevention and control by linking community, health facility, district, provincial and national levels. This strategy provides for rational use of resources for disease prevention and control.

Currently, many intervention programs have their own disease surveillance systems. Experiences with some disease eradication and elimination programs show that disease control and prevention objectives are successfully met when resources are dedicated to improving the ability of health officials to detect the targeted diseases,

obtain laboratory confirmation of outbreaks, and use action thresholds at the district level. Based on these experiences and recommendation from WHO/AFRO, the Ministry of Health proposes multi-disease surveillance on selected priority disease or conditions on an integrated approach.

Each program has made efforts through the years to improve its ability to obtain data for developing timely and reliable information that can be used for action. They involve similar functions especially at district and health facility levels. They often use the same structures, processes and personnel.

In an integrated system:

- The district level is the focus for integrating surveillance functions. This is because the district is the first level in the health system with full-time staff dedicated to all aspects of public health such as monitoring health events in the community, mobilising community action and advocating for support from national and other stakeholders resources to protect the community's health.
- All surveillance activities are co-ordinated and streamlined. Rather than using scarce resources to maintain separate vertical activities, resources are combined to collect information from a single focal point at each level.
- Several activities are combined into one integrated activity and take advantage of similar surveillance functions, skills, resources and target populations. For example, surveillance activities for acute flaccid paralysis (AFP) can address surveillance needs for neonatal tetanus, measles and other diseases. Thus, health staff who routinely monitor AFP cases can also review district and health facility records for information about other priority diseases.

- Surveillance focal points at the district, provincial and national levels collaborate with epidemic response committees at each level to plan relevant public health response actions and actively seek opportunities for combining resources.

Objectives of Integrated Disease Surveillance and Response

The general objective of the IDSR strategy is to provide a rational basis for decision-making and implementing public health interventions that are efficacious in responding to priority communicable diseases. To implement IDSR, the Ministry of Health proposes a system of simplified tools and response actions at all levels. These tools should contribute to efficient and timely decision-making based on the use of timely information, selection of appropriate responses and effective use of available resources for preventing and controlling communicable diseases.

The goal of IDSR is to improve the ability of a district to detect and respond to diseases and conditions that cause high levels of death, illness and disability. The ultimate results of strengthening skills and resources for IDSR will be improved health and well-being of the communities in a district.

To that end, integrated disease surveillance seeks to:

- Strengthen the capacity of the health system to conduct effective surveillance activities
- Integrate multiple surveillance systems so that forms, personnel and resources can be used more efficiently and effectively
- Improve the use of information for decision making
- Improve the flow of surveillance information between and within levels of the health system
- Improve laboratory capacity in identification of pathogens and monitoring of drug sensitivity
- Increase the involvement of clinicians in the surveillance system.
- Emphasize community participation in detection and response to public health problems
- Strengthen the involvement of laboratory personnel in disease surveillance.

How does information flow in an integrated disease surveillance system?

An ill person presents for medical attention. Information about the patient is recorded in registers. The registers are maintained to include information for both inpatients and outpatients. At a minimum, the following data is recorded: name, the patient's registration/unit number, date of onset of illness, date of presentation at the facility, date of discharge (inpatient only), village (location), age, sex, diagnosis, treatment, and outcome (inpatient only).

If the clinician suspects a disease or condition that is targeted for elimination or eradication, or if the disease has high epidemic potential, the disease is reported immediately to the designated health staff in the health facility and at the district level. The health facility should begin a response to the suspected outbreak. At the same time, the district takes steps to investigate and confirm the outbreak. The investigation results are used to plan a response action.

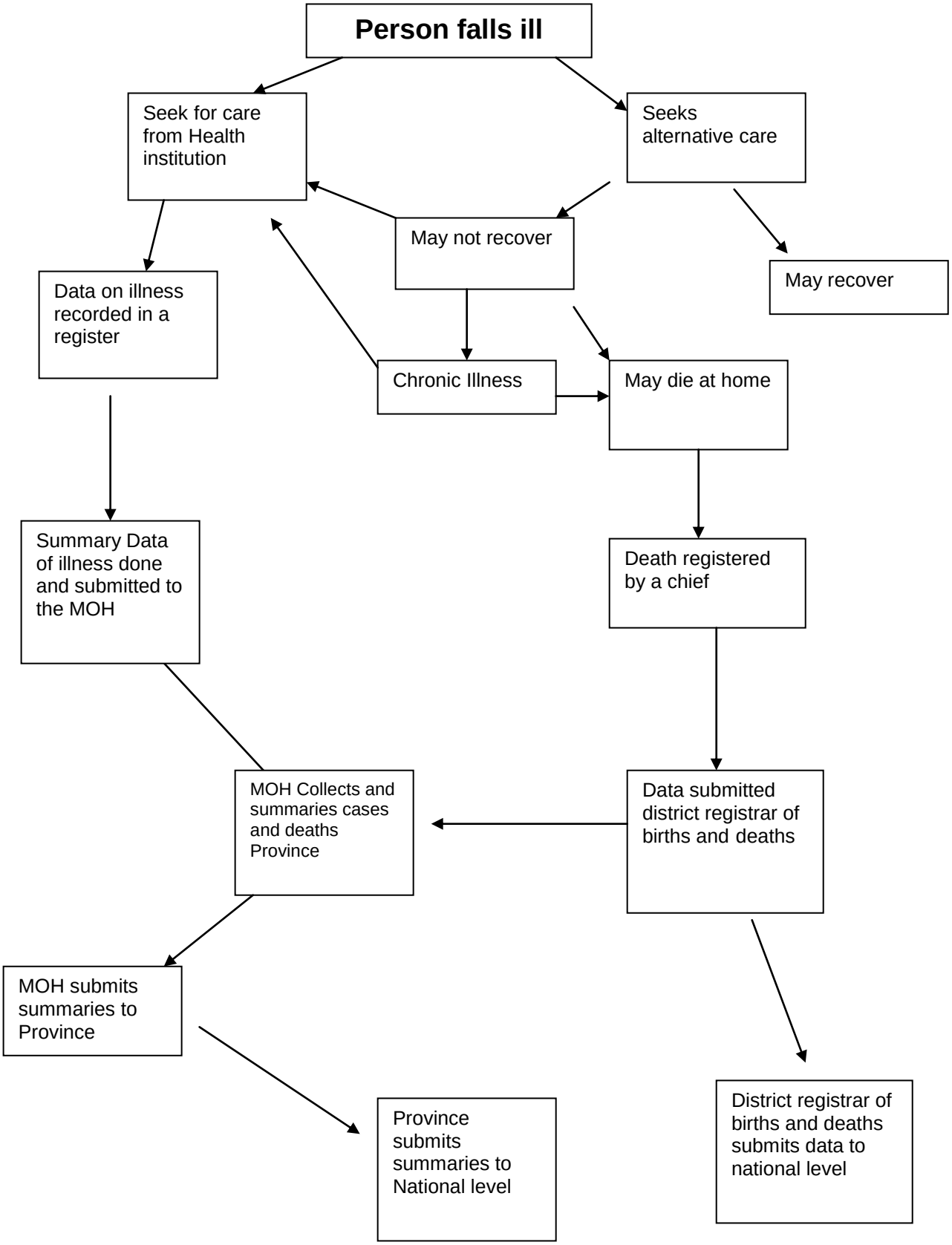
Once a month, the health facility summarizes the number of cases and deaths for each routinely reported IDS condition and reports the totals to the district. During epidemics summaries are compiled and submitted on weekly basis to the next higher level. The health facility performs some analysis of the data such as keeping trend lines for selected priority diseases or conditions and observing whether certain thresholds are passed to alert staff to take action. One action that is taken if an outbreak is suspected is to obtain laboratory confirmation. Laboratory specimens are obtained and the following data is documented: type of specimen, date obtained, date sent to the laboratory, condition of specimen when received in the laboratory (good or poor), and laboratory results.

At the district level, data is compiled monthly for each of the IDS conditions. The district prepares analyses of time, place and characteristics of the patients such as age and gender for both outpatients and inpatients. These results are sent to the province where the data is aggregated and forwarded to the national level.

The district uses the data to plot graphically the routine surveillance trends and epidemic curves for IDS conditions. In addition, the district maintains a log of suspected outbreaks reported by health facilities. This list documents the nature of the potential outbreak, the number of possible cases, the dates of investigations and actions taken by the district. It also includes any findings of investigations led by district, provincial and national levels.

The district surveillance focal point provides disease-specific data and information to each disease prevention programme within the district.

INFORMATION FLOW IN IDSR



How Can IDSR Contribute to Epidemic Preparedness?

When an outbreak of a communicable disease occurs or is detected, there is no time to conduct initial training or assemble supplies. All efforts must be focused on meeting the needs of patients and the community members.

Being prepared for an emergency situation can ultimately save lives. In cases where epidemic preparedness plans have been in place, timely detection of outbreaks has been followed by prompt and appropriate response actions.

Since the disease surveillance system collects data for describing and analysing health events, it provides skills and information for early detection of disease outbreaks leading to enhanced preparedness for emergency situations. For example, a district's epidemic management team can define the role of each level in an outbreak response in advance.

How are surveillance functions described in these guidelines?

These guidelines assume that all levels of the health system are involved in conducting surveillance activities for detecting and responding to priority diseases and conditions and include the following:

Step 1 - Identify cases. Using basic, standard case definitions, identify priority diseases and conditions.

Step 2 - Report suspected cases or conditions to the next level. If this is an epidemic prone disease, or a disease targeted for elimination or eradication, investigate and respond immediately.

Step 3 - Analyse and interpret data. Compile the data, and analyse it for trends. Compare information with previous periods and summarize the results.

Step 4 - Investigate and confirm suspected cases and outbreaks. Take action to ensure that the case or outbreak is confirmed including laboratory confirmation wherever it is feasible. Gather evidence about what may have caused the outbreak and use it to select appropriate control and prevention strategies.

Step 5 – Respond Mobilize resources and personnel to implement the appropriate outbreak or public health response.

Step 6 - Provide feedback. Encourage future cooperation by communicating with levels that reported outbreaks and cases about the investigation outcome and success of response efforts.

Step 7 - Evaluate and improve the system. Assess the effectiveness of the surveillance system, in terms of timeliness, quality of information, preparedness,

thresholds, case management and overall performance. Take action to correct problems and make improvements. There is a role for each surveillance functions at each level of the health system[1].

The levels are defined as follows:

- **Community:** Represented by basic village-level services such as trained birth attendants, village /opinion leaders (e.g. assistant chiefs and chiefs), school teachers, and village health workers or similar care providers.

- **Health facility:** All institutions offering health services outpatients, inpatients or both.

- **District:** The intermediate administrative unit comprising of administrative divisions.

- **Provincial:** The administrative unit serving several districts

- **National level:** The level where policies are set and resources are allocated (Ministry of Health, Headquarters).

- **Laboratory:** A facility offering laboratory services for confirmation of disease outbreak and is linked to a system of national quality assurance and reference laboratories for specific diseases.

How Can Districts Strengthen Surveillance and Response?

The checklist in annex 1 should be used to define basic requirements for effective IDSR.

Districts should also use the matrix below (Detect and Respond to Priority Diseases) for surveillance functions and skills to describe their role in the surveillance system. The matrix describes a complete system in which all the skills and activities are in place. Each level supports activities at other levels and reinforces the opportunity for successful decision-making at corresponding levels and functions. This matrix provides a systematic framework for improving and strengthening the system.

Practical uses of the matrix include:

- Ensuring that all necessary functions and capacities have been identified
- Establishing accountability to provide a basis for assigning functions to appropriate levels and determining what capacities should be present
- Developing activities and training for human resource development
- Managing and monitoring programs
- Planning for surveillance and laboratory personnel, supplies and materials.
- Moreover, the matrix illustrates several key assumptions about surveillance systems.

[1] *These guidelines focus on improving surveillance in the health system. In all districts, all health facilities (public, private, mission and non-governmental organizations) will be integrated.*

- If one or more of the elements at each level is not present or is being performed poorly, the risk of failure increases for achieving surveillance and control objectives.
- An effective system will be supported at each level from the levels above and below.
- A complete system minimizes any delay in taking public health actions.
- The functions of detection, analysis, investigation, response, feedback and evaluation are interdependent and should always be linked.

DETECT AND RESPOND TO PRIORITY DISEASES[1]			
	1.0 Identify *Note: Laboratory steps apply to each level with access to laboratory services*	**2.0 Report**	**3.0 Analyse and Interpret**
Community	• Use simple case definitions to identify priority diseases or conditions in the community	• Know which health events to report to the health facility and when to report them	• Involve local leaders in observing and interpreting disease patterns and trends in the community
Health Facility	• Use standard case definitions to identify priority diseases or conditions that present in: - inpatient and outpatient services - community reports - private sector reports • Record information about suspected cases in clinic register. • Use local laboratory capacity to diagnose suspected cases • Use standard protocols to process laboratory specimens • Collect and transport clinical specimens for laboratory investigation	• Report case-based information for immediately notifiable diseases • Report data gathered from inpatient and outpatient services and from community and private sector sources • Report summary data to district Report laboratory results from sentinel sites.	• Prepare and periodically update graphs, tables and charts to describe time, person and place for reported diseases and conditions • Identify and report immediately any disease or condition that: *- exceeds an epidemic threshold or* *-occurs in locations where it was previously absent or* *-occurs more often in a population group than was previously o* *r* *-presents unusual trends or patterns* • *Interpret results. Discuss possible public health action with district team* • Observe changes in trends during routine analysis of laboratory results
District	• Maintain activities for collecting routine surveillance data in a timely way • Review records of suspected outbreaks • Collect and transport clinical specimens for laboratory investigation • Distribute specimen collection kits for special surveillance activities	• Support health facilities in knowledge and use of standard case definitions for reporting priority diseases and conditions • Make sure health facility staff know when and how to report priority diseases and conditions • Promptly report immediately-notifiable diseases to the national level • *Report laboratory results of priority diseases to the province*	• Define denominators and obtain data for ensuring accurate denominators • Aggregate data from health facility reports • Analyze case-based data by person, place and time • Calculate rates and thresholds • Compare current data with previous periods • Prepare and periodically update graphs, tables and charts to describe time, Person and place for reported diseases and conditions • Make conclusions about trends, thresholds and analysis results • Describe risk factors for priority disease or conditions
Province	• Reference laboratory for its districts for some diseases.	• Provide support supervision • Aggregate data received from district reports and report to National level.	• Summarize district reports and forward to the National levels. • Make conclusions about trends,thresholds and analytic results. • Describe risk factors for priority diseases or conditions. • Analyze data by time, person and place. • Analyze, map and stratify data by district and other factors.
National	• Establish steps for surveillance of sentinel populations • Conduct special survey to gather information about reported cases, outbreaks or unusual events • Define and update surveillance needs and implement training for and other support to each level • Advocate for adequate resources to support the identification and reporting of cases • *Set policies and procedures with national reference laboratory* • *Use national reference laboratory for maintaining quality control and standards*	• Set policies and procedures for reporting priority diseases and conditions at each level • Include private sector laboratories in the reporting network • Support reporting activities throughout the system • Receive reports of outbreaks and international notifiable diseases	• Set policies and procedures for analyzing and interpreting data • Aggregate data received from province reports • Make sure each level uses appropriate denominators for analysis • Interpret trends from national perspective • Adapt or define epidemic thresholds • Provide training resources for analyzing and interpreting data • Analyze data by time, person and place • Analyze, map and stratify data by district and other factors • Make conclusions based on analysis results • Provide reports and share data with national authorities and WHO as required • Define public health analysis skills appropriate to each level of personnel in the system

[1] *Adapted from:* ***Centres for Disease Control and Prevention (CDC), EPO Division of International Health, NCID-Division of Bacterial and Mycotic Diseases, Atlanta, GA***

4.0 Investigate *Note: These steps assume appropriate laboratory capacity*	**5.0 Prepare and Respond**	**6.0 Provide Feedback**	**7.0 Evaluate and** Improve the System
• Support case investigation activities such as informing the community of the problem case finding collecting of specimens and other activities	• Assist health authorities in selecting response activities • Participant in response activities • Mobilize community resources appropriate for response activities	• Give feedback to community members about reported cases and prevention activities	• Decide if action took place as planned • Evaluate the community response to the public health action
• Take part in investigation of reported outbreaks • Collect, package, store, and transport specimens for laboratory testing • Use investigation and laboratory results to confirm the outbreak • Process and record laboratory results • Provide the results to clinical staff and patients	• Treat cases and contacts according to standard case management guidelines • Use appropriate infection control measures • Carry out public health response with the district level • Mobilize community involvement in the response • Advocate for resources	• Give feedback to community members about outcome of reported cases and prevention activities	• Monitor timeliness and completeness for reporting routine and case based information to the district level • Evaluate routine detection and reporting of priority disease and conditions • Evaluate preparedness and timeliness of response activities • Evaluate appropriateness of case management • Take action to improve reporting practices • Take action to improve readiness for timely response to outbreak • Maintain contact with community to maintain preparedness and prevention activities • Monitor the interval between receipt of specimens and sending of results • Monitor quality of laboratory results
✓ Support districts in the investigation of reported cases or outbreaks • Report the confirmed outbreak to the national level.	• Support districts in the epidemic response. • Mobilize local resources • Advocate with the national for support	• Alert nearby areas and districts about outbreaks • Give districts regular and periodic feedback about routine control and prevention activities	• Monitor and evaluate program targets and indicator for measuring quality of the surveillance system • Monitor and evaluate timeliness and completeness of reporting from the districts • Monitor and evaluate timeliness of response to outbreak by the districts. • Monitor routine prevention activities and modify them as needed.
• Reference laboratory for its districts • Assist districts in the outbreak investigations • Report to the National level	• Give technical assistance and financial support to the distrcts • Advocate for resources and support supervision.	• Provide feedback to affected districts. • Alert neighbouring districts.	• Do monitoring and evaluation for all districts. • Monitor quality of laboratory results. • Monitor and evaluate program targets and indicator for measuring quality of the surveillance system • Monitor and evaluate timeliness and completeness of reporting from districts in the province. • Monitor and evaluate timeliness of response to outbreak • Monitor routine prevention activities and modify them as needed.
• Alert laboratory and support its confirmation activities: supplies transport media logistics transport of specimens • Support activities for investigating report outbreaks: supplies, logistics equipment, budget • Collaborate with international authorities as needed during investigations • Notify regional, international networks about confirmed outbreak • Process specimens for investigation and send timely results as required to each level • Request additional specimen as needed • Take part in epidemic response team	• Set policies and procedures for responding to cases and outbreaks of priority diseases and conditions • Support epidemic response and preparedness activities • Report and disseminate results of outbreak response in bulletins, media, press releases and briefings	• Give feedback about response activities to each level • Give province/districts regular, periodic feedback about routine control and prevention activities • Develop and periodically distribute national bulletin for epidemiology and public health	• Establish and disseminate policies and procedures for monitoring surveillances and outbreak response activities • Establish policies and practices for supervising surveillance and outbreak response activities • Evaluate detection and report activities and more implements as needed: Monitor and evaluate program targets and indicators for measuring quality of the surveillance system - Monitoring and evaluate timeliness and completeness of reporting from intermediate levels - Monitor and evaluate timeliness of national support for outbreak response - Monitor and evaluate effectiveness of district level outbreak response activities • Monitor routine prevention activities and modify as needed • Monitor quality assurance laboratory at lower levels

WHAT IS CONTAINED IN THESE GUIDELINES?

The guidelines contain general principles on detection, recording, analysis, reporting, investigation and response to priority communicable diseases. They are presented in eight sections;

1. Identify cases of priority disease and conditions
2. Report priority diseases and conditions
3. Analyse data
4. Investigate suspected outbreaks and other public health problems
5. Respond to outbreaks and other public health problems
6. Provide feedback
7. Evaluate and improve surveillance and response
8. Summary guidelines for specific priority diseases and conditions

How to use these guidelines

This manual contains practical guidelines for use as:

- A general reference for surveillance activities across all levels
- A set of definitions for thresholds that trigger some action for responding to specific diseases
- A stand-alone reference for level-specific guidelines
- A resource for developing training, supervision and evaluation of surveillance activities
- A guide for improving early detection and preparedness activities for improved and timely response.

These Guidelines sets forth basic general guidance on surveillance and response and are adapted to address priority communicable diseases.

Who are these Guidelines for?

The information and recommendations in this manual are intended for use by health staff in the surveillance coordination unit at district and health facilities. Information in these guidelines applies also to:

- Programme managers
- Surveillance officers
- Health records and information officers
- National epidemiology unit staff
- District health management teams
- Clinicians,
- Health facility managers
- Public Health officers/Technicians
- Health administrators
- Medical and nursing educators
- Public health educators
- Laboratory personnel
- Community
- Physio and Occupational Therapist

WHICH DISEASES ARE INCLUDED?

The Ministry of Health lists 18 communicable diseases and conditions for integrated disease surveillance to be implemented. The diseases are recommended because they fall into one or more of the following categories:

- Are top causes of high morbidity and mortality (e.g. malaria, pneumonia, diarrhoeal diseases, tuberculosis, and AIDS);
- Have epidemic potential (e.g. measles, cholera and viral haemorrhagic fevers);
- Surveillance required internationally (e.g. plague, yellow fever and cholera);
- Have available effective control and prevention interventions for addressing the public health problem they pose (for example, Tuberculosis, leprosy etc);
- Can easily be identified using standard case definitions; and
- Have intervention programmes supported by MOH for prevention and control, eradication or elimination of the diseases (for example, the Kenya Expanded Programme on Immunizations (KEPI) and the Integrated Management of Childhood Illness Strategy (IMCI).

	IDSR Priority Diseases
A	Epidemic-Prone Diseases
1	Cholera
2	Diarrhoea with blood (Shigella)
3	Meningitis
4	Plague
5	Typhoid fever
6	Viral haemorrhagic fevers
7	Yellow Fever
B	Diseases Targeted for Eradication and Elimination
8	Acute flaccid paralysis (AFP)/polio
9	Dracunculosis
10	Neonatal tetanus
11	Measles
12	Leprosy
C	Other Diseases of Public Health Importance
13	Pneumonia in children less than 5 years of age
14	Diarrhoea in children less than 5 years of age.
15	New AIDS cases
16	Malaria
17	STI
18	Tuberculosis

HOW DOES MOH SUPPORT EFFORTS TO STRENGTHEN DISEASE SURVEILLANCE?

The Ministry of Health provides IDSR support for every level of the health system, including:

- The development of comprehensive technical guidelines for each level
- An adapted guideline for implementation
- Advocacy for resources and resource mobilisation,
- Monitoring and detection of diseases across the country
- Policy on disease surveillance
- Legislation on communicable diseases

ANNEX 1: USING ASSESSMENT RESULTS

TO IMPROVE SURVEILLANCE AND RESPONSE AT THE DISTRICT LEVEL

IDSR provides guidance on how surveillance and response activities can be improved. This checklist should be used to help identify where districts can select priority activities to improve their surveillance and response capacity.

1. _____ Define the sources of information about health events in the district, including points of contact the community has with health services. For example, list the following sources on a list of district reporting sites such as the list in Annex 6 of this section:

- health facilities and hospitals
- community health workers
- traditional birth attendants
- rural community leaders who have knowledge of health events in the community (for example, the village elders, traditional healer, chiefs, school teacher, leaders of faith-based communities, etc.)
- public health officers
- private sector practitioners
- public safety officers such as fire, rescue or police departments
- others (please describe)_____

2. _____ Identify surveillance focal points for each source. Identify and specify the opportunities for community involvement in surveillance of health events.

3. _____ Describe how communication about surveillance and response takes place between the district and the surveillance focal points. Include methods such as monthly meetings, newsletters, telephone calls and so on. Update the description periodically.

4. _____ Describe the laboratory referral network for confirming priority diseases and conditions in the district. For example, list the following:

- Public, private or NGO district facilities with reliable laboratory services for confirming priority diseases.
- Prevention, control or special surveillance activities in the district with laboratory access (for example, any HIV sentinel surveillance sites in the district).

5. _____ Update the policies of the district epidemic response team so that assessing preparedness is a routine agenda item of the team. Specify and disseminate schedules for:
- Meeting to routinely assess preparedness for response and discuss current problems or activities
- Outbreak response meetings

6. _____ Describe the communication links between the community and health facilities with the epidemic response committee that can be activated during

an outbreak and for routine activities.

7. _____ Specify the priority diseases and conditions for surveillance within the district and those directed by national policy. List diseases that are:

- Epidemic-prone diseases
- Diseases targeted for eradication and elimination
- Other diseases of public health importance

8. _____ For each priority disease or condition selected, state the available public health response activity.

9. _____ For each disease or condition that the district can respond to, specify the target, alert threshold or analysis results that would trigger an action.

10. _____ For each priority disease or condition, review the minimum data element that health facilities and other sources should report. State when it should be reported, to whom, and how. For example:

- State the information that should be reported; a minimum requirement would be to report all cases and deaths for the selected diseases and conditions.
- State the diseases or conditions that require immediate reporting and communicate the list to health facilities in the district.
- Define the means for reporting data to the district (by phone, by form, by voice). If there is electronic reporting, do all facilities have access to computers and modems?
- Define how often the required data should be reported.

11. _____ Define the data management tools available in the district and how they should be used in an integrated system

- Routine reporting forms
- Case-based surveillance reporting forms
- Line lists for use in outbreaks of more than 5 cases
- Tables for recording summary totals
- Graphs for time analysis of data
- Maps for place analysis of data
- Charts for person analysis of data

12. _____ Define the exact data management requirement for each reporting site. For example, develop and disseminate a policy and specify the procedures so that reporting sites know they must report each month:

- Tally, compile and report summary totals
- Analyze monthly summaries in graphs, tables or maps
- Provide some interpretation to the district level.

13. _____ Periodically update the availability of relevant supplies at each reporting site for conducting surveillance. (Note: If a reporting site has capacity for electronic reporting, is there an electronic format that is compatible with the methods

used at the district, region and national levels? If electronic reporting is not available, do the focal points who are required to manage data have a reliable supply of paper, coloured pencils, graph paper, log books?)

14. _____ Decide if current forms address the priorities of integrated disease surveillance and response. For example, do current forms provide the information necessary for detecting problems and signalling a response to the priority diseases under integrated disease surveillance?

15. _____ Decide if additional indicators will be evaluated and plan how to monitor and evaluate timeliness and completeness of reporting.

16. _____ Define methods for informing and supporting health staff in the implementation of integrated disease surveillance. For example:

- List the current opportunities for training health staff in surveillance, response or data management in the district.
- Coordinate training opportunities between disease programs that take advantage of overlapping skills between programs such as supervision, report writing, budgeting, data analysis, and using data to set priorities.
- Define the training needs for each category of health staff for either initial training in surveillance and response skills or refresher training in how to integrate surveillance activities.

17. _____ Review and update feedback procedures and methods between the district, health facilities and community as well as between the district and higher levels. For example, specify the feedback methods and update as necessary:

- Bulletins summarizing data reported by health facilities to the district
- Periodic meetings to discuss public health problems and recent activities
- Supervisory visits

18. _____ Gather and present relevant data about your district that can be used to advocate for additional resources for improving surveillance and response activities in your district. (Example: Health staff are able to document an increase in malaria cases, they know that an effective response is available with the use of insecticide-treated bed-nets. The district surveillance officer used data to show the expected reduction in malaria cases if some of the community's bed net cost could be supported by local businesses.)

19. _____ State three objectives you would like to achieve for improving surveillance in your district over the next year.

SECTION 1
IDENTIFY CASES OF PRIORITY DISEASES
AND CONDITIONS

This section describes how to:

- Use standard case definitions for reporting suspected priority diseases and conditions
- Improve district procedures for surveillance and response
- Use the laboratory network to confirm suspected outbreaks.

1.1 INTRODUCTION

Cases and suspected outbreaks of priority diseases and conditions may come to the attention of the health system in several ways.

For example:

- A patient falls ill and seeks treatment from a health facility

- A member of the community reports a single suspected case, a cluster of deaths or unusual event to the health facility. For example, a pharmacy reports a sharp increase in the number of purchases of a particular medication or treatment. The school reports an increased number of absences due to similar signs and symptoms.

- During active searches to find additional cases for a particular disease, the surveillance officer identifies cases of other priority diseases that have not been reported. For example, during a review of the clinic register for cases of acute flaccid paralysis, the officer also looks for suspected cases of other vaccine-preventable diseases, such as measles, neonatal tetanus, meningitis and cholera.

- Radio, television or newspapers report rare or unexplained health events in the area.

- An individual health facility reports a cluster of deaths or an unusual increase in the number of cases that may not cross the health facility's action threshold. When the cases are added together and analysed at the district with reports from other health facilities, an outbreak is detected. For example, an individual health facility reports that there has been an adult with bloody diarrhoea who dies, the problem appears to be only in that catchment area. If several health facilities report a similar event, a district problem is detected and action can be taken.

- Vital events records (registration of births and deaths) show an increase in neonatal deaths.

- Unexplained increased mortality among wild and domestic animals

1.2 USE STANDARD CASE

A case definition is a standard set of criteria used to decide if a person has a particular disease, or if the case can be considered for reporting and investigation. Case definitions make use of both clinical and surveillance criteria. For example:

- Clinical case definition: Clinical staff (doctors, nurses, or clinical officers) sees a patient with signs and symptoms. A clinical case definition provides the criteria

for identifying appropriate and potentially life-saving treatment to offer the patient. Resources permitting, the clinician will ask for a diagnostic laboratory test to confirm and support the diagnosis. Without the laboratory confirmation, the clinician may not be able to determine either the cause of or appropriate treatment for the patient's condition.

- Surveillance case definition: A case definition for surveillance is used to:
  – Obtain an accurate detection of all cases of a disease or condition in a given population
  – Exclude detection of other similar conditions.

Using the same case definition throughout a country's public health surveillance system ensures efficient tracking of particular diseases or conditions. Data can be compared more accurately from one area to another. When health facilities and districts use different case definitions, tracking the trend of a particular infectious disease will be impossible. Health staff who analyse the data and take action will not know if the trends are due to the disease under surveillance or to some other cause.

1.2.1 Review standard case definitions used by health facilities in the district.

Take action to ensure that health workers know how to use standard case definitions specified by national policy for reporting priority diseases and conditions to the district level.

Suggested case definitions for the priority diseases and conditions in an integrated disease surveillance system are in Annex 2 at the end of this section.

Also refer to information about case definitions in the disease specific recommendations in Section 8 of these guidelines.

1.2.2 Distribute simplified case definitions to the community

Involve the community in plans to improve surveillance and response procedures in the district. If the community does not know how to notify health authorities when priority diseases or unusual health events occur, suspected cases will not be seen at the health facility, and cases will not be reported.

Community health workers, traditional healers, traditional birth attendants and community leaders should know how to recognize and report selected priority diseases to the health facility. They should also refer people with the suspected disease or condition to the health facility for treatment. Provide information to the community about priority diseases on posters, newsletters and announcements during community meetings.

Respond effectively to the community reports on the priority diseases or conditions, as this will encourage them to participate more in the surveillance activities.

A list of simplified (lay) case definitions for use in community surveillance is in Annex 3 of this section.

1.3 IMPROVE DISTRICT PROCEDURES FOR SURVEILLANCE AND RESPONSE

Use national assessment results to plan improved activities based on the prioritised list. Each year, evaluate the system and modify plans to address the next priority on the list.

1.3.1 Update the description of the catchment area

Periodically, update information about the catchment area. For example, make sure you have up-to-date information about:

- The size of important target populations in the district such as children less than 5 years of age, women of childbearing age, all children and adults from ages 1 through 30, people living in refugee settlements, youth out of school, and so on.

- Major public health activities in the area including public, private, and NGO immunization activities, clean water projects, family planning clinics, feeding centres for undernourished children, and so on.

- List five to ten current leading public health problems treated in the district or facility.

1.3.2 Update the list of reporting sites in the district

Identify all the health facilities in the district required to report surveillance information to the district level. Record the health facility and names of staff that are responsible for surveillance activities. The District Disease Surveillance Co-ordinator should have an updated list of reporting facilities, including addresses, telephone numbers and contact person prominently displayed for ease of reference. The list should include public, NGO and private health facilities.

1.4 DEFINE LABORATORIES FOR CONFIRMING SUSPECTED OUTBREAKS

There are several diseases or conditions with signs and symptoms that are the same or similar to other diseases or conditions. For example, a child with fever and rash over the entire body might be diagnosed with measles, even though there could be several causes for the child's clinical presentation.

Laboratory testing is a useful tool for public health because it can support or confirm the diagnosis. Even well trained, experienced health providers may be unable at times to make the correct diagnosis. Having laboratory support for the diagnosis increases the likelihood that the diagnosis is correct, and that public health action will be efficient and appropriate. Laboratory confirmation ensures that surveillance data (for example, the number of measles cases diagnosed according to clinical signs and symptoms) does not result in unnecessary public health actions (for example, conducting a mass immunization campaign for measles vaccine when the cause of the illness is not measles).

Annex 4 at the end of this section contains a rapid reference table for requesting, collecting, and shipping specimens for recommended laboratory tests to confirm priority diseases. General information about interpreting laboratory tests is in the introduction to Annex 4.

1.4.1 Establish communication with the designated laboratories

Establish or strengthen routine communication with identified laboratories that will receive specimens from your health facility or district and confirm suspected outbreaks. The purpose of this routine contact is to strengthen procedures between the health facilities in the district that will be sending specimens and the laboratory that will be receiving them. Ensure that the procedures for confirming the disease or condition and reporting the results are clear and can be reliably carried out.

1.3.2 Identify a district laboratory focal point

A district level focal point should make sure that laboratory confirmation procedures are known and followed in the district. The designated person should:

- Support the health facility in determining when to take a specimen for confirming the suspected case
- Co-ordinate with the laboratory, as needed, to identify the correct specimen for collection and any special concerns or procedures
- Collect and package the specimen safely or assist the health facility in collecting the specimen.
- Ensure the safe and reliable transport of the specimen from the health facility to the district
- Receive the laboratory results from the reference laboratory and report them promptly to the DHMT and the health facility.
- Take action with the health facility based on the laboratory report.

Annexes to Section 1

ANNEX 2	MOH recommended standard case definitions for reporting suspected priority diseases or conditions from the health facility to the district
ANNEX 3	Simplified Case Definitions for use in community surveillance
ANNEX 4	Recommended laboratory tests for confirming priority diseases and conditions
ANNEX 5	List of laboratories for confirming priority diseases and conditions

ANNEX 2 MOH RECOMMENDED STANDARD CASE DEFINITIONS

FOR REPORTING SUSPECTED PRIORITY DISEASES OR CONDITIONS FROM THE HEALTH FACILITY TO THE DISTRICT

MOH recommends that health facilities use the following surveillance case definitions for reporting suspected cases of priority diseases and conditions to the district level. Please refer to the disease-specific guidelines in Section 8 for additional information about specific case definitions.

Epidemic-prone diseases	
1. Cholera	Profuse effortless watery diarrhoea (i.e. more than 3 motions in 24 hours of sudden onset with or without vomiting in a person over 5 years old. In an area experiencing an epidemic, all cases with acute watery Diarrhoea including the 2 – 5 year age range are considered as cases. A sudden increase in the number of dehydrated cases (including Children aged 2 - 5 years) resulting from acute watery diarrhoea should raise suspicion of a possible cholera outbreak.
2. Diarrhoea with blood ***(Dysentery)***	Any person with diarrhoea and visible blood in the stool.
3. Meningitis (Epidemic)	Rapid onset of fever, headache, vomiting and either neck stiffness Or altered consciousness or bulging fontanelle (in less than 1 year olds) with or without petechial or purpural rash. Confirmation by turbid cerebrospinal fluid (CSF) and isolation of gram-negative Intracellular diploccoci (Nessieria Meningitides).
4. Typhoid fever	Insidious and sustained fever, severe headaches/Malaise, nausea and constipation (which is more common than diarrhoea in adults) With isolation of salmonella species in stool or blood of a patient.
5. Plague	Acute fever, chills, headaches, severe malaise prostration with painful swollen lymph nodes (bubonic type) or cough with blood stained sputum, chest pain, difficulty in breathing (pneumonic type). Confirm diagnosis by isolation of Gram Negative bipolar Coccobacilli in clinical material (bubo aspirate, sputum, tissue and blood
6. Viral hemorrhagic fevers	Acute onset of fever, for at least 72 hours, with headaches, nausea, unexplained bleeding tendencies such as, bloody stools, vomiting blood, bleeding from gums, nose, vagina, skin, or eyes. **WHILE** other causes of haemorrhagic tendencies have been ruled out. Confirmation by a positive Elisa for IGM for viruses known to cause haemorrhagic fever.

