

# National Guidelines on Epidemic Preparedness and Response



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**health**

Department:  
Health  
REPUBLIC OF SOUTH AFRICA

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## PREFACE

Prevention and control of epidemic prone communicable diseases remains a priority in South Africa. These diseases commonly spread rapidly within the country and across country borders. Epidemic prone diseases such as meningococcal disease, cholera, typhoid fever, yellow fever and viral haemorrhagic fevers (VHFs), have resulted in high morbidity and mortality globally.

Again the emergence of unknown/novel pathogens and re-emergence of infectious diseases of epidemic potential, continue to pose a threat to the health of our communities. In order to contain and minimise their impact, alertness and epidemic preparedness is critical. This therefore calls for vigilance, a systematic approach, strong coordination and rapid response mechanisms. Outbreaks just as other emergencies, can reach disastrous proportions when there is inadequate preparation, and a weak and uncoordinated response.

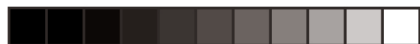
Experience has shown that where epidemic preparedness plans have been formulated and adequately implemented, not only were outbreaks detected early, but also the response has been rapid and well targeted, resulting in effective and rapid control.

These guidelines therefore seek to strengthen national, provinces, districts and facilities in their mission to prevent, manage, and control outbreaks/epidemics promptly.

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MS. B HOGAN , MP  
MINISTER OF HEALTH  
Date 06/03/2009





## Acronyms

<b>EPI:</b>	Expanded Programme on Immunisation
<b>EPR:</b>	Epidemic Preparedness and Response
<b>HIV:</b>	Human Immune Virus
<b>MDR- TB:</b>	Multi-Drug Resistant Tuberculosis
<b>NHLS :</b>	National Health Laboratory Services
<b>NICD:</b>	National Institute for Communicable Diseases
<b>SARS:</b>	Severe Acute Respiratory Syndrome
<b>STI:</b>	Sexually Transmitted Infections
<b>XDR- TB:</b>	Xtreme-Drug Resistant Tuberculosis





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The development of these guidelines is the result of collaboration efforts by the National Department of Health and other stakeholders. I would like to thank provinces, academic institutions, and researchers for their valuable contributions.

I wish to express my sincere gratitude to members of the Epidemic Preparedness and Response Working Group who were responsible for drafting these guidelines. The Working Group was composed of members from the following organizations:

- National Department of Health
- World Health Organisation (WHO)
- National Institute for Communicable Diseases (NICD)
- National Health Laboratory Services (Medunsa)
- Communicable Diseases Directorate, KwaZulu-Natal Department of Health

Finally, I would like to thank the Provincial Communicable Disease Control Coordinators and members of the National Outbreak Response Team (NORT) for their critical inputs and advice. I am confident that this document will assist health care workers responsible for communicable diseases control in strengthening the implementation of epidemic preparedness and rapid response strategies. This will in turn help to achieve reduced morbidity, mortality and disability due to infectious diseases in our country.

MR TD MSELEKU  
DIRECTOR-GENERAL: HEALTH

## CHAPTER ONE: INTRODUCTION

### 1.1 Background

The emergence and re-emergence of infectious diseases of epidemic potential, calls for improved preparedness, strong coordination and rapid response. Epidemics, as other emergencies, can reach disastrous proportions where there is poor preparation, weak and uncoordinated responses. Experience has shown that where epidemic preparedness plans have been formulated and implemented, not only have outbreaks been detected timely, but also the response has been rapid and well targeted, resulting in effective and rapid control.

The benefits of early detection are numerous. Early detection enables rapid response, which limits the number of cases and geographical spread, shortens the duration of the outbreak and reduces fatalities. These benefits do not only help reduce the associated morbidity and mortality but also save resources that would be necessary to tackle a large epidemic.

It is therefore important for the Department of Health to strengthen epidemic preparedness and response [EPR], particularly at district and community levels. Attention needs to be focused on preparedness, response actions, ways to monitor these activities and, finally, on the evaluation of the effectiveness of control measures.

Epidemic Preparedness and Response Plans should be underscored by detailed strategies for all priority diseases. These plans should clearly outline the interventions and specific activities to be implemented, resources needed e.g. human, finance, clear time frames, and monitoring and evaluation indicators e.g. input, process, output and outcome.

### 1.2 Legislative Framework

#### a) The National Health Act (Act 61 of 2003)

Section 3 (1) (c) of the Act, gives the Minister of Health the responsibility to, within the limits of available resources determine the policies and measures necessary to protect, promote and maintain the health of the population.

In addition, the Act empowers the Director General: Health, to:

- Ensure the implementation of national health policy in so far as it relates to the national department [section 21, (1) (a)].
- Issue guidelines for the implementation of national health policy [section 21, (1) (b)].
- Issue, and promote adherence to, norms and standards on health matters [section 21, (2) (b)].
- Coordinate health and medical services during national disasters [section 21, (2) (e)].
- Facilitate and promote the provision of health services for the management, prevention and control of communicable and non-communicable diseases [section 21, (2)(k)].

#### Section 23 (a) of the Act:

(ix) The National Health Council advises the Minister on “epidemiological surveillance and monitoring of national and provincial trends with regard to major diseases and risk factors for diseases”.

Provincial and District health councils also have similar functions on communicable disease control coordinators. This piece of legislation requires provinces and health districts to compile Strategic and Annual Performance plans, which should be made up of components that include Disaster Management plans.

#### b) The Disaster Management Act (Act 57 of 2002)

The Act provides for:

- An integrated and co-ordinated disaster management policy that focuses on preventing or reducing the risk of disasters, emergency preparedness, rapid and effective response to disasters and post-disaster recovery.

#### c) The Intergovernmental Relations Framework Act (Act 13 of 2005)

The Act is to provide within the principle of co-operative government set out in Chapter 3 of the Constitution a framework for the national government, provincial governments and local governments, and all organs of state within those governments, to among others, facilitate co-ordination in the implementation of policy and legislation.

## CHAPTER TWO: AIM AND OBJECTIVES OF THE EPR GUIDELINES

The aim of this document is to assist health care workers responsible for communicable diseases control in improving epidemic preparedness and rapid response strategies so as to reduce morbidity, mortality and disability due to infectious diseases. The specific objectives of these guidelines are to assist the process of Outbreak Response to:

- Strengthen Outbreak Response Teams with clear roles and responsibilities including terms of reference of each member/unit at all levels of the health system
- Develop a list of priority diseases e.g. epidemic prone infectious diseases, diseases targeted for elimination and eradication, and those of public health concern
- Develop functional Epidemic Preparedness and Response [EPR] Plan/Strategy for priority diseases
- Strengthen capacity at all levels, including communities on Epidemic Preparedness and Response
- Strengthen early detection, rapid response, outbreak investigation and epidemic management and control at all levels
- Strengthen monitoring and evaluation of epidemic preparedness and response strategies, and
- Document all outbreaks/epidemics and share information with all relevant stakeholders and educate the general public.
- Integrate outbreak action plans with those of other committees e.g. infection control committees at health facilities.

### 2.1 Outbreak Response

Outbreak response needs a well organised system with clear roles and responsibilities at all levels

The National, Provincial and District Departments of Health should establish and sustain well-constituted and well-functioning outbreak response teams. The overall aim of the outbreak response teams is to:

- Identify infectious disease outbreaks by ensuring the existence of a functional surveillance system
- Prepare for and investigate outbreaks wherever they occur
- Prepare adequately and timeously for emergencies and ensure rapid response and systematic management of outbreaks, in order to reduce morbidity, and mortality

#### 2.1.1 Outbreak Response Committee

The Committee should be at the National and Provincial levels, and be multisectoral and multidisciplinary, responsible for coordinating outbreak response.

Within the Department of Health, representatives will come from the following units:

- Communicable Disease Control (including EPI, Malaria, TB, HIV, STI, etc)
- Surveillance (including programme specific surveillance)
- Epidemiology and Information Systems
- Laboratory
- Environmental Health, including Port Health
- Health Promotion
- Clinical Care
- Infection Control

Additional members that are critical and should be part of the overall outbreak response committee are:

- Finance, Pharmacy, Communications, Hospital Management, Emergency Medical Services\Disaster Management, Primary Health Care (PHC) etc.

It should be realised that the constituents of the committee will also depend on the cadres available within the health system and also the types of priority conditions or outbreaks experienced by the country, province or district. Other sectors, especially Departments of Water Affairs and Forestry, Defence, Local Government, Social Development, Education, Agriculture, non-governmental organizations, international agencies, public entities, civic structures and community leaders/structures, etc should be involved accordingly.



## Functions of the Outbreak Response Committee

- To contribute to the preparation of the plan of action for epidemic preparedness and response that has been costed to allow for appropriate resource allocations
- To mobilise human, material and financial resources for epidemic prevention and control
- To provide information and education to the general public before, during and after outbreaks/epidemics
- To monitor the implementation of outbreak/epidemic control actions
- To coordinate assistance for epidemic prevention and control from various partners
- To monitor resource utilisation (drugs, vaccines, supplies, disinfectants, logistics, human and financial resources)
- To recommend appropriate strategies and measures for the rapid containment of epidemics
- To monitor and evaluate overall preparedness, investigation and response to ensure documentation of all outbreaks and provide feedback at all levels.

### 2.1.2 Outbreak Response Teams

The Outbreak Response Teams (ORT) are at District and Sub-district levels with membership that is multidisciplinary and multisectoral with representation from the following units / departments:

- Department of Health
- Health facilities ( clinical managers, CEOs , Infection Control nurses etc.)
- CDC Coordinators
- Surveillance officers and or Health Information Officers
- Environmental Health
- Laboratory Services
- Public Health specialists
- Other relevant Government Departments

### 2.2 General Responsibilities of the Outbreak Response Team Members

The activities of the outbreak response team should be underscored by the common understanding of reducing morbidity and mortality due to infectious diseases. This objective can be realised through the following general responsibilities of the team:

- To verify and confirm any rumour of disease outbreak at all levels
- To carry out outbreak investigation
- To coordinate the implementation of the plan of action and participate actively in the implementation of epidemic prevention and control strategies
- To provide technical support to the health facilities during outbreaks/epidemics
- To monitor and evaluate overall preparedness, investigation, response and documentation.

