THE UNITED REPUBLIC OF TANZANIA

Ministry of Health

INTEGRATED DISEASE SURVEILLANCE AND RESPONSE

Disease Outbreak Management:

A Field Manual for Council Health Management Teams

February 2004

Version 1.0

Integrated Disease Surveillance and Response (IDSR) in Tanzania is being implemented for the Ministry of Health through a collaboration of the following USAID-funded partners:

Centers for Disease Control and Prevention

Change Project

National Institute for Medical Research

Partners for Health Reform *plus*

Contents

1.0 Introduction

1.1 Purpose of this Manual

Disease Outbreak Management, A Field Manual for Council Health Management Teams (CHMT) in Tanzania was developed as a quick reference for the CHMT and co-opted members on:

- investigation of disease outbreaks,
- response and control strategies,
- case management, and
- supply needs

No single set of guidelines applies to all outbreaks or to all diseases, or can provide all of the information that you need. This manual, along with the documents listed in the reference section, the information that you collect, and consultations with district local authorities, regional and national Outbreak Management Teams, will help your team decide on the most appropriate response to an outbreak.

This manual was prepared during the latter half of 2003 using the information and recommendations provided in the references noted. Users should always check with the Ministry of Health (Epidemiology and Disease Control Section, Emergency Preparedness and Response Unit, Diagnostic Services Section) for the most current information and recommendations.

1.2 How this Manual is Organised

Sections **1.0** and **2.0** of this manual provide the general background information and fundamental principles that apply to all disease outbreaks. Section **1.0** describes why a timely investigation and a quick response are important for controlling and preventing further spread of the disease. Section **1.0** also summarises the roles and responsibilities concerning outbreak management in Tanzania. Section **2.0** gives the basics steps for conducting an epidemiological investigation.

Section **3.0** provides disease-specific protocols for outbreak management and laboratory confirmation. These protocols address epidemiological and clinical characteristics of the specific disease, case management, laboratory confirmation, disease prevention and control for each disease. These disease-specific protocols should be used when the action threshold has been reach for the following diseases: Cholera, Measles, Bacillary dysentery, Cerebrospinal meningitis, Acute Flaccid Paralysis (AFP), Plague, Yellow Fever and Viral Haemorrhagic Fevers. This section also includes a series of job aids for laboratory confirmation that offer step-by-step details for collection and handling of specific specimens, use of transport media, and packaging specimens for transport using the triple packaging system. These job aids also contain technical protocols for laboratory confirmation at referral laboratories.

Supplemental information related to the laboratory confirmation process is attached in the annex section of this manual.

The Annex section provides:

- A Checklist for disease out break management
- A case investigation form, and
- Supplemental job aids for specimen collection

1.3 Why Respond?

Communicable diseases continue to cause most of the mortality and morbidity in Tanzania. The commonest causes of mortality and morbidity in Tanzania include:

- Malaria,
- Respiratory tract infections,
- Diarrhoeal diseases, and
- HIV/AIDS.

Epidemic prone diseases, such as **cholera**, **measles**, cerebrospinal **meningitis**, **plague**, and bacillary **dysentery** are also an increasing problem in Tanzania. Only by active disease surveillance and thorough outbreak investigation can you determine if you are achieving your goals for controlling and preventing disease.

A timely response to a suspected disease outbreak provides the following benefits:

- By identifying the cause or the source of the outbreak early, the Council Health Management Team can limit the spread of the outbreak.
- Basic disease surveillance and outbreak investigations enable you to detect high-risk groups and high-risk areas. This allows you to plan specific strategies for preventing future outbreaks.
- An active response also raises awareness about the importance of health in the community and improves communication with the community. Whenever the community and government officials see an active health team, their respect and support for the CHMT increases.
- Knowing about and responding to an outbreak before the news media writes about it avoids embarrassing publicity.
- An outbreak investigation also provides an opportunity for providing other primary health care services and messages to the community.
- Most importantly, a rapid outbreak response can reduce morbidity, mortality, and disability by promoting proper and prompt case management by both health workers and caretakers.

1.4 Disaster Management in Tanzania

The Disaster Management Act (1990) derives its powers from the Constitution of the United Republic of Tanzania of 1977, which empowers the President to proclaim a state of emergency if there is imminent threat of a disaster. Both the Regional and District Commissioners, who represent the Head of State, have the appropriate authority to declare a regional or district disaster situation. In addition to the Disaster Management Act, several other legal documents provide authority in the management of disease outbreaks. These documents include:

- Infectious Disease Ordinance Cap 96
- Public Health (Sewerage and Drainage) Ordinance Cap 336
- Local Government (Urban Authorities) Act, 1982
- Local Government (District Authorities) (Miscellaneous Amendments) Act, 1999.