7. Yellow fever	Acute onset of fever, jaundice, and may be associated with bleeding from body orifices, altered consciousness, and renal failure (reduced urine output, proteinuria, haematuria).
Diseases targeted for eradication and elimination	
8. Acute flaccid paralysis (AFP)/polio	Any case with weakness or floppiness of the limbs of sudden onset, not due to trauma in a child less than 15 years of age.
9. Measles	Any person with fever and maculopapular (non-vesicular) generalized rash and cough, coryza or conjunctivitis (red eyes) or any person in whom a clinician suspects measles. A measles death is a death occurring within 30 days of onset of the rash.
10. Leprosy	Any person with one of the following cardinal signs: skin patch with loss of sensation, one or more enlarged nerves, and presence of leprosy bacilli with or without bacteriological diagnostic confirmation and requiring chemotherapy (excluding patients released from treatment).
11. Neonatal tetanus	Any newborn with a normal ability to suck or cry during the first two days of life, and who, between 3 and 28 days of age, cannot suck normally and has generalized stiffness and/or spasms.
12. Dracunculosis	Any person with a history of skin lesion and emergence of Guinea worm within one year of the skin lesion

Other diseases of public health importance	
13a *Diarrhoea with some dehydration* in children less than 5 years of age	Any child less than 5 years of age with diarrhoea and two or more of the following: – restless or irritable – sunken eyes – drinks eagerly, thirsty – skin pinch goes back slowly
13b. *Diarrhoea with severe dehydration* in children less than 5 years of age	Any child less than 5 years of age with diarrhoea and two or more of the following: – lethargic or unconscious – sunken eyes – not able to drink or drinking poorly – skin pinch goes back very slowly
14a. *Pneumonia* in children less than 5 years of age	Any child aged 2 months up to 5 years of age with cough or difficult breathing and – breathing 50 breaths or more per minute in an infant 2 months up to □1 year – breathing 40 breaths or more per minute for a child aged 1 to 5 years *(Infants less than 2 months with fast breathing 60 breaths or more per minute are referred for serious bacterial infection.)*
14b. *Severe Pneumonia in children less than 5 years of age.*	Any child age 2 months up to 5 years with cough or difficult breathing, and with any general danger sign, or chest indrawing, or stridor in a calm child. General danger signs are: unable to drink or breast-feed, vomits everything, convulsions, lethargy or unconsciousness.
15. New AIDS cases	Any person with an opportunistic infection and is HIV positive

16. Malaria	***Malaria in over 5 years excluding in pregnancy*** Any person with fever or fever with headache, back pain, chills, sweats, myalgia, nausea and vomiting diagnosed clinically as malaria. ***Malaria in under 5years*** Any child below 5 years with malaria ***Malaria in pregnancy*** A pregnant woman with signs and symptoms of uncomplicated malaria
17. Tuberculosis	Chronic cough (of more than three weeks) with sputum smear positive for mycobacterium tubercle.
18. Sexually Transmitted Infections	***Suspected case***: ▪ *Genital ulcer syndrome (non-vesicular*): Any male with an ulcer on the penis, scrotum, or rectum, with or without inguinal adenopathy, or any female with ulcer on labia, vagina, or rectum, with or without inguinal adenopathy. ▪ *Urethral discharge syndrome*: Any male with urethral discharge with or without dysuria. ***Confirmed case***: ▪ *Genital ulcer syndrome (non-vesicular):* Any suspected case confirmed by a diagnostic laboratory procedure. ▪ *Urethral discharge syndrome*: A suspected case confirmed by a diagnostic laboratory procedure (for example Gram stain showing intracellular Gram-negative diplococci).

ANNEX 3 SIMPLIFIED CASE DEFINITIONS

FOR USE IN COMMUNITY SURVEILLANCE

Inform community health workers, traditional healers, traditional birth attendants, health workers who conduct outreach activities in hard-to-reach areas, and community leaders about the priority diseases and conditions under surveillance in your area. Use simplified cases definitions such as the following to help the community to recognise when a person with these signs should be referred to a health facility.

Simplified case definitions for community surveillance	
1. Acute flaccid paralysis	Any sudden onset of weakness of the limbs not caused by injury in a child less than 15 years.
2. Cholera	Any person >2yrs with three or more watery stools of acute onset within the last 24hrs and dehydration or danger signs such as *drowsiness or apathy, unconsciousness, vomits everything, convulsions, and in children less than 5, unable to drink or breast-feed.*
3. Diarrhoea with blood	Any person with diarrhoea and visible blood in the stool
4. Malaria	Any person who has an illness with high fever and a danger sign (*Danger signs are drowsiness or apathy, unconsciousness, vomits everything, convulsions, and in children less than 5 years, unable to drink or breast-feed)*
5. Measles	Any person with fever, running nose, red eyes and rash
6. Meningitis	Any person with fever and neck stiffness
7. Neonatal tetanus	Any newborn who is normal at birth, and then after 2 days, becomes unable to suck or feed.
8. Plague	Any person with fever and painful swelling under the arms or in the groin area. In an area known to have plague, any person with cough, chest pain and fever.
9. Pneumonia in children under 5 years	Any child less than 5 years of age with coughs and fast breathing or difficulty in breathing.
10. Tuberculosis	Any person with cough for 3 weeks or more
11. Viral hemorrhagic fevers	Any person who has an unexplained illness with fever and bleeding from any part of the body or who died after an unexplained severe illness with fever and bleeding
12. Yellow fever	Any person with fever and yellowness in the white part of the eyes or yellowness of the skin
13. Typhoid fever	Any person with sustained fever, severe headache, and loss of appetite constipation or diarrhoea.
14. Childhood diarrhoea	Any child less than 5 years of age with 3 or more loose or watery stool in the past 24 hours with or without dehydration

15. New AIDS cases	Any person with recurrent illnesses e.g. respiratory infections, pneumonia, oral thrush and rapid weight loss
16.Sexually transmitted infections	Any person with unusual discharge, pain on passing urine, ulcer or pimple on his or her private parts.
17. Dracunculosis (Guinea worm)	A person presenting or having presented with skin lesion and protrusions of guinea worm in the last 12 months.
18. Leprosy	A person with whitish patch on the skin with loss or decrease of sensation.

ANNEX 4 RECOMMENDED LABORATORY TESTS
FOR CONFIRMING PRIORITY COMMUNICABLE DISEASES AND CONDITIONS

Confirming diagnoses of communicable diseases is essential. The laboratory results are used to:

- Accurately diagnose illness in an individual patient, and
- Verify the cause (or aetiology) of a suspected outbreak.

Laboratory specimens should arrive in the laboratory in good condition. This is to ensure that processing provides reliable results. Specimens should be collected safely, stored in appropriate media, and kept within a specific temperature range. Minimize delays between collection of the specimen and processing it at the laboratory.

Many factors can affect the reliability of interpretation of a laboratory test result. For example, results are difficult to interpret when:

- A blood specimen has been collected inappropriately and becomes haemolysed.
- There has been a delay in transportation or refrigeration resulting in bacterial overgrowth in the collected specimen.
- The storage media is not adequate causing reduced viability of the suspected organism or antibody.
- The specimens are not plated on the appropriate media or reagents are expired.

A positive result of any specimen e.g. blood, serum, urine, cerebral spinal fluid (CSF) or tissue usually confirms a suspected condition. In situations when a negative result is received e.g. for detection of IgM or viral isolation, repeating the laboratory test may be indicated. Implementing public health measures even before the laboratory confirmation is complete may be necessary.

The reference chart on the following pages lists recommended laboratory tests for confirming priority diseases and conditions. The table contains information about:

- the diagnostic test for confirming the disease or condition
- the specimen to be collected
- when to collect the specimen
- how to prepare, store and transport to the lab
- when to expect the results
- sources for additional information.

The chart is intended to be used as a rapid reference chart. Use the information when suspected priority diseases or conditions are reported from the health facility or when a suspected outbreak is reported. Refer to the disease specific guidelines in Section 8 for additional information about confirming outbreaks of priority diseases and conditions.

Annex 4 contd. **Recommended laboratory procedures and tests for confirmation of priority *diseases***

Suspected disease or condition	Diagnostic test	Specimen	When to collect	How to prepare, store and transport specimens to the laboratory	Results and Diagnostic-labs
1. Acute flaccid paralysis (Suspected polio) **REFERENCE:** WHO global action plans for laboratory containment of wild polio viruses. WHO/V&B/99.32, Geneva, 1999	Isolation of wild polio virus from stool	Stool 5-10g (approx. one teaspoonful) **Note:** If no specimen is collected, re-evaluate patient after 60 days to confirm clinical diagnosis of Polio.	Collect a sample from every suspected AFP case. The best time to collect stool is within 14 days. Stool can however be collected upto 60 days from onset of paralysis. Collect the first specimen when the case is detected. Collect a second specimen on the same patient 24 to 48 hours later.	X Place stool in clean, leak-proof container and label clearly. X Immediately place in refrigerator or cold box not used for storing vaccines or other medicines. X Transport specimens so they will arrive at designated polio laboratory within 72 hours of collection X Freeze specimen at 0-8°C or colder and transport frozen specimen in a stool carrier with frozen ice packs.	Preliminary test results are usually available 14-28 days after receipt of specimen by the laboratory. If wild polio virus is detected, the national programme will plan appropriate actions KEMRI Polio laboratory
2. Cholera **REFERENCE:** "Laboratory Methods for the Diagnosis of Epidemic Dysentery and Cholera". CDC/WHO, 1999 CDC, Atlanta, GA, USA	Isolate *V. cholerae* from stool culture and determine O1 serotype using polyvalent antisera for *V. cholerae* O1.	Liquid stool or rectal swab	Collect stool sample from the first suspected cholera case. If more than one suspected case, collect until specimens have been collected from 5 to 10 cases. Collect stool from patients fitting the case definition and: Xonset within last 5 days, and Xbefore antibiotics treatment has started **Do not delay treatment of dehydrated patients.** Specimens may be collected after rehydration (ORS or IV therapy) has begun.	XPlace specimen (stool or rectal swab) in a clean, leakproof container and transport to lab within 2 hours. If more than 2- hour delay is expected, place stool-soaked swab into Cary-Blair transport medium. Cary-Blair transport medium is stable and usually good for at least one year after preparation. It does not require refrigeration if kept sterile and in properly sealed container. If colour changes (medium turns yellow) or shrinks (depressed meniscus), do not use the medium. If Cary-Blair transport medium is not available and specimen will not reach the lab within 2 hours: X Store at 4°C to 8°C X Do not allow specimen to dry. Add small amount of Normal saline if necessary. X To ship, transport in well marked, leak-proof container X Transport container in cold box at 4°C to 8°C	Cholera tests may not be routinely performed in all laboratories. Culture results usually take 2 to 4 days after specimen arrives at the laboratory. The O139 serotype has not been reported in Africa and only if a few places in southwest Asia. Serological determination of Ogawa or Inaba is not clinically required. It is also not required if polyvalent antisera results are clearly positive All District hospital Labs

Suspected disease or condition	Diagnostic test	Specimen	When to collect	How to prepare, store and transport specimens to the laboratory	Results and Diagnostic-labs
3. Dysentery Diarrhoea with blood *(Shigella dysenteriae type 1)* and other shigellae **Note:** SD1 infections are epidemic-prone and associated with high levels of antibiotic resistance. SD1 is the most significant of the shigellae due to the high levels of mortality in the young and elderly and due to its association with hemolytic uremic syndrome (HUS). In case SD1 is not detected *E.histolytica* should be tested **REFERENCE:** "Laboratory Methods for the Diagnosis of Epidemic Dysentery and Cholera". CDC/WHO, 1999 CDC, Atlanta, GA, USA	Isolate *Shigella dysenteriae* type 1 (SD1) in culture to confirm Shigella outbreak. If SD1 is confirmed, perform antibiotic sensitivity tests with appropriate drugs. Microscopy on wet preparation for trophozoites	Stool or rectal swab. Stool	Collect sample when an outbreak is suspected. Collect stool from 5-10 patients who have bloody diarrhoea and: Onset within last 4 days, and Before antibiotic treatment has started. Preferably, collect stool in a clean, dry container. Do not contaminate with urine. Sample stool with a swab, selecting portions of the specimen with blood or mucus. If stool can not be collected, obtain a rectal swab sample with a clean, cotton swab.	Place stool swab or rectal swab in Cary-Blair transport medium. Ship to laboratory refrigerated. If Cary-Blair not available, send sample to lab within 2 hours in a clean, dry container with a tightly-fitting cap. Specimens not preserved in Cary-Blair will have significant reduction of shigellae after 24 hours. If storage is required, hold specimens at 4□C to 8□C, do not freeze.	Culture results are usually available 2 to 4 days after receipt by the laboratory. SD1 isolates should be characterized by antibiotic susceptibility. After confirmation of an initial 5-10 cases in an outbreak, sample only a small number of cases until the outbreak ends. Refer to disease specific guidelines in Section 8 for additional information about the epidemic potential of *Shigella dysenteriae* 1 All district Labs

Suspected disease or condition	Diagnostic test	Specimen	When to collect	How to prepare, store and transport specimens to the laboratory	Results and Diagnostic-labs
4. New AIDS cases **REFERENCE**: Guidelines for Second Generation HIV Surveillance, WHO and UNAIDS, 2000 WHO/CDC/CSR/EDC/2000.5	A positive ELISA for confirming HIV and a rapid test for confirming the positive results are sufficient for an epidemiologic case definition for HIV.	Blood - Collect 10 ml of venous blood	Obtain specimens according to national HIV/AIDS program strategy for clinical or epidemiological sampling.	**Use universal precautions to minimise exposure to sharps and any body fluid.** *For ELISA:* Collect 10 ml of venous blood. XLet clot retract for 30 to 60 minutes at room temperature or centrifuge to separate serum from red blood cells. XAseptically pour off serum into sterile, screw capped tubes. XStore serum at 4°C. XShip serum samples using appropriate packaging to prevent breakage or leakage.	HIV testing is highly regulated with strict controls on release of information. Results are usually available within one week from arrival in the laboratory. <u>All district labs</u>
5. Leprosy	**Routine laboratory confirmation for surveillance is not required.**				
6. Malaria **REFERENCE:** "Basic Laboratory Methods in Medical Parasitology" WHO, Geneva, 1991	XPresence of malarial parasites in blood films for suspected cases admitted to inpatient facility XHematocrit or hemoglobin for suspected malaria in children 2 months to 5 years in age.	Blood Usually finger-stick sample Finger stick or other accepted method for collecting blood from young children	*For blood smear:* prepare blood film for all suspected cases admitted to inpatient facility, or according to national malaria case management guidelines *For hematocrit or hemoglobin*: In the inpatient setting, perform a laboratory test confirming severe anaemia	*For blood smear:* Collect blood directly onto correctly cleaned and labeled microscope slides and prepare thick and thin smears. 1. Allow smears to dry thoroughly. 2. Stain using the appropriate stain and technique. 3. Store stained and thoroughly dried slides at room temperature out of direct sunlight. *For hematocrit or hemoglobin:* Collect specimen according to instructions in national guidelines.	Thick and thin smear results can be available the same day as preparation. Microscopic examination of malarial slides may also reveal the presence of other blood-borne parasites. <u>All peripheral laboratories</u>

Suspected disease or condition	Diagnostic test	Specimen	When to collect	How to prepare, store and transport specimens to the laboratory	Results and Diagnostic-labs
7. Measles **REFERENCE:** WHO Guidelines for Epidemic Preparedness and Response to Measles Outbreaks WHO/CDS/CSR/ISR/99.1	Presence of IgM antibodies to measles virus in serum.	Serum	Collect blood samples on every suspected measles cases. Collect serum for antibody testing at first opportunity or first visit to the health facility.	• For children, collect 1 to 5 ml of venous blood depending on size of child. Collect into a test tube, capillary tube or micro-container. • Separate blood cells from serum: – Let clot retract for 30 to 60 minutes at room temperature. Centrifuge at 2000 rpm for 10-20 minutes and transfer serum into a clean glass tube. – If no centrifuge, put sample in refrigerator overnight (4 to 6 hours) until clot retracts. Transfer serum the next morning. – If no centrifuge and no refrigerator, let blood sit at an angle for at least 60 minutes (without shaking or being driven in a vehicle). Transfer serum into a clean tube. • Store serum at 4°C. (Use vaccine carriers with four ice packs) • Transport serum samples using appropriate packaging to prevent breaking or leaks during transportation	The specimen should arrive at the laboratory within 3 days of being collected. Results are usually available after 7 days. If as few as 2 out of 5 suspected measles cases are laboratory confirmed, the outbreak is confirmed. Avoid shaking of specimen before serum has been collected. To prevent bacterial overgrowth, ensure that the serum is transferred into a clean glass test tube. The test tube does not need to be sterile, just clean. Transport the serum in a hand vaccine carrier at 4^{o}C to 8^{o}C to prevent bacterial overgrowth (up to 7 days). If not refrigerated, serum stored in a clean tube will be good for at least 3 days. KEMRI Measles lab

Suspected disease or condition	Diagnostic test	Specimen	When to collect	How to prepare, store and transport specimens to the laboratory	Results and Diagnostic-labs
8. Epidemic Meningitis **REFERENCE:** "Laboratory Methods for the Diagnosis of Meningitis Caused by *Neisseria meningitis, Streptococcus pneumoniae and Haemophilus influenzae*". WHO document WHO/CDS/EDC/99.7 WHO, Geneva	Microscopic examination of stained CSF for Gram negative diplococci Culture and isolation of *N. meningitidis* from CSF	Cerebral spinal fluid (CSF) **Note:** CSF is the specimen of choice for culture and microscopic exam. If CSF not available, collect blood (10 ml adults, 1-5 ml for children) for culture.	Collect specimens from 5 to 10 cases once the alert or action threshold (see "Meningitis" in Section 8) has been reached.	XPrepare the patient and aseptically collect CSF into sterile bottles with tops. XImmediately collect 1 ml of CSF into a sterile plain and fluoride bottles and transport to the lab immediately XIncubate at body temperature (36□C to 37□C). • Never refrigerate specimens that will be cultured.	Isolation of *Neisserie meningitis*, a fastidious organism, is expensive, and difficult. It requires excellent techniques for specimen collection and handling and expensive media and antisera. Initial specimens in an outbreak or for singly occurring isolates of *N. meningitis* should be serotyped and antibiotic sensitivity performed to ensure appropriate treatment. All district hospital Labs
10. Plague **REFERENCE:** "Plague Manual: Epidemiology, Distribution, Surveillance and Control". WHO/CDS/EDC/99.2 WHO, Geneva, 1999 "Laboratory Manual of Plague Diagnostic tests". CDC/WHO publication, 2000, Atlanta, GA	Isolation of Yersinia pestis from bubo aspirate or from culture of blood, CSF or sputum. Confirm diagnosis by isolation of Gram Negative bipolar Coccobacilli in clinical material (bubo aspirate, sputum, tissue and blood). Identification of antibodies to the *Y. pestis* F1 antigen from serum.	Aspirate of buboes, blood, CSF, sputum, tracheal washes or autopsy materials for culture Blood for serological tests	XCollect specimen from the first suspected plague case. If more than one suspected case, collect until specimens have been collected on 5 to 10 suspected cases before the administration of antibiotics. XWith buboes, a small amount of sterile saline (1-2 ml) may be injected into the bubo to obtain an adequate specimen XIf antibiotics have been started, plague can be confirmed by seroconversion (4-fold or greater rise in titer) to the F1 antigen by passive hemaglutination using pared sera. Serum should be drawn within 5 days of onset then again after 2-3 weeks.	XSpecimens should be collected using aseptic techniques. Materials for culture should be sent to the laboratory in Cary Blair transport media or frozen (preferably with dry ice (frozen CO_2). Unpreserved specimens should reach the laboratory the same day. XLiquid specimens (aspirates) should be absorbed with a sterile cotton swab and placed into Cary-Blair transport medium. Refrigerate. XIf transport will require 24 or more hours and Cary Blair transport is not available, freeze the specimen and transport it frozen with cool packs.	Cultures should only be sent to a laboratory with known plague diagnostic capabilities or to a WHO Collaborating Center for Plague. Plague culture results will take a minimum of 3 to 5 working days from reception in the laboratory. Antibiotic treatment should be initiated before culture results are obtained. Plague patients seroconvert to the F1 *Y.pestis* antigen 7-10 days after onset. Plague Centre-NPHLs

Suspected disease or condition	Diagnostic test	Specimen	When to collect	How to prepare, store and transport specimens to the laboratory	Results and Diagnostic-labs
9. Neonatal tetanus	***Laboratory confirmation is not required.***		X	X	
11. Tuberculosis **(Smear positive pulmonary tuberculosis)** **REFERENCE:** Laboratory Services in Tuberculosis Control, Parts I, II and III. WHO publications WHO/TB/98.258	Presence of acid fast bacillus (AFB) in Ziehl Neelsen (ZN) stained smears	Deep-chest sputum	Collect sputum (not saliva) for direct smear microscopy and examine at least two stained specimens taken on different days.	Smear should be examined at health facility where the specimen is taken.	TB microscopy is read daily. Quantification of observed mycobacterium are reported using various reporting methods. Refer to the criteria used by the examining laboratory. Microscopy—all levels of laboratories Culture—central lab
12. Viral hemorrhagic fevers **REFERENCES:** Infection Control for Viral Hemorrhagic Fevers in the African Health Care Setting WHO/EMC/ESR/98.2 Viral Infections of Humans; Epidemiology and Control. 1989. Evans, A.S. (ed). Plenum Medical Book Company, New York	Presence of IgM antibodies against Ebola, Marburg, CCHF, Lassa or Dengue fever *or* Presence of Ebola in post-mortum skin necropsy	*For ELISA*: Whole blood, serum or plasma *For PCR*: Whole blood or blood clot, serum/plasma or tissue *For immunohistochemistry:* Skin or tissue specimens from ***fatal*** cases.	Collect specimen from the first suspected case. If more than one suspected case, collect until specimens have been collected from 5 to10 suspected cases.	**HANDLE AND TRANSPORT SPECIMENS FROM SUSPECTED VHF PATIENTS WITH EXTREME CAUTION. WEAR PROTECTIVE CLOTHING AND USE BARRIER PRECAUTIONS.** *For ELISA or PCR:* XRefrigerate serum or clot XFreeze (-20C or colder) tissue specimens for virus isolation *For Immunohistochemistry:* X Fix skin snip specimen in formalin. Specimen can be stored up to 6 weeks. The specimen is not infectious once it is in formalin. X Store at room temperature X Formalin-fixed specimens may be shipped at room temperature.	Diagnostic services for VHF are not routinely available. Advance arrangements are usually required for VHF diagnostic services. Contact the Virology lab KEMRI. National Public health Laboratories.

Suspected disease or condition	Diagnostic test	Specimen	When to collect	How to prepare, store and transport specimens to the laboratory	Results and Diagnostic-labs
13. Yellow fever **REFERENCES:** District guidelines for Yellow Fever Surveillance, WHO/GPVI/EPI/98.09 Yellow Fever. 1998. WHO/EPI/Gen/98.11	ELISA for the presence of yellow fever IgM antibodies	Serum	Collect specimen from the first suspected case of yellow fever. If more than 1 suspected case, collect until specimens have been collected from 5 to 10 suspected cases.	▪ Collect 10 ml of venous blood from adults, 1-5 ml from children. In a standard glass test tube, capillary tube or microtainer. ▪ Separate blood cells from serum: ▪ Let clot retract for 30 to 60 minutes at room temperature. Centrifuge at 2000 rpm for 10-20 minutes and pour off serum into a clean glass tube. ▪ If no centrifuge, put sample in refrigerator overnight (4 to 6 hours) until clot retracts. Pour off serum the next morning. ▪ If no centrifuge and no refrigerator, let blood sit at an angle for at least 60 minutes (without shaking or being driven in a vehicle. Pour off serum into a clean tube. ▪ Store serum at 4°C. ▪ Ship serum samples using appropriate packaging to prevent breaking or leaks during shipmen	The specimen should arrive at the laboratory within 3 days of being collected. Avoid shaking of specimen before serum has been collected. To prevent bacterial overgrowth, ensure that the serum is poured into a clean glass test tube. The test tube does not need to be sterile – just clean. Transport the serum in an EPI hand vaccine carrier at 4□C-8□C to prevent bacterial overgrowth (up to 7 days). If not refrigerated, serum stored in a clean tube will be good for at least 3 days. Contact the Virology lab KEMRI. National Public health Laboratories
14. Typhoid fever	Isolation of salmonella species in blood, stool or urine of a patient Demonstration of a rising “O” titres (Widal Test)	Blood, stool and urine Serum	Blood - one week after the onset of symptoms Stool - two weeks after the onset of symptoms Urine- three weeks after the onset of symptoms Slide agglutination tests (widal tests) are used for typhoid detection. If positive they must be followed up with tube titration and arising titre for “O” antigen one week after the first titration should be indicative	Sample for blood cultures should be in blood culture transport media. Stool should be in Cary-Blair transport media. Or fresh sample in polypot. Urine should be in a sterile leak proof container. Serum should be in clean plain bottle.	Isolation of Salmonella spp. From any of the samples. A rising “O” titres after titration in tube method

Suspected disease or condition	Diagnostic test	Specimen	When to collect	How to prepare, store and transport specimens to the laboratory	Results and Diagnostic-labs
15. Sexually transmitted infections	Wet preparation from genital swabs and urine Gram stain and culture from genital swabs and urine Serological tests for syphilis, HIV and chlamydia	Urethral swabs, HVS, eye swabs, throat swabs, Urine Serum	When an infection is suspected	Stuarts transport media for genital swabs Urine is transported in sterile leak-proof containers. Serum should be in a clean plain bottle.	Identify the causative organisms by direct microscopy of wet preparations and gram stain. Isolation of the pathogens Positive reactive test.
16. Dracunculiasis	No lab confirmatory test required				
17. Pneumonia in children under 5 years	**Radiographic or lab confirmation of pneumonia will not be feasible in most districts.**				
18. Childhood diarrhoea	Laboratory confirmation of specific agent causing outbreak is not routinely recommended for surveillance purposes				

ANNEX 5: LIST OF LABORATORIES

FOR CONFIRMING PRIORITY DISEASES AND CONDITIONS

Periodically update the list of laboratories or those specified by the National level for confirming priority diseases in your district. Also record whom to contact for assistance.

Name of disease	Available laboratory tests	Name, address, and phone number for laboratory
1. Acute flaccid paralysis (Polio)	Culture tests in Virology	KEMRI Polio laboratory
2. Cholera	Culture	NPHLS, Quality Assurance Lab. NAIROBI. Provincial and district labs.
3. Shigellosis	Culture	NPHLS, Quality Assurance Lab. NAIROBI. Provincial and district labs.
4. HIV/AIDS	Serology	NPHLS, Quality Assurance Lab. NAIROBI. Provincial and district labs.
5. Malaria	Microscopy, immunology (Serology)	NPHLS, Quality Assurance Lab. NAIROBI. Provincial and district labs.
6. Measles	Serology	KEMRI Measles lab
7. Meningitis	Microscopy, Culture, Serology	NPHLS, Quality Assurance Lab. NAIROBI. Provincial and district labs.
8. Tuberculosis	Microscopy, Culture	NPHLS, Quality Assurance Lab. NAIROBI. Provincial and district labs.
9. Plague	Microscopy, Culture and serology	Plague Centre – NPHLS HQ, NAIROBI.
10. Viral Hemorrhagic Fevers	Serology, Culture	Virology Lab. KEMRI HQ, NAIROBI.
11. Yellow Fever	Culture, serology and microscopy	Virology lab. KEMRI HQ, NAIROBI
12. STI	Culture, serology and microscopy	NPHLS, Quality Assurance Lab. NAIROBI. Provincial and district labs.
13. Typhoid fever	Culture and serology	NPHLS, Quality Assurance Lab. NAIROBI. Provincial and district labs.

Section 2
REPORT PRIORITY DISEASES AND CONDITIONS SECTION 2REPORT PRIORITY DISEASES AND CONDITIONSSECTION 2REPORT PRIORITY DISEASES AND CONDITIONSSECTION 2REPORT PRIORITY DISEASES AND CONDITIONSSECTION 2REPORT PRIORITY DISEASES AND CONDITIONSSECTION 2REPORT PRIORITY DISEASES AND CONDITIONSSECTION 2REPORT PRIORITY DISEASES AND CONDITIONSSECTION 2REPORT PRIORITY DISEASES AND CONDITIONS

This section describes how to:

- Decide how often to report priority diseases and conditions
- Record information in health facility registers
- Use standard methods for reporting diseases
- Improve routine reporting practices

2.0 INTRODUCTION

Ensuring reliable reporting of surveillance data throughout the system is important so that policy makers, program managers, surveillance officers and other health care providers can use the information to:

- Formulate policy and make decision
- Identify problems and plan appropriate responses/intervention measures
- Take action in a timely way
- Monitor disease trends in the area

2.1 KNOW HOW OFTEN TO REPORT PRIORITY DISEASES AND CONDITIONS

All health facilities, regardless of the controlling agency, should report to the district where summaries are made and sent to the Provincial and then national level.

These guidelines recommend two kinds of reporting:

- ***Immediate reporting***: Report information about an individual case when an epidemic-prone[2] disease is suspected and requires immediate notification. Also report case-based information for diseases targeted for elimination or eradication or when an action threshold is crossed.

- ***Routine summary reporting:*** Routinely report the total number of cases and deaths seen on monthly basis. These data will be analysed at various levels and the results used to monitor progress towards disease reduction targets, measure achievements of disease prevention activities at all levels, and identify hidden outbreaks or problems so that early action can be taken.

[2] *Note: Epidemic-prone diseases that are to be reported weekly when an outbreak is suspected include cholera, typhoid fever, dysentery, measles, meningitis, yellow fever, plague, Viral Hemorrhagic Fever and Malaria*

Table 2.1: Reporting of suspected outbreak and monthly summary reporting.

The following list suggests when to report a suspected outbreak and monthly summary reporting:

Name of disease	**When to report a suspected outbreak**
I. ***For these diseases, a single suspected case is a suspected outbreak:*** Acute flaccid paralysis (AFP) Cholera Dracunculiasis (Guinea worm) Measles *(elimination)* Neonatal tetanus Plague Viral hemorrhagic fever (e.g. Ebola, Rift Valley fever) Yellow fever	• Report case-based information immediately to the district as soon as an outbreak is suspected – Make the initial report by fastest means possible (telephone, facsimile, E-mail, radiophone, or any other available means of communication) – Follow up with a written report of the case-based information recorded on a case based surveillance reporting form. • For diseases targeted for eradication or elimination, send case-based information along with relevant laboratory specimen to the national level • Report summary information monthly. Enter "zero" when no cases were suspected or confirmed during the reporting period.
II. ***For these diseases, report a suspected outbreak when the threshold is crossed:*** Meningitis Typhoid fever	• Report suspected meningitis **outbreak when 5 or more cases**. (See Section 8 for specific guidance on alert and action thresholds for meningitis.) • Observed increase in number of cases and deaths with at least one case confirmed by culture.
III. ***For these diseases, report monthly summaries of cases and deaths to the next level. Community-Health facility-District-Province-National (as appropriate)*** Diarrhoea in children < 5 years of age Bloody Diarrhoea in all ages TB Leprosy Malaria New AIDS cases Pneumonia in children <5 years of age Sexually Transmitted Infections (STIs)	• Health facilities report summary totals to the district. District reports summary totals to the provincial level, provincial reports summary totals to national level. • Observe alert and action thresholds for specific diseases during analysis of monthly summary reports refer to Section 8.

2.2 RECORD INFORMATION IN FACILITY REGISTERS

All health facilities/institutions should use standardised procedures for recording patient information including diagnosis. Like all diseases and conditions, all cases of the 18 IDSR diseases/conditions should be captured in the out-patient/in-patient registers. In addition, all the 18 IDSR diseases should be routinely line-listed except **malaria, pneumonia and diarrhoea**. In the case of malaria, pneumonia and diarrhoea, monthly summaries should be derived from the outpatient/in-patient registers and index cards. Maintain a separate line list sheet for each disease/condition using the form in annex 10. At the end of each month close the entries with a line, count the cases and enter the number into the monthly summary sheet. Continue using the same sheet until it is full, then start on a new sheet.

To ensure that cases of priority diseases and conditions are recorded correctly:

- Take steps to ensure that all health staff knows the standard case definitions.
- Establish or modify existing procedures so that all health staff will be able to apply the standard case definitions in detecting or suspecting cases or outbreaks.
- Highlight with staff those diseases or conditions that require immediate reporting for case-based surveillance. For example, all the health staff should be aware of the epidemic-prone disease for which one case is a suspected outbreak requiring immediate action.
- Depending on the recommendations for a specific priority disease or condition, as soon as an epidemic-prone disease is suspected, ask the patient about additional cases in the home, work place or community.
- Identify a focal person at each health facility who will be responsible for tracking priority diseases and reporting them as required. In large health facilities such as hospital this task should be assigned to the Health Records and Information Officer (HRIO). In smaller facilities the officer in charge should identify a focal person from among the staff for this purpose. If the disease is one that requires immediate reporting, the information should be reported to the district level through the fastest means possible. The districts should notify the Provincial and National levels immediately by facsimile, telephone, electronic mail, telegrams, personal messages, or other rapid communication methods.

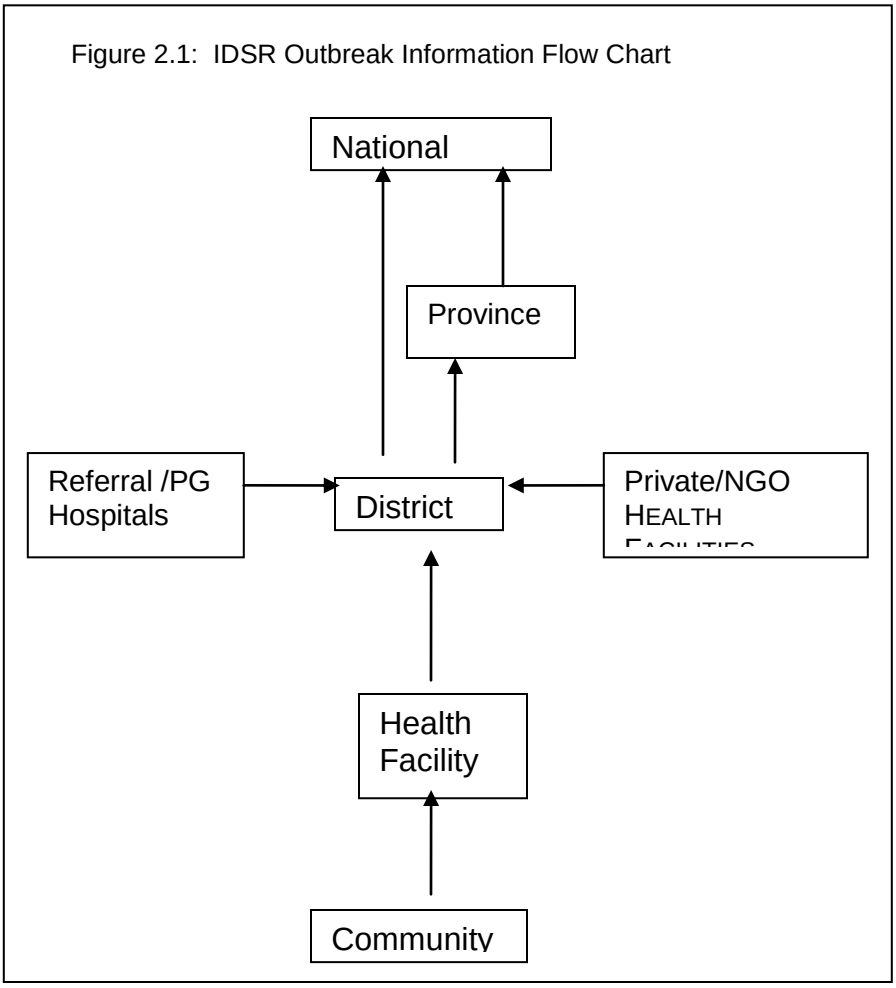
It is important to identify sources in the community who will be able to report suspected cases of priority diseases to the health facility. Examples of community sources include pharmacists, Community Own Resource Persons (CORPS), Schoolteachers, Private clinics, Village/opinion leaders, Religious leaders, Traditional healers, traditional birth attendants or other community health workers, Provincial administrators (Chiefs/Assistant Chiefs). The Disease surveillance Co-ordinator should provide the community with simplified information about the priority diseases. Give enough simplified information about the disease so that the community source can refer cases to the health facility, or notify the health facility when unusual or unexplained health events occur in the community. **Please refer to the list of simplified case definitions for community surveillance in Annex 3 Section 1.**

2.3 USE STANDARD METHODS FOR REPORTING PRIORITY DISEASES

In an integrated system, streamlining reporting allows for data to be reported efficiently by using a minimum number of forms and reporting contacts. Rather than requiring health facilities to provide reports using several forms for different disease control and prevention programs, data about the priority diseases can be reported on a single form. Two reporting systems will be in operation:

- Immediate reporting
  - Disease outbreak reporting system
  - Case-based disease reporting system
- Routine Monthly disease summary reporting system

Figure 2.1: IDSR Outbreak Information Flow Chart



2.3.1 Immediate reporting

2.3.1.1 Disease Outbreak Reporting System (immediate notification)

This is for epidemic prone diseases namely:

1. Cholera
2. Diarrhoea with blood
3. Measles
4. Meningitis
5. Plague
6. Typhoid fever
7. VHF
8. Yellow fever
9. Unusual events

When an outbreak of any priority disease is suspected, the patient's locating information, immunization history, date of onset of symptoms, and other relevant risk factors should be reported immediately to the district level. The verbal or written notification should reach the district within 24 hours from when the case was first seen by the health facility. Districts should then report to the provincial and national levels.