### 2.3 Meetings

The relevant most senior or delegated officials that can make immediate decisions within the Department, should chair the outbreak response committee / team at national, provincial and district levels. It is recommended that the District Manager chair the outbreak response team at district level. The frequency of meetings will depend on the nature of the outbreak/epidemic and its epidemiological situation.

#### 2.3.1 During Outbreaks/Epidemic Periods

During outbreaks, it is recommended that the team meet on a daily basis. The frequency may be reduced depending on the extent of the outbreak. When the control measures are launched and when epidemiological surveillance data show no more extension of the epidemic, a weekly meeting may suffice. The responsibilities described above should be reviewed regularly in order to ensure the success of epidemic control actions. Leaders should ensure proper secretarial support and minuting of the proceedings of the meetings.

#### 2.3.2 During Non Outbreak/Epidemic Periods

The core team should meet monthly and the extended team, including members from other departments, should meet at least quarterly. Districts at risk of outbreaks should systematically convene meetings of the team at the beginning of each epidemic season in order to assess the trends of epidemic-prone diseases and review the implementation of epidemic preparedness plans.







## 2.4 Roles and Responsibilities/Terms of Reference of Team

It is critical for the participating units, organisations and individuals to clearly understand their roles and responsibilities. As a result, Terms of Reference should be agreed upon and every member should honour them. A guide is herein provided and should be considered in reaching consensus when drawing terms of reference for the team.

It should also be noted that the Terms of Reference could be adapted to suite local needs, be it at national, provincial, district or sub-district level, and will depend on the resources available. Refer to Annexure A for information on the roles and responsibilities/terms of reference by various stakeholders in the prevention, control and management of disease outbreaks.

These terms of reference are expected to be dynamic in nature and should be continuously reviewed, given the nature of emerging and re-emerging infectious diseases and the control measures to manage them. The involvement of various stakeholders will also be determined by the nature of outbreaks and epidemics the country experiences.



## CHAPTER THREE: PRIORITY CONDITIONS, THRESHOLDS AND CASE DEFINITIONS

A sensitive surveillance system is critical to enhance prediction and early detection of outbreaks/ epidemics as well as monitoring and evaluation of intervention programmes. It is important to note that the priority epidemic prone diseases need to be reported on a weekly basis. A priority list should be adjusted as the need arises e.g. seasonality (to include influenza A during the winter months) and locally/provincially (e.g. focus on bilharzia in the Eastern Cape, North West and other provinces).

In setting up priority diseases, it is important to recognise outbreaks/epidemic in terms of historical trends such as frequency, time, place and person. The impact of these diseases should be a guiding principle, e.g. potential number of cases and deaths, including the potential to spread.

Community health workers, traditional healers, birth attendants, health workers who conduct outreach activities in hard-to-reach areas, and community leaders should be informed about the priority diseases. This will help them in recognising persons with these signs and should be encouraged to refer them to the nearest health facility.

Available resources are central in determining these priority conditions and are categorised as follows:

- Both alert and epidemic thresholds should be assigned to all priority diseases. Thresholds serve as part of the early warning system, and facilitate the implementation of appropriate actions. See Table 1 for priority conditions and thresholds. Thresholds should be determined by the area specific epidemiology. An alert threshold suggests to health staff that further investigation is needed and that contingency plans i.e. drug stocks and supplies and preventive measures, such as health promotion, should be in place.

An alert threshold is reached when, depending on the disease, 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 staff responds to an alert threshold by:

- Reporting the suspected problem to the next level
- Reviewing data from the past
- Requesting laboratory confirmation
- Being more alert to new data and the resulting trends in the disease or condition
- Investigating the case or condition
- Alerting the appropriate disease-specific program manager and district epidemic response team of a potential problem

An epidemic threshold triggers a definite response. It signals an action beyond confirming or clarifying the problem. Possible actions include communicating laboratory confirmation to affected health centers, implementing an emergency response such as an immunisation activity, community awareness campaign, or improved infection control practices in the health care setting. The following steps are required to establish thresholds:

- If data from previous years is available, review trends in cases and deaths due to these diseases over the last 5 years.
- Determine a baseline number to describe the current extent of the disease in the catchment area
- As appropriate, take into account factors for diseases such as malaria or cholera with seasonal increases
- State the threshold clearly as a number of cases per month or week, so that health staff responsible for surveillance activities can readily recognise when the threshold is reached
- Periodically, revise the epidemic thresholds and adjust accordingly depending on past and current trends for the disease
- If the extent of the disease's burden is changing (for example, cases are increasing), then adjust the threshold

**Table 1: Priority Conditions and Thresholds**

Priority Conditions	Alert Thresholds [Cases]	Epidemic Thresholds [Cases]
<b>Epidemic Prone Diseases</b>		
Cholera	1	1
Plague	1	1
Typhoid fever	1	2 or more epidemiologically linked
Shigellosis*/Dysentery	Trends	Trends
Malaria*	Trends	Trends
Yellow fever	1	1
Meningococcal disease	1	2 or more epidemiologically linked
Viral Haemorrhagic Fevers	1	1
Viral hepatitis	2 or more epidemiologically linked	2 or more epidemiologically linked
SARS	1	1
Influenza by Novel Virus	1	1
<b>Diseases Targeted for Elimination and Eradication</b>		
Polio/AFP	1	1
Tetanus neonatrum	1	No epidemic potential
Trachoma	1	No epidemic potential
Measles	1	1
Leprosy*	Trends	No epidemic potential
<b>Public Health Importance</b>		
Bilharzia*	Trends	Trends
Rabies, human	1	1
Food Poisoning	2 or more epidemiologically linked	2 or more epidemiologically linked
Tetanus	1	No epidemic potential
MDR-TB	1	2 or more epidemiologically linked
XDR-TB	1	2 or more epidemiologically linked

\*Thresholds will be determined by area specific epidemiology

NOTE: Thresholds for some diseases will not change between districts or health facilities because they are determined by national policy. Both clinical and community case definitions should be used to identify these conditions.( Table 2 and Table 3)

**Table 2: Case Definitions for Health Facility Level**

<b>Epidemic-Prone Diseases</b>	
Cholera	In an area where the disease is not known to be present, any person 5 years of age or more who develops severe dehydration or dies from acute watery diarrhoea. In an area where there is a cholera epidemic a patient 5 years or more develops acute watery diarrhoea, with or without vomiting.
Shigella	Any person with diarrhoea and visible blood in the stool.
Typhoid Fever	Any person with insidious onset of sustained fever, headache, coma, malaise, anorexia, relative bradycardia, constipation or diarrhoea, non productive cough and confirmed by isolation of salmonella typhi from blood, stool or any other clinical specimen.
Meningococcal Disease	Any person with headache, fever, stiff neck, drowsiness or confusion, eyes sensitive to light, nausea or vomiting, fits, and skin rash.
Plague	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.
Viral Haemorrhagic Fevers	Any person with severe illness, fever, and at least one of the following signs: bloody stools, vomiting blood, or unexplained bleeding from gums, nose, vagina, skin or eyes.
Yellow Fever	Any person with sudden onset of high fever (>39°C rectal or 38°C axillary), followed by jaundice within two weeks of onset of first symptoms.
Malaria	Any person with fever with or without headache, confusion, 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.
SARS	Any person presenting with: sudden onset of fever and cough or sore throat and or difficulty breathing with or without clinical or radiographic findings of pneumonia.
<b>Diseases Targeted for Eradication and Elimination</b>	
Acute Flaccid Paralysis [Polio]	Any child less than 15 years of age with acute onset of flaccid paralysis or a person of any age in whom the clinician suspects polio
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 becomes still or has convulsions or both.
Measles	Any person with fever, and maculopapular (blotchy) rash, and cough, coryza or conjunctivitis.
Leprosy	A person having one or more of the following: skin patches with loss of feeling, enlarged and tender peripheral nerves, loss of sensation and mobility of the hands, feet or face, or decreased sweating, non-itching, shiny, glossy lumps and/or thickened skin.
Trachoma	Any person with chronic follicular keratoconjunctivitis. Conjunctiva is red and swollen, with small whitish dots/follicles inside lining of the eyelids. There may also be visible red dots, or papillae and scars.
<b>Diseases of Public Health Importance</b>	
Rabies	Any person with history of exposure to saliva of suspected rabid mammal
Bilharzia	Blood in urine or abdominal pain, hepatosplenomegaly confirmed by Schisto eggs in stool or urine
Viral Hepatitis	Jaundice with or without fever, confirmed by serological testing
Food Poisoning	Any person presenting with acute onset of vomiting, diarrhoea, abdominal pain or malaise after ingestion of food. Botulism presents with neurological symptoms
MDR-TB	Any person with symptoms of night sweats, fever, malaise, loss of appetite, loss of weight, cough of more than two weeks and a laboratory diagnosis of Mycobacterium tuberculosis strain resistant to Isoniazid and Rifampicin
XDR-TB	Any person with symptoms of night sweats, fever, malaise, loss of appetite, loss of weight, cough of more than two weeks and a laboratory diagnosis of Mycobacterium tuberculosis strain resistant to Isoniazid, Rifampicin, any of the fluoroquinolones (Ciprofloxacin, Ofloxacin) and injectables (Amikacin, Kanamycin, Capreomycin) used as second line drugs for the treatment of MDR-TB

**Table 3: Case Definitions for Community Level.**

<b>Epidemic-Prone Disease</b>	
Cholera	Any person 5 years of age or more with lots of watery diarrhoea
Shigellosis/Dysentery	Any person with diarrhoea and visible blood in the stool
Typhoid Fever	Persistent fever with headache
Meningococcal Meningitis	Any person with fever and neck stiffness/headache
Plague	Any person with 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.
Viral Haemorrhagic Fevers	Any person who has an unexplained illness with fever and bleeding or who died after an unexplained severe illness with fever and bleeding
Yellow fever	Any person with fever and yellowing in the white part of the eyes or yellowing of the skin
Malaria	Any person who has an illness with high fever and a danger signs like lethargy, unconsciousness, vomits everything, convulsions, and in children less than 5, unable to drink or breast-feed
SARS	Any person with sudden onset fever and cough and difficulty in breathing
<b>Diseases Targeted for Elimination and Eradication</b>	
Acute Flaccid Paralysis [Polio]	Sudden onset of floppy weakness/paralysis in any limb
Measles	Any person with fever, rash and cough, runny nose or red/watery eyes
Neonatal tetanus	Any newborn that is normal at birth, and then after 2 days, becomes unable to suck or feed.
Leprosy	A person with skin patches with loss of feeling; and/or loss of feeling and/or mobility in the hands, feet and face.
Trachoma	Any person with red and swollen conjunctivitis. with small whitish dots, inside the lining of the eyelids
<b>Diseases of Public Health Importance</b>	
Rabies	Exposure to saliva of suspected rabid animal
Viral Hepatitis	Yellow eyes, dark urine
Bilharzia	Blood in urine or stool
Food Poisoning	Diarrhoea or vomiting following ingestion of food
MDR-TB	Any person with symptoms of night sweats, fever, malaise, loss of appetite, loss of weight, cough of more than two weeks
XDR-TB	Any person with symptoms of night sweats, fever, malaise, loss of appetite, loss of weight, cough of more than two weeks