Disaster management requires an integrated, multi-sectoral approach, involving active and coordinated participation by all of the key players. TANDREC (Tanzania Disaster Relief Coordination Committee) in the office of the Prime Minister is assigned the leadership and coordination responsibilities for both preparedness and management of disasters. The secretariat to TANDREC coordinates and supervises disaster management activities in the country.

There is a Disaster Management Team at the Ministry of Health (MOH) that represents the health sector for disaster management activities. It has the following responsibilities:

(1) assessing health and medical needs;

(2) conducting health surveillance;

(3) providing medical care and relevant personnel;

(4) providing health and medical equipment and supplies during outbreaks;

(5) evacuating patients;

(6) providing hospital care;

(7) providing drugs and patient safety;

(8) ensuring health worker safety;

(9) identifying biological hazards;

(10) providing mental health care;

(11) ensuring safe blood transfusion for life saving purposes;

(12) supervising vector control activities;

(13) monitoring supply of potable water, and disposal of waste water and solid waste; and

(14) victim identification and mortuary services.

The MOH unit responsible for all health emergencies in the country is called the Emergency Preparedness and Response Unit (EPRU).

1.5 Roles and Responsibilities of Different Levels for Outbreak Management

Controlling and reducing communicable diseases in Tanzania requires establishing permanent outbreak management committees/teams at all levels. These committees/teams have specific roles and responsibilities on outbreak management linked to all levels. Each level is responsible for taking part in outbreak management accordingly.

1.5.1 Ministry of Health

The Ministry of Health (MoH), national level, has the following responsibilities:

(1) preparing national plans and guidelines for outbreak control;

(2) ensuring adequate drugs and supplies for containing outbreaks;

(3) seeking and monitoring donor assistance;

(4) providing and monitoring technical assistance for outbreak control;

(5) preparing materials for sensitizing communities through mass media;

(6) advising all levels on best approaches for controlling outbreaks;

(7) providing training on outbreak control for health workers; and

(8) providing reports and feedback to the mass media.

1.5.2 Regions and Districts

Regions and Districts have the following responsibilities:

(1) analyse epidemiological data from the health facilities and report to higher levels;

(2) make preparedness plans;

(3) form outbreak investigation teams;

(4) ensure adequate drugs and other medical supplies before, during and after outbreaks;

(5) prepare fact sheets to inform communities about disease transmission and prevention;

(6) train health workers on proper case management and control of outbreaks;

(7) follow up on environmental sanitation and availability of clean and safe water;

(8) monitor outbreak control activities;

(9) report to the PHC committee; and

(10) involve the relevant sectors and the community in outbreak control.

1.5.3 Council Health Management Team

The district is the focus for fighting against communicable diseases, including disease outbreaks. The CHMT coordinates and leads the effort to investigate, declare, control, and prevent outbreaks in the district. For epidemic preparedness and response, the CHMT under the District Medical Officer (DMO) should ensure the establishment of at least two teams/committees for outbreak management: the Outbreak Investigation Team and the District Outbreak Management Committee.

The responsibilities of the District Outbreak Management Committee include:

(1) establish, manage, and supervise the District Outbreak Investigation Team;

(2) assist with locating health and welfare workers to carry out control efforts and establish treatment camps;

(3) obtain information in the area of the outbreak;

(4) provide technical assistance on specimen collection and transport;

(5) provide operational assistance concerning food, vector control, water supply, and waste disposal; and

(6) assist with the provision of medical supplies.

At minimum, the co-opted members for the District Outbreak Management Committee should include village representative and the in-charge of the health facility in the infected area.

Under the CHMT, district health staff and other co-opted members are organised to address various health issues. The District Outbreak Investigation Team, which includes CHMT members, is responsible for confirming that there is an outbreak, determining the cause of the outbreak, and planning and implementing the most appropriate response. The investigation team:

(1) reviews information about reported cases to determine if there is indeed an outbreak (*Has the action threshold been met?)*;

(2) conducts the epidemiological investigation in the field;

(3) ensures the collection of specimen for laboratory confirmation;

(4) initiates the search for additional cases;

(5) compiles and analyses the information collected during the investigation;

(6) assesses local resources and the ability to provide a response; and

(7) writes the report (see section **2.0** step 9) and communicates findings to decision makers.