For any of these diseases included in the case based reporting system, health facilities should send immediate reports along with laboratory specimens to the national level with

copies of reports sent to district and provincial levels respectively. Also report immediately any unusual health event reported by the community such as a large number of deaths with fever that did not respond to usual treatment for causes of fever in the area. Report information about the health event verbally by telephone or radiophone or use an electronic method such as E-mail or facsimile. Prompt reporting is required for certain diseases because action can be taken to control the wider transmission of the disease and prevent additional cases from occurring.

2.3.1.2 Case-based reporting

This is for the following disease or conditions.

- AFP
- Measles
- NNT
- Yellow fever
- VHF
- Plague

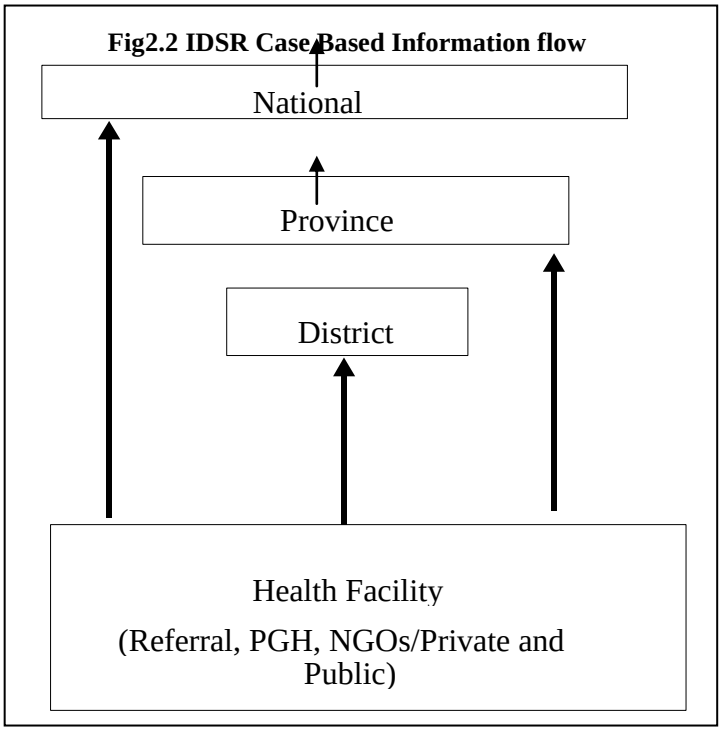


Fig2.2 IDSR Case Based Information flow

If the health facility suspects any of these diseases or conditions, the health facility staff should contact the district disease surveillance coordinator immediately by telephone, facsimile, e-mail or other prompt communication. Following the verbal report, a case-based surveillance form should be filled for the particular case and laboratory specimen collected where necessary. The health facility should send the original copy of the form along with the filled laboratory form and the specimen to the national level. A copy should be sent to the district and province respectively. The fourth copy should be retained in the health facility.

The case-based reporting form (annex 9) should be used to report written information about individual cases of the above diseases recommended for case-based surveillance.

The case based surveillance reporting sample form (annex 9) has two sections. The top half is where information is recorded about the individual case. It provides information that can be used to plan a more detailed case investigation. The bottom half of the form is a laboratory transmittal slip. It contains spaces where laboratory results and information about the timeliness of the laboratory testing should be recorded.
This form should have the following:

- The patient's name. If neonatal tetanus is reported, also record the name of the mother
- Patient's date of birth, if known, or the age of the patient
- Patient's locating information (address, village, neighbourhood, major landmarks example schools or Church, Estate and plot number for urban populations)
- How to contact the patient or the parents of the patient if more information is needed (Telephone, next of kin, guardian, location and sub-location).
- Patient's sex
- The date the patient was seen at the health facility and the date the case was reported to the district
- Date of onset of the disease (refer to disease specific guidelines for signs and symptoms that define onset of the disease)
- If you are reporting a suspected case of a vaccine preventable disease, describe the patient's immunisation history (and also for the mother if neonatal tetanus is suspected)
- Patient's status at the time of the report (if an inpatient, report final outcome as living or deceased)
- Provide the date of the report.

The health worker who completes the form should record his or her name and the date the form was sent. The form should be filled in quadruplicates. Use the Original copy as a laboratory transmittal slip if a laboratory specimen is taken; otherwise just submit it to the national level. Send the second and third copies to the district and Province respectively. Keep the fourth copy at the health facility.

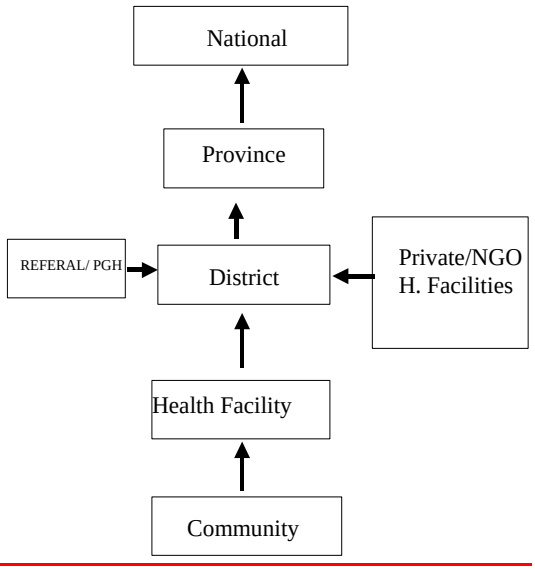
Refer to Annex 4 or the disease specific guidelines in Section 8 for information about which laboratory tests to request

2.3.2 Routine

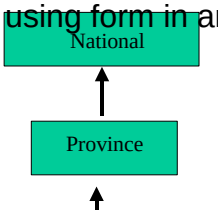
Each month, the health facility calculates the total number of cases and deaths due to priority diseases and conditions seen in the health facility. Separate totals are calculated for outpatient and inpatient cases and deaths. The summary totals are recorded in the Health Facility on the "Monthly Surveillance Report form for Priority communicable Diseases" (annex 11). Sources of information are the line-lists of priority diseases using the form in annex 10.

The district aggregates the data from all the health facilities that reported and submits district summary totals to the province on the "Monthly Surveillance Report form for Priority communicable Diseases" using the form in annex 11. The province aggregates data from all constituent districts and sends to the national level using form in annex 11.

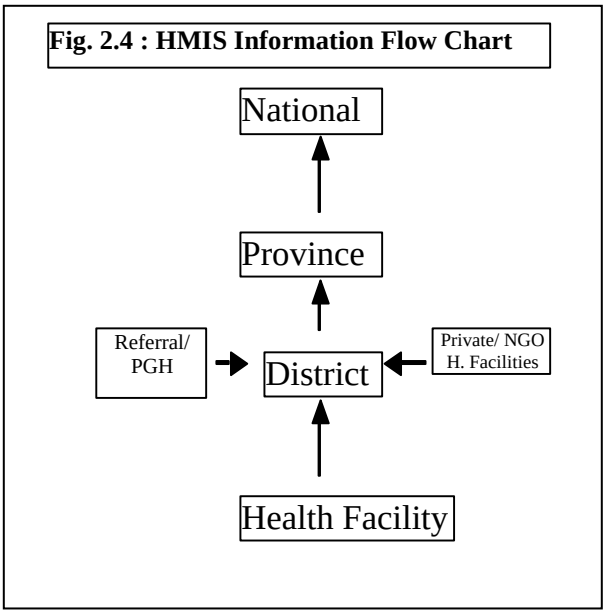
Fig. 2.3: IDSR Routine Information Flow



IDSR Routine Information Flow Chart



2.3.3 The relationship between IDSR and HMIS reporting systems



Based on records in the health facility outpatient register, each health facility reports cases of 36 diseases/conditions on MOH 705 form. Also inpatient morbidity/mortality data on 130 disease/conditions are reported by health facilities on the "in-patient morbidity and mortality form". Both outpatient and in-patient report include data on the 18 IDSR priority diseases. Data from the IDSR reporting systems are used for immediate action or intervention, data from the HMIS reporting system is used for planning and policy development. Each health facility should send both inpatient and outpatient HMIS report to the district level monthly. Every month each district should aggregate data from all health facilities and send to the provincial level. Likewise, the provincial level will aggregate data from all the districts within the province and transmit to the national level monthly.

2.4 IMPROVE ROUTINE REPORTING PRACTICES

In the Health facilities the patient is received and registered (no hospital number is given at this stage), then proceeds to the clinician where a diagnosis is made. The patient comes back to the health records staff for the diagnosis to be recorded in the outpatient register and/or line-listed and hospital number given. Thereafter the patient moves on for the other services. In the facilities where this process is not possible such as health centres or dispensaries, the nurse will ensure that proper recording and summaries are made.

Since some patients may walk away after getting the prescription from the clinician to purchase drugs elsewhere arrangement should be put in place to record their diagnosis. Whichever method is adopted it should maximise the capture of morbidity data from such patients without inconveniencing them. The hospital may also use the revenue collection points to collect this data.

2.4.1 Review the flow of information in the health facility

The District Disease Surveillance Coordinator in liaison with the information focal person should make sure that:

- Clinicians make the diagnosis using the recommended standard case definition so that the health records staff records the diagnosis in the outpatient registers.

- For diseases listed for case based surveillance, clinicians, ward nurses or other responsible staff should complete the form while the patient is still present.

- Health records staffs have monthly surveillance report forms for outpatient and inpatient cases and deaths due to the priority diseases according to the standard case definitions.

- District Disease surveillance team reviews the monthly totals and provide comments on the forms about results seen in monthly analysis to the districts.

- Health records staff records the totals on a recommended Health facility monthly summary of out and in-patient reporting form, submit to the district for analysis and use.

Note: **In the sample monthly summary reporting forms (annex 11) at the end of this section, there is space for recording observations about the data that health professionals at the health facility and district observe either during routine analysis or when they complete the form each month.**

2. ely re

If no cases of an immediately reportable disease have been diagnosed during the month, record a zero (0) on the reporting form for that disease. If the space is left blank, the staffs that receive the report will not know why there is a blank space.

If a reportable disease or condition has not been detected, during the month, a zero should be entered in the form. This concept is called zero

Submit a zero report for each immediately reportable disease even if no cases were detected during the month. This will tell the District, Provincial and National disease surveillance coordinators that a complete report has been submitted by the health facility, district or province.

2.4.3 Use line lists and summary reporting during outbreaks

All cases of IDSR priority diseases are to be line listed with the exception of pneumonia, malaria and diarrhoea. However for epidemic prone disease when there is an outbreak involving large numbers stop line-listing and report summary total of cases and deaths each week using the weekly epidemic monitoring form (annex 12).

ANNEXES TO SECTION 2

ANNEX 7	Maintaining Health Facility registers for recording priority diseases and conditions
ANNEX 8	Instructions for completing the case-based surveillance reporting form
ANNEX 9	Case-based Reporting Form
ANNEX10	Line list for reporting case-based information when several cases occur during a short period: health facility to districts
ANNEX11	Monthly surveillance report form for priority communicable diseases (all levels)
ANNEX 12	Weekly Epidemic Monitoring Form
ANNEX 13A	Leprosy quarterly report form
ANNEX 13B	Tuberculosis quarterly report form
ANNEX 14	Managing public health surveillance data

ANNEX 7: MAINTAINING HEALTH FACILITY REGISTERS FOR RECORDING PRIORITY DISEASES AND CONDITIONS

Each health facility should maintain registers for recording cases of priority diseases and conditions seen in the health facility. At a minimum, the health facility register should have spaces for recording the following information:

- The date the patient was seen.
- The patient's identification number
- The patient's name, sex, age, occupation.
- Postal/Physical address (major landmark, location, sub-location, next of kin, estate)
- The patient's diagnosis. This is mainly important for reporting summary information. Use IMCI diagnosis for diarrhoea with dehydration and for pneumonia in children less than 5 years of age.
- The patient's status if an inpatient (condition, discharge, alive or dead)
- Use the Malaria case management guidelines to record malaria in pregnancy.

ANNEX 8: INSTRUCTIONS FOR CASE- BASED SURVEILLANCE REPORTING FORM

For the health facility:

1. Complete the name of the health facility submitting the case based reporting form.

2. Tick the box at the top of the form to indicate which disease is being reported. If the disease or condition is not stated, or its cause is unknown, write the name of the disease or condition (or "unknown") in the blank marked "Other".

3. Record the name of the patient and where applicable record the name of the patient's mother, father or guardian. But for a neonatal tetanus cases, record the name of the mother.

4. Record the patient's age, or the patient's date of birth.

5. Record information about the patient's residence. In rural areas include the name of the village, Sub-location or neighbourhood/major landmarks that the patient lives in. In urban areas include street, estate, plot number and house number and any other relevant information. Include the name of the district that the patient lives in.

6. Record information about how to contact the patient or the patient's parents for use at a later time when additional information about the patient's illness may be needed.

7. Record "M" for Male, and "F" for Female.

8. Record the date the patient was seen at the health facility and the date the health facility reported the disease or condition to the district. (The form should be a follow-up to prompt verbal reporting.)

9. Record the date of onset of the disease, if known.

10. For vaccine preventable diseases, such as AFP, neonatal tetanus, measles, meningitis and yellow fever, obtain an immunisation history for the patient. Record the date of the last immunisation dose for the appropriate vaccine. Decide if the dose was more than 15 days ago. If the immunisation was received within the last 15 days, there may not have been an immunisation response. Do not count doses that were received within the last 15 days.
    - For meningitis, record if there is a history of vaccination during a mass campaign.
    - For neonatal tetanus, record the number of lifetime doses of tetanus toxoid the mother received up to 15 days before the delivery.

11. Report whether the condition or disease was diagnosed/detected in a health facility or not at the time the case was reported.

12. When the investigation of the case is complete, record as appropriate in line with the final classification of the disease.

13. The health facility staffs that complete the form should sign his or her name, designation and the date the form was filled. Indicate the date the form was sent to the district.

For the District

14. When the report is received at the district, record the date it was received. If a verbal report was made, report the date of the verbal report

15. Ensure that a complete case reporting form is sent to the national level with a copy to the province for data entry and analysis.

If there is laboratory specimen collected, then go to numbers 16-20. If none, ignore.

If a laboratory specimen is taken, send a copy of the form to the laboratory with each specimen.

16. Record the date the specimen was collected in the box labelled "If lab specimen collected". Also record the date the specimen was sent to the laboratory.

17. Tick what type of specimen was collected (blood, CSF, stool).

18. Record the date the laboratory received the specimen. Also record the condition of the specimen. The health facility personnel should ensure that the specimens are collected under the right/appropriate conditions. For example AFP stool specimen and measles serum specimens should be kept under cold-chain conditions; for meningitis use sterile bottles for CSF collection.

19. Record the results of the laboratory testing according to the prompts on the bottom part of the form.

20. Record the date the results were given (verbally/writing) to the health facility with copies to the district and the Province.

For the National Level

21. Unique identification numbers/ epid numbers are used to record cases reported from the district for data entry and analysis.

ANNEX 9:

IMPORT INTEGRATED CASE BASED SURVEILLANCE FORM FROM PAGEMAKER

ANNEX 10: HEALTH FACILITY LINE-LISTING FORM

MOH 503

Health Facility: _____ District: _____ Date received at District: _____
Province: _____ Disease/Condition: _____

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

[3] *Age in years if more than 12 months, otherwise indicate number of months e.g. 4m, 7m.*

MOH 504

ANNEX 11: MONTHLY SURVEILLANCE REPORT FORM
FOR PRIORITY COMMUNICABLE DISEASES (ALL LEVELS)

NB. Circle level as appropriate. Enter name in the space provided.

Health Facility Name_____ District
District Province _____
Province

Month _____ Year _____

Record below the total number of cases and total number of deaths for each disease/condition. Report these totals to the next level. Complete the column for the current month for all disease/conditions.

	Out-Patient	In-Patient	
	Cases	Cases	Deaths
Malaria in Pregnancy			
Malaria in >5 not in pregnancy			
Malaria <5 years			
Pneumonia (<5 years)			
Diarrhoea (<5 years)			
New AIDS cases			
STI			
Diarrhoea with blood			

Number of sites that reported on time		Number of Out-patient sites that are supposed to report		Number of sites that reported late	

Zero reporting for immediately reported, case-based diseases/conditions: Total cases previously reported this month on case forms or line lists

AFP		Measles		Plague	
Cholera		Meningitis		Yellow Fever	
Dracunculosis		Neonatal Tetanus		Viral Haemorrhagic Fever	
Typhoid Fever					

NOTE: Official counts of immediately notified cases come only from case forms or line lists. The counts from the zero-reporting boxes are not official counts.

Analysis, interpretations, comments, and recommendations on both out-patient and in-patient data:

Conclusions, actions taken, and recommendations:

Reported by Name_____
Designation _____
_____
Signature _____
_____
Date _____
_____

Received by: Name _____
Designation
Signature
Date

Copy 1 to Next level **Copy 2 to be retained at the reporting level**

NB. TB and Leprosy data reported quarterly on separate forms.

ANNEX 12 EPIDEMIC MONITORING FORM

MOH 505

Province _____ Health Facility: _____ Week Ending: _____ Month: _____ Year: _____

Age	< 5 years				5- 14 yrs				15 + years				Total				Cumm. Totals (from 1st Jan)			
	Cases		Deaths		Cases		Deaths		Cases		Deaths		Cases		Deaths		Cases		Deaths	
Sex	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Diseases to be reported monthly																				
Malaria*																				
Pneumonia																				
Childhood diarrhoea																				
AIDS																				
Tuberculosis																				
Epidemics **Report Immediately**																				
Cholera																				
Typhoid																				
Dysentery																				
Measles																				
Meningitis meningocccal)																				
Plague																				
Yellow Fever																				
Other VHFs																				
Diseases for eradication /elimination – report immediately																				
Acute Flaccid Paralysis (AFP for Poliomyelitis																				
Neonatal Tetanus																				
Others																				

When malaria occurs as epidemic, report immediately. VHFs = Viral Haemorrhagic Fevers

Reported by Name_____ Designation _____ Date _____

ANNEX 13a: Tuberculosis quarterly report form MOH 506

Quarter _____ Year _____

Health Facility _____District _____Province_____

Case Notifications	Number
Pulmonary- Smear + New case	
Pulmonary- Smear + Relapse	
Pulmonary- Smear Negative	
Pulmonary- Smear not done/unknown	
Extra-pulmonary	
Total	

Age of new pulmonary smear+ cases			
	M	**F**	**Total**
0-14			
15-24			
25-34			
35-44			
45-54			
55-64			
65+			
Total			

Category of Re-treatment cases	Number
Relapses	
Failures	
Re-treatment after interruption	
Total	

Cohort Analysis done on patients registered in same quarter in the previous year

Smear conversion	New pulm smear+ (at 2 months)	Re-Treatment smear+ (at 3 months)
New sputum + converted by 2-3 months		
New sputum + evaluated with sputum by end of 3rd month		

Treatment results	New pulm smear+	Re-Treatment smear+
Total registered		
Total evaluated		
Smear negative at end of treatment (cured)		
Completed treatment, but smear not done at end of treatment		
Died		
Failure		
Interrupted treatment/loss to follow-up/defaulters		
Transferred out		

Analysis, interpretations, comments, and recommendations

Other information:

Comments on observed trends, Abnormal increase in cases, lack of decrease of previous increasing trends? Improving trends?

Conclusions, actions taken, and recommendations:

Reported by Name_____
Designation _____
_____
Signature _____
_____
Date _____
_____

Received by Name _____
Designation
Signature
Date

Copy 1 to National Level Copy 2 to Provincial Level Copy 3 to District Copy 4 Retain at the Facility

ANNEX 13b: Leprosy quarterly report form MOH 507

Quarter _____ Year _____

Health Facility _____District _____Province_____

Category	Indicators	Clinical form of leprosy		Total
		Multi-bacillary	Pauci-bacillary	
Total cases under treatment during the quarter	Total cases being treated (or about to immediately start treatment) during the quarter			
In-coming cases seen during the quarter	Total new cases never treated (=detection)			
	0-14 years			
	15+ years			
	New cases with < 2nd degree Disability			
	Relapse, defaulter, or transferred			
Cases that left program during this quarter	Died			
	Treatment finished			
	Transferred			
	Lost to follow-up (at least 1 year without treatment			
	Total			
Cases in program at the last day of the quarter	Total (=cases at the beginning plus new cases during the quarter minus cases that left the program)			

Analysis, interpretations, comments, and recommendations

Other information:

Comments on observed trends, Abnormal increase in cases, lack of decrease of previous increasing trends, improving trends.

Conclusions, actions taken, and recommendations:

Reported by Name_____ Received by Name _____
Designation _____ Designation _____
Signature _____ Signature _____
Date _____ Date _____

Copy 1 to National Level Copy 2 to Provincial Level Copy 3 to District Copy 4 to Facility

ANNEX 14: MANAGING PUBLIC HEALTH SURVEILLANCE DATA

Effective public health activities, including public health surveillance, depend on a trusting relationship between the public health workers and the public they serve.

The following are obligations of public health workers including epidemiologists:

X**Protect the confidentiality and privacy of the community**

Privacy is the right of patients to choose what information they will release about themselves and to whom.

Confidentiality is the obligation of public health workers to keep information about individuals restricted only to those persons who absolutely need it for the health of the community. Patients have the right to know why they are providing information, to refuse to provide information, and to expect that information will be handled as confidential.

Information, even when it does not include names, can still be used to identify persons and lead to discrimination or other consequences against individuals and, therefore, must be protected. In Kenya, even a few pieces of information that may seem to be unimportant can be used unintentionally to identify the patient. Additionally, consideration will be given to how to protect patients from identification while still allowing the public health system to trace contacts or outbreaks when required. A good information system will have thought carefully about what information is essential for public health action.

X**Informed Consent**

Make sure that information is used only for the purposes for which it was intended. Information for surveillance is not expected by the community to be used for research purposes. There may be national or institutional laws that specify what the uses should be and when additional consent from the patient is needed. The public health worker respects these laws.

X**Maintaining professionalism and the public trust**

To perform public health functions, including surveillance, it is essential that there is public support. Trust is an expression of confidence that public health workers will be fair, reliable, ethical, and competent.

SECTION 3
ANALYSE DATA

This section describes how to:

- **Receive, handle and store data reported from other levels**
- **Analyse data by time, place and person**
- **Draw conclusions based on the analysis results**
- **Compare analysis results with thresholds for public health action.**

3.0 INTRODUCTION

Analysing trends of disease cases and deaths over time has many benefits. The analysis provides key information for:

- Identifying trends and taking prompt public health action
- Identifying causes of problems and their most appropriate solutions
- Evaluating the quality of public health programs in the district over the medium- and long-term.

Analysis of surveillance data emphasises two important outcomes:

- During an acute outbreak of a disease or condition, the information that results from data analysis leads to the identification of the most appropriate and timely control actions. The actions are taken immediately to limit the outbreak and prevent further cases from occurring.

- Disease rates change over time. Some of these changes occur regularly and can be predicted such as an increase of malaria cases during the rainy season. Analysis and use of the trends in summary data over time provides information for improving district public health activities that target diseases such as malaria, tuberculosis, HIV/AIDS and vaccine preventable diseases. These are diseases that can account for up to 80% of the deaths due to the priority diseases and conditions. Many of the deaths are in children less than 5 years of age.

This section focuses on the analysis of data at the district level.
However, the steps can be applied to data at all levels of the health system.

Data should be analysed at each level of collection.

3.1 RECEIVE DATA FROM HEALTH FACILITIES

The district team receives two types of surveillance data from reporting health facilities.

- Case-based or other information from suspected cases of immediately reportable diseases
- Monthly summary totals of cases and deaths for the priority diseases.

The Ministry of Health recommends that:

- Reports of suspected cases for immediately reportable diseases are received by the district within 24 hours of the case being seen at the health facility.
- Monthly reports of summary data should be received on time i.e. by the 7th of the following month at the district, 14th at the province and 21st at the National level.

Note: When an outbreak is suspected, cases and deaths should be reported and graphed weekly.

When written reports are received, review case-based reporting forms to see if any essential information is missing.

If reports are not being received at all, or if they are consistently late, contact or visit the health facility to find out what has caused the problem. Work with the staff at the reporting health facility to help find a solution that could be implemented for improving reporting.

Note: Make sure those health workers who record, report or store data understand the need for privacy and confidentiality. Please see Annex 14 for guidance in managing public health surveillance data.

3.2 PREPARE TO ANALYSE DATA BY TIME, PLACE, AND PERSON

In order to detect outbreaks, follow their course, and monitor public health activities, health staff need to know:

- How many cases occurred
- Where the cases occurred
- When the cases occurred
- The population most affected
- Risk factors that contributed to transmission of the disease

This information comes from patient registers and lists. But it is easier to identify problems and detect outbreaks if the data from the patient record or clinic register are summarized and displayed in a table, graph or map. When data are displayed, the information can be understood quickly, and it is easier to see patterns and trends.

One method for ensuring that at least routine summary data for priority diseases is analysed every month is to maintain an “analysis book” at the health facility and district levels. Recommended graphs, tables and maps for analysing data about the selected priority diseases can be kept together in a notebook or placed on the wall. Each month the graphs and tables are updated and conclusions drawn about what is shown.

The analysis book can be easily observed during a supervisory visit or when the health facility public health team or district response team want to have information about how to respond to health events in the area.

The chart on the following page lists recommended methods and tools for analysing surveillance data so that health staff will have the information they need to take a public health action.

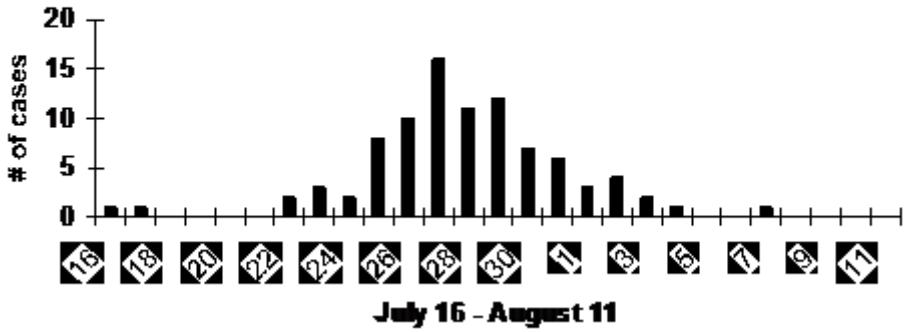
Table 3.1: Objectives, tools and methods of descriptive analysis for communicable diseases

Type of analysis	Objective	Tools	Method
Time For immediately reportable diseases and monthly summary totals of cases and deaths for priority diseases	Detect abrupt or long-term changes in disease occurrence, how many occurred, and the period of time from exposure to onset of symptoms.	Record summary totals in a **table** or on a **line graph** or **histogram.**	Compare the number of case reports received for the current period with the number received in a previous period (months, seasons or years)
Place Usually for immediately reportable diseases only	Determine where cases are occurring (for example, to identify high risk area or locations of populations at risk for the disease)	Plot cases on a **spot map** of the district or area affected during an outbreak.	Plot cases on a map and look for clusters or relationship of the location of the cases to the health event being investigated.
Person Usually for immediately reportable diseases only	Describe reasons for changes in disease occurrence, how it occurred, who is at greatest risk for the disease, and potential risk factors	Extract specific data about the population affected on a **table.**	Depending on the disease, characterize cases according to the data reported for case-based surveillance such as age, gender, place of work, immunization status, school attendance, and other known risk factors for the diseases.

3.3 ANALYSE DATA BY TIME

Analysing data to detect changes in the numbers of cases and deaths over time is the purpose of “time” analysis. Observing disease trends over time helps to show when regular changes occur and can be predicted. Other disease rates make unpredictable changes. By examining events that occur before a disease rate increases or decreases, it may be possible to identify causes and appropriate public health actions for controlling or preventing further occurrence of the disease.

Fig.3.1: Bar graph Showing Data Analysis by Time



Data about time is usually shown on a graph. The number or rate of cases or deaths is placed on the vertical or y-axis. The time period being evaluated is place along the horizontal or x-axis. Events that occurred that might affect the particular disease being analysed can also be noted on the graph. For example, the graph may indicate the date that refresher training was conducted for health workers in IMCI case management for childhood diseases.

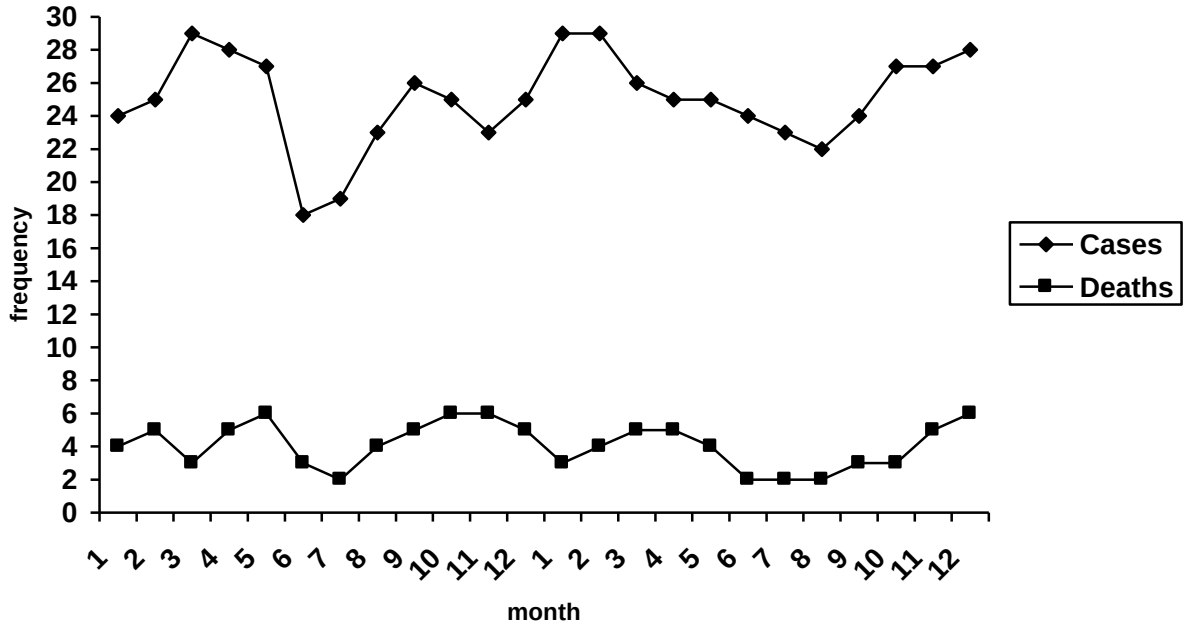
Graphs can show how many cases and deaths have occurred in a given time. It is easier to see changes in the number of cases and deaths by using a graph, especially for large numbers of cases or showing cases over a period of time.

Graphs are made with bars (a bar graph) or lines (a line graph) to measure the number of cases over time.

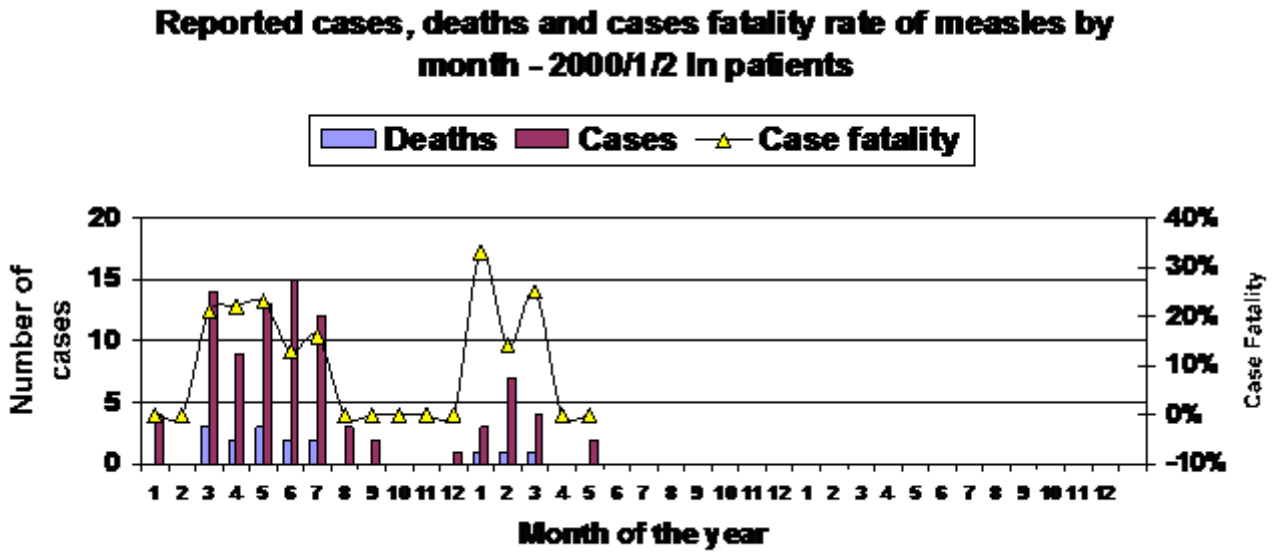
This is an example of a bar graph presenting data analysed by time.

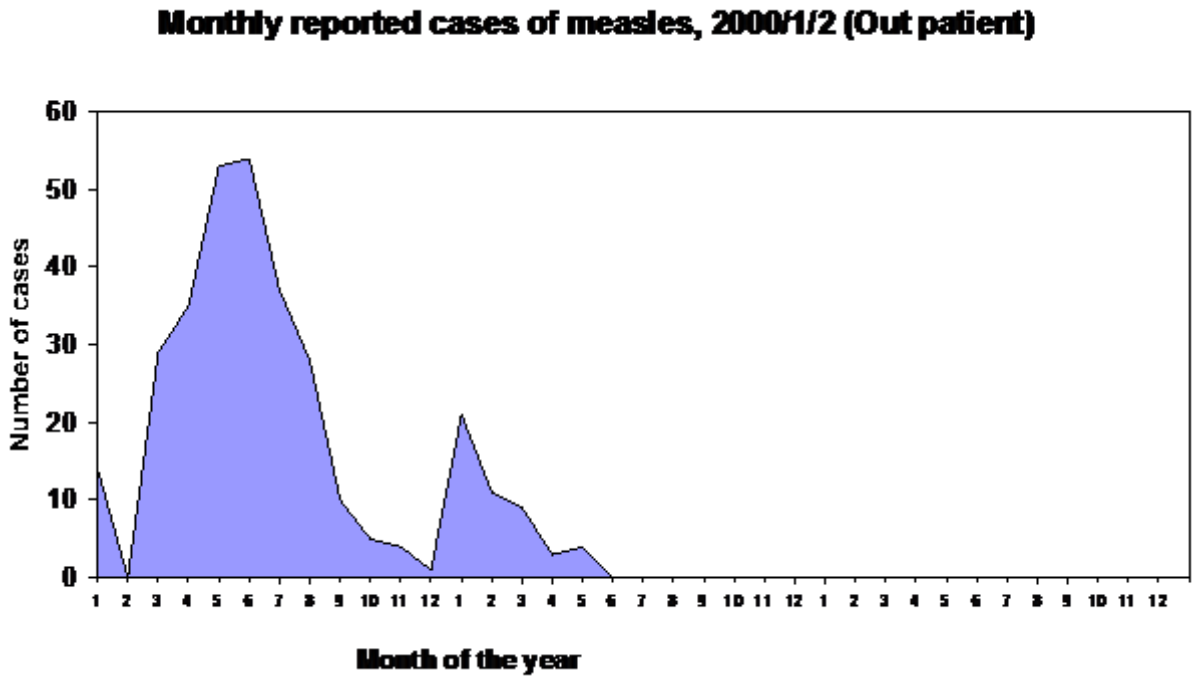
This is an example of a line graph.