## CHAPTER FOUR: DISEASE OUTBREAK INVESTIGATION

Disease outbreaks may be notified through various sources, e.g. clinical and laboratory surveillance, community members and leaders, and media. To follow are ideal elements to be considered before and during disease outbreak investigation:

### 4.1. Preparing for Outbreak Investigation

Proper planning before an outbreak investigation takes place is very essential. It is important to decide whether there is a need to investigate or not. Prior to the investigation, the team should prepare a method for tracking the reporting and response to outbreaks or rumors. In verifying rumours or outbreaks, the following factors should be considered:

- Source of information (For example, is the source of the rumor reliable?)
- Number of reported cases and deaths
- Transmission mode, risk and severity
- Political or geographic considerations
- Available resources

The outbreak investigation always needs to be treated with urgency. Regardless of the various factors, suspected outbreaks need to be reported within 48 hours. If outbreak is verified, coordinate the investigation objectives with the person responsible for coordinating outbreak response team. Make travel arrangements for getting to and from the site of the investigation. Inform health staff about the tasks they will be expected to do and the functions they will support. Prepare a diagram showing who will report to whom and how information will move both within the investigation team and between the district and other levels, including the most local level. Methods may include daily updates by radiophone, facsimile, electronic mail or conference calls. Also, define the role of non-health staff and how they should be supervised before conducting a field visit.

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. Involve the community and local health facility staff in planning and conducting the investigation. Consider information about local customs, culture, and routines as it could affect the success of the outbreak investigation. Observe the appropriate authorisations, clearances, ethical norms, and permissions that are required to do the investigation.

#### 4.1.1 Laboratory Logistics

Make sure transportation for moving specimens to the appropriate laboratories has been arranged. The laboratory results are used to accurately diagnose illness, and verify the cause (or etiology) of a suspected outbreak. Laboratory specimens should arrive in the laboratory in good condition. 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. Standard operating procedures should be followed for the diagnostic test for confirming the disease or condition, specimen to be collected, when to collect the specimen, how to prepare, store and ship it, when to expect the results and sources for additional information. Rapid response kits that contain supplies and equipment for carrying out the investigation should be made available.

### 4.2 Methods of Investigation

The investigation team should review how to collect and record the required information. For example, at a minimum, staff should know how to gather and record information on a line list. Agree on the variables to be collected, recorded and analysed prior to the investigation. For example, a line list for summarising time, place and person analysis, epidemiologic curve, spot map and analysis tables for risk factors, age group, gender, immunisation status, and so on.

### 4.3 Confirm the Diagnosis

If the disease is to be confirmed by laboratory testing, refer to the laboratory standard operating procedures which describes how to collect, store and ship 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 persons at the health facility. Find out if the laboratory results are consistent with the clinical findings. Seek additional assistance from higher levels or technical experts if you have any questions about the laboratory results.





## 4.4 Review the Clinical History

Examine the 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, the following questions among others:

- Where do you live?
- When did the symptoms begin?
- Who else is sick in your home (or workplace, village, neighborhood)
- Where have you traveled 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?
- What is the source of your water?
- What did you eat prior to the onset of the signs and symptoms?

## 4.5 Case Management

Strengthen case management at the health facility (or any place where the patients are being managed). Provide the health facility with advice, support, and supplies as indicated by the case management guidelines. For example, monitor the patients' signs and symptoms, and treat the patient with available recommended drugs and supportive therapy. 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 supplies and body fluids.

## 4.6 Search for Additional Cases [Record Review]

Once the initial cases have been confirmed and treatment has begun, actively search for additional cases. 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. Request health workers and hospital staff, to search for similar cases in the registers from neighboring health facilities.

## Search for Cases in the Community

Identify areas of likely risk where the patients have lived, worked, or traveled. Also talk to other informants in the community such as priests or school teachers. The disease and its mode of transmission will determine the areas for the search and factors of risk 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. 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 or symptoms that meet the case definition. Collect information that will help to describe the magnitude and geographic extent of the outbreak. Refer newly identified/suspected cases to the health facility for treatment.

## 4.7 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 reporting form, line list or any other recommended form. For each case, record at least:

- The patient's name, address, and village or neighborhood 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 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 immunisation status if the disease being investigated is a vaccine-preventable disease
- The name and designation of the person reporting the information

## 4.8 Receive Data from Health Facilities

Note: The Department recommends that the national office receive reports from provinces of suspected cases for immediately reportable diseases within 48 hours of the case being seen at the health facility. Both weekly and





monthly reports of summary data should be received on time. 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 to improve reporting. Make sure that health staff who record, report or store data understand the need for privacy and confidentiality. Data should be recorded in a line list form **[See Annexure B for Patient-Based Line List Form and Annexure C for Provincial/District Summaries.]**

#### 4.9 Analyze Data by Time, Place, and Person

In order to detect outbreaks, follow their course, and monitor public health activities; health staff needs to know how many, where and when the cases occurred. 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.

During the initial analysis, summarise 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 “epi” 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).

##### 4.9.1 Analyze Data by Time

Analysing data to detect changes in the numbers of cases and deaths over time is the purpose of “time” analysis. Data about time is usually shown on a graph. 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. As the histogram develops, it will demonstrate an epidemic curve. Highlight significant events on the histogram with arrows. For example, review the log of reported outbreaks and rumors 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
- The district notified the province and national levels

The purpose for highlighting these events 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.

##### 4.9.2 Analyze 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. Use the place of residence on the case reporting forms or line lists to plot and describe clusters of cases occurring in a particular area, travel patterns that relate to the method of transmission for this disease and common sources of infection for these cases. 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 kilometers)
- 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 department. 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 different features, health, villages, roads, and cities, etc

### 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 this 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, gender, urban and rural residences, immunisation 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 and other variables relevant to this disease (death by age group, for example). Analysis by person is recommended for describing the population. Analysis by person is not routinely recommended for summary data.

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 cholera that occurred during the year in children less than 5 years of age.). The **denominator** is the number of all people or cases affected by a specific event within a given area and within a specified time period, such as the population in which the event occurred or the population at risk.

### 4.9.4 Calculate Case Fatality Rate

A case fatality rate helps to indicate whether a case is identified promptly, indicate problems with case-management, and identify a more virulent, new or drug-resistant pathogen. To calculate a case fatality rate, take the total number of deaths [e.g. 5] and divide by the total number of reported cases [e.g. 78]. That is 5 divided by 78 or  $5 \div 78$  is 0.06. To get a percentage, multiply the answer by 100. [i.e.  $0.06 \times 100 = 6\%$ ]. The case fatality rate is therefore 6.0%.

## 4.10 Interpret Analysed Results

Review the analysis results and make conclusions about the outbreak. For example what was the causal agent of the outbreak, source of infection, transmission patterns and control measures implemented and to what effect?

### 4.10.1 Time Interpretation

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 Place Interpretation

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 Person Interpretation

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 measles 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. See **Annexure D** for a summary of the elements of an outbreak investigation and **Annexure E** for an approach to a suspected imported case of a contagious disease.

#### 4.11 Summarise Results and Draw Conclusions

Depending on how often data is reported to the next level (for example, weekly or monthly), review the analysis tools to make sure that the total number of cases and deaths, geographical distribution and case fatality rates are calculated and up-dated. 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 staff are more helpful, drugs are available, clinic fees are charged.

##### 4.11.1 Use Results to Improve Public Health Action

Public health programs have set disease reduction targets. For example: an increase in the number of cases should prompt further inquiry and action to improve the quality of the public health program; Consider improvements such as improving drug availability for case management; Work with community health staff to improve community awareness and health seeking behavior; Improve immunisation coverage in areas of highest risk for a given vaccine-preventable disease. 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 whether 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 a lack of resources is identified as a cause for the increased number of cases.

NB: It is important to note that recording of all rumours and verified or confirmed outbreaks plays a major role in improving early reporting and rapid response. The information recorded can be used for future predictions as well. See **Annexure F** for the Log Form. **Annexures G and H** are to be used for weekly monitoring of epidemic-prone disease and timeliness in reporting respectively. For more information, please contact the communicable disease control units both at national and provincial level [**Annexure J**]



## CHAPTER FIVE: RESPONSE TO A CONFIRMED OUTBREAK

[Activities During a Confirmed Outbreak]

### 5.1 Prepare to Respond

This section describes steps for responding to a confirmed outbreak of a priority disease and trends seen in routine analysis. When an outbreak of a priority disease occurs, the response is immediate. All efforts and resources are aimed at controlling the outbreak. Measures to treat and control the disease and prevent unnecessary deaths or disabilities must be timely. Coordinate information and planning of responses with the appropriate district staff.

For responding to epidemic-prone diseases, the response is planned by the Outbreak Response Team. The Outbreak response Team should routinely:

- Review surveillance data for trends that cause a concern for public health.
- Make sure that the medical supervisors in all the health facilities know and use protocols for recommended case management of priority diseases and conditions.
- 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, availability of funds, supplies for giving vaccinations, procedures for procuring stocks of vaccine in an emergency and conducting a prompt vaccine response to an emergency, checking emergency stock of supplies periodically, making sure they are dry, clean and ready for use and make sure steps for obtaining laboratory confirmation are known by the appropriate staff.
- Refer to the disease specific guidelines and select appropriate response activities that involve proven measures to prevent unnecessary deaths or disabilities. Guidelines should include 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 should be encouraged.
- 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 and rate of immunization coverage for the outbreak disease.
- Alert nearby districts or catchment areas about the outbreak. If they are having a similar outbreak, coordinate response efforts.
- 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. If supplies are not available locally, contact the higher levels to find out where they might be obtained quickly, borrow from other services, activities, or non-governmental organizations in your area or identify practical low-cost substitutes
- Assign clear responsibilities to individuals or units for specific response activities.
- Provide training and supplies so that health staff will be able to keep detailed records on the response activities
- Throughout the response activity, review data on cases, laboratory confirmation, and treatment.
- Identify problems in implementing the activities and modify activities, as necessary.