1.5.4 Health Facility

The health facility is the most important level for disease detection and response. With the assistance of the CHMT, health facilities are in the best position for detecting an outbreak and for taking timely and effective action. By maintaining the IDSR graphs on the monthly totals of cases, a health facility will have a picture of the disease pattern in its area, and thereby the ability to detect outbreaks.

Besides serving as the early warning mechanism for detecting and reporting outbreaks, the health facility should work with the CHMT on investigation and control of outbreaks that occur in its catchment area. Ways in which the health facility can assist with outbreak management include:

(1) initiating investigation or response activities immediately according to protocols;

(2) assisting the CHMT with the investigation;

(3) providing timely and proper case management;

(4) initiating prevention and control measures;

(5) collecting and transporting specimens according to laboratory protocol; and

(6) organising long-term measures to prevent future outbreaks.

2.0 Steps for Conducting an Outbreak Investigation and Response

This section describes the 10 basics steps for conducting an epidemiological investigation and implementing an appropriate response. On the next page, a diagram outlines the outbreak investigation and response steps, including the process for laboratory confirmation.

(1) Verify and notify

The first action to take is to verify that the report is correct and that the reported case(s) meet(s) the action threshold. A visit should be made to the health facility or community reporting the outbreak to verify the reported information. Notify the District Commissioner, the District Executive Director and the Regional Medical Officer of any suspected outbreak.

(2) Prepare for the investigation

Observation and data collection in the community reveal important information for controlling the outbreak or preventing future ones; this can be accomplished by conducting an outbreak investigation in the affected community using the following fundamental steps.

Organise your investigation team

Although your CHMT has a designated outbreak investigation team, the composition of the team may vary depending on the disease and staff available. At least one staff person from the health facility in the affected area should participate in the investigation. The health facility team member can help work with the community and with interviewing. Persons with expertise from the regional (or other) level for specimen collection, handling, and transport should be co-opted to assist with the laboratory confirmation process (Refer to Job Aids for Laboratory Confirmation in Section 3). One member of the CHMT should be designated to supervise the interviewing team(s) to ensure that interviews are conducted properly and that case investigations forms are completed correctly.

When planning the investigation, decide on what other tasks and services the team can accomplish, such as oral rehydration therapy (ORT) or providing health messages. Before providing other services, however, obtain the required supplies and be sure that the team members are prepared for these tasks.

Select the community and plan logistics

Use your IDSR data! Select the community that is most affected by the outbreak and where you believe you will gain the most useful information about the cause and the extent of the outbreak. For outbreaks affecting several areas at the same time, it may be more beneficial to select the village with the most cases for collecting detailed information, rather than trying to collect less information from many areas. By carefully defining the catchment area for the investigation, you might reduce logistics expenses as well. By coordinating with government officials you may also obtain additional transportation and logistics support for the investigation.

INSERT PROTOCOL FOR LAB CONFIRMATION HERE

Prepare a budget

A properly planned outbreak investigation requires less funding than a poorly planned one. You can reduce costs by coordinating the investigation with resources in the District. Include the following items in your budget:

- allowances for team members;
- transportation expenses (fuel, oil, etc.);
- stationery for your report and the investigation teams;
- supplies for specimen collection and packaging;
- resources for transportation of specimens (Refer to Job aids for laboratory confirmation in Section 3);
- any additional supplies required.

Meet with the district local officials

Before beginning the investigation, it is important to inform government officials and community leaders that the purpose of the investigation is to determine the cause of the outbreak and to find ways for containing it and preventing future such outbreaks.

(3) Confirm the diagnosis

The most important step in the investigation of any suspected outbreak is to confirm the diagnosis. Although some diseases may appear easy to recognise, they can be confused with other diseases. For example, there are many causes of fever besides malaria and there are other rashes that might resemble measles.

Laboratory tests are necessary to confirm a diagnosis. The investigation team should collect specimens as soon as possible. Refer to the Job Aids for Laboratory Confirmation in Section 3 for disease-specific protocols for tasks related to the collection of specimens and the communication of results. The district should provide the necessary supplies and support for performing these tasks. The remaining steps in conducting an investigation should not be delayed while waiting for laboratory results, but they will be useful for validating or revising case management and response decisions.

(4) Manage and isolate cases

The District should provide the necessary supplies and support for treating patients. When necessary, patients should be isolated as much as possible to prevent further spread of the disease. Treatment sites or treatment camps may also be needed, requiring additional health staff. Details on Case Management and Isolation for each disease are found in Section **3.0**.