Fig 3.2: Line graph Showing Data analysis by Time



A histogram is like a line graph except that it uses squares to represent cases rather than a line to connect plotted points. Use histograms to analyze outbreak data and to show an epidemic curve (an “Epi” curve). For acute outbreak diseases, time may be shown in 1-day, 2-day, 3-day or 1-week or longer intervals. In a histogram, the cases are stacked on the graph in adjoining columns so that the number of cases and deaths can be observed during the period under observation.





To make a graph:

1. Decide what information you want to show on the graph.

2. Write a title that describes what the graph will contain (for example, *Monthly totals for inpatient cases and deaths due to malaria with severe anaemia*

3. Decide on the range of numbers to show on the vertical axis.

    - Start with 0 as the lowest number

- Write numbers, going up until you reach a number higher than the number of cases
- Choose an interval if the numbers you will show on the vertical axis are large.

4. Label the vertical axis, explaining what the numbers represent.
5. Label the horizontal axis and mark the time units on it. The horizontal axis is divided into equal units of time. Usually you will begin with the beginning of an outbreak, or the beginning of a calendar period, such as a month or year.
6. Make each bar on the graph the same width.
7. Mark the number of cases on the graph or histogram. For each unit of time on the horizontal axis, find the number of cases on the vertical axis. Fill in one square for each case, or for some number of cases in the column for the day on which the patient was seen. Show deaths by using a different pattern of lines, or a different colour. If you are making a line graph, instead of making a bar or filling in squares, draw a cross or make a point where the horizontal and vertical lines cross. Connect the points on the graph to show the trend going up or down over time.

3.4 ANALYSE DATA BY PLACE

Analysing data according to place gives information about where a disease is occurring. Establishing and regularly updating a spot map of cases for selected diseases can give ideas as to where, how, and why the disease is spreading. An analysis of place provides information that is used to:

- Identify the physical features of the land
- Understand the population distribution and density of the area
- Describe the variety of populations in an area. (Farming area, high-density urban area, refugee settlement, and so on.)
- Describe environmental factors (major water sources in a community, such as rivers, lakes, pumps, and so on.)
- Identify clinics, meeting houses, schools, community buildings, and large shelters that can be used during emergency situations
- Show distances between health units and villages (by travel time or distance in kilometres)
- Plan routes for supervisory or case investigation activities
- Spot locations of disease cases and identify populations at highest risk for transmission of specific diseases.

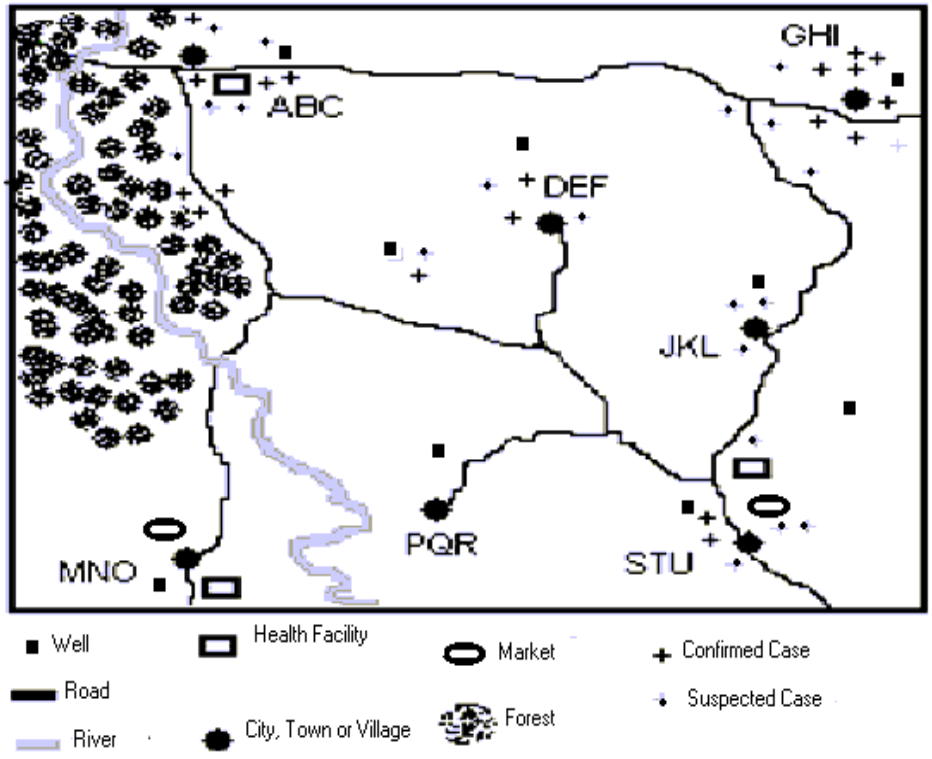
Create a map to use as part of routine surveillance of disease.

- Obtain a local map from the local government office or land department. Trace the main features needed for health work onto transparent paper and then to a large card that can be hung on a wall for easy use. If no official map is available, sketch the whole district area.

- Prepare a code of signs to use on the map, to represent each of the following features that will be shown on the map:

- Location of health facilities in the district and the areas each serves
– Geographic areas such as forests, savannah areas, villages, roads, and cities
  Socio-economic areas of relevance to priority diseases
  Significant occupation sites such as mines or construction sites
– Location of suspected and confirmed cases of priority diseases
- Location of previous confirmed outbreaks

Figure 3.5: Spot map of Wilaya District Showing Data Analysis by Place



3.5 ANALYSE DATA BY PERSON

Analysis by person is recommended for describing the population at risk for epidemic-prone diseases and diseases targeted for eradication or elimination. These are diseases

that are reported using case-based surveillance forms and therefore data on personal characteristics is likely to be available. Analysis by person is not routinely recommended for summary data.

A simple count of cases does not provide all the information needed to understand the impact of a disease on the community, health facility or district. Simple percentages and rates are useful for comparing information reported to the district.

The first step in analysing person data is to identify the numerator and denominator for calculating percentages and rates.

- The ***numerator*** is the number of specific events being measured (such as the actual number of cases or deaths of a given disease, for example the number of cases of measles that occurred during the year in children less than 5 years of age.)

- The ***denominator*** is the number of all events being measured (such as the size of the population in which the cases or deaths of a given disease occurred, or the population at risk.)

Simple percentages can be calculated to compare information from populations of different sizes. For example:

Table 3.2: Showing Measles Data Analysis by Person

Health facility	**Number of measles cases this year in children less than 5 years of age**
A	42
B	30

By looking only at the number of reported cases, it appears that a higher occurrence of measles cases occurred in health facility A.

But when the number of reported cases at each health facility is compared to the total number of school-aged children living in each catchment area, then the situation becomes clearer.

Table 3.3: Showing Population of School-aged Children in a Catchment Area

Health facility	**Number of school-aged children living in the catchment area**
A	1,150
B	600

By calculating the percentage of the number of cases of measles during the last 12 months in school aged children, the District Health Management Team can compare the impact of the illness on each facility. The numerator is the number of cases that occurred over one year. The denominator is the number of school-aged children at risk in each catchment area. In this example, the incidence rate is higher in health facility B than in health facility A.

Table 3.4: Showing Percentage of Measles Cases in School-aged Children in the last 12 months

Health facility	Percentage of cases of measles in school-aged children during last 12 months
A	0.4%
B	0.5%

3.5.1 Make a table for person analysis

For each priority disease or condition under surveillance, use a table to analyse characteristics of the patients who are becoming ill. A table is a set of data set in columns and rows. The purpose of a table is to present the data in a simple way. For surveillance and monitoring, use a table to show the number of cases and deaths from a given disease that occurred in a given time. Annex 16 gives sample tables for person analysis.

To make a table:

1. Decide what information you want to show on the table. For example, consider analysis of measles cases and deaths by age group

2. Decide how many columns and rows you will need. Add an extra row at the bottom and an extra column at the right to show totals as needed. In the example, you will need a row for each age group, and a column for each variable such as age group or cases and deaths.

3. Label all the rows and columns, including measurements of time. In the example below, the analysis is done yearly. Analysis of person is also recommended for analysis of outbreak data.

4. Record the total number of cases and deaths as indicated in each row. Check to be sure the correct numbers are in the correct row or column.

Table 3.5: Showing cases and deaths by age group

Age group	Number of reported cases	Number of deaths
0 - 4 years	40	4
5-14 years	9	1
15 years and older	1	0
Age unknown (Not indicated)	28	0
Total	78	5

3.5.2 Calculate the age distribution of cases.

When the summary totals for each age group are entered, one analysis that can be done is to find out what percent of the cases occurred in any given age group. Use the information on the table to:

1. Identify the total number of cases reported within each age group from the summary data for which time or person characteristics are known. (For example, there are 40 cases in children 0 up through 4 years of age.)
2. Calculate the total number of cases for the time or characteristic being measured. (In this example, there are 50 cases whose age is known.)
3. Divide the total number of cases within each age group by the total number of reported cases. (For example, for children age 0 up through 4 years divide 40 by 50. The answer is 0.8.)

4. Multiply the answer times 100 to calculate the percent. (Multiply 0.8 X 100. The answer is 80%.)

Table 3.6: Showing Percentage of cases by age group

Age group	Number of reported cases	% of reported cases in each age group
0-4 years	40	80%
5-14 years	9	18%
15 years and older	1	2%
Age unknown	28	0%
Total	78	100

3.5.3 Calculate a case fatality rate

A case fatality rate helps to:

- Indicate whether a case is identified promptly
- Identify a more virulent, new or drug-resistant pathogen.
- Indicate poor quality of care or no medical care.
- Compare the quality of case management between different catchment areas, cities, and districts.

Public health programs can impact the case fatality ratio by ensuring that cases are promptly detected and good quality case management takes place. Some disease control recommendations for specific diseases include reducing the case fatality rate as a target for measuring whether the outbreak response has been effective. To calculate a case fatality rate:

1. Calculate the total number of deaths. (In the example of the Measles data, there are 5 deaths.)
2. Divide the total number of deaths by the total number of reported cases. (For example, the total number of reported cases is 78. The number of deaths is 5. So divide 5 by 78. 5 ÷ 78 is 0.06.)
3. Multiply the answer times 100. (0.06 X 100 equals 6%.)

Table 3.7: Showing case fatality rates by age group

Age group	Number of reported cases	Number of deaths	Case fatality rate
0-4 years	40	4	10%
5-14 years	9	1	11%
15 years and older	1	0	0
Age unknown	28	0	0%
Total	78	5	6%

3.6 DRAW CONCLUSIONS FROM THE ANALYSIS

Depending on how often data is reported to the next level (for example, monthly):

3.6.1 Review the updated charts, tables, graphs and maps

Review the analysis tools to make sure that:

- The total number of cases and deaths under surveillance is up-to-date.
- The case fatality rates are calculated and up-to-date
- The geographical distribution of the cases and deaths are described and include case fatality rates as appropriate.

3.6.2 Compare the current situation with previous months, seasons and years

1. Observe the trends on the line graphs and look to see whether the number of cases and deaths for the given disease is stable, decreasing or increasing.

2. If case fatality rates have been calculated, is the rate the same, higher, or lower as it was in the previous months?

3.6.3 Determine if thresholds for action have been reached

Thresholds are markers that indicate when something should happen or change. They help surveillance and program managers answer the question, “When will you take action, and what will that action be?”

Thresholds are based on information from two different sources:

- A situation analysis describing who is at risk for the disease, what are the risks, when is action needed to prevent a wider outbreak, and where do the diseases usually occur?

- International recommendations from technical and disease control program experts.

Districts should observe thresholds for the most critical diseases in their area. It is not useful to have a threshold or trigger occurring for multiple diseases constantly. Health staff will lose their willingness to truly watch for trends and respond to problems if they become overextended.

These guidelines recommend two types of thresholds: an alert threshold and an action threshold. Not every disease has both types of thresholds, although each disease certainly has a point where a problem needs to be reported and some action taken. The thresholds as described in these guidelines represent the continuum of recommended practices and are used to describe where action is recommended. Detailed thresholds for specific diseases are in Section 8 of these guidelines. Definitions of the thresholds are included in this section.

An ***alert threshold*** suggests to health staff that further investigation is needed. Depending on the disease, an alert threshold is reached when there is one suspected case (as for an epidemic-prone disease or for a disease targeted for elimination or eradication) or when there is an unexplained increase seen over a period of time in monthly summary reporting. Health staffs respond to an alert threshold by:

- Reporting the suspected problem to the next level
- Reviewing data from the past
- Requesting laboratory confirmation to see if the problem is one that fits the standard case definition
- Being more alert to new data and the resulting trends in the disease or condition
- Investigate the case or condition
- Alert the appropriate disease-specific program manager and district epidemic response team to a potential problem.

An ***action threshold*** triggers a definite response. It marks the specific data or investigation finding that signals an action beyond confirming or clarifying the problem. Possible actions include communicating laboratory confirmation to affected health centres, implementing an emergency response such as an immunization activity, community awareness campaign, or improved infection control practices in the health care setting.

Suggested tools for detecting thresholds that alert health workers to a possible outbreak are in the table 4.1 in Section 4. Also refer to the disease-specific guidelines in Section 8.

3.6.4 Summarize the analysis results

Consider the analysis results with the following factors in mind:

- Trends for inpatient cases describe increases and decreases for the most severe cases. Deaths are most likely to be detected for cases that are hospitalised. The reporting of the case according to the definition is likely to be more accurate than those reported for outpatient cases.

- Increases and decreases may be due to factors other than a true increase or decrease in the number of cases and deaths being observed. The program objectives for the disease reduction activities in your area should be to decrease the number of cases and deaths over time.

- If this decrease is not occurring, and the number of cases is remaining the same or increasing, consider whether any of the following factors are affecting reporting:

– Has there been a change in the number of health facilities reporting information?
– Has there been any change in the case definition that is being used to report the disease or condition?
– Is the increase or decrease a seasonal variation?
– Has there been a change in screening or treatment programs? In community outreach or health education activities that would result in more people seeking care?
– Has there been a recent immigration or emigration to the area or increase in refugee populations?
– Has there been any change in the quality of services being offered at the facility? For example, lines are shorter, health workers are more helpful, drugs are available, and clinic fees are charged.

3.6.5 Compare this month's achievement towards disease reduction targets

Many public health programs have set disease reduction targets. There may be targets for individual health facilities, for communities and for the district as a whole. Collaborate with the managers of the public health activity programs to discuss progress towards the targets based on the analysis results.

If analysis results indicate that the program strategy is not leading to a change or an increase in the number of cases being detected and treated, then discuss ways to improve the situation. For example, any increases or lack of decline in the number of cases should prompt further inquiry and action to improve the quality of the public health program. Consider improvements such as:

- Improve drug availability for pneumonia case management in children under 5 years of age
- Improve drug availability at least for pregnant women and children during the malaria season
- Work with community health staff to improve community awareness about when to bring children to the health facility for treatment for diarrhoea with dehydration, pneumonia, and malaria.
- Expand HIV/AIDS prevention education to reach youth not in school.
- Improve immunization coverage in areas of highest risk for a given vaccine-preventable disease (measles, meningitis, neonatal and maternal tetanus, yellow fever)

3.7 SUMMARIZE AND USE THE ANALYSIS RESULTS TO IMPROVE PUBLIC HEALTH ACTION

Make statements that describe the conclusions you have drawn from the analysis results. Use them to take action to:

- Conduct an investigation to find out where there is an increase in the number of cases.
- Collaborate with specific disease reduction programs to intensify surveillance if an alert threshold has been crossed,
- Advocate with political leaders and the community for more resources, if lack of resources is identified as a cause for the increased number of cases.

Investigate public health problems as in Section 4.0.

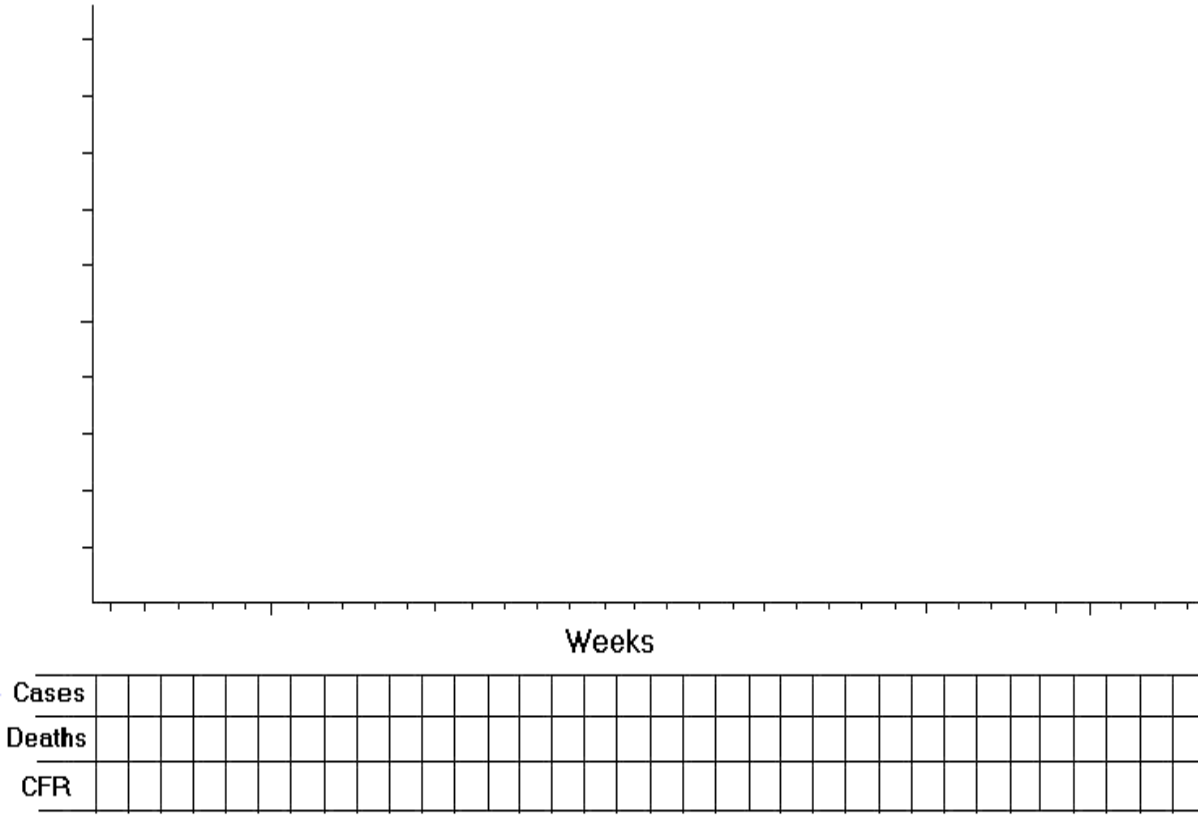
Provide feedback to other levels of the health system and the community as in Section 6.0.

ANNEXES TO SECTION 3

ANNEX 15 Sample grid for time analysis

ANNEX 16 Sample tables for person analysis

ANNEX 15 Sample grid for time analysis



ANNEX 16 SAMPLE TABLES FOR PERSON ANALYSIS

These are examples of person analyses that may be done for outbreak data or at the end of the year to analyse summary data for case-based surveillance reports.

Age distribution (Denominator is the total number with data i.e. sub-total)

Age Group	Number of reported cases	% of reported cases
0 up through 4 years		
5 years up through 14 years		
15 years and above		
Sub-total		
Number with missing data		
Total		

Location: Urban versus rural[4] (Denominator is the total number with data i.e. sub-total)

Location	Number of reported cases living in this area	% of reported cases
Urban		
Rural		
Sub-total		
Number with missing data		
Total		

Gender distribution (Denominator is the total number with data i.e. sub-total)

Gender	Number of reported cases	% of reported cases

[4] *Check with Population and Housing census report of 1999 for definition of urban and rural*

Female	
Male	
Sub-total	
Number with missing data	
Total	

Comparing Inpatient and Outpatient Status (Denominator is the total number with data i.e. sub-total)

Source of report	Number of reported cases	% of reported cases
In-patient		
Out-patient		
Sub-total		
Number with missing data		
Total		

Comparing immunization status and outcome

Number of doses	Number survived	Number deceased
Zero doses		
1 dose		
2+ doses		
Sub total		
Number with missing data		
Total		

Section 4
INVESTIGATE SUSPECTED OUTBREAKS AND OTHER PUBLIC HEALTH PROBLEMS

This section describes how to:

- **Decide to investigate a suspected outbreak or other public health event**
- **Plan and carry out a case investigation**
- **Analyse the investigation results to determine what caused the problem.**

4.0 INTRODUCTION

An outbreak investigation is a method for identifying, evaluating and reporting people who have been exposed to an infectious disease or affected by an unusual health event. The investigation provides relevant information for use in taking immediate action and improving the long-term disease prevention strategies. The steps for conducting an investigation of a suspected outbreak of an infectious disease can also be used to investigate other public health problems in the district. The objectives of an investigation are to:

- Verify the outbreak or the public health problem.
- Identify and treat additional cases that have not been reported or recognized.
- Collect information and laboratory specimens for confirming the diagnosis.
- Identify the source of infection or cause of the outbreak.
- Describe how the disease is transmitted and the populations at risk.
- Select appropriate response activities to control the outbreak.
- Strengthen disease preventive activities to avoid future recurrence of the outbreak.
- Identify other risk factors in an outbreak.

Districts have the overall responsibility for investigating outbreaks. Health facilities will undertake some or all aspects of investigating outbreaks for some diseases or conditions.

4.1 DECIDE TO INVESTIGATE A SUSPECTED OUTBREAK

For some communicable diseases, a single suspected case is the trigger for taking action e.g. cholera and viral haemorrhagic fever. These are dangerous diseases with the potential for explosive outbreaks or with high case fatality rates if cases are not promptly treated. Report the suspected case to higher level and conduct investigations immediately.

For other diseases, for example, malaria, meningitis etc the trigger is when a certain threshold is reached. When the threshold is reached health workers should promptly investigate the problem and respond immediately. Details of alert and action thresholds are described in section 3.6.3 and table 4.1.

Some health events require investigations to be started as soon as possible. Districts should aim to investigate suspected outbreaks within 24 hours of notification.

Conduct an investigation when:

- The district receives a report of a suspected outbreak of a disease or a public health problem.
- An unusual increase is seen in the number of deaths during routine analysis of data
- Alert or action thresholds have been reached for specific priority diseases.
- Communities report rumours of deaths or about a large number of cases that are not being seen in the health facility
- A cluster of deaths occurs for which the cause is not explained or is unusual (for example, deaths after a drinking spree like “Kumi Kumi”).

NOTE: The threshold for some diseases will not change between districts or health facilities because they are thresholds for immediately notifiable diseases and are set by national policy.

Examples of thresholds or triggers for taking action to implement interventions or investigations of a case or outbreak are below:

Table 4.1: Threshold Levels for Priority Diseases/Conditions

	Disease/Condition	Threshold of Cases for Action
1	Malaria	If the number of new cases exceeds the upper limit of cases seen in a previous non-epidemic period in previous years.
2	Pneumonia	Number of cases and deaths increase by two-fold over the number seen in the past.
3	Childhood diarrhoea	Number of cases and deaths increase by two-fold over the number seen in the past.
4	New AIDS cases	Number of cases and deaths increase by two-fold over the number seen in the past.
5	Tuberculosis	Number of cases and deaths increase by two-fold over the number seen in the past.
6	Cholera	Single confirmed case is an outbreak
7	Typhoid Fever	Observed increase in number of cases and deaths with at least one case confirmed by culture.
8	Dysentery	Observed increase in number of cases and deaths with a confirmed case.
9	Measles	Single suspected case is a suspected outbreak
10	Meningococcal Meningitis	5 cases in 1 week or doubling of the number of cases over a 3-week period in a population of 30,000.
11	Plague	Single suspected case is a suspected outbreak
12	Yellow Fever	Single suspected case is a suspected outbreak
13	Viral Haemorrhagic Fever	Single suspected case is a suspected outbreak
14	AFP	Single suspected case is a suspected outbreak
15	Neonatal Tetanus	Single suspected case is a suspected outbreak
16	Leprosy	Single confirmed case is an outbreak
17	Dracunculosis (Guinea worm)	Single suspected case is a suspected outbreak
18	Sexually Transmitted Infections	Number of cases increase by two- fold over the number seen in the past.

4.2 RECORD REPORTED OUTBREAKS AND RUMOURS

Every district should use the district log for suspected outbreak tracking of the reporting and response to outbreaks and rumours. A district log form is provided in Annex 17 of this section.

The purpose of tracking reported outbreaks is to ensure that the report of each suspected outbreak or rumour is followed by some action and resolution. Keeping this record will help to gather information for evaluating the timeliness and completeness of the outbreak investigation and response process.

4.3 VERIFY THE REPORTED OUTBREAK

Promptly verify reported outbreaks from health facilities or community rumours. This is important for making sure that timely decisions are made to prevent expending resources on investigating events that are not true outbreaks of priority diseases.

Consider the following factors:

- Source of information (For example, is the source of the rumour reliable? Is the report from a health facility?)
- Severity of illness
- Number of reported cases and deaths
- Transmission mode and risk for wider transmission
- Political or geographic considerations
- Public relations
- Available resources.
- Possibility of a new or re-emerging infectious disease.

The outbreak situation, when compared to the above factors, may cause the district to treat the investigation with more urgency. For example, reports of a suspected viral hemorrhagic fever case are treated with more urgency than a report of a neonatal tetanus case because the risk for wider transmission of the VHF is greater. Regardless of the factors, suspected outbreaks (including immediately notifiable cases) from health facilities need to be reported within 24 hours.

4.4 PREPARE TO CONDUCT AN INVESTIGATION

Coordinate the investigation objectives with the person in the district responsible for control of that disease or condition. Make sure that the objectives of the investigation will provide the essential information for implementing the most appropriate and relevant response. Plan to use appropriate methods that are relevant to the disease or condition being investigated. If epidemic response and preparedness activities have taken place in the

district or health facility, staff that are capable of taking part in the investigation should be identified and trained.

4.4.1 Specify work health staff are expected to do

Inform health staff about the tasks they will be expected to do and the functions they will support. Contribute to the positive motivation for doing the investigation. For example, make sure that the investigation team understands the link between the investigation and the selection of response activities for preventing additional cases and saving lives.

4.4.2 Define supervision and communication lines

Ensure an effective communication plan is in place. Communication methods and channels may include daily updates by radiophone, facsimile, electronic mail or conference calls.

Show on the diagram the lines of authority and the roles of each staff person on the team. Define the role of non-health staff and how they should be supervised.

Media briefing is the function of the Hon. Minister, Permanent Secretary, the Director of Medical Services and their designated officers. For disease listed for Case based Surveillance the health facility will communicate to the National level directly and a copy to the district and the Province.
However during an outbreak the facility will communicate to the district and the district to the national level directly with copies to the province and the DMOH should:

- Contact the provincial and national level daily
- Submit weekly epidemic report using the epidemic monitoring form (Annex 12) to the national level and copy to the province.

Routine communication will follow through from the facility to the district. The districts to the province, which will in turn submit a summary, report to the national level. During response to outbreaks the national outbreak management team will communicate and deal with the outbreak response teams at the epicentre directly and notify the provincial level see Fig. 4.1 below.

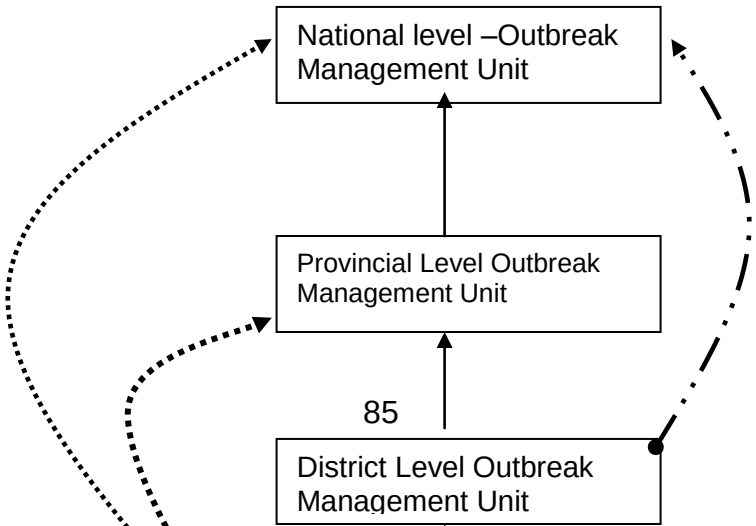


Fig. 4.1 **Illustration of communication lines for IDSR**

4.4.3 Decide where the investigation will take place

1. Review information already known about the suspected illness, including its transmission method and risk factors. Use this information to define the geographic boundaries and target population for conducting the investigation**.** Begin the investigation in the most affected place. Determine the most affected place by calculating specific attack rates.

2. Contact nearby health facilities to find out if they have seen similar cases or an increase in number of cases with the same diagnosis.

3. Involve the community and local health facility staff in planning and conducting the investigation. Information about local customs, culture, and routines could affect the success of the outbreak investigation.

4.4.4 Obtain the required authorizations

Observe, obtain and follow appropriate protocol, authorizations, clearances, ethical norms, and permissions that are required to conduct the investigation.

4.4.5 Finalize forms and methods for collecting information and specimens

Review with the investigation team how to collect the required information and record it. For example, at a minimum, staff should know how to gather and record information on a line list.
Select the variables to record and analyse for the disease being investigated. Depending on staff responsibilities, review how to identify and record information for preparing the following:

- Line list for summarizing time, place and person analysis
- Epidemiological curve
- Spot map
- Analysis tables for risk factors, age group, sex and immunisation status. Refer to the steps in Section 3.

4.4.6 Arrange transportation

Make travel arrangements for getting to and from the site of the investigation and for travelling during the investigation. Make sure transportation for moving specimens to the appropriate laboratories has been arranged. Courier services can be used to transport specimens to the reference laboratories.

4.4.7 Gather supplies for collecting lab specimens

There is need to have a rapid response kit that contains supplies and equipment for carrying out the investigation in every district.

If a kit is not available in your district, look at the disease specific program guidelines and talk to laboratory specialists to find out the requirements for laboratory supplies for proper collection, storage, and transport of relevant specimens.

Refer to the laboratory chart in Annex 19 Part A at the end of this section and to the specific disease guidelines in Section 8.

4.4.8. Arrange for subsistence and other costs

Mobilise resources for subsistence allowances for both health workers and non-health staff including security and community guides.

4.5 CONFIRM THE DIAGNOSIS 4.5 CONFIRM THE DIAGNOSIS 4.5 CONFIRM THE DIAGNOSIS 4.5 CONFIRM THE DIAGNOSIS 4.5 CONFIRM THE DIAGNOSIS 4.5 CONFIRM THE DIAGNOSIS 4.5 CONFIRM THE DIAGNOSIS 4.5 CONFIRM THE DIAGNOSIS 4.5 CONFIRM THE DIAGNOSIS

4.5.1 Review the clinical history

Examine the patient or patients to confirm that their signs and symptoms meet the case definition. Ask the patient or a family member who can speak for the patient:

- Where do you live?
- When did the symptoms begin?
- Who else is sick in your home (or workplace, village, neighbourhood)
- Where have you travelled recently?
- Where did you live within the 2 weeks prior to the onset of symptoms (residence at time of infection)?
- Were you visited by anyone within the last 2 weeks?

4.5.2 Collect laboratory specimens and obtain laboratory results

If the disease is confirmable by laboratory testing, refer to the laboratory chart in Annex 4 in Section 1.0 to determine the diagnostic test and the specimen that is required. The

chart also describes how to collect, store and transport the specimen, and how many specimens to collect to confirm an outbreak for a particular disease.

Review laboratory results with the investigation team, clinicians, and laboratory personnel at the health facility. Are the laboratory results consistent with the clinical findings? Seek additional assistance from national level program managers or technical experts if you have any questions about the laboratory results.

Preserve samples from patients during an outbreak or with strange disease occurrences for as long as possible and transmit them to the national level. The specimens should be accompanied with a case summary and laboratory request form.

The primary laboratory should arrange to send a quality control sample to another laboratory. All laboratories should always follow standard operating procedures for all tests.

4.6 ISOLATE CASES AS NEEDED AND TREAT THEM

Strengthen case management at the health facility (or where the patients are being seen). Provide the health facility with advice, support, and supplies as indicated by the case management guidelines. For example:

- Monitor the patients' signs and symptoms
- Treat the patient with available recommended drugs and therapies
- Support the health facility in enhancing infection control, as needed depending on the specific disease. Use standard precaution with all patients in the health facility, especially during an outbreak of a disease transmitted by contact with contaminated materials and body fluids.
- Observe appropriate isolation practices.

4.7 Search for additional cases

Once the initial cases have been confirmed and treatment has begun, actively search for additional cases.

4.7.1 Search for cases in the health facility records

In the health facilities where cases have been reported, search for additional cases in the registers. Look for other patients who may have presented with the same or similar signs and symptoms as the disease or condition being investigated. Health workers should be requested to search for similar cases in the registers of neighbouring health facilities.

See Annex 18 at the end of this section for instructions on conducting a register review. Make sure to follow up any cases that have been allowed to go home.

4.7.2 Search for cases in the community

Identify areas of likely risk where the patients have lived, worked, or travelled. Also talk to other informants in the community such as pharmacists or schoolteachers. The areas to be searched will be influenced by the disease, its mode of transmission, and risk factors related to time, place and person analysis. Visit those places and talk to people who had or were likely to have had contact with the patient.

During the visit carry out the following:

- Sensitise and educate the community.
- Ask if they or anyone they know has had an illness or condition like the one being investigated.
- Find out if anyone else in the area around the case has been ill with signs and/or symptoms that meet the case definition.
- Collect information that will help to describe the magnitude and geographic extent of the outbreak.
- Treat newly identified cases and their contacts where applicable.
- Refer newly identified cases to the health facility for treatment.

4.8 RECORD INFORMATION ABOUT THE ADDITIONAL CASES

For each new case either in the health facility register or in searches of the community that fits the surveillance case definition, record the collected information on either a case-based investigation (reporting) form, line list or other recommended form.

4.8.1 Record information on a case investigation (reporting) form

Record information on a case investigation (reporting) form for at least the first five patients. Also record information on a case form for all those from which laboratory specimens will be taken. For each case, record at least:

- The patient's name, address, and village or neighbourhood and locating information. If a specific address is not available, record information that can be used to contact patients if additional information is needed or to notify the patient about laboratory and investigation results.
- The patient's age, occupation, and gender. This information is used to describe the characteristics of the population affected by the disease.
- The date of onset of symptoms and date the patient was first seen at the health facility
- Relevant risk factor information such as immunization status if the disease being investigated is a vaccine-preventable disease.
- The name and designation of the person reporting the information

NOTE: To streamline data collection methods, use the case reporting form as a laboratory transmittal slip. (See the sample form in Annex 9).

4.8.2 Record information about additional cases on a line list

When more than five to ten cases have been identified, and the required number of laboratory specimens have been collected, record any additional cases on a line list. Use the line list as a laboratory transmittal form if 10 or more cases need laboratory specimens collected on the same day and specimens will be transported to the lab in a batch.

4.9 ANALYSE DATA ABOUT THE OUTBREAK

The methods for analysing outbreak data are similar to how the analysis of summary data is described in Section 3. Data about the outbreak is analysed and reanalysed many times during the course of an outbreak.

During the initial analysis, summarize the outbreak and look for clues about where the outbreak is occurring, where it is moving, the source of the outbreak (from a single source, for example, a well or a funeral), and the persons at risk of becoming ill (for example, young children, refugees, persons living in rural areas, and so on). Present the data in the following way:

- Draw a histogram representing the course of the disease (an epidemic curve).
- Plot the cases on a spot map.
- Make tables of the most relevant characteristics for cases (for example, comparing age group with vaccination status).

During an outbreak, these data will need to be updated frequently (often daily) to see if the information being received changes the ideas regarding the causes of the outbreak.

4.9.1 Analyse data by time

Prepare a histogram using data from the case reporting forms and line lists. Plot each case on the histogram according to the date of onset. Use symbols to represent each case.

As the histogram develops, it will demonstrate an epidemic curve. Define the geographic area the curve will represent. For example, decide if the curve should describe the entire district or the health facility catchment area where the case occurred.

The results of the time analysis allows program managers and surveillance officers to look back at the outbreak and answer questions such as when were patients exposed to the illness and the length of the incubation period.

Highlight significant events on the histogram with arrows. For example, review the log of reported outbreaks and rumours to highlight the dates when:

- Onset of the first (or index) case
- The health facility notified the district
- The first case was seen at the health facility
- The district began the case investigation
- A concrete response began and other incidental occurrences.
- The district notified the provincial/national level

Note: The purpose of highlighting these events with arrows is to evaluate whether detection, investigation and response to the outbreak was timely. For example, monitoring the interval between the onset of the first known case and when the first case was seen in the health facility is an indicator of the community's awareness of the disease's signs and symptoms and the need to refer cases to the health facility. These intervals are discussed further in Section 7 *Evaluate and Make Improvements to the System*.