### 5.2 Implementation of Epidemic Control Actions

In case of an outbreak/epidemic the Outbreak Response Team should assist the community in the implementation of measures aimed at containing the outbreak. The response activities include the following: strengthening case management, updating health staff's skills, emergency immunization campaigns, surveillance, health education and communication, access to clean water, safe disposal of human waste, food handling practices, reduced exposure to mosquitoes, control of vectors, and dissemination of technical recommendations appropriate for the outbreak.

#### 5.2.1 Strengthen Case Management

Suspected cases detected at community level should be **referred** to health facilities for confirmation and appropriate treatment using treatment standard protocols. For some diseases such as viral haemorrhagic fever, yellow fever and plague, cases should be **isolated**. Patients should benefit from **education** on the disease and its mode of transmission so as to protect their families and entourage and thereby contribute to the containment of the outbreak. 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. In a large epidemic, ask the medical officer at each health facility to identify an area that can be used for a large number of patients. Make the necessary drugs and treatment supplies available.

### 5.2.2 Set up Contingency Drugs\Stocks\Supplies

Districts at risk of outbreaks should set-up a contingency stock of drugs and supplies allowing them to manage the first cases without delay before receiving support from higher levels. The contingency stock should be regularly and carefully monitored in order to avoid shortages and expiry of drugs and supplies. The content of the contingency stock varies with the nature of epidemic-prone diseases.

Contingency plans should be available for all priority conditions. Due to the potential for some of these stocks and supplies to expire; and procurement procedures, it is recommended that all the depots should have minimum stock, which can manage at least 100 people per week. This of course will depend on the type and burden of disease and availability of resources and infrastructure.

### 5.2.3 Update Health Staff Skills

Give clear and concise directions to health staff taking part in the response. 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 and equipment and disposing of bodies safely. In an urgent situation, there often is not time for formal training. Provide on-the-job or one-on-one training as needed. For example, ask a skilled clinician to do one-on-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.

### 5.2.4 Conduct an Emergency Immunisation

Collaborate with the district or national EPI and disease control programme manager 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.** Determine the target population for the activity based on the case and outbreak investigation results.

### 5.2.5 Conduct Surveillance\Case Finding

Using standard case definitions for the community (Table 3), efforts should be made for detecting all individuals with signs and symptoms of the disease causing the outbreak. 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 centers 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.

### 5.2.6 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. Decide **what to communicate** by referring to disease specific recommendations. Make sure to include: Signs and symptoms of the disease, how to treat the disease at home, if home treatment is recommended, prevention behaviors that are feasible and that have a high likelihood of preventing disease transmission, when to come to the health facility for evaluation and treatment, and immunization recommendations, if any.

Decide **how to state the message**. Make sure that the messages use local terminology, are culturally sensitive, clear and concise. Work with local traditions and address beliefs about the disease. Select appropriate communication methods that are present in your district. For example: radio, television, newspapers, meetings with health personnel, community, religious and political leaders, posters, flyers, and presentations at markets, health centres, schools, women's and other community groups, service organizations, religious centers. See fact sheets information on priority conditions **[Annexure I]**.





Give health education messages to community groups and service organisations and ask that they disseminate them during their meetings. Give health education messages to trusted and respected community leaders and ask them to spread them to the community. 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. Meet with the community spokesperson to give up-to-date information on the outbreak and response. Give clear and simple health messages that the media should use without editing. Give clear instructions to communicate to the media only the information and health education messages provided by the Epidemic Response Committee.

### 5.2.7 Improve Access to Safe Water

Make sure the community has an adequate supply of safe water for drinking and other uses. Water needs are much higher during an outbreak situation, especially outbreaks of diarrhoeal diseases. If no local water sources are available, during an emergency, water supply may need to be brought in by trucks. In case of water-borne diseases, particular caution should be exerted in **handling drinking water**. One should drink only **safe water**, that is, water **treated** by ebullition, chlorination or filtration. Public water sources should be well supervised to make sure they supply safe drinking water. After treatment, drinking water should be **stored** in appropriate containers and protected from contamination. To make sure that families have **safe drinking water at home** provide community education on how to keep home drinking water safe and on containers that prevent contamination of water. For example, use containers with narrow mouths so that people cannot contaminate the water by putting their hands into the container.

### 5.2.8 Ensure Safe Disposal of Human Waste\Sanitation

During an outbreak, **sanitation measures** should be reinforced. **Human waste** should be disposed of properly. The community should be instructed to use appropriate latrines. The latrines should be regularly inspected. **Solid and liquid waste** should be **treated** and **disposed** off properly, by incineration or burial. House and public areas should be kept clean. **Pest control measures** should be applied against flies, cockroaches, rodents, etc. To make sure that human feces 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 10 meters 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.

### 5.2.9 Promote Good Personal Hygiene

The community should be reminded to apply simple and effective personal hygiene measures such as **hand washing** after defecation and before handling drinking water and food, and before eating. Hands should also be washed with soap and water after handling patients, patient dejections or patient's belongings, especially clothes and beddings. One should avoid crowded places. **Clothes and beddings** should be washed and changed regularly.

### Improve infection control practises for airborne infections

Communities and patients should be educated about cough hygiene and avoiding spitting out sputum to prevent spreading the infection to others. This includes instructing them to cover their nose and mouth when coughing or sneezing, and where possible providing face masks or tissues to assist them in covering their mouths.

Facemasks help prevent the spread of bacteria from the patient to others. The facemask can capture large wet particles near the mouth and nose of the patient, preventing the bacteria from being released into the environment. Facemasks could be provided to persons who are infectious, to wear until they become non-infectious. Cloth masks can be sterilized and reused. Paper tissues can be used to cover the mouth and nose when coughing or sneezing. Tissues and facemasks should be disposed in waste receptacles.

The house in which the patient lives should be well ventilated by ensuring that all windows and doors are kept wide-open most of the time to encourage ventilation of the room and sunlight to enter the room to minimize the risk of infection. Where this is not possible the patient should spend most of the time in the open.





### 5.2.10 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 the nationally established standards and controls for the handling and processing of food. Conduct community education on food hygiene practices for the general public and those in the food industry. Visit restaurants, food vendors, food packaging factories, and so on to inspect food-handling practices. Look for safe practices such as proper hand washing, cleanliness and adherence to national standards. Close restaurants, vending areas or factories if inspection results show unsafe food handling practices.

### 5.2.11 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 the insecticide treated net programme and to conduct community education on the proper use of insecticide treated nets and how to avoid dawn-to-dusk mosquito bites.

### 5.2.12 Control vectors

Encourage prevention of diseases carried by rodent/animals 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 avoid contact with the blood and saliva 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

### 5.2.13 Manage Contact/Family

Contacts and family members living with the cases or suspected cases should be **informed** about the disease and its mode of transmission. They should be asked to **refer** to health facility in case they observe symptoms/signs of the disease causing the outbreak. For specific diseases all contacts should be put under close **surveillance**.

### 5.2.14 Burials and Social Gatherings

During an outbreak, particular caution should be exerted for burial of deceased patients. Trained health staff should preferably handle burials. Burial ceremonies should be kept minimal. In general, social gathering such as parties, large meetings and rallies, etc, should be **discouraged**. School activities may be suspended in specific instances.

## 5.3 Monitoring Disease Outbreaks/Epidemics

Continuous monitoring and evaluation should constitute an integral part of managing and controlling an outbreak. The tool below can assist in the daily reviewing of activities to ensure the success of strategies that are implemented during the outbreak.



**Table 4: Monitoring Tool**

MAJOR TASK	DAILY ACTIVITIES [Report of Yesterday's Activities and Write in Today's Activities]	RESPONSIBLE PERSON	DUE DATE
<b>COORDINATION</b>			
Teams/Meetings	Availability of outbreak response team and meetings to coordinate response activities		
<b>CASE MANAGEMENT</b>			
Treatment	Accessibility to health care facilities, drugs and adherence to treatment protocols		
<b>SURVEILLANCE\CASE FINDING</b>			
Data Collection	Recording and reporting of all cases and deaths including data analysis		
<b>HEALTH PROMOTION</b>			
Hygiene Promotion	Develop messages to educate public on specific prevention and control issues e.g. good personal hygiene		
<b>ENVIRONMENTAL HEALTH</b>			
Healthy Environments	Improve access to water and sanitation and vector control		
<b>LABORATORY</b>			
Confirmation	Specimen collection and testing		
<b>GATHERINGS/COMMUNITY PARTICIPATION</b>			
Mobilisation	Encourage involvement of community leaders		
<b>COMMUNICATION</b>			
Feedback	Media liaison/press releases		
<b>LOGISTICS/SUPPLIES</b>			
	Monitor the distribution of supplies and assess future needs		

Additional areas that should be monitored included: infection control, home-based care, referral system, religious leaders\faith\traditional healers\prevention\control, peer education\Schools, burials\imbizo, post outbreak\epidemic evaluation, feedback and social practice



## CHAPTER SIX: MONITORING AND EVALUATION

### 6.1 Monitoring

Monitoring is a process that assists in improving performance. It aims to sustain good quality services rather than finding faults. This section describes how each month; EPR co-ordinators or members of the outbreak response teams visit districts and local municipalities to monitor progress of implementation of EPR plans and to discuss the following issues:

- Preparedness, detection, reporting of priority disease
- Outbreak investigation and response activities.
- Timeliness and completeness of data on a routine basis
- Surveillance data are being used for action at all levels
- Prevention and control activities
- Outbreak detection and districts response with appropriate action.
- The improved surveillance has had an impact on the health events in the district.

Furthermore, various EPR elements that needs to be monitored before, during and after outbreaks/epidemics include:

- Identify and record suspected cases
- Confirm suspected cases
- Collect, review and analyse data
- Availability of well functioning teams and EPR Plans
- Report data
- Investigation and respond to outbreak
- Maintain readiness for epidemic response
- Supervision and training
- Resources
- Feedback

### 6.2 Support Visits

#### a) Begin regularly scheduled monitoring visits 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.
- Data is analysed in the health facility to identify thresholds to take action for reported priority diseases.
- 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 health facility to improve surveillance actions and readiness for outbreak response.

#### b) Provide feedback to health staff during each visit:

Let the health workers 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. If improvements are needed, discuss solutions with the team. Provide on-the-job training as needed if a problem is identified. 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.

#### c) Use of a Support Visit 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 support visit and review timeliness and completeness of reporting

#### d) Identify Targets and Indicators:

Measuring indicators are used to measure the extent of achievement for a particular program or activity. The achievement is compared to overall recommended or expected standard. An indicator can also 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. Select the indicators that are most relevant to the plan for improving EPR, and that will provide information that can be used.







### e) 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. Example:

<b>Indicator:</b>	The proportion of health facilities in the district that keep trend lines for priority diseases.
<b>Numerator:</b>	The number of health facilities that keep trend lines for priority diseases.
<b>Denominator:</b>	The number of health facilities in the district.

## 6.3 Evaluation

Evaluation involves reviewing interventions and determining whether planned goals have been reached, and if not, identifying gaps. Evaluation is a systematic way of learning from experience by using lessons learnt to improve the existing activities and those planned. Evaluation should not stop at a list of problems and their possible causes, but should include recommendations. The following areas should be considered when conducting an evaluation:

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

### Provide Feedback on Evaluation

Provide a report and give feedback to health facilities and authorities 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

Recommend solutions and prioritise activities for improving surveillance and response in the district.



## CHAPTER SEVEN: REPORT WRITING

All Outbreaks\Epidemics must be documented in a scientific and systematic manner. The following is a recommended format for report writing:

### **Title of the Report**

### **Introduction/Background Information**

### **Aim and Objectives of Investigation**

### **Methodology of Investigation**

**Results:** Summary of Major Findings/Description of Outbreak:

- Period/Index Case/Time, Place, Person
- Laboratory Confirmation [Date]/Causal Agent
- Mode of Transmission
- Cases/Attack Rate
- Deaths/Case Fatality Ratio
- Distribution: Time, Place Person, Epidemic Curve, Mapping

### **Description of Response**

- Coordination
- Monitoring/Surveillance
- Laboratory Surveillance
- Case Management
- Health Education
- Environmental Issues
- Community Involvement, etc

### **Results of response and evidence of impact**

### **Lessons Learnt/Self Evaluation**

### **Conclusions and Recommendations**

### **Feedback**

Feedback can take various forms e.g. submissions, meetings [briefings], bulletins, media and other forms of presentations.



## ANNEXURE A

### ROLES AND RESPONSIBILITIES OF OUTBREAK RESPONSE COMMITTEES / TEAM MEMBERS

#### Communicable Disease Control

- Coordinate Epidemic Preparedness and Response (EPR) and epidemiological investigation
- Provide technical support required to develop guidelines on control, prevention and management of epidemic-prone infectious diseases
- Provide technical support to all levels on the control, prevention and treatment of epidemic-prone infectious diseases
- Facilitate laboratory surveillance activities for early detection of outbreaks and monitoring of circulating pathogenic strains
- Develop mechanisms for systematic monitoring and evaluation of strategic plans of EPR on epidemic-prone infectious diseases and feedback
- Liaise with other relevant programmes, government departments and health partners
- Participate in inter-country epidemic preparedness and response activities, e.g. WHO or SADC EPR Initiatives
- Facilitate resource mobilisation (human, financial, infrastructure, etc) for rapid response and timely preparedness
- Develop and disseminate information of disease outbreaks to the public, health authorities, neighbouring countries and World Health Organisation
- Prepare and submit reports/information to strategic managers and political heads and structures such as the Directors General, Ministers, parliament, cabinet, etc.

#### Epidemiology\Surveillance\Health Information

- Surveillance (data collection, capturing, cleaning, analysis and presentation) for rapid response, investigation and management of epidemics.
- Weekly data on priority conditions should be made available to the units responsible for preparedness and rapid response during epidemic and non-epidemic periods
- Ensure that an Early Warning System for potential outbreaks is established and functional for early detection of potential epidemics. Review data on reported epidemic-prone diseases in order to detect possible outbreaks
- Disseminate data for prompt and appropriate response, to all users, in the form of reports, website, etc. timeously
- Conduct epidemiological investigations, and develop reports on the epidemiology of disease outbreaks
- Develop mechanisms for systematic monitoring and evaluation of strategic surveillance plans on epidemic-prone communicable diseases and provide feedback
- Provide technical support to provincial, district and sub-district surveillance\health information managers
- Provide support in epidemic intelligence (clinical surveillance and investigation)

#### Health Promotion

- Develop and distribute Information, Education and Communication [IEC] materials, e.g. posters, pamphlets and audio-visuais, for public awareness in all relevant settings
- Increase public awareness on infectious diseases through electronic media, television, radio, and internet
- Develop active community participation strategies, and ensure community involvement
- Train health promotion practitioners on the various techniques useful for attitude and behavioural change and healthy life styles
- Involve community-based organisations (CBOs) and non-governmental organisations [NGOS] and community health workers in outbreak response

#### Environmental Health

- Conduct environmental assessment and management of risk factors predisposing individuals to epidemic-prone infectious diseases
- Distribute and share the environmental health assessment information with other outbreak response team members, e.g. Communicable Disease Control Coordinator, Health Promotion Manager and





#### Surveillance Officer

- Collect environmental samples for laboratory testing in order to confirm sources of outbreaks
- Facilitate Port Health activities

### Food Control

- Play a central role in the implementation of Food Control Regulations to prevent foodborne diseases and provide technical and legal support in case of foodborne or related outbreaks
- Coordinate food recall activities during foodborne outbreaks

### Communication

- Identify spokespersons for the Department, and work as media liaison between the Department and the public
- Establish guidelines and routines: patients confidentiality, press releases and clear misconceptions
- Manage foreign and international communications in order to protect and maintain diplomatic ties with other countries

### Human Resources

- Facilitate capacity development of members
- Provide technical support and training on epidemic preparedness and response to outbreak response teams
- Motivate for availability of additional human resources

### Pharmaceutical Policy and Planning

- Ensure the provision of medical supplies before and during outbreaks, e.g. drugs, vaccines, equipment

### Finance

- Provide additional and emergency financial support

### Emergency Medical Services and Disaster Management

- Transportation of patients
- Coordination of hospital allocation
- Coordination of all EMS activities, both private and public
- Play a role in incident management

### NHLS/NICD

- Conduct laboratory diagnosis and confirmation of agents of infectious diseases
- Develop and provide standard operating procedures (SOP) for specimen collection, storage and transport
- Provide laboratory surveillance and training [capacity development]
- Strengthen laboratories in terms of skills, logistics and supplies for early confirmation of outbreaks for appropriate and rapid response to epidemics
- Provide technical support for EPR at national, provincial and district levels

### South African Military Health Services

- Provide technical assistance, infrastructure and human resources during and in the absence of outbreaks
- Participate in investigation of outbreaks of deliberate nature

### Department of Water Affairs and Forestry

- Provide safe drinking water and sanitation
- Conduct water quality monitoring of water sources