Section 3 describes in more detail how to prepare and plot cases on a histogram.

Section 7 describes how to use information on the histogram to monitor and evaluate timeliness of the case detection, investigation and response actions.

4.9.2 Analyse data by place

Use the place of residence on the case reporting forms or line lists to plot and describe:

- Clusters of cases are occurring in a particular area
- Travel patterns that relate to the method of transmission for this disease
- Common sources of infection for these cases.

Please see Section 3 for detailed steps describing how to prepare a map for marking the location of suspected and confirmed cases.

Mark on a map of the area where the suspected and confirmed cases occurred as follows:

- Roads, water sources, location of specific communities and other factors related to the transmission risk for the disease under investigation. For example, a map for neonatal tetanus includes locations of traditional birth attendants and health facilities where mothers deliver infants.

- Location of the patients' residences or most relevant geographic characteristic for this disease or condition (for example, by village, neighbourhood, work camp, or refugee settlement. Another example is when mapping patients during a meningitis outbreak involving school children; locate the schools where they attend.)

- Other locations appropriate to the disease being investigated.

Please refer to the details in section 3.4 for specific recommendations for analysing data by place.

4.9.3 Analyse data by person

Review the case forms and line lists and compare the variables for each person suspected or confirmed to have the disease or condition. For example, depending on the factors that must be considered in planning a specific response, compare the total number and proportion of suspected and confirmed cases according to:

- Age or date of birth
- Sex
- Urban and rural residences
- Immunization status

- Inpatient and outpatient status
- Risk factors
- Outcome of the episode, for example, whether the patient survived, died or the status is not known.
- Laboratory results
- Final classification of the case
- Other variables relevant to this disease (death by age group, for example).

Use disease-specific information to decide which variables to compare. For example, if information has been collected about a malaria outbreak, specify the age groupings that are targeted by the National Malaria Program. Compare the age groupings of cases detected in young children (age 2 months up to 5 years) cases in older children (age 5 to 15 years), cases in adults (age 15 and over) and cases in pregnant women.

Please see the disease specific guidelines for recommendations about the essential variables to compare for each disease. Refer to Section 3 for detailed steps about preparing tables for analysing data by person.

4.10 INTERPRET ANALYSIS RESULTS

Review the analysis results and make conclusions about the outbreak. For example:

- What was the causal agent of the outbreak?
- What was the source of infection?
- What was the transmission pattern?
- What control measures were implemented and to what effect?

4.10.1 Interpret the time analysis results

Look at the histogram and observe the shape of the epidemic curve. Draw conclusions about when exposure to the agent that caused the illness occurred, the source of infection and related incubation period.

- If the shape of the curve suddenly increases to develop a steep up-slope, and then descends just as rapidly, exposure to the causal agent was probably over a brief period of time. There may be a common source of infection.
- If exposure to the common source was over a long period of time, the shape of the epidemic curve is more likely to be a plateau rather than a sharp peak.
- If the illness resulted from person-to-person transmission, the curve will present as a series of progressively taller peaks separated by periods of incubation.

4.10.2 Interpret the place analysis results

Use the map to:

- Describe the geographic extent of the problem.
- Identify and describe any clusters or patterns of transmission or exposure. Depending on the organism that has contributed to this outbreak, specify the proximity of the cases to likely sources of infection.

4.10.3 Interpret the person analysis results

Information developed from the person analysis is essential for planning the outbreak response because it describes more precisely the population at risk for transmission of this disease or condition. For example, if yellow fever cases occurred in patients less than 15 years of age, then the immunization response action would need to target children less than 15 years of age.

4.10.4 Calculate case fatality rates

Refer to the steps in Section 3 that describe how to calculate case fatality rates.

ANNEXES TO SECTION 4

ANNEX 17 **Log of suspected outbreaks and rumours**

ANNEX 18 **How to conduct a register review**

ANNEX 19 **Checklist of laboratory supplies for use in an outbreak investigation**

ANNEX 17 DISTRICT LOG OF SUSPECTED OUTBREAKS AND RUMOURS

Record verbal or written information from health facilities or communities about suspected outbreaks, rumours, or reports of unexplained events.
Record the steps taken and any response activities carried out.

Log Date 1	Condition or Disease 2	Source of Information 3	No. of cases Initially reported & deaths if any 4	Location (health centre, village etc.) 5	Date district was notified 6	Date suspected outbreak was investigated by the district 7	Results of district investigation (Confirmed ruled out or unknown) 8	Date outbreak began. Date onset index case/date crossed threshold or first cluster. 9	Date a case was first seen at a health facility 10	Date concrete interventions began 11	Type of concrete interventions that was began 12	Date district notified national level of the outbreak 13	Date received national response 14	Comments 15

ANNEX 18: HOW TO CONDUCT A REGISTER REVIEW

The purpose of a register review is to collect information on cases admitted to the health facility during a specific period. Explain that the information will be used to determine what caused the outbreak or increase in number of cases.

1. Select the facilities for review. Depending on the local conditions and the priority disease or condition being investigated, select:

- Any inpatient facility with more than 10 hospital beds. Give priority to government health facilities.

- Large reference or teaching hospitals with paediatric wards because they receive referrals from other health facilities.

- Small hospitals or health facilities that serve remote areas and high-risk populations. For example, nomadic groups, refugees, or areas without regularly scheduled health services.

2. Meet with the health facility staff and explain the purpose of the review.

Explain to the health facility's senior staff the purpose of the review. The information will assist the district and health facility in determining the most appropriate action for limiting the outbreak and preventing future cases from occurring. Emphasize that the activity is an information-gathering exercise, and is not a review of health worker performance.

3. Arrange to conduct the review.

Arrange a time to conduct the review when staff who will assist with the review are present and available to help or to answer questions.

4. Identify sources of information.

During the visit, depending on the priority disease or condition being investigated, check inpatient registers for the paediatric and infectious disease wards. The inpatient register for the paediatric ward is a good source because it lists all children admitted to the ward. Annual summary reports are not always accurate, and outpatient registers often include only a provisional diagnosis.

Review the system and procedures health workers use to record information in the registers about diagnoses. Make sure that the information needed for investigating any suspect case is available. At a minimum, the register should include:

-- the patient’s name, age, sex and place of residence
-- the signs and symptoms

-- date of onset of symptoms and outcome (for example, date of death, if relevant)
-- immunisation status, if appropriate to this disease

If the health facility does not keep at least the minimum information, talk with senior staff about how to strengthen the record keeping so that the minimum information is collected.

5. Do the record review at the scheduled day and time.

Go to the selected wards as scheduled. During the visit, look in the health facility registers for cases and deaths that may be suspected cases of NT. These should be cases or deaths that meet the standard case definition for suspected cases. Find out whether the suspected case was investigated and reported according to national guidelines.

6. Line-list the suspected cases that are found.

Record information about the suspect cases. This information will be used during case investigation activities.

7. Provide feedback to the health facility staff.

Meet with the health facility supervisor and discuss the findings of the activity. Use the opportunity to review any features of case management for the illness that may help health workers in the facility. Reinforce the importance of immediate reporting and case investigation as tools for prevention of priority diseases and conditions.

8. Report any suspected cases to the next level.

Report the suspected cases according to local procedures. Investigate the case further to determine the factors that placed the patient at risk for the disease or condition. Develop an appropriate case response.

ANNEX 19: CHECKLIST OF LABORATORY SUPPLIES FOR USE IN AN OUTBREAK INVESTIGATION

A) Supplies required for standard safety precautions when collecting and handling specimens:

_____ Pieces of bar soap and disinfectants (such as chlorine based bleach) for setting up hand washing stations
_____ Surgical Gloves
_____ Safety boxes for collecting and disposing of contaminated supplies and equipment
_____ When handling specimen from highly infectious conditions (e.g. suspected haemorrhagic fever) wear protective gear: (cap, eye shields, facemask, gown, apron, boots).

B) For collecting laboratory specimens:

Blood	**Cerebral spinal fluid (CSF)**
_____ Sterile needles, (G19, 20 &21) _____ Sterile syringes (2,5 & 10 mls) _____ Vacutainers _____ Test tube for serum _____ Antiseptic skin disinfectant _____ Tourniquet _____ Centrifuge – manual/electrical _____ Transport tubes or bottles with screw-on tops _____ Transport media – for blood _____ sterile pipette and bulb _____ sterile glass or plastic tube or bottle with screw-on top _____ Trans-Isolate media	_____ Local anaesthetic _____ Needle and syringe for anaesthetic _____ Antiseptic skin disinfectant _____ Screw top bottles plain and fluoride _____ Microscopic slides in a box _____sterile pipette and bulb _____ sterile glass or plastic tube or bottle with screw top _____ Haemocytometer (counting chamber) _____ Centrifuge – manual/electrical _____ Reagents for gram stain
Blood films (malaria)	**Stool**
_____ Sterile or disposable lancet _____ Glass slides and cover slips _____ Slide box _____ Skin disinfectants _____Field Stain A and B _____ Cotton wool _____ Cotton gauze _____ Methylated spirit _____ Pair of scissors	_____ Rectal swabs _____ Cary-Blair transport media _____ Poly pots

C) For packaging and transporting samples:

_____ Cold box with frozen ice packs or vacuum flask
_____ Cotton wool for cushioning sample to avoid breakage
_____ Shipping labels for addressing shipment to lab
_____ Labels for marking “store in a refrigerator” on outside of the shipment box
_____ Case forms and line lists to act as specimen transmittal form
_____ Marking pen to mark tubes with name of patient and ID number (if assigned by the district)

SECTION 5
RESPOND (INTERVENE) TO OUTBREAKS AND OTHER PUBLIC HEATH PROBLEMS

This section describes how to:

- **Improve preparedness for responding to epidemics and other public health problems at the district and health facility level.**
- **Select appropriate public health responses based on investigation and analysis results and disease-specific recommendations**
- **Prepare in advance to obtain the necessary resources for responding to epidemics and other public health problems**

5.0 INTRODUCTION

This section describes steps for responding to:

- A confirmed outbreak of a priority disease (for example cholera)

- Trends seen in routine analysis (for example, a persistent increase in the number of deaths in children under 5 due to severe pneumonia.) that indicate no change or an increase in the number of cases or deaths targeted by a disease prevention program.

When an outbreak of a priority disease occurs, the response is immediate. All efforts and resources are aimed at controlling the outbreak. If preparations have been made in advance of the outbreak, the health system will be able to function effectively. Measures to treat and control the disease and prevent unnecessary deaths or disabilities can be taken in a timely way.

When a problem is identified through analysis of routine data, select an appropriate response and take action. For example, improve the assessment and treatment of pneumonia cases in children less than 5 years of age.

For either case, coordinate information and planning of responses with the appropriate district staff. For responding to epidemic-prone diseases, the response is planned by an epidemic response committee. For situations where disease reduction targets are not being achieved as planned, the district surveillance staff works with the focal person responsible for prevention and control of the specific disease to take action.

District staff who respond to outbreaks or public health problems should routinely:

1. Review surveillance data for trends that cause a concern for public health.

2. Make sure that the medical supervisors in all the health facilities in the district know and use protocols for recommended case management of priority diseases and conditions.

3. Review and update supplies and resources for epidemic response of priority diseases, including:

    - Presence of trained staff
    - Treatment equipment and supplies
    - Resources for transportation and communication.
    - Supplies for collecting and shipping specimens for confirmation
    - Supplies for giving vaccinations
    - Procedures for procuring stocks of vaccine in an emergency and conducting a prompt vaccine response to an emergency.
    - Resources for staff subsistence allowances.

4. Check emergency stock of supplies periodically (every 3 to 4 months, for example), to make sure they are dry, clean and ready for use.

5. Make sure steps for obtaining laboratory confirmation are known by the appropriate staff.

5.1 PREPARE TO RESPOND TO AN EPIDEMIC

5.1.1 Specify who should be on the epidemic response team

Periodically meet with the epidemic response team whether or not there is an outbreak. During an epidemic, meet as soon as the epidemic is recognized. Then meet as often as needed to plan, implement, monitor and report on the epidemic response.

The following should be members of the epidemic response team at provincial and district levels -

Core group

District level	**Provincial level**
District Medical Officer of Health	Provincial Medical Officer
Health Records Information Officer	Health Records Information Officer
Public Health Officer	Public Health Officer
Public Health Nurse	Public health Nurse
Medical Laboratory technologist	Medical Laboratory technologist
Clinical Officer	Clinical Officer
Health Education officer	Health Education Officer

Epidemic Response Support Group

From the public sector:

- District Commissioner
- District Education Officer
- District Development Officer
- Water engineer
- Works officer
- Politicians, administrators, and other officials
- Community representatives
- Police or other public safety officers
- Local authorities
- Local media representatives/ Information officers
- Co-opt as necessary

From non-governmental organisations with health care activities in the area:

- NGOs/CBOs involved in community health programmes
- Manager of outreach program to special populations
- Kenya Red Cross Society
- From the private sector:
- Principal clinical or nursing officer from private hospital, clinic or laboratory
- Pharmacist

5.1.2 Organise strategic buffer stocks/supplies

You may have already prepared for epidemic response in your district. If not, assess the supplies, equipment and resources currently available. Take action to set aside supplies that can be used in an emergency response activity. Each level should be prepared for some response action. It will be necessary to mobilize resources for the task at hand.

Update your buffer stock every three months or after an epidemic to replenish used stock or replace items with short shelf life.

5.2 SELECT A RESPONSE FOR THE OUTBREAK OR PUBLIC HEALTH PROBLEM

When an outbreak is confirmed, or a need for public health action is identified, review the investigation results and data analysis conclusions. Refer to the disease specific guidelines and select response activities that involve:

- Proven measures to prevent unnecessary deaths or disabilities due to the specific cause of the problem.

- A mix of activities for immediately controlling the problem in the short-term, and reducing the risk of ongoing transmission in the long-term through prevention activities.

- Participation from the community, health care facilities and the district personnel.

Refer to Section 8 for disease specific epidemic response activities.

5.3 PLAN OUTBREAK RESPONSE ACTIVITIES

Responding to problems identified during analysis of summary data reported monthly is in Section 7.

Consider the following factors when planning the response activity:

1. If emergency response funds will be needed, set up procedures for obtaining them. For example, ask the provincial or national level how to request funds and provide the required information as needed.

2. If laboratory specimens will be collected from a remote location, set up a procedure for transport of specimens. Make sure the transport procedure allows for the specimens to:

- Be kept at the recommended temperature
- Arrive at the laboratory as quickly as possible.

3. Identify areas or populations at high risk for the disease or condition. Review the analysis data to refine the description of the outbreak characteristics. Review at least the:

- Incidence rate for the outbreak disease
- Extent of risk factors for the outbreak disease. For example, look at the case investigation results for information about the extent of unsafe delivery practices in a neonatal tetanus outbreak, unsafe food practices for diarrhoea, and the number of people who have forest-related occupations during a yellow fever outbreak.
- Rate of immunisation coverage for the outbreak disease (applies to vaccine preventable diseases).

4. Inform nearby districts or catchment areas about the outbreak. Hold meetings with neighbouring districts to harmonize control strategies. If they are having a similar outbreak, coordinate response efforts. For example, combine efforts to:

- Obtain supplies and resources
- Develop and disseminate health education messages and materials
- Conduct emergency immunization as appropriate or other preventive activities
- Transport specimens to reference laboratory for confirmation

5. Review the lists of supplies and resources made by the epidemic response team. Obtain the emergency supplies and set them aside at the district and local levels for emergency use

6. If supplies are not available locally:

- Contact the provincial office, regional depot or the national level to find out where they might be obtained quickly
- Borrow from other services, activities, or non-governmental organizations in your area
- Identify practical low-cost substitutes
- Notify the national level of gaps in supplies.

7. Assign clear responsibilities to individuals or units for specific response activities.

8. Provide training and supplies so that health staff will be able to:

- Keep detailed records on the response activities. For example, keep a tally sheet of individuals immunized; a list of the community education messages, communication channels, and dates of community education activities; a list of individuals receiving bed nets.

- Review data on cases, laboratory confirmation, and treatment throughout the response activity.

- Identify problems in implementing the activities and modify activities, as necessary.

5.4 IMPLEMENT RESPONSE ACTIVITIES

Refer to disease-specific guidelines for recommended responses. The response activities include the following:

- Strengthen case management
- Update health staff's skills
- Conduct emergency immunization campaigns
- Enhance surveillance during the response activity
- Inform and educate the community
- Improve access to clean and safe water
- Improve safe disposal of human waste
- Improve food handling practices
- Reduce exposure to mosquitoes
- Control vectors
- Disseminate the technical recommendations appropriate for the outbreak.

5.4.1 Strengthen case management

Take steps to support improved clinical practices. Review the recommendations in Annex 22b for treating cases during an outbreak. Prepare health staff to take these and other responses:

- Review with each health facility whether the clinical staff know and use recommended protocols for case management of outbreak diseases.

- Make sure that clinicians get laboratory confirmation of the outbreak disease, if the disease is laboratory confirmable.

- Set aside or ask the officer in charge at each health facility to identify an area that can be used for a large number of patients. See annex 22B on how to set up temporary treatment centres.

- Make the necessary drugs and treatment supplies available.

5.4.2 Update health staff skills

1 Give clear and concise directions to health staff taking part in the response.

2 Select training topics. Emphasize case management for the specific disease according to disease specific recommendations. Select other training topics depending on the risk of transmission for the specific disease, for example:

- Intensifying standard precautions (use of clean water, hand washing and safe sharps disposal)
- Barrier nursing and use of protective clothing
- Isolation precautions
- Treatment protocols such as delivering oral rehydration salts (ORS) and using intravenous fluids
- Disinfecting surfaces, clothing, equipment and dead bodies.
- Disposing of bodies safely

3 Implement training. In an urgent situation, there often is not time for formal training. Provide on-the-job or one-to-one training as needed. For example, ask a skilled clinician to do one-to-one demonstrations on the wards. Make sure there is an opportunity for the training physician or nursing staff to observe the trainees using the updated or new skill.

5.4.3 Conduct an emergency immunization activity

Collaborate with the district or KEPI and DOMU to conduct an emergency immunization activity, if indicated. Begin planning the emergency immunization activity as soon as possible. Speed is essential in an emergency immunization because time is needed to obtain and distribute vaccine. ***Establish a plan for acquiring an emergency stock of vaccine before an epidemic occurs by.***

1. Determining the target population for the activity based on the case and outbreak investigation results

2. Referring to the KEPI programme guidelines for specific recommendations about delivery of the indicated vaccine.

A worksheet called “Planning an emergency immunization activity” is in Annex 24 at the end of this section.

A worksheet called “Estimating vaccine supplies for immunization activities” is in Annex 25 at the end of this section.

5.4.4 Enhance surveillance during the response activities

During a response to an outbreak, encourage health staff at all health facilities to be vigilant in surveillance of the disease or condition. Make sure that health staff:

- Search for additional persons who have the specific disease and refer them to the health facility or treatment centres for treatment (cholera, for example), or quarantine the household (plague, for example) and manage the patient.
- Update line lists and monitor the effectiveness of the outbreak or response activity.

5.4.5 Inform and educate the community

Keep the public informed to calm fear and to encourage cooperation with the outbreak response. Develop community education messages to provide the community with information about recognizing the illness, how to prevent transmission and when to seek treatment. Begin communication activities with the community as soon as an epidemic or public health problem is identified.

1. Decide **what to communicate** by referring to disease specific recommendations in Section 8. Make sure to include:

    - Signs and symptoms of the disease
    - How to treat the disease at home, if home treatment is recommended.
    - Prevention behaviours that are feasible and that have a high likelihood of preventing disease transmission
    - When to come to the health facility for evaluation and treatment
    - Immunization recommendations, if any.

2. **Decide how to state the** message. Make sure that the messages:

    - Use local terminology
    - Are culturally sensitive
    - Are clear and concise
    - Work with local traditions
    - Address beliefs about the disease.

Sample community education messages:

    - Hand-washing
    - Safe handling of food
    - Safe disposal of human waste
    - Clean drinking water and storage
    - Safe burial of bodies
    - Reducing exposure to mosquitoes, sand flies and other vectors.

Details on above messages are in Annex 27 at the end of this section.

3. Select appropriate communication methods and channels that are present in your district. For example:
   - Radio
   - Television
   - Newspapers
   - Meetings with health personnel, community, religious and political leaders
   - Posters
   - Fliers
   - Presentations at markets, health centres, schools, women's & other community groups, service organizations, religious centres.

4. Give health education messages to community groups and service organizations and ask that they disseminate them during their meetings.

5. Give health education messages to trusted and respected community leaders and ask them to spread them to the community.

6. Select and use a community liaison officer or health staff to serve as spokesperson to the media. As soon as the outbreak has been recognized:

   - Tell the media the name of the spokesperson, and that all information about the outbreak will be provided by the spokesperson
   - Release information to the media only through the spokesperson to make sure that the community receives clear and consistent information.
   - This should be the officer designated by the Director of Medical Services.

7. On a regular basis, meet with the community spokesperson to give:

   - Frequent, up-to-date information on the outbreak and response
   - Clear and simple health messages that the media should use without editing
   - Clear instructions to communicate to the media only the information and health education messages from the Epidemic Response Committee.

5.4.6 Improve access to safe and clean water

Make sure the community has an adequate supply of safe and clean water for drinking and other uses. The daily water needs per person during non-outbreak situations are shown below. Water needs are much higher during an outbreak situation, especially outbreaks of diarrhoeal diseases.

Table 5.1: Daily Water needs per person.

Daily water needs per person*		
	Non-outbreak situation	***During outbreak of diarrhoeal disease***
Home use	20 litres per person per day	50 litres
Health care setting	40 to 60 litres per person per day	50 litres in wards 100 litres in surgery 10 litres in kitchen

*Refugee Health: an Approach to Emergency Situations, Medecins sans Frontieres, 1997 MacMillan

Safe sources of drinking water include:

- Piped treated/chlorinated water
- Surface water sources (a river, pond, dams or lakes), if protected from contamination by people or animals. For example, make sure that the water source is at least 30 meters away, upstream from areas where people or animals defecate.
- Tapped rainwater.
- Under ground water sources (borehole, wells, springs) if protected from pollution and sited at least 30 metres away from pit latrines covered with a slab and water appropriately drawn.
- Boiled water.
- Carry out routine surveys and sampling of public water sources from time to time depending on pollution patterns in the locality.

If no local water sources are available, during an emergency, water supply may need to be brought in by truck. However, transporting water is expensive and difficult to sustain.

To make sure that families have ***safe and clean drinking water at home*** provide:

- Community education on:
  - How to keep home drinking water safe (sanitary storage).
  - Protect water sources
  - Treating water from unsafe sources.

5.4.7 Ensure safe disposal of human waste

To make sure that human faeces are disposed of safely:

- Assign teams to inspect local areas for human waste disposal. Safe practices include disposing of faeces in a latrine or burying them in the ground more than 30 meters away from a water supply.

- If unsafe practices are found, provide information to the community. Construct latrines appropriate for local conditions with the cooperation of the community.

- Conduct community education on sanitation practices.

5.4.8 Improve food handling practices

Make sure that people in the home, in restaurants, at food vending settings, and in factories handle food safely. Refer to regulations under Foods, Drugs and Chemical Substances Act Cap 254 Laws of Kenya on the established standards and controls for the handling and processing of food.

To ensure food hygiene:

- Conduct community education on food hygiene practices for the general public and those in the food industry.
- Food and water samples from commercial food outlets should be tested routinely for bacteriological contamination.
- Visit restaurants, food vendors and food packaging factories to inspect food-handling practices. Look for safe practices such as proper hand washing, cleanliness and adherence to national standards.
- Conduct medical examination for food handlers every six months. The examination should include:

    - Physical examination
    - Stool for culture and microscopy
    - Urine for culture and microscopy
    - Nasal swab for culture
    - Throat swab for culture
    - Blood for Widal test

- Close restaurants, vending areas or factories if inspection results show persistent unsafe food handling practices.
- Treat those found to harbour pathogens
- Strengthen national controls as necessary.

5.4.9 Reduce exposures to mosquitoes

Encourage prevention of mosquito-borne diseases by helping people in your district reduce their exposure to mosquitoes during the day and at night. Work with the malaria control programme in your district to:

- Implement insecticide treated net/materials (ITN/M) practice.
- Conduct community education on:
    - proper use of ITN/Ms
    - how to avoid dawn-to-dusk mosquito bites.
    - how to reduce mosquito population.

5.4.10 Control vectors and Rodents

Encourage prevention of diseases carried by insects and rodents by helping people in your districts reduce their exposure to these animals. For example, rodents can carry Lassa fever and they may be infested with fleas that carry plague. Work with the vector control officer in your district to encourage the community to:

- Minimize rodents and fleas population in the homesteads.
- Avoid contact with the blood and body fluids of dead rodents
- Keep food and water in the home covered to prevent making food available to rodents
- Keep your home and cooking area clean and uncluttered to remove places where rodents could nest in your home
- Keep cats

5.5 REPORT ON THE OUTBREAK

A detailed report on the outbreak can be helpful in planning for the next outbreak. As soon as the epidemic has been controlled, write a report and include:

- Details on the response activities. Include dates, places, and individuals involved in each activity. Also include the epidemic curve, spot map, table of person analyses, and the line list of cases.
- Any changes that were made to the initial response activities
- Recommended changes to improve epidemic response in the future. For example, you might recommend changes in the immunization strategy and programme to make the immunization activity more effective. You might recommend changes in the transporting procedure for laboratory specimens to allow specimens to reach the reference laboratory in good condition or more quickly.

- Disseminate a report on the outbreak.

ANNEXES TO SECTION 5

ANNEX 20: TREAT CASES DURING AN OUTBREAK

Use appropriate drugs and treatments for managing cases during an outbreak. These are treatment recommendations for use in an outbreak situation for cholera, dysentery, measles and bacterial meningitis.

1. Treat cholera in an outbreak situation

Source: *WHO guidelines for management of the patient with cholera, WHO/CDD/SER/91.15*

1. Assess the patient's level of dehydration. See assessment guide below.
2. Give fluids according to the appropriate treatment plan. (See next page.)
3. Collect a stool specimen from the first 5 suspected cholera patients that are seen in the health facility.
4. Give an oral antibiotic to patients with severe dehydration.

Assess the patient for signs of dehydration		
A. Look at patient's general condition: Is the patient: (i) lethargic or unconscious? (ii) Restless and irritable? B. Look for sunken eyes. C. Offer the patient fluid. Is the patient: (i) not able to drink, or drinking poorly? (ii) Drinking eagerly, thirsty? D. Pinch the skin of the abdomen. Does it go back slowly or very slowly? (Longer than 2 seconds?)		
Decide if the patient has severe, some or no signs of dehydration and give extra fluid according to the treatment plan		
If two of the following signs are present: E. lethargic or unconscious F. sunken eyes G. not able to drink or drinking poorly H. Skin pinch goes back very slowly	Classify as	**SEVERE DEHYDRATION*** Give fluid for severe dehydration (Plan C)
*In adults and children older than 5 years, other signs for severe dehydration are "absent radial pulse" and "low blood pressure".		
If two of the following signs are present: I. Restless, irritable J. sunken eyes K. drinks eagerly, thirsty L. skin pinch goes back slowly	Classify as:	**SOME DEHYDRATION** Give fluid according to for some dehydration (Plan B)
If there are not enough signs to classify as some or severe dehydration	Classify as:	**NO DEHYDRATION** Give fluid and food to treat diarrhoea at home. (Plan A)

Give antibiotics recommended for treatment of severely dehydrated cholera patients		
Antibiotic	**Children**	**Adults**
Doxycycline ***(****as one single dose)*	–	300 mg[1] *(one single dose)*

[1] *Doxycycline is WHO's antibiotic of choice for adults (except pregnant women) because only one dose is required.*

Tetracycline *(4 times per day for 3 days)*	-	500 mg
Furazolidine *(4 times per day for 3 days)*	1.25 mg per kg	100 mg[3]
Erythromycin[4] *(4 times per day for 3 days)*	30 - 50 mg per kg in four divided doses	500 mg
Chloramphenicol	50mg per kg in four divided doses	500mg

- If the patient vomits while taking fluid, wait 10 minutes. Then allow the patient to resume feeding, but more slowly.
- Continue monitoring the patient and replacing fluid until the diarrhoea stops.
- When the patient is ready to leave the facility, counsel the patient on treating diarrhoea at home.
- Refer to IMCI guidelines for treating children under 5 years of age and to national guidelines for further information on treating acute watery diarrhoea and confirmed **Cholera.**

Plan A: Treat diarrhoea at home

If patients showed no signs of dehydration when they were first assessed, they may be treated at home. Give a 2-day supply of ORS and explain how to take the ORS solution according to the following schedule:

AGE	**Amount of solution after each loose stool**	**Provide enough ORS packets for preparing:**
Up to 2 years	50 to 100 ml after each loose stool	500 ml per day
2 years up to 10 years	100 to 200 ml after each loose stool	1000 ml per day
10 years or more	As much as the patient wants	2000 ml per day

Plan B: Treat some dehydration with ORS

In the clinic, give the recommended amount of ORS over a 4-hour period. Determine the amount according to the patient's weight. Use the patient's age only when the weight is not known.

Determine the amount of ORS to give during the first 4 hours						
Age or Weight	**Up to 4 months**	**4 months up to 12 months**	**12 months up to 2 years**	**2 years up to 5 years**	**5 years up to 14 years**	**15 years and more**
Weight in kg	< 6 kg	6 - < 10 kg	10 - < 12 kg	12 - < 19 kg	19 - 30 kg	30 kg and more

[3] *Furazolidone is WHO's antibiotic of choice for pregnant women.*
[4] *Erythromycin or chloramphenicol may be used when the other recommended antibiotics are not available, or where V. cholerae is resistant to them. Erythromycin is the first line drug for treatment of cholera in children.*

Give this amount of ORS	200 - 400 ml	400 - 700 ml	700- 900 ml	900 -1400 ml	1400-2200 ml	2200-4000 ml

- If the patient wants more ORS than shown, give more.
- For infants under 6 months who are not breast-fed, also give 100-200 ml of clean water during this period.
- Give frequent small sips from a cup.
- If the patient vomits, wait 10 minutes. Then continue giving fluids, but more slowly.
- For infants who are breast-feeding, continue breast-feeding whenever the infant wants.
- Assess patients every 1-2 hours to make sure they are taking ORS adequately and to monitor fluid loss. Completely reassess the patient's dehydration status after 4 hours, and follow the appropriate treatment plan for the patient's dehydration classification.

Plan C: Treat severe dehydration quickly

1. Start intravenous fluids immediately. If the patient is a child and can drink, give ORS by mouth while the drip is set up. Give 100 ml per kg of Ringer's Lactate Solution divided as follows:

For giving IV fluids:		
For **adults** (and patients 1 year and older), give 100 ml per kg IV within 3 hours as follows:	First, give 30 ml/kg as rapidly as possible within 30 minutes	Then, give 70 ml per kg during the next 2 ½ hours
For **patients less than 1 year**, give 100 ml per kg IV in 6 hours as follows:	First, give 30 ml per kg in the first hour*	Then, give 70 ml per kg in the next 5 hours

** Repeat once if radial pulse is still very weak or not detectable after the first 30 ml per kg is given.*

2. Reassess the patient after the first 30 ml per kg, and then every 1 to 2 hours. If hydration status is not improving, give the IV drip more rapidly.
3. Also give ORS (about 5 ml per kg per hour) as soon as the patient can drink. This is usually after 3 to 4 hours for infants and after 1 to 2 hours for patients older than one year.
4. Reassess the patient after 6 hours (for infants) or 3 hours (for one year and older). Classify dehydration. Then choose the appropriate plan (Plan A, Plan B, Plan C) to continue treatment.
5. Give antibiotics recommended for treatment of severely dehydrated cholera patients. See the schedule on the next page.

Instructions for home care

Give patients information about home care before they leave the health facility.

1 If the patient vomits while taking ORS, wait 10 minutes and then continue giving fluids more slowly.
2 Continue breast-feeding of infants and young children.
3 Return for treatment if the patient develops any of the following:

- increased number of watery stools
- eating or drinking poorly
- marked thirst
- repeated vomiting
- fever
- blood in the stool.

2. Give an appropriate oral antibiotic for outbreaks of bloody diarrhoea due to *Shigella dysentariae* type 1.

Source: *Adopted from WHO Guidelines for the control of epidemics due to S. dysentariae type 1. WHO Geneva. 1995*

	NALIDIXIC ACID Give four times daily for 5 days		**CIPROFLOXACIN** Give two times daily for 5 days
WEIGHT	**TABLET (**250 mg)	**TABLET (**500mg)	**TABLET (**250 mg)
Children's dose			
3 - 5 kg	¼ tablet		-
6 - 9 kg	½ tablet	¼ tablet	
10 - 14 kg	*1* tablet	½ tablet	
15 - 19 kg	*1* tablet	½ tablet	
20-29 kg	2 tablets	1 tablet	-
Adult dose	4 tablets	2 tablets	4 tablets

3. Give vitamin A to children with measles

Source: *WHO guidelines for epidemic preparedness and response to measles outbreaks, WHO/CDS/CSR/ISR/99.1*

- Give the first dose in the health facility or clinic.
- Give the mother one dose to give at home the next day.

Age	**Vitamin A capsules**		
	200 000 IU	100 000 IU	50 000 IU
Up to 6 months		½ capsule	1 capsule
6 months up to 12 months	½ capsule	1 capsule	2 capsule
12 months up to 5 years	1 capsule	2 capsules	4 capsules

4. Give appropriate antibiotic for bacterial meningitis cases during an outbreak

Adopted from: Control of epidemic-prone meningococcal disease, WHO practical guidelines, 2nd edition 1998, WHO/EMC/BAC/98.3

1. Admit patient to a health facility for diagnosis and treatment.
2. Start an antibiotic treatment immediately. Intra-muscular injectable oily chloramphenicol is best choice during an epidemic. It is very effective and a single dose is usually effective. If injectable treatment is not possible, give oral amoxicillin or cotrimoxazole or treat with an antimicrobial recommended by national treatment guidelines for meningitis.

3. Patient isolation is not necessary. Provide good supportive care and simplify case management.

Give a single dose of oily chloramphenicol

AGE	**INTRAMUSCULAR OILY CHLORAMPHENICOL** 100 mg per kg in a single dose If the patient has not improved, give a second dose 24 to 48 hours later.	
	Dose in grams	**Dose in millilitres**
Adult: Age 15 years and older	3.0 g	12 ml
Child: 10 to 14 years	2.5 g	10 ml
6 to 9 years	2.0 g	8 ml
3 to 5 years	1.5 g	6 ml
1 to 2 years	1.0 g	4 ml
2 to 11 months	0.5 g	2 ml
1 to 8 weeks	0.25 g	1 ml

See next table for other recommended antibiotics.

(This section to be checked for dose and duraton of treatment)

Other recommended antibiotics to treat meningitis

Agent	Route	Dose for adults	Dose for children	Duration of treatment
Penicillin G	IV	3-4 MU daily every 4-6 hours	400 000 Units per kg	10-14 days
Amoxicillin	IV	2-3 g daily every 6 hours	250 mg per kg	10-14 days
Chloramphenicol	IV	1 g every 8-12 hours	100 mg per kg	10-14 days
Chloramphenicol (oily)	IM	Single dose 3 g	single dose - 100 mg per kg	1-2 days
Cefotaxime	IV	2 g every 6 hours	250 mg per kg	10-14 days
Ceftriaxone	IV	1-2 g over 12-24 hours	50-80 mg per kg	10-14 days
Ceftriaxone	IM	1-2 g single dose	50-80 mg per kg	1-2 days

ANNEX 21: SETTING UP OF A TEMPORARY TREATMENT CENTRE

Infectious diseases can spread easily and rapidly where people reside in congested and unsanitary conditions. A treatment centre can be a major source of infection. Patients contaminate the environment and all articles used in their care can be a major source of contamination. Many friends and relatives visit the sick and may also contract diseases from the patients.

Management of outbreaks of infectious diseases requires appropriate isolation to prevent accidental nosocomial transmission of infection. A temporary treatment centre should be opened if there is no existing health facility.

The Site

A suitable site for a temporary treatment centre should be within the locality where cases of an infectious disease are occurring. The centre should be away from the community market or a place with major community activities. A safe distance allows for privacy and reduces chances of accidental contamination. It should also be sited where it cannot contaminate the community water supply – consider the following: -

- Good access – road, telephone, and electricity where these facilities are available.
- Water supply – Adequate and reliable water supply is essential for the required cleaning.