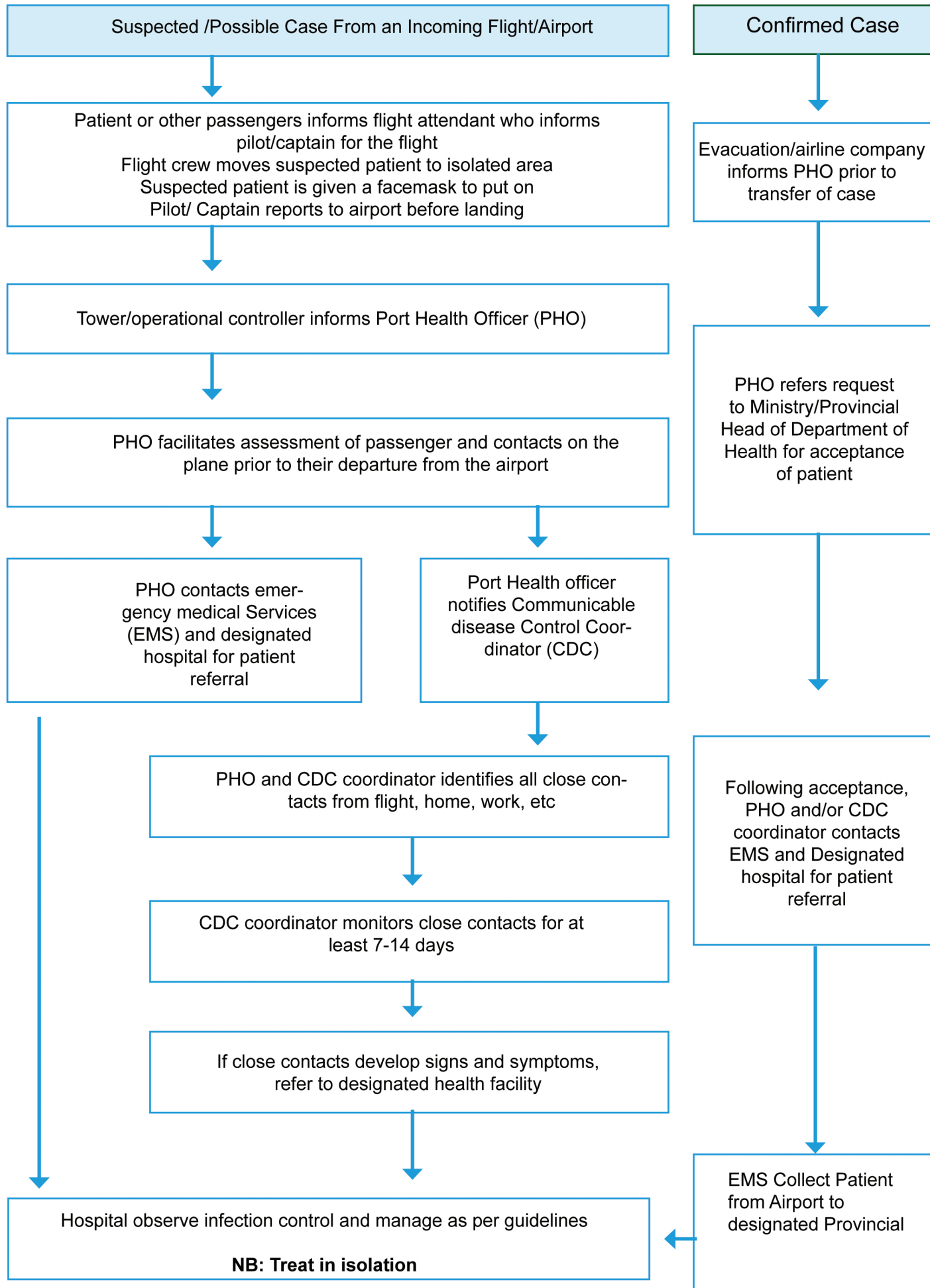




**ANNEXURE D**  
**ELEMENTS OF OUTBREAK/EPIDEMIC INVESTIGATION**

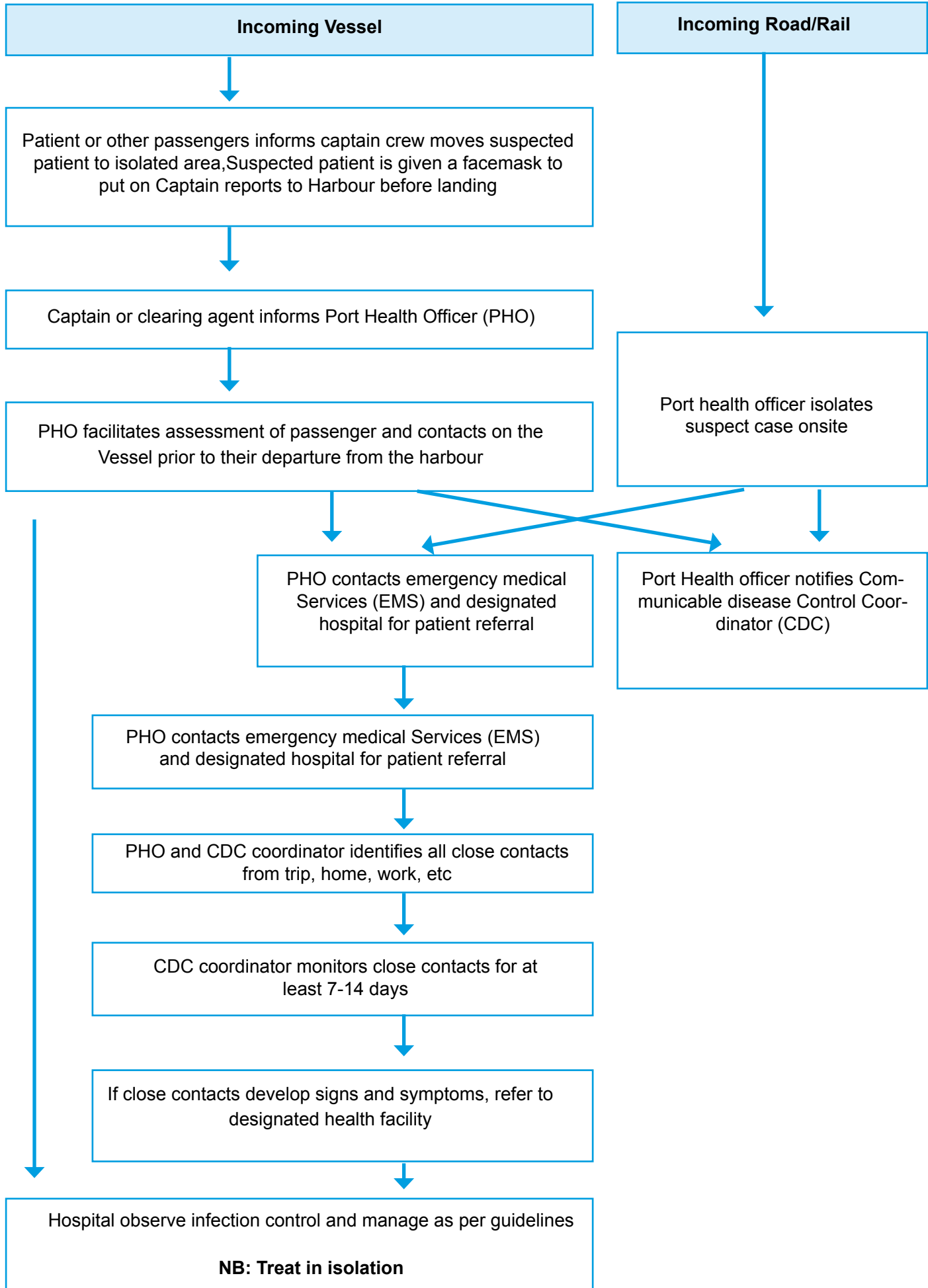
	<b>DETAILED INSTRUCTIONS</b>		
	Verify and Confirm Outbreak or Epidemic	1. Confirm Diagnosis	1. Medical doctor does a clinical examination and 2. The local laboratory test confirms the diagnosis and/or 3. Sample is sent to a reference laboratory (Provincial or NHLS)
2. Establish an Initial Case Definition		4. Choose a working case definition from the list of WHO recommended case definitions, after examining patients and meeting with local health workers (this enables you to describe a typical patient to others and to count patients)	
3. Confirm the Increase in the Number of Cases		5. Using this case definition, what is the usual number of patients per day (or week) with this condition? 6. And what is the number per day (or week) now? 7. When were the first cases seen indicating an outbreak? 8. If deaths, count number of deaths per day (or week) before and now. 9. Count the number of deaths in community due to this disease by verbal autopsy.	
Assess Impact on Health	4. Estimate the Population at Risk	10. Where are the patients found? 11. How many people live in the area where cases have been seen?	
	5. Find the Cases	12. Using the working case definition, interview health workers and review patient and death records (if any) or do rapid household Surveys in the affected area. 13. Count the number of new cases per day (or week.) 14. Determine when the epidemic started! 15. Find the geographical distribution of the epidemic	
	6. Collect Information on all or a Representative Sample of Cases	16. Name 17. Age 18. Sex	20. Place of occurrence 21. Date of onset 24. Severity of illness 25. Outcome
	7. Analyse the information	29. Draw graph showing the number of cases every day (one graph for every area if more than one area) 30. Sketch a rough map showing the highest concentration of cases. Based on this information, you can guess on the transmission of the outbreak (e.g. polluted water source)	
Assess the local Response Capacity and Immediate needs	8. Local Response Capacity	31. What number and type of staff is available locally? 32. Which are available? 33. What has been done in terms of epidemic response? 34. Suggest steps to interrupt transmission. 35. Has any health education been conducted?	
	9. What do you need immediately?	36. Laboratory support? 37. Environmental Support? 38. Personnel? 39. Drug, vaccines and equipment? 40. Transport, communication and logistics?	
Presenting Results	10. Write a report with clear Recommendations	41. Describe the situation using the answers and comments to questions 1-29 42. Estimate the need for outside assistance based on the answers to questions 30-40 43. Give recommendations on priority activities and or further Epidemiological investigations 44. Convey the report to next higher level.	

**ANNEXURE E:  
APPROACH TO AN IMPORTED POSSIBLE/SUSPECTED/CONFIRMED CASE OF  
CONTAGIOUS DISEASE**





**Suspected /Possible Case From a Country/Area With Known Contagious Illness Cases**





**ANNEXURE F**  
**LOG OF SUSPECTED OUTBREAKS AND RUMORS**

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.

Condition or Disease (1)	Number of cases initially reported (2)	Location (Health Centre, Village, etc) (3)	Date district was notified (4)	Date province was notified	Date suspected outbreak was investigated by the district (5)	Result of investigation (Confirmed, Ruled Out, or Unknown) (6)

Date Outbreak Began/Date onset index case/date crossed threshold or first cluster) (7)	Date a case was first seen at a health facility (8)	Date Concrete intervention began (9)	Type of Concrete Intervention that was begun (10)	Date prov Notified National Level of the Outbreak (11)	Date prov received national response (12)	Comments (13)





**ANNEXURE H:  
TIMELINESS/COMPLETENESS RECORDING FORM.**

Province/District/Sub-District:..... Date:..... Time:.....

Province/District/Sub-District	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Total number of reports expected (N)												
Total reports sent on time (T)												
Total reports sent late (L)												
Total number of reports not received (W)												
Timeliness of the reports = $100 * T / N$												
Completeness of reporting = $100 * (N-W) / N$												

NB: T = arrived on time, L = arrived late, W = report not received

Please note that timeliness and completeness are expressed as percents (%). When the surveillance system is good, the rates for timeliness and completeness should approach 100%. This table allows for monitoring the progress of these two indicators in the district so that action can be taken to improve timeliness for each health facility in the district.



## ANNEXURE I: FACT SHEETS ON PRIORITY INFECTIOUS DISEASES

### CHOLERA

#### Signs and Symptoms:

Any person with rice watery diarrhoea, vomiting and sunken eyes with dehydration should be considered as a suspected cholera case.

#### Treatment

Any such person should be given oral rehydration solution (ORS) and urgently referred to nearest health facility.

#### Contacts/Family Members

##### Burials and Social Gatherings:

Burial should be left to trained staff and should occur without delay after disinfection of the body, beddings and all personal belonging of the deceased. Burial ritual and ceremonies should be kept minimal.

#### Water and Sanitation:

One should drink only water treated by boiling, chlorination or filtration. After treatment, drinking water should be stored in appropriate containers and protected from contamination. Human waste should be disposed off properly, e.g. in latrines. Solid and liquid waste should be disposed off properly, e.g. incineration or burial. Pest control measures should be applied against flies, cockroaches and rodents.

#### Health Education:

Community members including students, mothers, workers, and patients with other diseases should be informed of cholera. All possible media should be used, e.g. radio, TV, churches, rallies, public gatherings, posters, booklets, etc. Information for the community include water treatment, handwashing with soap and preparation of ORS [8 teaspoon of sugar, half teaspoon of salt in a one litre of treated water].

Hands should be washed frequently with soap and water, e.g. before eating or handling food and drinks, after defecation and after handling sick persons, or their belongings. Hands should be thoroughly washed with water and soap before handling food. Food should be cooked and eaten warm. Raw food, non-cooked food and pre-cooked food items exposed for long time should be avoided. Peeling raw food is also advised.



## MEASLES

### Case Definition:

Any person with fever and rash should be considered as a suspected case

### Case Management:

Any such person should be referred urgently to the nearest health centre

#### Contacts/ Household Members:

Non-vaccinated children and adults who have not been vaccinated nor have had measles are at risk of contracting the disease

### Prevention

Children in crèches, schools and those hospitalised are exposed when a case is introduced. They should be rapidly vaccinated if they are not yet vaccinated.

### Health Education:

Community members, especially mothers, should be informed about the disease. The community should be informed that measles is a highly contagious disease.

It is caused by a virus transmitted easily from a sick person to a healthy one through the respiratory route. This disease can be easily prevented by vaccination. It is sometimes very serious and can cause death.





## MENINGOCOCCAL DISEASE/MENINGITIS

### Case Definition:

Any person with fever and neck stiffness should be considered as a suspected case

### Case Management:

Any such person should be referred urgently to nearest health centre

### Contacts/Family

This disease can be transmitted from one person to another especially at close contact, e.g. classroom, barracks, crèches, etc. Vaccination and prophylaxis helps in the prevention of the disease

### Health Education:

All community members should be informed about the disease. The community should be informed that meningococcal meningitis is a serious communicable disease transmitted from person to person through the respiratory tract. Many persons may harbour the germ without becoming sick.

Changes in the weather, especially warm, dry and dusty conditions weaken natural defence mechanisms and may help the germ to cause clinical symptoms. Crowding and poor ventilation should be avoided.

There is an effective vaccine against the disease. Although, the current vaccine protects for a period limited to three years, it is very effective for the control of starting outbreaks. There is also an effective treatment. Early treatment help prevent death and complications.





## PLAGUE

### Case definition:

Any case with painful swelling of lymph nodes under arms or in inguinal area, or cough with chest pain and fever in an area known to have plague should be considered as a suspected case.

### Case Management:

Any such case should be referred to the health centre for diagnosis and treatment

### Contacts/Family:

All contacts and household members should be observed for development of similar signs.

### Environmental Sanitation:

Rodent control measures should be applied. Insecticides should be used to get rid of risks, emphasize personal hygiene and one should wear clean clothes. All fleas should be eliminated by the use of appropriate insecticides.

### Health Education:

All community members should be informed about the disease. The community should be informed that plague is a serious communicable disease transmitted from one person to another through the respiratory tract (pulmonary plague) and through flea bites.

Vaccines are not recommended for immediate protection during an outbreak, but recommended as a prophylactic measure for high risk groups (e.g. laboratory personnel who are constantly exposed to the risk of contamination). There is an effective treatment and early treatment help prevent death.





## YELLOW FEVER

### Case Definition

Yellow fever is a vector borne viral disease transmitted between humans by a mosquito. It is characterised by an acute onset of fever, hepatitis (inflammation of the liver), and albuminuria (protein in the urine), followed by remission, renal (kidney) failure, shock, and generalised haemorrhages (bleeding).

### Case Management

There is no specific treatment for yellow fever, besides supportive care.

### Health Education

There are two actions travellers can take to avoid yellow fever:

1. General precautions to avoid mosquito bites should be followed by everyone.
2. Most adults and children over nine months of age can receive the yellow fever vaccine.

General precautions to avoid mosquito bites include the use of insect repellent, protective clothing, and mosquito netting. Yellow fever vaccine is a live virus vaccine. A single dose confers immunity lasting 10 years or more. Some countries require travellers to have received yellow fever vaccine within the last 10 years as a condition for entry.





## RABIES

### Case Definition

Rabies is a zoonotic viral disease, which infects domestic and wild animals. It is transmitted to other animals and humans through close contacts with saliva from infected animals (i.e. bites, scratches, licks on broken skin and mucous membranes). The symptoms include involvement of the respiratory, gastrointestinal and/or central nervous systems, hyperactivity (furious rabies) or paralysis (dumb rabies), coma and death.

### Case Management

#### 1. Treatment

There is no treatment for active rabies. Once symptoms develop, death is the unfortunate outcome.

#### 2. Prevention

##### 2 a) Post-exposure treatment

As part of wound management, the most effective mechanism of protection against rabies is to immediately vigorously wash and flush wound or point of contact with antiseptic solution (chlorhexidine) or soap and water. Anti-rabies vaccine should be given for Category II and III exposures as soon as possible. Anti-rabies immunoglobulin should also be given for all Category III exposures and for Category II exposures in immunosuppressed patients. Suturing should be avoided.

##### 2 b) Animal vaccination

Prevent rabies through dog and cat vaccination. The veterinary services should be notified and information obtained on the epidemiological situation in the area.

### Health Education

Ensure regular vaccination campaigns of domestic canines.



## HEPATITIS

### Case Definition

Hepatitis is a viral infection of the liver. There are several types of viral hepatitis infections, namely, A, B, C, D, E, F and G.

The most common symptoms are loss of appetite, fatigue, fever, body aches, nausea and vomiting, and stomach pain. In more serious cases patients may have dark urine, light coloured bowel movement and yellowing of skin or eyes (jaundice).

### Case Management

There is no specific treatment for hepatitis. Therapy should be supportive and aimed at maintaining comfort and adequate nutritional balance.

Drug and alcohol induced hepatitis can be managed by avoiding the causative agents.

Patients with HBV/HIV co-infection may have exacerbation of hepatitis due to ARV treatment. Choose anti-retroviral regimens based on anti-HBV activity.

### Contacts

All contacts with the infected person should be referred to the health facility for assessment and given appropriate advice on prevention and treatment.

### Health Education

Preventive measures include:

- Good personal hygiene
- Avoid infected contacts
- Immunisation
- Use of condoms



## BACILLARY DYSENTERY

### Case Definition

Any person having diarrhoea with visible blood in the stools should be considered as a suspected case of bacillary dysentery or shigellosis

### Case Management:

Any such person should be given ORS and urgently referred to the health centre for appropriate treatment

### Contacts:

All contacts and household members should be observed for development of bloody diarrhoea

### Food Handling:

Hands should be thoroughly washed with water and soap before handling food. Food should be cooked and eaten warm. Raw food, non cooked food and pre-cooked food items exposed for long time should be avoided.

### Water and Environmental Sanitation:

One should drink only water treated by ebullition, chlorination or filtration. Public water sources should be well supervised to make sure they supply treated drinking water. After treatment, drinking water should be stored in appropriate containers and protected from further contamination. Human waste should be disposed off properly. The community should be instructed to use appropriate latrines. Solid and liquid waste should be treated and disposed off properly, by incineration or burial. Pest control measures should be applied against flies, cockroaches, and rodents.

### Health Education:

The community should be informed that bacillary dysentery is a highly communicable disease, caused by a microorganism and spread from one person to another through food, water, soiled hands and other items. The germ is easily killed by heat (boiling water, cooking food) or by disinfectants such as chlorine. Washing hands with soap and water help get rid of germs on hands. There is no vaccine. One should avoid self-medication as this practice help create drug resistance. Sick persons may develop dehydration, which may cause death. Giving enough liquid to the patient can easily prevent this condition. ORS are very effective for this purpose.

Hands should be washed frequently with soap and water, especially before eating or handling food and drinks, after defecation and after handling sick persons, their belongings (clothes, beddings) or their dejections.



## HAEMORRHAGIC FEVER

### Case Definition:

Any case or death with fever, bleeding from the nose or month, bloody diarrhoea, red urine or blood spot on the skin.

### Case Management:

Any such person should be isolated and urgently referred to the health center for diagnosis and treatment.

### Contacts/Family:

All contacts and household members should be referred to health authorities and observed for development of fever and other signs and symptoms of the disease.

### Burials and Social Gatherings:

Only specially trained staff should handle burial of persons deceased from haemorrhagic fever. It should occur without delay after disinfection of the body, belonging of the deceased. Burial ritual and ceremonies should be kept minimal.

### Health Education:

All community members should be informed about the disease. The community should be informed that haemorrhagic fever (such as Ebola, Marburg, Dengue, Rift Valley) is highly communicable, caused by a microorganism and spread from one person to another through blood and excretions of sick persons. Washing hands with soap and water helps get rid of germs on hands. There is no vaccine. There is no effective, specific treatment. Currently prevention is the only effective control method. Prevention is achieved through strict isolation of sick persons in appropriate health care settings. All persons approaching the patients must wear protective masks, goggles, clothes, gloves and shoes. All personal belongings of the patient, including excretions must be disinfected and disposed off properly by trained health staff. One should also avoid manipulating or eating found carcasses.

Hands should be washed after handling sick persons, their belongings (clothes, beddings) and their excretions.



## TETANUS

### Case Definition:

The most common symptom is stiffness of the jaw, commonly known as lockjaw. Other symptoms include stiffness of abdominal and back muscles and contraction (spasms) of facial muscles. If they affect the chest and airways, the person can suffocate.

### Case Management:

All cases should be referred urgently to a health center for appropriate treatment. Minor wounds: Clean the wound thoroughly with soap and warm water. Leave the wound uncovered, if possible. Severe injuries: See a health care provider for evaluation and treatment (stitches, antibiotics or a Td booster shot). Pay attention to any signs of infection such as redness or warmth of the wound, swelling, tenderness, or fever. If signs of infection develop, consult your health care provider. For a minor injury – Get a tetanus shot if your last tetanus shot was over 10 years ago. For a complicated or contaminated wound (including puncture wounds), get a tetanus shot if your last tetanus shot was over 5 years ago. Most health care providers give tetanus vaccination.

### Prevention:

Pregnancy: Maintain proper hygiene during delivery. Tetanus can be prevented with a vaccine. Newborns: at 6, 10, 14 weeks, teenagers and adults should receive booster doses of Td vaccine, a combined vaccine against tetanus and diphtheria every 10 years.

### Health Education:

Increase community awareness and prompt health-seeking behaviour.





## ACUTE FLACCID PARALYSIS (POLIOMYELITIS)

### Case Definition

Any case of acute flaccid paralysis, including Guillian Barre' Syndrome, in a child less than 15 years of age for which no other cause is apparent, or a patient at any age diagnosed as polio by a medical officer. The virus causes paralysis, which is irreversible in many cases.

### Case Management

Isolation of patient and provide supportive care

### Contacts/Family Members

Vaccination of households and community contacts (mop-up campaigns)

### Prevention (4 strategies)

Polio is a disease for eradication through high routine coverage with oral polio vaccine (OPV), mass immunisation campaigns and 'mopping-up' campaigns. House-to-house vaccination of all children from 0-59 months within a high-risk geographic area or population with 2 doses of OPV regardless of immunisation history. Parents and community can assist by reporting any child less than 15 years with sudden weakness or paralysis in leg(s) or arm(s) that is not caused by injury. All parents and caregivers must take their children for OPV at correct ages.