  - Availability of treated water or the possibility of treating water is essential.
- Existing infrastructure – consider an existing building that can be converted into a temporary treatment centre at minimal cost.
- Good drainage and safe disposal of general and medical wastes from a temporary treatment centre.
- Availability of toilets /bathrooms - or where temporary structures can be developed quickly and at modest costs.

Organization of a Temporary Treatment Centre

1. A temporary treatment centre should have a perimeter fence to prevent free flow of people.
2. Control human traffic by use of ropes and only allow guided flow so that as people enter or leave a temporary treatment centre they disinfect their feet/shoes in a footbath.
3. Use volunteers or support staff to guide and control human traffic.
4. Create critical sections or rooms for smooth organization of activities. The following are essential:

- Admission area requires the following:
  - Facilities for resuscitation
  - Facilities for history taking and examination of patients
- The acute care room/area where patients who are in acute stage or in a collapsed state are admitted and treated.
- Admission room where patients are admitted after they are stabilized for continued medical care.
- Utility room for decontaminating articles before they are sent for cleaning or laundering.
- Procedure room – Where equipment for procedures are prepared from and supplies are stored.
- Dead bodies room, where dead bodies should be disinfected before disposal.
- Staff Room – this is a room where health workers can rest or take refreshments.
- Patient and Relative Education area
  - All patients and their relatives should be taught about the disease e.g. cholera, how it is contracted and prevention.
  - Individual and group counselling can also take place here.
  - Educational demonstrations are done here

NB

At every doorway in a temporary treatment centre there should be a footbath with 0.2% chlorine solution for disinfecting the shoes/feet especially when dealing with a highly contagious condition (see annex 23 for details on preparation of disinfectant solutions)

Chlorine Concentration	**Uses**
2% solution	• Disinfect vomitus, faeces blood spills and latrines toilets • Washing dead bodies
0.2% solution	• Disinfect floors • Spraying of homes of cholera patients (floors, beds,

Chlorine Concentration	Uses
	latrines) • Spraying of beds • Footbaths in all entrances in/out of a temporary treatment centre (Solution changed daily) • Disinfect clothes by soaking for 10 minutes. Clothes are rinsed and washed afterwards.
0.05% solution	• Washing of hands and skin • Rinsing dishes
0.0001% solution	• For disinfecting drinking water.

Common Varieties of Chlorine Compounds in Kenya

Jik - Sodium hypochlorite solution

Aquatab - Chlorine tablets

Bleaching Powder - Lime of chlorine (Calcium, hypochlorite)

ANNEX 22: PREPARING DISINFECTANT SOLUTIONS BY USING DIFFERENT CHLORINE PRODUCTS

During a response to an outbreak of any disease transmitted through direct contact with infectious body fluids (blood, urine, stool, semen, and sputum for example), an inexpensive system can be set up using ordinary household bleach.

The following table describes how to make 1:10 and 1:100 chlorine solutions from household bleach and other chlorine products.

Use this chlorine product	**To make a solution for disinfecting**: -- *Excreta* -- *Cadavers* -- *Spills of infectious body fluids*	**To make a 1:60 solution for disinfecting:** -- *Gloved hands* -- *Bare hands and skin* -- *Floors* -- *Clothing* -- *Equipment* -- *Bedding*
Household bleach 3.5% active chlorine	1 part bleach plus 5 parts of water	1 part of bleach solution plus 59 parts of water
Household bleach 4.5% active chlorine	1 part bleach per 7 parts of water (1:8)	100 ml per 10 litres of water, or 1 litre of 1:10 bleach solution per 9 litres of water
Calcium hypochlorite powder or granules 70% (HTH)	7 grams or ½ tablespoon per l litre of water	7 grams or ½ tablespoon per 10 litres of water
Household bleach 30% active chlorine	16 grams or 1 tablespoon per l litre of water	16 grams or 1 tablespoon per 10 litres of water

To disinfect clothing:

- Promptly and thoroughly disinfect patient's personal articles and immediate environment using one of the following disinfectants:
  - Chlorinated lime powder
  - 2% chlorine solution
  - 1% to 2% phenol solution

- Promptly and thoroughly disinfect patient's clothing:
  - Wash clothes with soap and water
  - Boil or soak in disinfectant solution
  - Sun dry
  - Wash utensils with boiling water or disinfectant solution
  - Do not wash contaminated articles in rivers or ponds that might be sources of drinking water, or near wells.

ANNEX 23: PLANNING AN EMERGENCY IMMUNIZATION ACTIVITY

1. Specify the target population for the immunization activity.
2. Estimate the necessary amounts of vaccine, diluents, and immunization supplies such as sterile syringes and sterile needles, and safety boxes, (See the worksheet in Annex 25)
3. Choose the immunization sites and inform the community.
   Coordinate with the EPI or disease control programme in your district to identify sites for conducting the immunization activity.
   - Identify the facilities that can participate in the activity
   - Identify a mobile vaccination team, if needed.
   - Determine if there are any hard-to-reach areas, e.g. a transient workers' camp. Identify a mobile vaccination team to reach these areas.
   - Contact the facilities and schedule the immunization sites.
   - Contact the national level for vaccine. If a national reserve stock is not available, the national EPI programme manager will request an emergency supply from WHO.
   - Make sure there is enough capacity to store extra amounts of the vaccine during storage and transportation to the immunization site.
4. Select vaccinator teams. For every 100 to 150 people expected at the immunization site, the following staff is required:

   - 1 to 2 vaccinators to give immunizations
   - 1 recorder to record on immunization cards
   - Volunteers to verify age and vaccination status.

5. Work with KEPI and DOMU to conduct refresher training for vaccinators on recommended immunization practices. See Annex 26 for recommended immunization practices.
6. Mobilize the community. Inform the public about the emergency immunization activity.
7. Arrange transportation to the immunization site.

   - Plan their transportation to and from the site
   - Schedule vehicles and plan for fuel and other costs.
   - Estimate per diem costs and make necessary arrangements for lodging if the site is away from the health worker's usual station.

8. Monitor the number of immunizations given.

ANNEX 24 ESTIMATING VACCINE SUPPLIES FOR IMMUNIZATION ACTIVITIES[5]

Outbreak: _____ ***Date confirmed***: _____

Target population:

___ children age 0 up to 5 years
___ children age 9 months up to 14 years
___ children and adults age 0 up to 30 years
___ women of childbearing age - 15 years up to 49 years
___ all adults and children in the general population

1. Calculate the size of the target population. If the activity only targets a proportion of the general population, estimate the size of the target population. Multiply the general population times the percentage of children or adults in the target population. If you do not know the exact age distribution rates in your area, use recommended estimates such as the following:

--	children age 0 up to 5 years	17%
--	children age 9 months up to 14 years	46%
--	children and adults age 1 up to 30 years	70%
--	women of childbearing age 15-49 years	24%

2. Find out how many doses each person should receive. Record the number below as "number of doses recommended".
3. Allow for wastage. Use a wastage factor of 20%. Multiply the size of the target population (see step 1) times the number of doses times 1.20.

_____	x	_____	x	1.20	=	_____
Size of target population		*Number of recommended doses*		*wastage*		*Number of doses to order including wastage*

4. Allow for a reserve stock. Use a reserve factor of 25%. Multiply the estimated number of doses including wastage times 1.25 to obtain the total estimated number of doses.

_____	x	1.25	=	_____
Number of doses		*Reserve factor*		*Total number of estimated doses including wastage*

[5] *Source: Field Guide for Supplementary Activities Aimed At Achieving Polio Eradication, World Health Organization, Geneva 1997*

District guidelines for yellow fever surveillance, Division of Emerging and other communicable disease surveillance and control, World Health Organization, Geneva 1998

5. To obtain the total number of vials of vaccine to order, divide the total number of estimated doses by the number of doses that are contained in the vial. (This is usually printed on the label.)

_____	÷	_____	=	_____
Total number of estimated doses		*Doses per vial*		*Total number of vials required*

6. If the vaccine requires a diluent, multiply the number of millilitres of diluent per vial times the total number of vials required.

_____	x	_____	=	_____
Diluent required per vial		*Total number of vial*		*Total diluent to order*

7. Estimate the number of sterile needles and syringes that will be needed to carry out the activity. If single-use needle and syringes are used, order the same amount as for the estimated number of doses in Step 4.

8. Estimate the number of dilution syringes necessary for preparing the vaccine.

ANNEX 25: RECOMMENDED IMMUNIZATION PRACTICES

Work with KEPI and DOMU to give refresher training to the vaccination teams that will conduct the emergency immunization activity. At a minimum, make sure vaccination teams know how to:

1. Reconstitute the vaccine correctly:
-- Determine the appropriate quantity of diluent to reconstitute the freeze-dried vaccine.
-- Use a sterile syringe and sterile needle.
-- Draw up and expel the diluent several times in the vial that contains the vaccine.

2. Wrap the vial in silver foil or cover it with a dark cloth. This will protect the vial from sunlight.

3. In a field situation, protect the vaccine and diluent from contamination. Cover the open top of the vial with foil to keep out dirt and flies.

4. Place the vaccine immediately on frozen ice pack. Keep the ice and vaccines in the shade all the time.

5. Follow national policy for reusing opened vials. Note that reconstituted measles vaccine **MUST** be discarded after **SIX** hours.

6. Record the dose on an immunization card for each person immunized, if it is national policy to require vaccinated persons to have a card.

7. Collect data for monitoring the activity. For example, record the number of doses given on a tally sheet so that coverage from the campaign can be calculated.

8. Remind health workers about the risk of getting blood-borne diseases from an accidental needle stick. Review safe practices for handling and disposing of sharp instruments and needles.

9. Arrange for safe disposal of used injection materials at the end of the activity. They can be burned or buried in a pit.

10. Give instructions for use of injection techniques. Review with health staffs the need to plan vaccination campaigns.

ANNEX 26: SAMPLE MESSAGES FOR COMMUNITY EDUCATION

Improve hand washing:

Hand washing with soap may be the most effective way to prevent transmission of some organisms causing infectious diseases. For that reason, promote hand washing in every family. Hand washing is particularly important after defecation, after cleaning a child who has defecated, after disposing of a child's stool, before preparing or handling food and before eating.

Hand washing is practised more frequently where water is plentiful and within easy reach. If possible, water for washing should be stored separately from drinking water. During an epidemic, soap should be provided to those without it. If soap is not available, ash or earth can be used to scrub the hands. Do not dry washed hands with dirty cloths. Air-dry wet hands.

Message:

ARE YOU PROTECTED FROM DYSENTERY (bloody diarrhoea)?
Washing your hands protects yourself and others from disease.

Always wash with running water:

- after visiting the toilet
- after cleaning a child who has defecated
- after disposing of a child's stool
- before and after eating
- before preparing or handling food.

Message:

ARE YOU READY FOR HAND-WASHING?
Do you have?

- Clean water
- Soap (or if you do not have soap, use ash or sand to scrub your hands)

Safe handling of food

Encourage the following food safety practices:

- Do not eat raw food, except undamaged fruits and vegetables that are peeled and eaten immediately.
- Cook food until it is hot throughout
- Eat food while it is still hot, or reheat it thoroughly before eating
- Wash and thoroughly dry all cooking and serving utensils after use
- Keep cooked food and clean utensils separate from uncooked foods and potentially contaminated utensils
- Wash hands thoroughly with soap and clean running water before preparing food, eating and after visiting the toilet.
- Protect food from flies by covering or any other method.

Message:

DO YOU PREPARE FOOD SAFELY?

Cooking kills germs

- Thoroughly cook all meats, fish and vegetables
- Eat cooked meats, fish and vegetables while they are hot.

Washing protects from disease

- Wash your hands before preparing or serving food
- Wash your dishes and utensils with soap and hot water
- Wash your cutting board especially well with soap.
- Wash your fruits and vegetables before eating

Peeling protects from disease

- Only eat fruits that have been freshly peeled (such as bananas and oranges)

KEEP IT CLEAN: COOK IT, PEEL IT, OR LEAVE IT.

Safe disposal of human waste

High priority should be given to ensuring the safe disposal of human waste at all time, and especially during epidemics of diarrhoea. Sanitary systems appropriate for local conditions should be constructed with the cooperation of the community.

Community messages should emphasize

- Everyone should use latrines properly, including children
- Transfer children's excreta with a scoop or shovel to the latrine or bury in a hole.
- Avoid defecating on the ground, or in or near the water supply.
- Where there is no latrine use the cat method for excreta disposal.

When large groups of people congregate, as for fairs, funerals, or religious festivals, ensure the safe disposal of human waste. If there is no latrine, designate areas for defecation and provide a jembe/shovel to bury the excreta.

Message:

ARE YOU PROTECTED FROM DYSENTERY (bloody diarrhoea)?
DO YOU USE A TOILET OR LATRINE?

Germs that cause dysentery live in faeces. Even a person who is healthy might have dysentery germs.

- *Always use* toilet or latrine. If you don't have one – build one!
- Keep the toilet or latrine *clean*
- *Wash your hands* with soap (or ash) and clean running water after using the toilet or latrine.

KEEP IT CLEAN: USE A TOILET OR LATRINE

Clean and Safe drinking water and storage

Community drinking water supply and storage

1. *Piped water.* To maintain safety, properly chlorinate piped water. To prevent entry of contaminated groundwater into pipes, repair leaking joints and maintain constant pressure in the system.

2. *Exposed water source* (a river, pond, or open well). If these sources are used for drinking water, fence around them to protect from contamination by people and animals. Dig drainage ditches to prevent storm water and other surface water from flowing into the drinking water source. Do not allow defecation within 30 meters of the water source, and should be downhill, or downstream, from it.

3. *Closed wells*. Equip with a wellhead drainage apron, and with a pulley, windlass, or pump.

4. *Trucked in*. If locally available water is likely to be contaminated, drinking water should be supplied by tankers or transported in drums, if it is adequately chlorinated and a regular supply can be ensured. The trucking of water, however, is expensive and difficult to sustain; it is usually considered a short-term measure until a local supply can be established.

Home drinking water storage and treatment

When the safety of the drinking water is uncertain, it should be chlorinated in the home or boiled.

To prevent contamination of drinking water, families should store drinking water using one of the following types of containers:

1. *Covered containers* that are cleaned daily and kept away from children and animals. Water should be removed from the containers using a long-handled dipper, kept specially for this purpose.
2. *Narrow-mouthed containers* with an opening too small to allow the insertion of a hand. Water should be removed by pouring from the opening or by a spigot.

Water used for bathing, washing and other purposes other than drinking need not be treated and should be stored separately from drinking water.

Safe disposal of bodies

The body fluids of persons who die due to diarrhoea or a viral hemorrhagic fever are still infectious. Use extreme caution when preparing the bodies of suspected cholera or viral hemorrhagic fever patients.

- Disinfect bodies using 2% chlorine solution
- Pack bodies in plastic body bags before burial.
- Hold funerals of persons quickly and close to the place of death.
- Discourage washing of dead bodies
- Discourage distribution of food during funerals

Reducing exposure to mosquitoes

Personal Protection:

- Use insect repellents
- Use nets/materials, impregnated with insecticide
- Tuck the lower edge of the net under the bedding
- Wear long sleeved tops and trousers in the evenings and when outdoor at night.

Section 6
PROVIDE FEEDBACK
Section 6Provide feedbackSection 6Provide feedbackSection 6Provide feedbackSection 6Provide feedbackSection 6Provide feedbackSection 6Provide feedbackSection 6
Provide feedback

This section describes how to:

- Write an outbreak response report
- Develop information sheets summarizing data and its interpretation
- Develop and distribute a public health bulletin
- Develop district newsletters, fact sheets and reports

6.0 INTRODUCTION

Health facilities or districts should report surveillance data to the next level as required. However, if the facilities or districts do not receive feedback on how the data was used or what the data meant, health workers may think that their reporting was not important. As a result, future reporting may not be as reliable because health workers will not know if the information they sent to other levels was useful or necessary. They will have a good understanding of the health situation at their own level, but they will not know or understand the situation at the other levels.

When the district, province or national managers receive data, they should respond to the levels that reported it. The purpose of the feedback is to encourage and reinforce health workers efforts to participate in the surveillance system. Another purpose is to raise awareness about certain diseases and any achievements of disease control and prevention projects in the area.

Feedback may be written, such as a monthly newsletter, monthly reports, annual reports or it may be given orally, for example, during supervisory visits or at staff meetings.

This section focuses on district level feedback. But the information can also be applied in health facility, provincial and national levels.

6.1 WRITE AN OUTBREAK RESPONSE REPORT

After an outbreak response has taken place, epidemic response team that led the investigation need to prepare a report. An example of a recommended report is in the Annex 27 at the end of this section. Use a copy of the report as feedback to the health levels that reported the cases in the first place.

6.2 DEVELOP INFORMATION SUMMARY SHEETS 6.2 DEVELOP INFORMATION SUMMARY SHEETS6.2 DEVELOP INFORMATION SUMMARY SHEETS6.2 DEVELOP INFORMATION SUMMARY SHEETS6.2 DEVELOP INFORMATION SUMMARY SHEETS6.2 DEVELOP INFORMATION SUMMARY SHEETS6.2 DEVELOP INFORMATION SUMMARY SHEETS

An information summary sheet is a report that presents data and its interpretation in a table or other graphic format. For example:

- At a staff meeting, or during a supervisory visit, give a verbal report or comment about the data that were reported by the health facility during a given period of

time. Display the data in a simple table. Sit with the health staff and show them the data. Discuss the likely conclusions that can be drawn from the data they have seen. Consider conclusions not only for the health facility, but also for the district as a whole.

- Prepare a single sheet with a simple table that shows how the data reported for this period are different from the data reported for some other period or target population. For example, show the number of cases of diarrhoea with dehydration in children less than 5 years of age from the same period last year. Compare them with a corresponding period this year when an intervention project was instituted, e.g. after a water catchment protection project was implemented in a high-risk area.

- Use the summary sheets to support requests made to higher levels for additional funds, supplies and other resources.

6.3 DEVELOP AND DISTRIBUTE A PUBLIC HEALTH BULLETIN/NEWSLETTER

In many countries or international regions, the national level or region publishes a public health bulletin on a regular basis. Kenya shall be publishing a quarterly national public health bulletin. The bulletin will have a wider audience than just the health staff at a particular health level.

The bulletins will contain at least:

- a summary table showing the number of reported cases and deaths to date for each priority disease
- a commentary or message on a given disease or topic.

The national public health bulletin will be sent to the Provincial Medical Office for distribution to all the other health care levels. At each level the bulletin will be circulated widely and strategically displayed for all to see. A copy of the bulletin shall be used during supervisory visits to show health staff how the data they report contribute to the improvement of public health.

6.4 DEVELOP A PROVINCIAL/ DISTRICT NEWSLETTER

Provinces and districts will be encouraged to publish a periodical newsletter covering topical issues in the regions. The purpose of this public health newsletter will be to present facts in a limited format and time frame. It will be used to inform and motivate health workers.

The target audience for the newsletter will be health staff in the district or province. The newsletter will be 2 to 4 pages long and produced simply with a computer-entered or typewritten text.

The following are examples of articles or summary of articles that could be presented in a newsletter.

- Summary of national, provincial or district data for a given priority disease
- Report of progress towards a specific public health target
- Report of a specific achievement towards public health by an individual heath worker or a group of health workers.
- Description of special events or activities for example World AIDS Day.

6.5 DEVELOP FACT SHEETS

Fact sheets are brief summaries of 1 to 2 pages. They will be prepared by health staff at national, provincial and district for the general public. They usually deal with a single topic or message. For example, the district would like to give the community information about a typhoid fever outbreak. The fact sheet states the steps for hand washing and clean food preparation in addition to a table with the number of cases and deaths. These sheets will be fixed on notice boards or distributed to community groups that are planning health education campaigns.

6.6 ACCESS OTHER METHODS FOR PROVIDING FEEDBACK

Feedback may be provided through various methods including:

- Talking to staff during supervisory visits and at meetings of various health professional bodies.
- Reaching staff electronically through e-mail at district and the provincial levels (provide provinces and districts with e-mail facility)
- Providing guidelines and technical manuals to the provinces and districts.
- Respective responsible officers should carry out briefing at national, provincial and district level.
- Providing health education materials to the provinces and district for priority disease and conditions.
- Talking to communities through public barazas and other forums.

ANNEXES TO SECTION 6

ANNEX 27 Sample district outbreak report framework

ANNEX 27: DISTRICT OUTBREAK REPORT FORMAT

1. Disease/Condition _____

2. Period _____

3 Place –Province ---------- District---------- Division----------

Location---------- Sub-Location----------Village----------

4. Executive summary:

5 Introduction:

Background:

Reasons for investigation
(public health significance,
threshold met, etc.)

Investigation and
outbreak
preparedness:

6 Methods:

Dates of investigation:

Site(s) of investigation (health care
facilities, villages, other):

Case finding (indicate what was done
regarding case finding, e.g., register
review, contact investigation, alerting
other health facilities, other)

Lab specimens collected:
Describe response and
intervention (include dates):

7 Results:

Date and location of first known (index) case: Date and health facility of first case seen by the health care system
Results of additional case finding:
Lab analysis and results:
With text, describe key features of results
of time, place, and person analysis
For detailed results by time (epidemic curve),
place (map), and person characteristics
(table) and line list (refer to section 3 for details)

Results of response and evidence of impact.

Interpretations, discussion, and conclusions:

Recommended public health actions: Comment on following levels: community, health facility, district, partners, provincial, and national

District Medical Officer of Health: _____
Name Signature

Date report completed: _____

SECTION 7

EVALUATE AND IMPROVE SURVEILLANCE AND RESPONSE

- Monitor the quality of surveillance activities at the district level
- Report timeliness and completeness to other levels
- Identify targets and indicators
- Supervise surveillance and response activities
- Take action to improve surveillance in next year's plan.

7.0 INTRODUCTION

Section 3 of these guidelines describes how the health staff responsible for surveillance at the health facility and at the various levels of health system will review and analyse the data reported each month. They will make conclusions each month about:

- Timeliness and completeness of reporting, and
- How well routine prevention and control activities are taking place so that when problems are detected, districts and other levels will respond with appropriate action.

The same information will also be used to monitor and evaluate the quality of:

- Immediate reporting i.e. Disease outbreak and Case-based disease reporting
- Reporting of summary data on a routine basis

Note: Evaluating outbreak investigations and response are described in Section 5.5 and Annex 28.

When improvements have been made to the disease surveillance system at your level, and the new activities have become routine, evaluate the system every year. During the evaluation, determine whether:

- The surveillance objectives are being met
- Surveillance data are used for action
- The improved surveillance has had an impact on health events in the health system.

The information in this section will describe how to routinely monitor and annually evaluate the performance of the surveillance system and specific disease control and prevention programmes.

7.1 MONITOR THE QUALITY OF THE SURVEILLANCE SYSTEM

An important indicator of a quality reporting system is to measure its timeliness and completeness. When reports are sent and received on time, the possibility of a prompt and effective response is greater. Completeness of reporting describes whether all the reporting sites have reported as expected. If reports are late, or are not submitted, the aggregated information for the district (or other administrative area) will not be accurate. Outbreaks can go undetected, and other opportunities to respond to identified problems will be missed.

A confirmed outbreak needs to be monitored. The procedure involves among others, review of the line listing for summarising time, place and person analysis, epidemiological

curve, spot maps and analysis of tables for risk factors, age groups, sex, immunization status and so on.

During an outbreak the District Epidemic Response Team will meet at least once a day to review updated data and decide the status of the epidemic, whether the interventions are working including constraints and facilitating factors. Solutions should then be sought and a report written. A copy of the report should be sent to the provincial and national level. The Provincial Epidemic Preparedness team should also meet regularly.

During epidemics of national concern e.g. Viral Haemorrhagic Fevers, the National Epidemic Preparedness and Response Team should also meet daily to monitor the situation and act accordingly. They should assist the district in resource mobilisation, policy development, provide technical support and develop appropriate IEC material relevant to the disease or condition.

7.1.1 Identify targets and indicators

Measuring indicators is a method for determining the extent of achievement for a particular program or activity. The achievement is compared to overall recommended standard quality practices. It can also measure progress towards implementing an overall program target. For example, a district may have as its goal the achievement of 100% completeness of reporting by a certain period. An indicator can be developed to measure the proportion or percentage of facilities that are reporting. This proportion is then compared with the desired goal or target, and can be used to evaluate progress and, therefore, the quality of the service or activity.

List possible indicators to measure surveillance performance at your level. These may be indicators that relate to national goals, or to specific plans for improving integrated surveillance and response activities. Select the indicators that are most relevant to the health level's plan for improving surveillance, and that will provide information that can be used. District indicators are provided on the next page.

Table 7.1: District-level indicators for monitoring quality of surveillance and response at the health facility

Domain or function of surveillance	***Indicator: Regularly monitor the number of health facilities that:***
Identify and record suspected cases	• Have a clinical register • Correctly record information in the register
Confirm suspected cases	• Have access to a functioning laboratory that can reliably process specimens (sputum, stool, blood, serum, cerebral spinal fluid, for example) for confirmation of priority diseases. • Safely collect and properly package specimens for transport to higher level laboratory • Submit specimens of priority diseases for confirmation in a timely way
Review and analyse data	• Keep up-to-date trend lines for each selected priority diseases • Have detected a new epidemic • Have an action threshold for each priority disease
Report data	• Report case-based information for immediately reportable diseases • Have a reliable supply of reporting forms • Accurately record case register data on summary report forms • Submitted reports on time to the district during last 3 months • Submitted required number of reports during last 3 months
Respond to outbreak thresholds and analysis results	• Used local information to conduct a community disease prevention and control activity during the last 12 months. • Implemented prevention and control measures based on local data for at least one epidemic-prone disease
Provide feedback	• Received a bulletin or report from district or other level about data health facility reported to other levels during the year • Met with community members to discuss investigation results during last 3 months.
Maintain readiness for epidemic response	• Use standard case management protocols for priority diseases • Use a minimum level of standard precautions with all febrile patients regardless of infection status • Maintain an emergency stock of urgent drugs and treatment supplies for responding to epidemic-prone diseases seen previously in the area.
Supervision	• Use a supervision checklist for surveillance during supervisory visit at least once in last 3 months
Training	• Conducted training for health staff on one or more of following topics in last 12 months: using case definitions, handling specimens safely, collecting and reporting data, analysing and interpreting trends, using thresholds for action, supervisory skills.

Domain or function of surveillance	*Indicator: Regularly monitor the number of health facilities that:*
Resources	• Have reliable transportation methods, with fuel source as needed (bicycles, motorcycle, vehicle, fuel) • Have access to reliable communication methods (telephone, facsimile, radiophone, electronic mail, others) • Have supplies for carrying out outbreak investigations • Have funds for implementing response actions • Have appropriately trained manpower in IDSR

7.1.2 Select data for measuring the indicators

After you have selected relevant indicators, specify the numerator and the denominator. For example, a district has as its objective to have all health facilities keep trend lines in an analysis workbook for the selected priority diseases. The analysis workbooks are monitored during supervisory visits.

Indicator: The proportion of health facilities in the district that keep trend lines for priority diseases.

Numerator: The number of health facilities that keep trend lines for priority diseases.

Denominator: The number of health facilities in the district.

7.1.3 Monitor and evaluate detection of immediately reportable diseases

Monitor and evaluate the interval between the onset of the first known case and when the first case was seen in the health facility. This delay in the use of health services is one of the factors in the evolution of the illness, and, therefore, its prognosis.

Other intervals to monitor for detection of immediately reportable diseases include monitoring reporting from the community to the health facility (within 48 hours of onset of illness), from the health facility to the district (within 24 hours) and from the time the threshold is reached to a concrete response (Refer to annex 28b).

7.1.4 Monitor timeliness and completeness of monthly reporting

Routinely monitor the receipt of reports to evaluate the timeliness of reporting and the completeness of the information. Use a monitoring tool such as a record of reports received to monitor timeliness and completeness of reporting at your level. A sample form for recording timeliness of reporting is in Annex 29 at the end of this section. The reports from the facilities should reach the districts by 5th of the following month; districts to provinces by 14th and the provincial reports should reach the national level by 21st of the following month.

If you routinely record and review the dates on which reports are received, the effectiveness of the system can be assessed easily each month during the analysis of routine and case-based data. For example, use the record of reports received at each level to:

- Measure how many reporting facilities /sites submitted reports for a given month
- Identify which reporting facilities/sites have reported
- Measure how many reports were submitted on time.
- Identify and follow up facilities/sites, which have not reported.

7.1.5 Identify problems and take action

If the monitoring information shows that a health facility or any other reporting site has not provided a report, or if the report is not on time, contact the surveillance focal point at the facility. Work with the designated staff to identify what has caused the problem and develop solutions together. For example:,

- find out if health staff have a reliable supply of forms for reporting the required information
- there may be a new staff at the facility who does not know the procedure for reporting
- health staff are not motivated to send the reports because they do not think it is important and do not have resources to take action.

Make plans with the reporting unit to find solutions for improving the situation. Explain that when information is complete, the district can assist health staff more efficiently with planning responses and carrying them out. For example, if lack of supplies is a problem, the district can use the reporting information to advocate with higher levels in the system.

7.1.6 Report timeliness and completeness to other levels

When routine reports of the number of cases are sent to the district, provincial and national levels also send the data for timeliness and completeness. This will help the other levels understand the situation more clearly and evaluate the quality of the data that is being sent. For example, if the report to the national level states that two cases of measles were detected during the month, it should also include information about the number of health facilities that reported. It will make a difference to the other levels when they evaluate the information if the 2 cases occurred with only 20% rather than 100% of the facilities/sites reporting. The report on timeliness and completeness should be used during supervisory visits at each level.

7.2 CONDUCT SUPERVISION

Supervision is a process of helping health staff to improve their work performance. Supervision is not an inspection. Good supervision aims at supporting and sustaining good quality services rather than finding things that are wrong.

In a good system, supervisors and health professionals work together to review progress, identify problems, decide what has caused the problem and develop feasible solutions.

7.2.1 Improve job descriptions to include surveillance tasks relevant to each category of health staff

Job descriptions are the basis for conducting supervision and assessing performance. Review the job descriptions of health staff who have a role in the surveillance and response system. Make sure that the job description states:

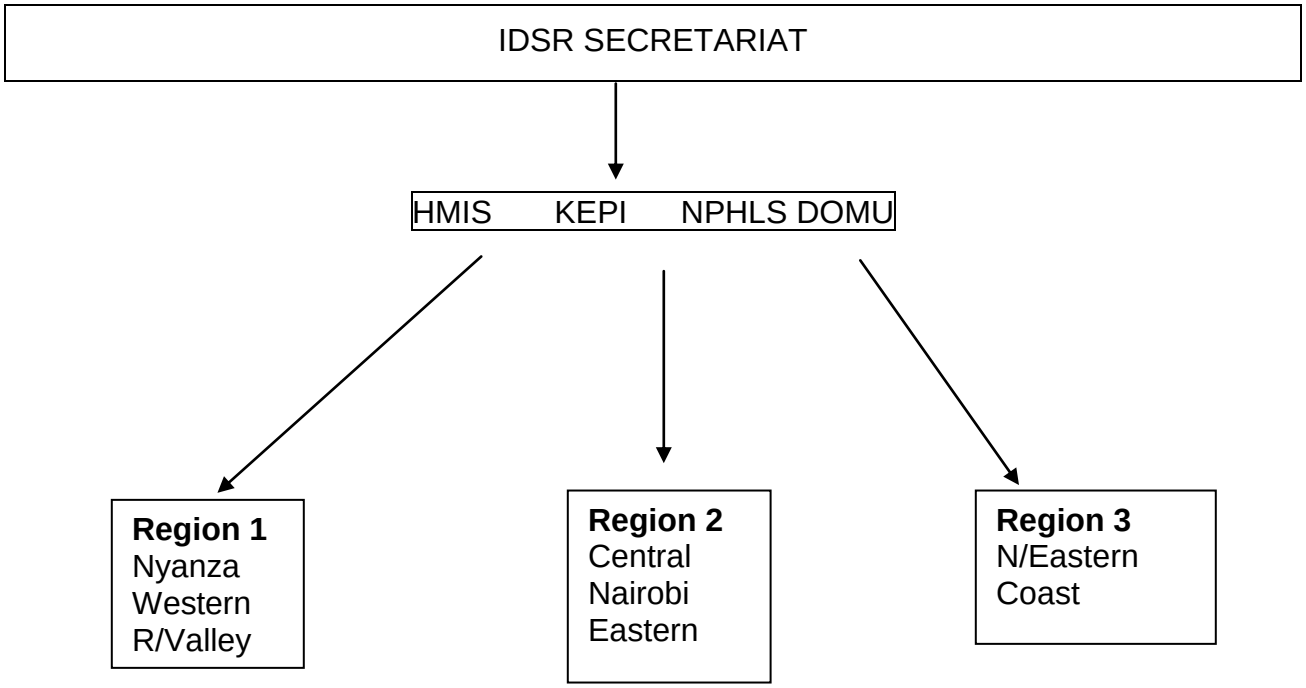
- The surveillance tasks the specific category of health staff should perform
- To whom the health staff report
- Other health staff that are supervised by the specific category or person.

7.2.2 Prepare a supervision plan

The national level will carry out supervisory visits to provinces quarterly. For reasons of integration and efficiency, teams should be formed by persons from Disease Outbreak Management (DOMU), Health Management and Information System (HMIS) and Kenya expanded Programme on Immunization (KEPI). Each team will be trained in IDSR and make supervisory visits to the provinces. Supervisory teams will be created to cover three regions so as to synchronise and integrate their activities with the WHO/IDSR officers. The teams will also liase and work with the Provincial Integrated Disease Surveillance and Response Teams (PIDS&RTs) in their respective provinces. Region one will include Rift valley, Nyanza and Western provinces, Region two, Nairobi, Central and Eastern Provinces and Region three North Eastern and Coast provinces.

These supervisory teams will be visiting the same Provinces for continuity, consistency and enhanced feedback. PIDS&RTs already exist at the provincial level who with the support of WHO already carry out supervisory visits on disease surveillance in the provinces on monthly basis. The diagram below illustrates the aforementioned.

Fig.7.1: ORGANISATIONAL STRUCTURE FOR IDSR SUPERVISION



The Districts will supervise the lower levels under their jurisdiction monthly through the existing DHMT structures. To be able to perform these tasks, districts should be empowered financially, logistically and technically since they are strategically placed in disease surveillance and response systems.

Disease surveillance and response targets in the overall plan for supervision at your particular level should include:

- a schedule of the supervisory activities you will conduct over the year. At each visit the previous supervisory report should be carried along as feedback and follow up.

- transport for supervisory visits and for surveillance activities that require transportation. For example, coordinate travel or logistics for surveillance supervisory visits with visits made by other programs or activities.

- other reporting sites in supervision of district surveillance activities such as private clinics, mission and NGO health facilities and community reporting sites in the overall plan.

Identify and obtain other necessary resources for supervision e.g. GOK allocations, cost sharing and contributions from partners at each level of health care.

7.2.3 Conduct supervisory visits

Begin regularly scheduled supervision at your level to ensure that:

- Health workers know how to identify and use standard case definitions to record suspected cases of priority diseases seen in their health facility.
- Priority diseases are recorded in the case register according to the case definition.
- Some data is analysed in the health facility to identify thresholds to take action both for routinely reported priority diseases (disease of public health importance) and case-based diseases (epidemic prone diseases, and diseases targeted for eradication or elimination).
- Reported cases of diseases for which a single case is a suspected outbreak are investigated promptly.
- Response takes place when outbreaks are confirmed, or when problems are identified in routine reporting.
- Response actions are monitored and action is taken by the different levels of the health system to improve surveillance actions and readiness for outbreak response.

Make sure during the visit to:

1. Provide feedback to health staff during each visit. Let the health staff know what is working well. Also give feedback on how the data reported previously was used to detect outbreaks and take action to reduce illness, mortality and disability in the district. If improvements are needed, discuss solutions with the staff.
2. Provide on-the-job training as needed if a problem is identified. For example, during a review of the analysis workbook, the supervisor noted that case fatality rates were not calculated correctly. The supervisor met with the health staff that do the calculation and reviewed the steps for calculating the rate with the staff.
3. Follow up on any request for assistance such as for emergency response equipment or supplies.
4. If a solution to a pre-existing problem was identified in a previous visit, check to see how well the solution has been implemented. Find out if problems are still occurring and modify the solution if necessary.

7.2.4 Use a supervisory checklist

Each health facility has unique problems and priorities that require specific problem solving and corrections. To maintain the positive motivation of the health facility staff for making the improvements, consider developing a graduated checklist to guide the supervisory visit. The items listed in a graduated checklist[6] (see Annex 31) are selected based on what has been achieved so far at the health facility. For example, when the facility has achieved one objective (using standard case definitions consistently, for example), work with health facility staff to include the next indicator or item for monitoring performance (using thresholds for action, for example). Revise the supervisory checklist accordingly. Use it during future visits to help health staff monitor their activities and progress towards an improved system.