## BILHARZIA (SCHISTOSOMIASIS)

### Case Definition

The patient may present with blood in urine or stool, rash or itchy skin, fever, chills, coughs and muscle aches can begin within 1-2 months of infection.

### Case Management

Suspected cases should be referred to health centre for diagnosis and treatment. Drugs are available for treatment of schistosomiasis.

### Contacts

Infected patients should be treated and health education for contacts and community should be intensified

### Environmental Health

Monitor quality of water.  
Conducting awareness campaigns and mounting of signboards.

### Prevention and Health Education

Avoid swimming or playing in fresh water when you are in areas in which schistosomiasis occurs. Drink safe water. Bath water should be heated for 5 minutes at 150° F. Water held in a storage tank for at least 48 hours should be safe for showering.

Vigorous towel drying after an accidental, very brief water exposure may help to prevent the schistosoma parasites from penetrating the skin.





## TYPHOID FEVER

### Case Definition

Typhoid fever is a bacterial infection of the intestinal tract and occasionally the blood stream. The disease can be characterised by insidious onset of sustained fever, headache, coma, malaise, anorexia, relative bradycardia, non-productive cough and confirmed by isolation of *Salmonell typhi* from blood, stool or any other clinical specimen.

### Case Management

Cases should be given oral rehydration solution and referred to the health facility as soon as possible. Antibiotics such as ceftriaxone and ciprofloxacin can be used.

### Contacts

Contacts should be observed for disease related symptoms such as fever, headache, constipation or diarrhoea.

### Health education

The community should be informed of the disease, which is highly communicable through consumption of contaminated food or water.

Sanitation measures should be re-enforced, including proper disposal of human waste.

### Prevention

1. Infected persons should avoid handling food.
2. Hand washing with soap and water after using the toilet and before preparing or eating meals should be emphasised.
3. Use of safe water
4. Good personal hygiene
5. Community education on the disease
6. sanitation measures should be re-enforced, including proper disposal of human waste



## MALARIA

### Case Definition

Malaria is a disease caused by a parasite that is transmitted from person-to-person by the bite of an infected Anopheles mosquito. The symptoms of malaria include fever, chills, headache, muscle aches, and malaise (a general sick feeling).

Symptoms can develop as early as 6-8 days after being bitten by an infected mosquito or as late as several months after departure from an area where malaria is present, after antimalarial drugs are discontinued.

### Case Management

- Prompt medical treatment is necessary.
- Case should be referred to health centre.

### Prevention

Preventing mosquito bites is the most effective way to prevent malaria. Contact may be minimised by:

- Indoor residual spraying
- Applying insect repellent
- Use of insecticide treated nets
- Travellers should start prophylaxis treatment before travelling to malarious areas.

Identify high-risk areas to guide preventive measures.

### Health Promotion

To increase public awareness for prompt care seeking behaviour and preventive measures at household and community levels.



## FOOD POISONING

### Case definition

Any person who present with acute onset of vomiting, diarrhoea, abdominal pain or malaise after ingestion of food, and epidemiological analysis implicates the food as the source of illness.

There are more than 250 known foodborne diseases. Bacteria are the cause of most cases, followed by viruses, and parasites. Natural and manufactured chemicals in food products also can result in severe morbidity and mortality. Some diseases are caused by toxins (poisons), from the disease-causing organism, others by the systemic reactions to the organism itself. People infected with foodborne pathogens may have no symptoms or may develop symptoms ranging from mild intestinal discomfort to severe dehydration and bloody diarrhoea and even neurological.

### Case management

Treatment is mainly supportive, since most foodborne gastroenteritis is self-limiting.

Administration of fluids to replace the loss as a result of diarrhoea and vomiting is the mainstay of treatment.

**Antibiotics are indicated in selected cases.**

### Prevention

In most cases foodborne diseases are avoidable. There are some basic ways to prevent being infected by most foodborne microbes:

- Proper food handling and storage
- Water and environmental sanitation
- Use of safe water (water can be made safe by chlorination or boiling)
- Personal hygiene

### Health education:

the community should be informed of the dangers of food poisoning and possible risk factors such as:

- Unhygienic food handling
- Deliberate or accidental addition of chemical poisons to food products
- Consuming unsafe meat products, such as, sick animals or found carcasses



## AVIAN INFLUENZA (BIRD FLU)

### Case Definition

Avian influenza or bird flu is a disease caused by a virus that occurs naturally among birds, and that sometimes infects pigs.

### Case Management

#### Transmission

The flu virus is commonly shed in droppings and secretions from the eyes, mouth and nose of infected birds.

#### Treatment

There are some antiviral drugs available e.g. oseltamivir  
The danger, however, is that flu viruses can become resistant to drugs.

#### Spread to Humans

Through direct contact with infected poultry (chickens, ducks, turkeys)  
Through surfaces contaminated with secretions and droppings from infected birds

#### Risk Factors

Poultry workers and those who work on poultry farms  
Children, because they like to play with birds and animals. Children are not always careful about what they touch, nor are they always conscious about hygiene.  
Hunters and fishermen

#### Signs and Symptoms

- Fever, cough, sore throat and muscle pains
- Eye infections and pneumonia,
- Severe breathing problems and other life-threatening diseases.
- History of contact with birds suspected of being infected with avian influenza

#### Prevention

- Always wash hands with soap and water or ash before and after handling food
- Avoid close contact with birds
- Poultry must not be brought indoors
- Children must report all sick or dead birds seen to adults immediately
- Wash or disinfect shoes, clothes and the wheels of bicycles after visiting farms or poultry markets, especially before going indoors
- If a person feels sick after touching sick or dead birds, contact the nearest health post immediately
- If it is suspected that someone in the family may have contracted the disease, the person must be immediately taken to the nearest health facility.

#### Vaccine for Humans

At present there is no vaccine but trials are underway to test potential vaccines.  
It may, however, take a long time before a vaccine is available.





## MDR-TB and XDR-TB

### Case Definition

**MDR TB:** Multidrug Resistant tuberculosis is defined as tuberculosis disease caused by strains of Mycobacterium Tuberculosis that are resistant to both Rifampicin and Isoniazid, with or without resistance to other drugs.

**XDR-TB:** Extremely Drug Resistant Tuberculosis is defined as tuberculosis disease caused by strains of Mycobacterium tuberculosis that are resistant to Rifampicin and Isoniazid and in addition also resistant to any fluoroquinolone and at least one of the three injectables used as second line drugs for the treatment of MDR-TB (Capreomycin, Amikacin and Kanamycin)

### Signs and Symptoms:

Coughing for longer than 2 weeks, malaise or tiredness, loss of weight, night sweats, fever and loss of appetite

### M(X)DR TB Outbreak

Variations in incubation periods and expression of disease with some patients manifesting as latent disease and others as active disease contribute to difficulties in recognition. An increase in expected TB cases would be therefore difficult to use as a criteria to recognize an outbreak. Unusual patterns of drug resistance are an important alert to the possibility of an outbreak. Relapse of TB disease in a cluster of apparently successfully treated patients may also alert one to the possibility of an outbreak.

A cluster of cases, often with resistant or unusual susceptibility pattern, that may be epidemiologically linked.

### Management

Susceptibility testing of the tuberculosis strains is critical as outbreaks frequently involve drug resistant strains, frequently with unusual or extensive drug resistance. Molecular fingerprinting of isolates must be carried out to confirm the epidemiological links. Sputum specimens from people with suspected drug resistant TB must always be submitted for microscopy, culture and drug susceptibility testing.

There is a standardised regimen for the treatment of MDR TB using a combination of drugs, which the patient has not been exposed to. For XDR-TB the regimen is individualised based on the resistance profile of the patient and drugs to which they are still sensitive to are used but a combination of at least four drugs should be used.

### Household Members:

Should carry out symptom screening and all those who are symptomatic should be investigated further by sputum examination (culture and sensitivity)

Gatherings:

All close contacts in aggregate settings (jails, hospitals, schools, hospices) should be screened like the household members.

### Prevention:

MDR-TB is best prevented by treating drug sensitive TB properly. However, MDR-TB can be transmitted and cases of MDR-TB should be isolated, especially in settings where there are also HIV positive people.

Children under the age of 5 in household contact with an MDR-TB case should receive chemoprophylaxis – the choice of drugs will depend on the sensitivity pattern of the organism of the index case.

### Health Education:

Community members should be informed of an outbreak of MDR-TB. All possible media should be used but care should be taken not to stigmatise the disease or the index case and also not to spread panic in the community. Information to the community should include symptoms of TB and what to do if symptoms are present.



## ANNEXURE J:

### COMMUNICABLE DISEASE CONTROL RESOURCE OFFICES

PROVINCE	ADDRESS	TEL.NO	FAX.NO
National Department of Health	Private Bag X828, <b>PRETORIA, 0001</b>	(012) 321 0375	(012) 321 3113
Department of Health, Northern Cape Province	Private Bag X5049, <b>KIMBERLEY, 8301</b>	(053) 830 0655	(053) 830 0542
North West Department of Health, North West Province	Private Bag X2068, <b>MMABATHO, 2535</b>	(018) 397 2602	(018) 397 2659
Limpopo Department of Health, Limpopo Province	Private Bag X9302, <b>POLOKWANE, 0700</b>	(015) 293 6062/3	(015) 293 6281
Western Cape Department of Health, Western Cape Province	P O Box 2060, <b>CAPE TOWN, 8000</b>	(021) 483 5707	(021) 483 2682
Eastern Cape Department of Health, Eastern Cape Province	Private Bag X0038, <b>BHISHO, 5605</b>	(040) 608 1712	(040) 609 8405/04 (040) 60 1112
Free State Department of Health, Free State Province	<b>Private Bag X2271, BLOEMFONTEIN, 9300</b>	(051) 408 1595	(051) 408 1074
Gauteng Department of Health, Gauteng Province	Private Bag X085, <b>MARSHALLTOWN, 2107</b>	(011) 355 3867	(011) 355 3297
Mpumalanga Department of Health, Mpumalanga Province	Private Bag X11285, <b>NELSPRUIT, 1200</b>	(013) 766 0000	(013) 766 3473
KwaZulu-Natal Department of Health, KwaZulu-Natal Province	Private Bag X 9051, <b>PIETERMARITZBURG, 3200</b>	(033) 395 2051	(033) 342 5830



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