During the visit, use a checklist to monitor how well health workers are carrying out the recommended surveillance functions. For example, a member of the District Disease Surveillance Team visiting a health facility for supervision visit should verify the following:

Identify and Register cases –

a) Check in the clinic register to see if the diagnoses correspond to the recommended case definitions.
b) Check the register to see if all the columns are filled out correctly.

Confirm cases - Compare the laboratory records for priority diseases with the number of cases seen in the clinic for the same period of time. For example, compare the number of positive malaria slides with the reported number of hospitalised malaria cases.

Reporting –

a) Ask to see copies of the most recent reports or for the most recent reporting period. Compare the number of cases of priority diseases that were reported with the number recorded in the register.
b) Check the date on which the case report was sent against the date recommended for sending the report.
c) Check the reports to make sure they are complete and accurate.

Review and analyse data

a) Verify that trend lines are prepared and kept up-to-date for priority diseases
b) Ask to see the "Health Facility **Analysis Book**", if these are in use in your district. See if the trend lines for selected diseases are up-to-date.

Preparedness - Look at the stocks of emergency drugs, supplies and protective clothing to be sure the re is an adequate supply.

7.2.5 Write a report of the supervisory visit

Provide in the report achievements that were recognized during the visit. Also state the actions that were planned with the health staff and any requests for additional resources, funds or special problems.

7.3 Use supervisory visits to improve surveillance activities in the district and other levels in the health system.

Visits by surveillance supervisors from national or provincial disease surveillance team member are good opportunities to discuss and improve disease control in the district. For example the supervisor can discuss why the inpatient malaria deaths have not been declining. He or she can also discuss about additional ideas and/or resources needed to strengthen disease control activities at that level.

At the end of your supervisory visit enter your comment, observation and recommendation as agreed with the health worker in the "Supervisory Comments Book".

7.4 ANNUALLY EVALUATE QUALITY OF INTEGRATED DISEASE SURVEILLANCE AND RESPONSE

7.4.1 Determine indicators and program targets to evaluate

Depending on the development status of surveillance in a district, select indicators for evaluation that will provide information that relates to the district's priorities and objectives for the year. Selected indicators (See Annex 30 for details) are likely to be the following:

- Indicators for measuring quality of surveillance in general. For example, to evaluate timeliness and completeness of reporting, select as an indicator the percentage of health facilities that reported routine information on time.

- Indicators for measuring quality of surveillance for specific diseases (for example, to monitor response to surveillance data about meningitis, select as an indicator the percentage of health facilities where meningitis outbreaks were detected and which were laboratory confirmed.)

7.4.2 Compile and organize monitoring and other results

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[6] ***Note:*** *A sample supervisory checklist is in Annex 31 at the end of this section. The questions to be answered during the supervisory visit can be adapted or modified to meet the specific concerns and extent of progress towards an integrated surveillance system within the health facility.*

Gather data from several sources. For example in a district:

- Review the objectives for the year listed in the district's annual plan for improving disease surveillance and response.
- Gather the monthly summaries of cases and deaths reported to the district, spot maps, and other analysis results performed by the district.
- Collect as well any results from special surveys or studies that were done in the district over the last year.
- Include case investigation forms and reports of outbreak response activities that took place in the district.
- Gather summary information from the community and also from health workers.

7.4.3 Analyse results

As you evaluate the summary data for the year, decide:

- Whether the reports were completed, on time and accurate.
- What were the significant changes in disease trends during the year.
- If an increase occurred, was the problem identified?
- If additional cases are still occurring, why and where are they occurring?
- Whether appropriate and timely actions were taken in response to the surveillance data.
- Whether supervisory visits were conducted as planned and follow up tasks carried out as planned.
- Whether the community felt that response activities were successful.
- Whether any actions were taken to address health staff requests or suggestions about services or surveillance.

7.4.4 Identify problems and their causes

If problems occurred, and the district did not meet an expected target, or reach a desired level of performance with any indicator, determine what caused the difference between what was expected and what actually occurred. If a problem is identified, discuss with the district team and health facility staff to find out the possible causes of the problem.

7.4.5 Prioritise plans for improvements to surveillance and response in the following year's plan

Include in the district plan for the following year successful activities that should continue. Also include feasible solutions selected as a result of analysis of this year's annual evaluation.

Plan to implement the solution. For example:

1. State the new activity and its objectives

2. Specify the personnel who will carry out the activity.
3. Estimate the cost of the activity
4. Develop a timetable for the activity. Define the sequence of activities in logical order.
5. Specify the logistics for the new activity (equipment, personnel, transportation, resource allocation)

7.4.6 Provide feedback to health facilities about the evaluation

Provide a report and give feedback to the lower levels about the results of the evaluation activity. Mention in the feedback report:

- What the objectives were for the year.
- What was actually achieved.
- What were likely reasons for any differences between what was planned and what was achieved.
- Recommended solutions and prioritised activities for improving disease surveillance and response in the respective levels.

ANNEXES TO SECTION 7

Annex 28 **Self-evaluation of the timeliness and quality of outbreak detection, investigation, and response**

ANNEX 29 **Sample form for recording timeliness and completeness of monthly reporting from the health facility to the district level**

ANNEX 30 **Sample indicators for monitoring by the provincial or national level of district-level surveillance activities**

ANNEX 31 **Sample supervisory checklist for surveillance and response activities at the health facility level**

ANNEX 28: SELF-EVALUATION OF THE TIMELINESS AND QUALITY OF OUTBREAK DETECTION, INVESTIGATION, AND RESPONSE

Outbreak detection:

- Interval between onset of index case (or occurrence of un usual cluster at the community level) [date 1] to arrival of first outbreak case at the health facility [date 2] (Target: <3 days): _____ (Date 1) _____ (Date 2) _____ (Interval)

- Interval between initial outbreak case seen at the health facility (or date of outbreak threshold crossing at the health facility) [date 1] and reporting to the district health team [date 2] (Target: within 24 hours): _____ (Date 1 & Time i) _____ (Date 2 7 Time 2) _____ (Interval(Hrs))

- Cumulative interval between onset of index case (or occurrence of un usual cluster at the community or health facility) [date 1] to notification to the district [date 2] (Target: <7 days): _____ (Date 1) _____ (Date 2) _____ (Interval)

Outbreak investigation:

- Case forms/line listed completed? ____Yes _____No- Laboratory specimens taken (where applicable) ____Yes ____No

- Interval between notification of district [date 1] and district field investigation-tion conducted [date 2] (Target: within 48 hours) _____ (Date &Time I1) _____ (Date & Time 2) _____ (Interval(Hrs))

- Interval between sending specimens to the lab [date 1] and receipt of results by the district [date 2] (Target: 3-7 days, depending on type of test) _____ (Date 1) _____ (Date 2) _____ (Interval)

Outbreak response:

- Interval between notification of outbreak to district [date 1] and concrete response by the district [date 2] (Target: within 48 hours of notification) _____ (Date & Time 1) _____ (Date & Time2) _____ (Interval(Hrs))

Evaluation and Feedback:

- Interval between end of the outbreak [date 1] and finalization of outbreak report sent to the provincial and national level [date 2] (Target: 2 weeks) _____ (Date 1) _____ (Date 2) _____ (Interval)

- Outbreak management committee met? ____Yes ____No

-Feedback given to health facilities and community? ____Yes ____No

_____
Method of feedback used

Other aspects, evaluation:

ANNEX 29: SAMPLE FORM FOR RECORDING TIMELINESS AND COMPLETENESS OF MONTHLY REPORTING FROM THE HEALTH FACILITY TO THE DISTRICT

NB: legend
T = arrived on time L = arrived late N = report not received R = total number expected reports

Province _____ District _____ Year _____

Name of health Facility	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	% Timeliness	% Completeness
1														
2														
3														
4														
5														
6														
Total number of reports expected (R)														
Total reports sent on time (T)														
Total reports sent late (L)														
Total number of reports not received (N)														
Timeliness of the reports = 100 * T / R														
Completeness of reporting = 100 * (R-N) / R														

Please note that timeliness and completeness are expressed as percents (%). When the surveillance system is good, the rates of timeliness and completeness should approach 100%. This table allows for monitoring the progress of these two indicators in the districts so that action can be taken to improve timeliness for each health facility in the district.

ANNEX 30: INDICATORS FOR MONITORING THE QUALITY OF DISTRICT LEVEL SURVEILLANCE ACTIVITIES

To evaluate the quality of surveillance functions listed in column 1 below, regularly monitor and observe the progress for the following indicators listed in column 2. When comparing several health facilities at the same level of the health system, use proportions or rates.

For this Surveillance function:	***Regularly monitor the number of districts that:***
Maintain readiness for epidemic response	❑ Have a plan for outbreak response ❑ Have access to emergency stocks of drugs and supplies at all times during the last 12 months ❑ Have access to funds for outbreak response ❑ Have a team trained to conduct an outbreak investigation
Identify suspected cases	❑ Have a surveillance coordinating focal point at the district level ❑ Review case registers and logs
Investigate and confirm reported outbreaks	❑ Investigated at least one reported outbreak during the last 12 months ❑ Have laboratory capacity within the district that can confirm suspected cases of priority diseases ❑ Confirm priority diseases in a timely way ❑ Are able to demonstrate safe handling, packaging, storing, and transport of specimens to higher level laboratory
Report data	❑ Have a reliable supply of recommended forms at all times over the last 6 months ❑ Submitted all required reports to the next level on time during the last 6 months
Analyse data	❑ Describe outbreak data by time, place and person ❑ Perform trend analysis by health facility ❑ Have an action threshold for each priority disease and appropriate denominators and a defined response action ❑ Compare quarterly data
Response	❑ Responded within 48 hours of reaching the threshold for action. ❑ Meet with community about a health problem at least once every 6 months ❑ Achieved acceptable case fatality rates during the most recent outbreak (for example, no more than 10% for meningitis, no more than 1% for cholera) ❑ Have epidemic management committees that evaluated their preparedness and response activities during the last 12 months
Provide feedback	❑ Prepare and disseminate a written report of surveillance information at least quarterly during the last year ❑ Received a written report or bulletin containing information district reported from a higher level during the last year ❑ Provide feedback to the community

Supervision	❑ Number of health facilities that received a supervisory visit from the district surveillance focal point during the last 6 months
Training	❑ Number of health personnel in the district that received training for a surveillance function or topic such as investigation during the last 12 months.
Resources and personnel	❑ Number of districts with: ❑ transportation or logistical supports (vehicles with fuel, motor cycles) ❑ supplies for carrying out data management (computers, statistical and mapping program packages) ❑ communication methods (reliable telephone service, facsimile, radiophone, electronic mail) ❑ information and education materials (VCR and monitor, portable generator, screen, projector (slides or film) ❑ human resources (trained epidemiologist, laboratory technologists, data managers
Comments	

ANNEX 31 CHECKLIST FOR SUPERVISING SURVEILLANCE & RESPONSE ACTIVITIES AT THE HEALTH FACILITY

District_____ Health Facility:_____ Date of Supervisory Visit:_____

ACTIVITY	SUPERVISORY QUESTION	ANSWER	COMMENT (What Caused Problem)
Identify Suspected Cases	1. How often do you collect information from the community about reports of suspected cases or deaths due to a priority disease or condition?	_____	
Register cases	1. Are diagnoses of cases of priority diseases recorded in the clinic register according to the standard case definition?	-----Yes ……..No	
Report	1. Do health staff use a standard case definition to report the suspected cases and outbreaks? 2. Do you record information about immediately notifiable diseases on a case form or line list?	…….Yes ……..No …….Yes ……..No	
Analyze and Interpret	1. Do you plot the numbers of cases and deaths for each priority disease on a graph? (Ask to see the health facility's analysis book. Look to see if the trend lines are up-to date.) 2. Do you plot the distribution of cases on a map? (Ask to see the map)	……..Yes ……..No ……..Yes ……No	

ACTIVITY	SUPERVISORY QUESTION	ANSWER	COMMENT (What Caused Problem)
Investigate and Confirm Reported Cases and Outbreaks	1. If an epidemic-prone disease was suspected, was it reported within 24hrs to the district office? 2. For the cases of priority diseases needing laboratory tests seen since the last supervisory visit, how many had laboratory results? 3. Are appropriate supplies available or set aside for collecting laboratory specimens during an urgent situation. If yes ask to see.	……..Yes …….No Number of results obtained:_____ Number of expected cases seen:_____ ……Yes ……No	
Respond	1. Are appropriate supplies available for responding to a confirmed case or outbreak *(for example, immunization supplies and vaccine, ORS, antibiotics, and so on*)? 2. Please show me the supplies for carrying out a recommended response. 3.Who is the outbreak coordinator for this facility? 4. How often do you provide information and training in outbreak response to the staff of this facility?	……Yes …….no ……Available …not available Name:_____ Designation:_____ Training is done _____ times per_____	

ACTIVITY	SUPERVISORY QUESTION	ANSWER	COMMENT (What Caused Problem)
Provide Feedback	1. Do you provide feedback to the community on disease outbreak and response? 2. If yes , how often? 3. How do you provide feedback to the community? 4. Do you receive the latest bulletin from the *(National/Provincial, and District level*)	Yes___ No____ Information reported __ times per ____ 1. Baraza 2. Radio 3. Newsletter 4. TV 5. Others (specify) _____ Yes ___ No___	
Evaluate and Improve the System	1. Were the last 3 routine monthly reports sent to the district office? 2. Were the last 3 routine monthly reports sent on time?	……Yes …….No ……Yes …….no	
Epidemic Preparedness	1. What precautions do health staff (including laboratory staff) take routinely with all patients regardless of the patients' infection status? 2. How do you estimate the number of supplies to set aside for use during an emergency situation?	Minimum level of standard precautions: _____ How supplies are estimated: _____	

SECTION 8

SUMMARY GUIDELINES FOR SPECIFIC PRIORITY DISEASES

AND CONDITIONS

- Take action to respond to alert and action thresholds for specific diseases
- Identify surveillance goals and objectives for each priority disease
- Identify data to analyse and interpret for each priority disease

8.0 INTRODUCTION

Brief disease specific guidelines are presented in this section. The section aims to help the readers to rapidly update key facts on the selected priority diseases.

The summary guidelines present

- General background information on the disease or condition
- Surveillance goal
- Recommended case definition
- Threshold levels – alert and action
- Analysis and data interpretation
- References

Where epidemic occurrences are difficult to detect as in the case of STIs or New AIDS cases, recommended public health actions are suggested.

8.1 CHOLERA

Background	▪ Acute illness with profuse watery diarrhoea caused by *Vibrio cholerae* serogroups O1 or O139. In Kenya the commonly identified serogroup is 01. The disease is transmitted mainly through eating or drinking contaminated food or water; that is, cholera is spread through the faecal-oral route. ▪ Cholera causes over 100 000 deaths per year globally. It may produce rapidly progressive epidemics or worldwide pandemics. In endemic areas, sporadic cases (less than 5% of all non-outbreak-related diarrhoea cases) and small outbreaks may occur. ▪ Incubation period is from a few hours to 5 days, usually in the range from 2 to 3 days. ▪ There has been a resurgence of cholera in Africa since the mid-1980s, where over 80% of the world's cases occurred in 1999, with the majority of cases occurring from January through April. ▪ Cholera may cause severe dehydration in only a few hours. The case fatality rate (CFR) may exceed 50% in untreated patients with severe dehydration. If patients present at the health facility and correct treatment is received, the CFR is usually less than 1%. At least 90% of the cases are mild, and they remain undiagnosed. ▪ Risk factors: eating or drinking of contaminated foods such as uncooked seafood or shellfish from estuarine waters, lack of continuous access to safe water and food supplies, attending large gatherings of people including ceremonies such as weddings or funerals, contact with persons who died of cholera. ▪ Other enteric diarrhoea may cause watery diarrhoea, especially in children less than 5 years of age. Please see *Diarrhoea* with *dehydration* summary guidelines.

Surveillance goal	▪ Detect and respond promptly and appropriately to cases and outbreaks of watery diarrhoea promptly. To confirm an outbreak, collect stool specimens and transport media e.g. Cary-Blair and send to the laboratory immediately. ▪ Initiate immediate case-based reporting of cases and deaths when an outbreak is suspected.
Recommended case definition	***Suspected case***: In a patient age 5 years or more, severe dehydration or death from acute watery diarrhoea. If there is a cholera epidemic, a suspected case is any person aged 5 years or more with acute watery diarrhoea, with or without vomiting. ***Confirmed case***: A suspected case in which *Vibrio cholerae* O1 or O139 has been isolated in the stool.
Respond to alert threshold for epidemic-prone diseases	**If a single case is suspected:** ▪ Report case-based information immediately. ▪ Manage and treat the case according to national guidelines. ▪ Enhance strict hand washing and isolation procedures. ▪ Conduct case-based investigation (surveillance) to identify similar cases not previously reported and confirm the outbreak. ▪ Obtain stool specimen from 5 patients within 5 days of onset of acute watery diarrhoea, and before antibiotic treatment is started. See laboratory guidelines for information on how to prepare, store and transport the specimens.
Respond to action threshold for epidemic-prone diseases	**If a suspected case is confirmed**: ▪ Establish treatment centre in locality where cases occur. Treat cases onsite rather than asking patients to go to static treatment centres elsewhere. ▪ Strengthen management and treatment of cases. ▪ Mobilize community early to enable rapid case detection and treatment. Survey the availability of clean drinking water. ▪ Work with community leaders to limit the number of funerals or other large gatherings for ceremonies or other reasons, especially during an epidemic. ▪ Reduce sporadic and outbreak-related cases through continuous access to safe water. Promote safe preparation of food (especially seafood, fruits, and vegetables). Promote safe disposal of human waste and personal hygiene.

Analyse and interpret data	**Time:** Plot a graph of weekly cases and deaths and construct an epidemic curve during outbreaks. Report case-based information immediately and summary information monthly for routine surveillance. **Place:** Plot the location of case households. **Person:** Count weekly total cases and deaths for sporadic cases and during outbreaks. Analyse age/sex distribution, distribution according to sources of drinking water, assess risk factors to improve control of sporadic cases and outbreaks.
Reference	*Management of the patient with cholera*, World Health Organization, 1992. WHO/CDD/SER/91.15 Rev1 (1992) *Epidemic diarrhoeal disease preparedness and response--Training and practice.* Facilitator and participant manuals. World Health Organization, 1997. WHO/EMC/DIS/97.3 and WHO/EMC/DIS/97.4

8.2 TYPHOID FEVER

Background	Typhoid fever is an infectious enteric disease, which is contracted through eating food or drinking water that has been contaminated with *Salmonella typhi* and other species.
Surveillance goal	• Detect and respond to typhoid outbreak promptly • Improve percentage of laboratory confirmed cases. • Determine antibiotic sensitivity pattern of the *Salmonella spp.* isolated both for routine surveillance and during outbreaks.
Recommended case definition	***Suspected case*** Insidious but sustained fever, severe headaches, malaise, nausea and constipation (which is more common than diarrhoea in adults). ***Confirmed case*** A patient presenting with above symptoms and Salmonella species Isolated in blood or stool of a patient.
Respond to alert threshold for epidemic prone diseases	If you observe that the number of cases or deaths is increasing over a period of time: • Report the suspected case to the next level of health system • The definitive diagnosis requires isolation of *Salmonella typhi* from the patient's blood, stool or urine, through culture. • Commence the patient on chloramphenical; review after 3-5 days if there is good response, the patient should complete the 2 weeks treatment. If there is no improvement **refer** the patient **immediately** to a main hospital • Treat the suspected case with Quinolones. Third generation cephalosporines can be used when culture and sensitivity tests indicate resistance to chloramphenical. • Investigate the case to determine risk factors contributing to transmission.
Respond to action threshold for epidemic prone diseases	Observed increase in number of cases and deaths with at least one case confirmed by culture. • Search for additional cases in locality of confirmed cases • Strengthen case management. • Mobilize community to enable rapid detection and treatment • Identify high risk population using person, place, and time data

	• Reduce sporadic and outbreak related cases by promoting personal and food hygiene, improve access to safe clean water and safely dispose off human waste.
Analyse and interpret data	**Time**: Plot a graph of monthly trends for cases and deaths. Construct an epidemic curve for outbreak cases. **Place**: Plot a spot map of cases. **Person**: Count cases and deaths each month. During an outbreak, count cases and deaths weekly. Routinely analyse age distribution. Assess risk factors to improve control and prevention of new cases and future outbreaks.
Source of information	**MOH-DOMU**

8.3 DIARRHOEA WITH BLOOD (DYSENTERY)

Background	▪ *Shigella dysenteriae* is the most common cause of enteric infections and is transmitted from person-to-person through faecal-oral route. ▪ Large-scale outbreaks may be caused by Shigella dysentariae type 1 (SD1) With up to 30% of populations infected. The case fatality rate may approach 20% among young children and elderly persons with severe dehydration. ▪ The incubation period is from 1 to 4 days. ▪ Clinical illness is characterized by acute fever and bloody diarrhoea, and can also present with systemic symptoms and signs as well as dehydration especially in young children. ▪ Risk factor: overcrowded areas with unsafe water and poor sanitation (for example, informal settlements and refugee and other displaced populations). ▪ SD1 is frequently resistant to multiple antibiotics including trimethoprim-sulfamethoxazole. The drug of choice in Kenya is Nalidixic acid and Norfloxacin. ▪ Enterohaemorrhagic and enteroinvasive *E. coli* and other bacteria or parasites such as *Entamoeba histolytica* may also cause bloody diarrhoea.
Surveillance goal	▪ Detect and respond to dysentery outbreaks promptly. ▪ Improve percentage of laboratory-confirmed cases and evaluate proportion verified as type 1 (SD1). ▪ Determine antibiotic sensitivity pattern of the agents isolated (especially SD1) both for routine surveillance and during outbreaks.
Recommended case definition	***Suspected case***: A person with diarrhoea with visible blood in stool. ***Confirmed case***: Suspected case with stool culture positive for *Shigella dysentariae type 1.*

Respond to alert threshold	**If you observe that the number of cases or deaths is increasing over a period of time:** • Report the suspected case to the next level of the health system. • Treat the suspected cases with oral rehydration and antibiotics based on recent sensitivity results, if available. • Obtain stool or rectal swab specimen for confirming the outbreak. • Investigate the case to determine risk factors contributing to transmission.
Respond to action threshold	If a suspected case is confirmed: • Search for additional cases in locality of confirmed case. • Strengthen case management and treatment. • Mobilize community to enable rapid case detection and treatment. • Identify high-risk populations using person, place, time data. • Reduce sporadic and outbreak-related cases by promoting hand washing with soap or ash and clean running water after visiting the toilet and before handling food, strengthening access to safe water supply and storage, and use of latrines and safe disposal of human waste.
Analyse and interpret data	**Time:** Plot a graph of monthly trends in cases and deaths. Construct an epidemic curve for outbreak cases. **Place:** Plot location of case households. **Person:** Count cases and deaths each month. During an outbreak, count outbreak-related cases by week. Routinely analyse age distribution. Assess risk factors to improve control and prevention of sporadic diseases and outbreaks.
Reference	*Guidelines for the control of epidemics due to Shigella dysenteriae type 1*. WHO/CDR/95.4 *Safe Water Systems for the Developing World: A Handbook for Implementing Household-based Water Treatment and Safe Storage Projects*. Department of Health & Human Services. Centres for Disease Control and Prevention. Atlanta. 2000

8.4 DIARRHOEA WITH DEHYDRATION IN CHILDREN LESS THAN 5 YEARS OF AGE

Background	▪ Diarrhoea with dehydration in children less than 5 years of age is due to infections of the gastrointestinal tract caused by viruses (especially Rotavirus), bacteria *(E. Coli, Salmonellae, shigellae, Campylobacter, Yersinia*, and others), and parasites (*Giardia, Entamoeba*, cryptosporidia, cyclospora). These diseases are transmitted through eating contaminated food or water, or through faecal-oral route. ▪ Diarrhoeal diseases represent the second leading cause of death among children less than 5 years of age in many African countries, with more than 3 million deaths per year. ▪ Different epidemiological patterns (for example, seasonality) are observed for different pathogens. ▪ The Ministry of Health advocates that each district team use the Integrated Management of Childhood Illnesses (IMCI) strategy to reduce morbidity and mortality of childhood diarrhoea.
Surveillance goal	▪ Detect diarrhoea outbreaks promptly. Laboratory confirmation can confirm specific pathogenic agent outbreak, but laboratory confirmation is not necessary for routine surveillance of diarrhoea with dehydration. ▪ Monitor antimicrobial resistance during outbreaks of bacterial origin.
Recommended case definition	***Suspected case***: Passage of 3 or more loose or watery stools in the past 24 hours with or without dehydration and: *Some dehydration* -- two or more of the following signs: restlessness, irritability; sunken eyes; thirsty; skin pinch goes back slowly, or *Severe dehydration* -- two or more of the following signs: lethargy or unconsciousness; sunken eyes; not able to drink or drinking poorly; skin pinch goes back very slowly. ***Confirmed case***: Suspected case confirmed with stool culture for a known enteric pathogen. *Note:* Laboratory confirmation of specific agent causing outbreak is not routinely recommended for surveillance purposes.

Respond to a suspected outbreak for other diseases of public health importance	**If you observe that the number of cases or deaths is increasing over a period of time:** ▪ Report the problem to the next level. ▪ Investigate the cause for the increased number of cases or deaths and identify the problem. ▪ Make sure that cases are managed according to IMCI guidelines. ▪ Encourage home-based therapy with oral rehydration.
Respond to a confirmed outbreak for other diseases of public health importance	**If the number of cases or deaths increase to two times the number usually seen in a similar period in the past:** • Assess health worker practice of IMCI guidelines for managing cases and improve performance for classifying diarrhoea with dehydration in children less than 5 years of age. • Teach mothers about home treatment with oral re-hydration. • Conduct community education about boiling and chlorinating water, and safe water storage and preparation of foods.
Analyse and interpret data	**Time:** Plot a graph of cases and deaths to compare with same period in previous years. Prepare graphs for outpatient diarrhoea with some dehydration and for diarrhoea with severe dehydration. Construct an epidemic curve when outbreaks are detected. **Place:** Plot location of case households. **Person:** Report monthly totals due to diarrhoea with some dehydration and also for diarrhoea with severe dehydration from outpatient services. Also report monthly inpatient total cases and deaths due to diarrhoea with severe dehydration.
Reference	*Management of childhood illness: Clinical skills training course for first level health facilities*. World Health Organization. WHO/CDR/95.14 *Integrated Management of Childhood Illness: A WHO/UNICEF Initiative Bulletin of the World Health Organization.* Vol. 75, 1997, Supplement 1, 1997. ISBN 92 4 068750 5

8.5. DRACUNCULOSIS

Background	▪ Dracunculosis is commonly known as Guinea worm. It is caused by a large nematode, a disabling parasite that protrudes through the skin of the infected person. ▪ This is an old disease that leaves many patients with unfortunate socio-economic consequences. It is transmitted through ingestion of a crustacean (cyclops) eaten by an immature form of the nematode (larvae). The cyclops live and are found in stagnant water sources (lakes, swamps and rivers) in rural areas in African countries. When there is contact with water, the female nematode protrudes from the skin and discharges eggs to the water body. The incubation period is for a period of 9 to 12 months. There is no treatment or vaccine against the illness. ▪ Successful disease control strategies conducted by an international coalition and their partners has pushed Dracunculosis towards eradication. In the first quarter of 2000, 27 000 cases of Guinea worm were reported to the WHO compared to 892 000 that were reported for all of 1989, showing a reduction of 87%. ▪ The illness is endemic in 13 countries in Africa: Benin, Burkina Faso, Central Africa Republic, Cote d'Ivoire, Ghana, Ethiopia, Mali, Mauritania, Niger, Nigeria, Sudan, Togo and Uganda. ▪ In Kenya there are sporadic cases particularly in the North Rift districts e.g. Turkana and West Pokot.
Surveillance goal	▪ Active detection and investigation of each case at the community level. Monthly reporting of cases to the next level. ▪ In zones where Guinea worm has been eradicated, maintain active searches for additional cases. ▪ Report all imported cases to countries or areas of origin. ▪ Integrate into surveillance to confirm absence of transmission.
Recommended case definition	***Suspected case***: A person presenting or having presented in the last 12 months with a skin lesion and emergence of Guinea worm. ***Confirmed case***: No confirmation required.

Respond to alert threshold for disease targeted for eradication	**If a single case is suspected:** ▪ Report the case according to national program guidelines for eradication of Dracunculosis. ▪ Treat case with metronidazole to decrease disability associated with painful leg lesions. ▪ Conduct case investigation to confirm risk factors. ▪ Improve access to safe water according to national guidelines.
Analyze and interpret data	**Time:** Plot a graph of cases quarterly. **Place:** Plot distribution of households and work sites for cases from which cases have been reported. **Person**: Count quarterly cases, and analyse age distribution. Report monthly to next levels.
Reference	*Dracunculosis or guinea-worm*, Geneva, World Health Organization, WHO/CDS/CEE/DRA/99.2, 1999

8.6 LEPROSY

Background	▪ Leprosy is a chronic mycobacterial disease of the skin, the peripheral nerves and upper airway mucous membranes. The disease is transmitted mainly through airborne spread from nasal secretions of patients infected by Hansen's bacillus and also through inoculation into broken skin. Leprosy is endemic in several tropical areas around the world, including Africa. ▪ Patients are classified into two groups, depending on presence of skin and nerve signs: ▪ Multibacillary patients (MB) with more than 5 skins patches and several nerve enlargements. ▪ Paucibacillary patients (PB) with one to five skin patches and a single nerve enlargement. ▪ Leprosy control has improved greatly through use of WHO recommended multidrug therapy (MDT). Multiple drug therapy combining two or three drugs (rifampicin, clofaximine and dapsone) is very effective in curing leprosy. At the end of 1999, leprosy point prevalence in African countries was 1.6 cases per 10 000 population with about 70 000 registered cases. ▪ Incubation period is 6 months to 20 years or more. Infection is probably frequent but clinical disease is rare, even among the mostclose contacts of patients. Multibacillary patients are most contagious, but infectiousness is reduced rapidly as soon as multiple drug therapy begins. Leprosy can be complicated by neuritis and leprosy reactions, resulting in impairment and disabilities of hands, feet, and eyes. ▪ Leprosy has historically been associated with social isolation and psychosocial consequences. This social stigma still persists in some countries in Africa. ▪ Some skin diseases such as tinea versicolor, mycosis, vitiligo, Scleroderma, psoriasis, systemic lupus erythematosus and Von Recklinghausen disease may be mistaken for leprosy.
Surveillance goal	▪ Observe national trends towards the leprosy elimination target, defined as a reduction in prevalence to less than 1 case per 10,000 population. ▪ Monitor resistance of Hansen's bacillus to drugs used for multi-drug therapy (MDT) on an ongoing basis. ▪ As leprosy nears elimination, supplement routine surveillance with community-based surveillance. ▪ Maintain active case search

Recommended case definition	***Suspected case***: A person showing one of three cardinal signs of leprosy: hypopigmented or reddish skin lesion, loss or decrease of sensations in skin patch, enlargement or peripheral nerve. ***Confirmed case*:** A person showing at least two cardinal signs of leprosy and who has not completed a full course of treatment with MDT.
Respond to alert threshold for diseases targeted for elimination	**If a single case is suspected:** ▪ Report the suspected case to the appropriate level of the health system. ▪ Investigate case for risk factors. ▪ Begin appropriate case management: -- MB patients must be treated for 12 months with a three-drug regimen (12 MB blister packs to be taken in a period of 18 months). -- PB patients must be treated for 6 months with a two drugs MDT regimen (6 PB blister packs to be taken in a period of 9 months)
Respond to action threshold for diseases targeted for elimination	• If a suspected case is confirmed: • Examine patients for skin and nerve signs at each contact patient has with a health worker to diagnose and care for leprosy reactions and impairments. • Examine risk factors for treatment interruption (for example, inadequate supplies of MDT in the health centre, poor accessibility of patients' villages, and so on). Give sufficient blister packs for a full course of treatment to patients unable to attend a health centre monthly. • Identify any fast increase or decrease of new case s during a period. Assess adequacy of surveillance in areas where under- or ever-reporting is suspected. Monitor distribution of MDT drugs.
Analyse and interpret data	• Time: Plot a graph of cases by date diagnosed and treatment begun. • Place: Plot cases by location of households and disease classification (MB or PB) • Person: Count newly detected cases monthly by the type of leprosy (MB or PB). Analyse age and disability distribution and treatment outcomes (cases cured, defaulted, relapsed).
Reference	• A guide to eliminating leprosy as a public health problem, Second Edition 1997. Action Programme for the Elimination of Leprosy, World Health Organization. WHO/CTD/LEP/94.2

8.7 MALARIA

Background	• Malaria is a highly prevalent tropical illness with fever following the bite of infective female Anopheles mosquitoes, which transmit a parasite, Plasmodium falciparum, p. ovale, P. vivax, or P. malariae. Serious malarial infections are usually due to P. falciparum that may result in severe anaemia and cerebral involvement. • Malaria is one of the leading causes of illness and death in many African countries. There are 900 000 deaths per year in Africa mainly in children less than 5 years of age and pregnant women. • Incubation period from the time of being bitten to onset of symptoms is 7 to 30 days. The incubation period may be longer, especially with non- P. falciparum species. • Transmission of malaria is highly seasonal in some areas in African countries. ▪ P. falciparum is often resistant to chloroquine and is becoming resistant to sulfadoxine-pyrimethamine, and other drugs.
Surveillance goal	• Detect malaria epidemics promptly, especially in areas with seasonal epidemic transmission or with a large population at risk. • Improve percentage of malaria cases confirmed microscopically. • Monitor anti-malarial resistance of sporadic cases and outbreak-related cases. Use sentinel populations in selected sites for monitoring anti-microbial resistance.
Recommended case definition	**Uncomplicated malaria:** Any person with fever or fever with headache, back pain, chills, sweats, myalgia, nausea, and vomiting diagnosed clinically as malaria. **Confirmed uncomplicated malaria**: Any person with fever or fever with headache, back pain, chills, sweats, myalgia, nausea and vomiting and with laboratory confirmation of diagnosis by malaria blood film or other diagnostic test for malaria parasites. **Severe malaria** Any person hospitalised with a primary diagnosis of malaria and confirmed by a positive blood smear or other diagnostic test for malaria. **Malaria with severe anaemia** Any child 2 months up to 5 years with malaria and, if an outpatient, with severe palmar pallor, or if an inpatient, with a laboratory test confirming severe anaemia. *(Note: Young infants less than 2 months are usually classified as serious bacterial infection and are referred for further evaluation.)*

Respond to a suspected outbreak for other diseases of public health importance	**If there is an unusual increase in the number of new malaria cases or deaths as compared to the same period in previous non-epidemic years:** • Report suspected epidemic to the next level • Treat with appropriate anti-malarial drugs according to national programme recommendations • Investigate the cause for the increase in new cases • Make sure new cases in children age 2 months up to 5 years are managed according to IMCI guidelines. • Conduct community education for prompt detection of cases and access to health facilities.
Respond to a confirmed outbreak for other diseases of public health importance	If the number of new cases exceeds the upper limit of cases seen in a previous non-epidemic period in previous years: • Evaluate and improve, as needed, prevention strategies, such as use of permethirin-impregnated bed nets, especially for young children, pregnant women, and other high-risk populations.
Analyse and interpret data	**Time:** Plot a graph of the number of cases by month. Construct an epidemic curve during epidemics. **Place:** Plot location of households for new cases and deaths. **Person:** Count the number of new malaria cases and deaths by month and analyse age groups and time of onset.
Reference	*Malaria epidemics: Detection and control, forecasting and prevention*. Geneva. World Health Organization. WHO/MAL/98.1084

Note: Setting an epidemic threshold:

The national Malaria Control Programme can assist districts and health centres with determining appropriate thresholds for detecting possible epidemics. In the absence of a threshold set by the national programme, the following method can be used to determine the threshold level for a malaria epidemic. The threshold is determined using the median and the 3rd Quartile of a period of time (for example, 5-year data from a health facility or district by month):

1. Look at the number of malaria cases at a specific health facility or district by month for the past 5 years.

2. Determine the median for each month (for example, each January for the last 5 years). Rank the monthly data for each month for the five years in ascending order. Identify the number in the middle of each month's series (for example, the series of data for January) for the five years. This is the median. Repeat this process for each month in the five years.

3. Determine the 3rd Quartile for the monthly series by identifying the 4th highest number from the bottom in each data series (since data is ranked in ascending order). This is the 3rd Quartile representing the upper limit of the expected normal number of malaria cases.

4. Plot the 3rd Quartile for each data series by months for the five-year period and join the points with a line. The line represents the upper limit of the expected number of cases.

5. Plot the median for each data series by month for the five-year period and join the points with a line. This line represents the lowest limit of expected number of cases.

6. The area between the two lines (the median and the 3rd Quartile) represents the "normal channel". If the number of currently observed cases of malaria falls between the two lines, the number of new cases for that month is assumed to be "normal". If the number is above the 3rd Quartile (upper limit), this is an indication of a possible malaria epidemic.

SOURCE: WHO/AFRO REGIONAL MALARIA PROGRAMME

8.8 MEASLES

Background	▪ Measles is a febrile rash illness due to paramyxovirus (*Morbillivirus)* transmitted human-to-human via airborne droplet spread. It is the fourth leading cause of death in children less than 5 years of age in many African countries. ▪ The incubation period is 7 to 18 days from exposure to onset of fever. ▪ Among children with vitamin A deficiency and malnutrition, measles may result in severe illness due to the virus itself and associated bacterial infections, especially pneumonia; only the minority of cases are severe. ▪ Measles is among the most transmissible of human infections. Large outbreaks occur every few years in areas with low vaccine coverage and where there is an accumulation of persons who have never been infected or vaccinated. The true incidence of measles far exceeds reported cases. ▪ Risk factors include low vaccine coverage (<95 %), which allows accumulation of susceptible persons at high risk for measles. Outbreaks can be explosive in areas of high population density. ▪ Other viral illnesses such as rubella may cause or contribute to similar outbreaks.
Surveillance goal	▪ Detect outbreaks of fever with rash illness promptly: *In elimination with a measles elimination target*: immediate case-based reporting of suspected cases and deaths of fever with rash illness; confirm all suspected measles cases with laboratory test (usually serum IgM). *In countries with accelerated measles control programs*: Summary reporting of cases and deaths for routine surveillance and outbreaks; confirm the first five cases of suspected measles in a health facility per month with laboratory test (usually serum IgM)
Recommended case definition	***Suspected case***: Any person with fever and maculopapular (non-vesicular) generalized rash and cough, coryza or conjunctivitis (red eyes) or any person in whom a clinician suspects measles. ***Confirmed case***: A suspected cases with laboratory confirmation (positive IgM antibody) or epidemiological link to confirmed cases in an outbreak.

Respond to alert threshold for epidemic-prone diseases	**If an outbreak is suspected:** ▪ Report suspected case to the next level. ▪ Collect five blood samples for confirming the outbreak. ▪ Treat cases with oral rehydration, vitamin A, and antibiotics for prevention of bacterial super infection. Use airborne isolation precautions where feasible. ▪ Investigate the case or outbreak to identify causes for outbreak.
Respond to action threshold for epidemic-prone diseases	If an outbreak is confirmed: ▪ Improve routine vaccine coverage through the KEPI, and lead supplemental vaccination activities in areas of low vaccine coverage. ▪ Mobilize the community early to enable rapid case detection and treatment.
Analyse and interpret data	**Time:** Plot a graph of weekly cases and deaths. Construct epidemic curve for outbreak cases. **Place:** Plot location of case *households. **Person:** Count total cases and analyse by age group and immunization status.
Reference	*Using surveillance data and outbreak investigations to strengthen measles immunization programmes*, Geneva, World Health Organization. WHO/EPI/GEN/96.02

8.9 EPIDEMIC MENINGITIS

Background	• Acute infection of the central nervous system usually caused by *Neisserae meningitis*, *Haemophilus influenzae*, or *Streptococcus pneumoniae*, encapsulated bacteria transmitted human-to-human via airborne droplet spread. • In meningitis outbreak countries, large outbreaks due to N. meningitis (incidence great than 1 case per 1000 population) may occur November through May. Outside the meningitis belt, smaller outbreaks may occur year-round. • Incubation period is 2 to 10 days. • Attack rates are highest among children aged less than 15 years. Case fatality rates are usually 10 to 20% among treated patients, and >70% among untreated cases. • Antimicrobial resistance to chloramphenicol has not yet been detected in Africa. Resistance to sulfonamides is widespread. • Viral or tuberculosis meningitis and HIV-related opportunistic infections are among the conditions that may mimic this disease. Meningitis due to Haemophilus influenzae occurs principally in children less than 5 years of age.
Surveillance goal	• Promptly detect meningitis outbreaks and confirm aetiology of first 5 to 10 cases. Perform lumbar puncture and Gram stain of cerebral spinal fluid (CSF) on all cases of suspected meningitis where feasible to confirm aetiology of meningitis for improved surveillance. • Perform periodic sero-grouping to determine if cause of outbreak is vaccine-preventable. • Perform periodic susceptibility testing for penicillin and Chloramphenicol.
Recommended case definition	***Suspected case***: Any person with sudden onset of fever (>38.5^{o}C rectal or 38.0^{o}C auxiliary) and one of the following signs: neck stiffness, altered consciousness or other meningeal sign. ***Confirmed case***: A suspected case confirmed by isolation of *N. meningitis* from CSF or blood.

Respond to alert threshold for epidemic-prone diseases	**If alert threshold is reached**: • Population greater than 30 000, 5 cases per 100 000 inhabitants per week. • Population less than 30 000, 2 cases in 1 week or an increase in the number compared to the same time in previous years. **Respond to alert threshold:** • Inform next level of health system and investigate the cases • Confirm the cases. • Treat and manage cases appropriately with oily Chloramphenicol. • Intensify surveillance for additional cases in the area. • Prepare to conduct a mass vaccination campaign.
Respond to action threshold for epidemic-prone diseases	**If action threshold is reached:** • Population greater than 30 000: In one week, 15 cases per 100 000 inhabitants per week confirms epidemic in all situation. If no epidemic during last 3 years and vaccine coverage against meningococcal meningitis is <80%, action threshold is 10 cases per 100 000 inhabitants per week. • Population less than 30 000: 5 cases in 1 week or doubling of the number of cases over a 3-week period. **Respond to action threshold:** ▪ Begin mass vaccination campaign ▪ Distribute treatment supplies to health centres ▪ Treat according to epidemic protocol ▪ Inform the public • Define the age group at highest risk (usually persons age 1 through 30 years of age) and complete a mass vaccination campaign within 10 days of outbreak detection. • Mobilize community to permit early case detection and treatment, and improve vaccine coverage during mass vaccination campaigns for outbreak control.

Analyse and interpret data	**Time:** In meningitis belt countries during epidemic season, Plot a graph of weekly cases and deaths. Otherwise, graph monthly trends in cases and deaths. Construct an epidemic curve for outbreak cases. **Place:** In epidemics (not in endemic situations), plot location of case households. Estimate distance to the nearest health facility. **Person:** Count total sporadic and outbreak cases. Analyse age distribution. **Target case fatality rate:** <10%
Reference	*Weekly Epidemiological Record N 38, September 2000* (http://www.who.int/wer/pdf/2000/wer7538.pdf)

8.10 NEONATAL TETANUS

Background	• A neuromuscular toxin-mediated illness caused by the anaerobic spore-forming soil bacterium *Clostridium tetani.* The disease is transmitted when spores enter open wounds (injections, cutting the umbilical cord) or breaks in the skin. • While tetanus may occur in adults, infection primarily affects newborns. Neonatal tetanus has decreased dramatically in countries with improved maternal tetanus immunization rates. As a result, tetanus is targeted for elimination in many African countries. • Incubation period is 3 to 21 days, with an average of approximately 6 days. • Risk factors: Unclean cord care practices during delivery for neonates. Lack of antibody protection in completely un immunised mothers.
Surveillance goal	• Detect cases of neonatal tetanus immediately to confirm the case and prevent additional cases by immunizing at least pregnant women in area around the confirmed case. • Identify high-risk areas and target tetanus toxoid campaigns to women of childbearing age.
Recommended case definition	***Suspected case***: Any newborn with a normal ability to suck and cry during the first two days of life, and who, between the 3rd and 28th day of age, cannot suck normally, and becomes stiff or has convulsions or both. ***Confirmed case***: No laboratory confirmation recommended.
Respond to alert threshold for diseases targeted for elimination	**If a single case is suspected:** • Report case-based information immediately to the next level. • Conduct an investigation to determine the risk for transmission • Treat and manage the case according to national recommendations, usually with supportive care and, if feasible, in intensive care. No routine isolation precautions are needed.

Respond to alert threshold for diseases targeted for elimination	**If a case is confirmed through investigation:** • Immunize the mother with at least 2 doses of tetanus toxoid and other pregnant women in the same locality as the case. • Conduct a supplemental immunization activity for women of childbearing age in the locality. • Improve routine vaccine coverage through KEPI and maternal supplemental immunization programme activities. • Educate birth attendants and women of childbearing age on the need for clean cord cutting and care. Increase the number of trained birth attendants.
Analyse and interpret data	**Time:** Plot a graph of cases and deaths monthly. Target should reflect elimination target for each district. **Place:** Plot location of case households and location of birth attendants. **Person:** Count monthly cases and deaths. Analyse each case of NNT by cord care practices.
Reference	*Field manual for neonatal tetanus elimination*. Geneva, World Health Organization. WHO/V&B/99.14

8.11 NEW AIDS CASES

Background	• AIDS is an infection of human lymphocytes (types of white blood cells) and other organs. It is caused by a retrovirus, human immunodeficiency virus (HIV). Sexual intercourse, needle injections, transfusions, transplacental or trans-vaginal routes, breast milk or other direct contact with infected human bodily fluids transmits the virus from human to human. • Acquired immunodeficiency syndrome (AIDS) results in late-stage HIV infection and immunosuppression, with reduced numbers and function to T-lymphocytes. Primary HIV-related organ involvement and a variety of opportunistic infections result in death unless the growth of the virus is stopped by drugs that reduce viral load (antiretroviral therapy). When HIV infection progresses to illness, the symptoms are usually due to the failure of the immune system to resist other infectious diseases called opportunistic infections (OI). These include tuberculosis, bacterial pneumonia or sepsis, oro-pharyngeal candidiasis, chronic diarrhoea, chronic skin infections, recurrent herpes zoster, and others. • Twenty-four million Africans, close to one in ten adults between the ages of 15 and 49 years of age, are living with HIV/AIDS. The impact of the epidemic is already measurable in greatly increased adult and child morbidity and mortality. HIV/AIDS is now the leading cause of adult mortality in the African region. • Incubation period is approximately 1 to 3 months from the time of infection to the time that antibodies can be detected in a laboratory process. The time from HIV infection to the onset of AIDS is generally 7 to 9 years. • Risk factors: populations at high risk of acquiring HIV are commercial sex workers with or without other sexually transmitted infections (STIs). Some STIs may increase HIV transmission. Others at risk include intravenous drug users (IDU), recipients of unscreened blood products and neonates born to HIV-infected mothers. • Tuberculosis, visceral leishmaniasis, trypanosomiasis, and other subacute or chronic bacterial, parasitic, and viral infections may cause similar syndromes.

Surveillance goals	• Monitor the impact of HIV/AIDS interventions in trends of incidence and prevalence of HIV infections, AIDS and STIs through sentinel sites, surveys and special studies (according to guidelines for second generation surveillance of HIV/AIDS). • Estimate the burden of HIV/AIDS in the district using available information from HIV sentinel populations so that each new AIDS case is counted. • Monitor local STI epidemiology as possible cofactor for HIV transmission. • Monitor local opportunistic infection epidemiology, including TB • Improve percentage of suspected HIV/AIDS cases confirmed via serology. • Improve HIV/AIDS screening.
Recommended case definition	WHO/AFRO recommends that countries use either Bangui or Abidjan HIV/AIDS case definitions. A positive ELISA for confirming HIV and a rapid test for confirming the positive results are sufficient for an epidemiological case definition for HIV.
Public health actions	• Monitor local STI and opportunistic infections, including TB, as possible cofactor for HIV. • Improve percentage of suspected HIV/AIDS cases confirmed via serology. • Monitor use of condoms by commercial sex workers. • Provide voluntary counselling and testing services at district and sub-district levels. • Treatment of individual cases with antiretroviral therapy is not yet widely available in most African countries. Rapid diagnosis and treatment of AIDS-related OI may prolong life expectancy but this has not been widely evaluated in developing countries. • Promote condom use, especially among high-risk individuals. • Treat STIs, especially syphilis, chancroid diseases, and other ulcerative processes. • Mobilize non-paid blood donors and promote appropriate use of blood. • Promote good infection control practices within health facilities in the district. • Educate patients and their sexual partners to refrain from donating blood, tissues, semen or breast milk.
Analyse and interpret data	**Time:** Count new AIDS cases and report monthly. Analyse by number of cases confirmed with serology. At the end of the year, calculate the total number of cases and include trends for HIV sero-surveillance, STI surveillance and results of any special studies (socio-behavioural studies, drug sensitivity to antimicrobial agents, and so on).

Reference	*Guidelines for Sexually Transmitted Infections Surveillance*. Geneva. UNAIDS and World Health Organization. WHO/CDS/CSR/EDC/99.3. UNAIDS/99.33E

8.12 PLAGUE

Background	• Zoonotic systemic bacterial infection caused by *Yersinia pestis* (plague bacillus) usually transmitted to humans by fleas harboured by rodents (e.g. *Rattus rattus)*. • Main disease forms: bubonic, pneumonic, and septicaemic; large-scale epidemics may occur in urban or rural settings. • Incubation period is 1 to 7 days. • Case fatality rate (CFR) may exceed 50-60% in untreated bubonic plague and approaches 100% in untreated pneumonic or septicaemic plague, but is usually <1% with appropriate treatment. • Risk factor: rural residence. Exposure to infected populations of wild or domesticated rodents and their fleas.
Surveillance goal	• Detect outbreaks of plague promptly. Verify aetiology of all suspected non-outbreak-related cases and the first 5 to 10 outbreak-related cases.
Recommended case definition	***Suspected case***: Any person with sudden onset of fever, chills, headache, severe malaise, prostration and very painful swelling of lymph nodes, or cough with blood stained sputum, chest pain, and difficulty in breathing. ***Confirmed case***: Suspected case confirmed by isolation of *Yersinia pestis* from blood or aspiration of buboes, or epidemiological link to confirmed cases or outbreak.
Respond to alert threshold for epidemic-prone diseases	**If a single case is suspected:** • Report case-based information to the next level. • Collect specimen for confirming the case. • Investigate the case. • Treat the patient with streptomycin, gentamycin or chloramphenicol, and administer chemoprophylaxis of close contacts with tetracycline for seven days from time of last exposure.

Respond to action threshold for epidemic-prone diseases	**If the suspected case is confirmed:** • Isolate patients and contacts of pneumonic plague with precautions against airborne spread (wear masks, for example) until at least after 48 hours of appropriate antibiotic therapy. • Mobilize community to enable rapid case detection and treatment, and to recognize mass rodent die-off as a sign of possible impending epidemic. • Identify high-risk population groups through person, place, and time analysis. • Reduce sporadic and outbreak-related cases via improved control or rodent populations (remove trash, food sources, and rat harbourages) and protect against fleas with insect repellent on skin and clothing and environmental flea control (especially in homes and seaports and airports).
Analyse and interpret data	**Time:** Plot a graph of monthly trends in cases and deaths. Construct epidemic curve for outbreak cases. **Place:** Plot the location of case households. **Person:** Immediate case-based reporting of cases and deaths for routine surveillance. Count weekly cases and deaths for outbreaks. Analyse age distribution and assess risk factors to improve control of sporadic disease and outbreaks.
Reference	*Plague Manual: Epidemiology, Distribution, Surveillance and Control/ Manuel de la Peste: Epidémiologie, Répartition, Surveillance et Lutte.* WHO/CDS/CSR/EDC/99.2

8.13 PNEUMONIA

Background	• Infection of the lower airways caused by bacteria or viruses transmitted person-to-person via aerosolized respiratory droplet spread. The main bacterial causes of pneumonia among children are Streptococcus pneumoniae (the pneumococcus) and Haemophilus influenzae type b (Hib). • Acute respiratory infections (ARIs) and pneumonia represent the number one cause of mortality among children less than 5 years of age. • Incubation period is usually less than 7 days, depending on the etiology. • WHO and UNICEF recommend use of Integrated Management of Childhood Illness (IMCI) strategy to reduce morbidity and mortality attributable to childhood pneumonia. Early anti-microbial therapy has been shown to reduce mortality. • Resistance of the pneumococcus and Hib to beta-lactams (for example, ampicillin), sulfonamides (for example, tremethoprim-sulfamethoxazole) and other antimicrobials is increasing. • Viruses such as respiratory syncytial virus (RSV) may also cause ARI and pneumonia.
Surveillance goal	• Early identification of pneumonia cases and epidemics using clinical definitions. • Monitor antimicrobial resistance routinely and during outbreaks. • Reducing the proportion of severe pneumonia cases compared to non-severe pneumonia cases to monitor quality of interventions.

Recommended case definition	**Clinical case definition (IMCI) for pneumonia:** A child presenting with cough or difficult breathing and: • 50 or more breaths per minute for infant age 2 months up to 1 year • 40 or more breaths per minute for young child 1 year up to 5 years. *(Note: A young infant age 0 up to 2 months with cough and fast breathing is classified in IMCI as "serious bacterial infection" and is referred for further evaluation.)* **Clinical case definition (IMCI) for severe pneumonia:** A child presenting with cough or difficult breathing and any general danger sign, or chest indrawing or stridor in a calm child. General danger signs for children 2 months to 5 years are: unable to drink or breast feed, vomits everything, convulsions, lethargy, or unconsciousness. **Confirmed case:** Radiographic or laboratory confirmation of pneumonia will not be feasible in most districts.
Respond to a suspected outbreak for other diseases of public health importance	**If you observe that the number of cases or deaths is increasing over a period of time:** • Report the problem to the next level. • Investigate the cause for the increase and identify the problem. • Make sure that cases are managed according to IMCI guidelines. • Treat cases appropriately with recommended anti-microbial drugs
Respond to a confirmed outbreak of other disease of public health importance	**If the number of case or deaths increases to two times the number usually seen during a similar period in the past**: • Assess health worker practices of IMCI guidelines for assessing, classifying and treating children with pneumonia and severe pneumonia. • Identify high-risk populations through analysis of person, place and time. • Conduct community education about when to seek care for pneumonia.

Analyse and interpret data	**Time:** Conduct month-to-month analysis for unexpected or unusual increases. Plot a graph of cases and deaths by month. Construct epidemic curve for outbreak cases. Plot month-to-month data and compare to previous periods. **Place:** Plot location of case households. **Person:** Count monthly pneumonia and severe pneumonia cases. Count pneumonia deaths. Analyse age distribution.
Reference	*Integrated Management of Childhood Illnesses*. World Health Organization. WHO/CDR/95.14.1

8.14 POLIOMYELITIS (ACUTE FLACCID PARALYSIS)

Background	• Poliovirus (genus Enterovirus) serotypes 1, 2, and 3 are transmitted from person-to-person via faecal-oral spread. • Incubation period is 7 to 14 days for paralytic cases and the range is approximately 3 to 35 days. Immuno compromised persons may shed the virus for several years. • Infection is usually asymptomatic, but may cause a febrile syndrome with or without meningitis. In less than 5% of infections paralysis results, often of a single leg. • Polio infection occurs almost exclusively among children. Infection may occur with any of 3 serotypes of Poliovirus. Immunity is serotype-specific and lifelong. • Paralytic polio, though not fatal, has devastating social and economic consequences among affected individuals. • The Polio Eradication Program has nearly halted ongoing wild-type polio transmission worldwide through use of oral poliovirus (OPV) vaccine. Globally, poliovirus type 2 appears to have been eliminated. Serotypes 1 and 3 polioviruses still circulate in several African countries and surveillance are not yet adequate to assure eradication in many countries. • Areas with low vaccine coverage may allow ongoing wild-type transmission. • Other neurologic illnesses may cause AFP, for example, Guillain-Barré syndrome and transverse myelitis.

Surveillance goal	• Immediate case-based reporting of all poliomyelitis cases. *Weekly summary reporting of cases for routine surveillance and outbreaks. • Detect cases of acute flaccid paralysis (AFP) and obtain laboratory confirmation of the aetiology of all suspected AFP cases. Obtain two stool specimens with 14 days of the onset of paralysis for viral isolation. • Surveillance for AFP is used to capture all true cases of paralytic poliomyelitis. Target for surveillance performance to provide certification of polio eradications is 1 case of AFP per year per 100 000 population aged less than 15 years. • A sixty days follow up should be done for all cases of AFP. At Provincial and National level the following performance indicators must be calculated; a) Non Polio AFP detection rate (one case per 100000 under 15years of age per year), b) Percentage with adequate stool sample (target is 80%) c) Percentage of AFP cases where 60day follow up has been done (target is 80%).
Recommended case definition	***Suspected case:*** Any case of weakness or floppiness of sudden onset not due to trauma in a child under 15 years of age. ***Confirmed case***: A suspected case with wild poliovirus isolation in stool.
Respond to alert threshold for diseases targeted for eradication	**If a single case is suspected:** • Report the suspected case immediately according to the national polio eradication programme guidelines and fill the case based surveillance reporting form. • Conduct a case-based investigation. • Collect two stool specimens. Collect the first one when the case is investigated. Collect the second one from the same patient 24 to 48 hours later. The specimen should be transported in reverse cold chain to arrive at Polio reference Laboratory within 72hrs of specimen collection. • Obtain virological data from reference laboratory to confirm wild-type poliomyelitis or Vaccine Associated Paralytic Poliomyelitis (VAPP) within 28 days from the Date of arrival in the reference laboratory.

Respond to action threshold for diseases targeted for eradication	**If a case is confirmed:** • If wild poliovirus is isolated from stool specimen, refer to national polio eradication programme guidelines for recommended response actions. The national level will decide which actions to take and may include: • Specify reasons for non-vaccination of each unvaccinated case and address the identified deficiencies. • Immediately conduct "mopping-up" vaccination campaign around the vicinity of the case. • Conduct surveys to identify areas of low OPV coverage during routine EPI activities, and improve routine vaccine coverage of OPV and other EPI antigens. • Lead supplemental vaccination campaigns during National Immunization Days (NIDs) or Sub-National Immunization Days (SNIDs). Focus supplemental vaccination activities in areas of low vaccine coverage during EPI. Consider use of house-to-house vaccination teams in selected areas.
Analyse and interpret data	**Time:** Plot a graph of monthly cases (which should be zero to very few cases per area per year), or weekly cases during an outbreak. Evaluate the percent of suspected cases reported within 48 hours and the percentage with adequate laboratory evaluation. **Place:** Plot location of AFP cases on a country map. Investigate the circumstances of poliovirus transmission in each case thoroughly. Examine the possibility of other potential areas of transmission. **Person:** Count monthly routine and outbreak-related cases. Analyse age distribution. Assess risk factors for low vaccine coverage.
Reference	*Field Guide for Supplementary Activities Aimed at Achieving Polio Eradication*. World Health Organization.

8.15 SEXUALLY TRANSMITTED INFECTIONS

(Urethral discharge Male and female genital ulcer)

Background	• Infections of the human genito-urinary and reproductive systems transmitted via human sexual contact (sexually transmitted disease, STIs). The most common causes of male urethral discharge are a) the gonococcus *Neisseriae gonorrhoea* and b) *Chlamydia trachomatis*. The most common causes of male and female genital ulcers are a) syphilis *(Treponema pallidum), b)* herpes simplex virus (HSV1 or 2) and c) *chancroid (Haemophilus ducreyi).* • STIs are endemic in most countries of the world, including Kenya. Multiple simultaneous STIs are common (for example, gonorrhea plus *Chlamydia).* STIs may be most highly prevalent in areas where HIV occurs and may facilitate HIV transmission. STIs may be primary or from repeated attacks of urethral discharge. • STIs are a leading cause of abortion and stillbirth, prematurity, and congenital infections. They may lead to pelvic inflammatory disease (PID), a major cause of decreased fertility. • Incubation periods for gonorrhea are 2 to 7 days; Chlamydia 7 to 14 days (or longer); syphilis, 10 days to 12 weeks (usually around 3 weeks), and chancroid, 3 to 14 days. • STIs may be more commonly diagnosed in men, in whom clinical evidence of infection may be more readily apparent.
Surveillance goal	• Early detection and treatment of STI reduces transmission rates. Active efforts to diagnose latent syphilis may prevent significant disability. • Improve early and effective treatment of STIs using simple algorithms based on syndromic diagnosis for index cases and partners. • Carry out laboratory-based anti-microbial sensitivity monitoring and modify treatment guidelines accordingly at the national level. • Compare surveillance data for both STIs and HIV/AIDS since STIs may reflect co-presence of HIV.

Recommended case definition	***Suspected case***: • *Genital ulcer syndrome (non-vesicular):* Any male with an ulcer on the penis, scrotum, or rectum, with or without inguinal adenopathy, or any female with ulcer on labia, vagina, or rectum, with or without inguinal adenopathy. • Urethral discharge syndrome: Any male with urethral discharge with or without dysuria. ***Confirmed case***: • *Genital ulcer syndrome (non-vesicular):* Any suspected case confirmed by a laboratory method. • Urethral discharge syndrome: A suspected case confirmed by a laboratory method (for example Gram stain showing intracellular Gram-negative diplococci).
Public health action	• Conduct active case finding for specific target groups. • Conduct primary prevention activities such as promotion of safer sexual behaviours and provision of condoms. • Assess use of algorithms for detection and treatment of STIs. And improve health worker practice with algorithms. • Include STI prevention and care services in maternal and child health, and family planning services. • Target acceptable and effective STI prevention and care services to populations identified as vulnerable to STI transmission. • Promote early STI health seeking behaviour.
Analyse and interpret data	**Time:** Plot a graph of cases each quarter. **Place:** No recommendation for analysis of place. **Person:** Count quarterly cases and analyse age distribution.
Reference	*Guidelines for Sexually Transmitted Infections Surveillance*. Geneva. UNAIDS and World Health Organization. WHO/CDS/CSR/EDC/99.3. UNAIDS/99.33E

8.16 TUBERCULOSIS

Background	• Infection of the lungs and other organs usually caused by Mycobacterium tuberculosis transmitted person-to-person by droplet infection through coughing, sneezing or spitting. Clinically, the pulmonary form of the disease is more common than the extra-pulmonary form. The cardinal symptoms of pulmonary TB are chronic cough, weight loss, fever, loss of appetite and night sweats. • Tuberculosis (TB) is a leading cause of infectious illness and death worldwide with over 8 million new cases and 3 million deaths per year. In African countries, approximately 1.6 million of the new cases and over 70,000 cases occur each year. It is also estimated that between 30 and 50% of all new TB cases detected are infected with HIV and 40% of all AIDS deaths are due to TB.In Kenya 200-300 cases are detected annually. A 20% annual increase has been observed in the last 5 years.It affects all age-groups but more so the economically productive age groups of 15 to 44years. Those who are at highest risk of dying from TB include people with HIV/AIDS, malnutrition and other immuno-compromising conditions, the very young, and the very old. • The global HIV pandemic has been a major cause of increasing TB cases, especially in African countries. • Incubation period is approximately 1 to 3 months. • WHO recommends the Directly Observed Therapy, Short-course (DOTS) strategy to maximize compliance and treatment efficacy and to reduce development of drug-resistant strains. The DOTS strategy has been implemented by at least 40 of 46 Member States in the African region. Varying degrees of success have been achieved in controlling TB where resources and motivation for diagnosis, treatment, and patient follow up are adequate. • Clinically, bacterial pneumonia, malaria, trypanosomiasis, HIV/AIDS and a variety of other bacterial, parasitic, and viral infections may cause similar syndromes of fever, cough, fatigue, and weight loss, or may themselves precipitate active TB in an already infected individual. Abdominal or other extra-pulmonary sites of infection may occur after ingestion of unpasteurized cows' milk (M. bovis).
Surveillance goal	• Early detection of persons with infectious lung disease to improve chances of clinical improvement and reduce transmission of TB. • Improve percentage of TB cases confirmed by microscopy

Recommended case definition	***Suspected case***: Any person with a cough of 3 weeks or more Chronic chest pain Haemoptysis ***Confirmed case***: *Smear-positive pulmonary* TB: a) a suspected patient with at least 2 sputum specimens positive for acid-fast bacilli (AFB), or b) one sputum specimen positive for AFB by microscopy and radiographic abnormalities consistent with active PTB as determined by the treating medical officer, or c) one positive sputum smear by microscopy and one sputum specimen positive on culture for AFB. *Smear negative PTB*: a patient who fulfils all the following criteria: a) two sets taken at least 2 weeks apart of at least two sputum specimens negative for AFB on microscopy, radiographic abnormalities consistent with PTB and a lack of clinical response despite one week of a broad spectrum antibiotic, a decision by a physician to treat with a full course of anti-TB chemotherapy, or b) a patient who fulfils all the following criteria: severely ill, at least two sputum specimens negative for AFB by microscopy, radiographic abnormalities consistent with extensive pulmonary TB (interstitial and miliary), a decision by a physician to treat with a full course of anti-TB chemotherapy, or c) a patient whose initial sputum smears were negative, who had sputum sent for culture initially, and whose subsequent sputum culture result is positive.
Respond to a suspected outbreak for other diseases of public health importance	**If you observe that the number of cases or deaths is increasing over a period of time:** • Report problem to the next level, or according to national guidelines. • Treat individual cases with Directly Observed Therapy, Short-course (DOTS) strategy. • Where feasible, isolate persons using respiratory infection control practices, especially if multi-drug resistant TB is suspected. • Investigate cause of increase, including performance of DOTS programme in your area.
Respond to a suspected outbreak for other diseases of public health importance	If the number of cases or deaths increases to two times the number usually seen in a similar period in the past: • Assess health worker performance with detection and treatment of smear-positive PTB and improve practices as needed. • Assess DOTS program and take action to make identified improvements. • Conduct drug susceptibility tests to establish patterns of resistance.

Analyse and interpret data	**Time:** Plot a graph of cases and deaths monthly. **Place**: Plot distribution of case households and workplaces. **Person:** Count monthly cases and deaths. Analyse age and sex distribution quarterly.
Reference	*Treatment of Tuberculosis: Guidelines for National Programmes.* WHO/TB/97.230 *Policy Statement of Prevention Therapy Against TB in People Living with HIV,* WHO/TB/98.255

8.17 VIRAL HEMORRHAGIC FEVERS

Background	• This is a hemorrhagic disease syndrome caused by the following viruses: Ebola-Marburg (filoviruses), Lassa fever, Rift Valley fever (RVF), Congo-Crimean hemorrhagic fever (CCHF), and dengue hemorrhagic fever (DHF). No DHF has been reported in Africa. • The disease is transmitted from person-to-person (Ebola, Marburg, Lassa, CCHF), or via mosquitos (RVF, dengue), ticks (CCHF), rodents (Lassa), or contact with infected animals (RVF, CCHF). Ebola and Marburg may be transmitted via sexual contact. • Some viral hemorrhagic fevers (VHF) have explosive outbreak potential: international reporting to WHO is required within 24 hours. • Incubation period is variable, from 3 to 21 day depending on aetiology. • The minority of cases have hemorrhagic symptoms, but among those with these symptoms, the case fatality rate is high (15% to 90%). • Risk factors: In the health care setting, outbreaks may be amplified when standard barrier precautions are not taken, or in ceremonies involving touching ill or deceased infected persons or their secretions. Sporadic cases may arise from sexual contact or via sylvatic exposures (for example, occupation), or possibly following direct contact with infected animals. • Other hemorrhagic conditions that may mimic VHF include yellow fever, dengue, anthrax, leptospirosis, rickettsial infections, relapsing fever, and other infectious agents and toxic exposures.

Surveillance goal	• Detect hemorrhagic fever cases and outbreaks promptly and seek laboratory verification of the aetiology of all cases of suspected VHF. • In outbreak settings, the disease spectrum of VHF agents may include non-hemorrhagic febrile syndromes, and laboratory testing should be considered among persons with milder symptoms suggestive of viral illness.
Recommended case definition	Suspected case: Illness with onset of fever and no response to usual causes of fever in the area, and at least one of the following signs: bloody diarrhoea, bleeding from gums, bleeding into skin (purpura), bleeding into eyes and urine. Confirmed case: A suspected case with laboratory confirmation (positive IgM antibody or viral isolation), or epidemiological link to confirmed cases or outbreak.
Respond to alert threshold for epidemic-prone diseases	If a single case is suspected: Report case-based information immediately to the appropriate levels. Begin VHF isolation precautions immediately and enhance standard precautions throughout the health care setting. Use protective clothing, disinfection of surfaces and spills, safe disposal of materials used for patient care and safe disposal of patient waste. Treat and manage the patient with supportive care. Collect specimen safely to confirm the case.
Respond to action threshold for epidemic-prone diseases	**If a single case is confirmed:** • Maintain strict VHF infection control practices throughout the duration of the outbreak. • Mobilize the community for early detection and care. • Conduct community education about the confirmed case, how the disease is transmitted, and how to use infection control in the home care setting. • Conduct active searches for additional cases that may not come to the health care setting (older women or small children, for example) and provide information about prevention in the home and when to seek care. • Request additional help from national levels as needed. • Establish isolated ward to handle additional cases that may come to the health centre.

Analyse and interpret data	**Time**: Plot a graph of cases and deaths monthly. Construct an epidemic curve during the outbreak. **Place:** Plot location of case households and work sites using precise mapping. **Person:** Immediate case-based reporting of cases and deaths. During the outbreak, count and report cases and deaths. Analyse age and sex distribution. Assess risk factors immediately and consider request for assistance to improve outbreak control.
Reference	*Infection control for VHF in the African health care setting*, WHO, 1998. WHO/EMC

8.18 YELLOW FEVER

Background	• Viral hemorrhagic disease caused by a flavivirus transmitted human-to-human via Aedes mosquitos (urban epidemics) or via forest mosquito species and forest primate reservoirs (jungle cycle). • Large scale outbreaks every 3 to 10 years in villages or cities. Sporadic cases can occur regularly in endemic areas. Resurgence of disease in Africa since mid-1980s. True incidence far exceeds reported cases. • Incubation period 3 to 6 days after the bite from an infected mosquito. • While only the minority of cases are severe, case fatality rate may be 25% to 50% among patients with syndrome of hemorrhage, jaundice, and renal disease. • Risk factor: sporadic cases often linked to occupation or village location near woods or where monkeys are numerous. Also non-vaccinated persons. • International reporting to WHO required within 24 hours. • Viral Haemorrhagic Fever (VHF) and other infections causing haemorrhage may mimic yellow fever. • In Kenya four Districts in Rift Valley Province are considered to be high-risk areas and children in those Districts are targeted for Yellow Fever Vaccination in routine Immunization. Supplemental immunization will be carried out in four districts in the year 2002 targeting the whole population.
Surveillance goal	• Detect hemorrhagic fever cases and outbreaks promptly, and seek laboratory verification of the aetiology of all cases of suspected yellow fever. (Other viral hemorrhagic fevers, dengue, anthrax, leptospirosis, rickettsial diseases, malaria, and other infectious agents and toxic exposures may cause similar epidemics.)
Recommended case definition	***Suspected case***: A person with acute onset of fever followed by jaundice within two weeks of onset of first symptoms. Hemorrhagic manifestations and renal failure may occur. ***Confirmed case***: A suspected case with laboratory confirmation (positive IgM antibody or viral isolation) or epidemiological link to confirmed cases or outbreaks.

Respond to alert threshold for epidemic-prone diseases	**If a single case is suspected:** ▪ Report case-based information immediately to the next level. ▪ Treat and manage the patient with supportive care administered under a bed net (ORS, paracetamol for dehydration, fever) and strict isolation procedures. ▪ Collect blood specimen for laboratory confirmation. ▪ Investigate the case to determine how transmission occurred. ▪ Plan and carryout an immunization activity.
Action threshold for responding to epidemic-prone diseases	**If a single case is confirmed:** • Mobilize community early to enable rapid case detection and treatment. • Conduct a mass campaign in appropriate age group in the area (ages 6 months and older) and in areas with low vaccine coverage. • Identify high-risk population groups and take steps to reduce exposure to mosquitoes. • Improve routine and mass vaccination campaigns to include yellow fever in high-risk areas.
Analyse and interpret data	**Time:** Plot a graph of cases and deaths monthly. During an outbreak, graph cases and deaths weekly. Construct an epidemic curve during outbreaks. **Place:** Plot location of case households and occupation with precise mapping. **Person:** Report immediate case-based information for cases and deaths. Report summary totals monthly. During outbreak, count cases and deaths weekly. Analyse by age. Assess risk factors to improve prevention of sporadic outbreaks.
Reference	*District guidelines for yellow fever surveillance.* WHO 1998