(5) Search for additional cases

Other health facilities should be alerted to search for and report suspected cases in their facilities and in their communities. It is important to accurately define the extent of the outbreak and to collect sufficient information on the communities affected in order to determine the cause of the outbreak and to implement the most effective response.

(6) Collect information

Collect information on the outbreak by using the patient registers and case investigation forms. Use the IDSR line listing forms and data sheets that are found in the **National Guidelines for Integrated Disease Surveillance and Response**.

The following critical information should be collected on all patients:

- name of the patient
- residence (village)
- date of onset of illness or date first seen at the facility
- age
- sex
- immunisation status for vaccine-preventable diseases (children and TT for mothers)
- outcome (survived, still in the hospital, or died)

(7) Analyze and interpret data: person, place, time

Using the information from line lists and case investigation forms, describe the outbreak using the following analysis:

Person

1. How many cases and deaths have there been?
2. What is the case fatality rate?
3. Which age group is most affected?

Place

1. Which village(s) is/are affected?
2. What is the geographical distribution of cases?
3. Is the outbreak spreading?
4. Draw a map showing the distribution of cases.

Time

1. When did the cases occur? (date of onset of disease or date first seen at the health facility)
2. Is the number of cases increasing or decreasing?
3. Prepare a graph to display the number of cases and deaths by day. This will show the progress of the outbreak, or the “epidemic” curve.

(8) Plan and implement response activities

Organise and plan the District's response according to the extent of the outbreak using the information collected during the investigation. For waterborne diseases, the CHMT must ensure that suspected contaminated sources are not used. Details on control and prevention activities for each disease are found in Section **3.0**. In addition, the following activities and needs should also be considered:

- additional funds, if needed;
- transportation of specimens;
- supply stock and resources;
- clear assignment of responsibilities for each response activity planned;
- monitoring implementation of the response activities.

(9) Prepare report and give feedback to communities and government officials

The outbreak investigation report is for the entire District. Share the findings with the investigation team, regional and district officials, health facilities, NGOs, and the communities. The report does not need to be long, only informative. The following is a suggested outline on important content for the report.

Background information

- the time period for the outbreak
- the geographical area of the outbreak
- a description of the area investigated (population, environment, health facilities, etc.)
- the members of the investigation team

Results

- a brief narrative summary of the data (e.g. number of cases, age specific attack rates, case fatality rate, coverage rates, information on specimens collected (dates, number, type, results), referral laboratory performing testing, status of laboratory testing)
- confirmation of outbreak based on laboratory findings
- the most important findings
- the most important observations, including drawback if any

Follow-up actions

- specific measures and strategies for controlling the outbreak
- specific actions and the persons responsible for addressing the problems identified by the investigation

- specific measures and strategies for preventing future outbreaks (include the persons responsible and the time frame for implementation).

Summary

- conclusions and recommendations
- cost of the investigation
- suggestions for future investigations
- acknowledgments

Send copies of your report to: the Region, MOH national level, the health facility in the affected area, and NIMR IDSR. You should also send your report to the District Commissioner and District Executive Director.

(10) Develop strategies and activities for preventing future outbreaks

The information that you have collected from your outbreak investigation, along with your routine IDSR data, provides an excellent resource for improving your *District Epidemic Preparedness Plan*.

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Disease-Specific Protocols for
Outbreak Management and Laboratory Confirmation:

Cholera

Standard Case Definition 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 aged 5 years or more with acute watery diarrhoea, with or without vomiting.

Infectious Agent Cholera is caused by the bacterium *Vibrio cholerae*, sero group O1, which includes Ogawa and Inaba.

Action Threshold A single case is a suspected outbreak. Immediately initiate outbreak investigation and response activities.

Clinical Features Cholera patients usually develop acute, watery stools and dehydration. Approximately 75% of people infected with *Vibrio cholerae* have no symptoms and another 20% may only develop a more mild form of diarrhoea. A small proportion, from 2% to 5% of infected people will develop severe watery diarrhoea, vomiting and dehydration.

Mode of Transmission Cholera is transmitted by the faecal-oral route, almost always by contaminated water or food. Transmission by direct person-to-person contact, such as touching patients, is of high risk if precautions and personal hygiene are not observed. Contaminated surface water and water from shallow wells are common sources for infection. Any food, when served at room temperature, is also a common vehicle for transmission. Raw or undercooked seafood and raw fruits and vegetables also transmit cholera.

Incubation Period Usually 2 to 3 days, but may vary from a few hours to 5 days.

Period of Communicability Presumably for the duration of the stool positive stage, and usually only for a few days after recovery. Occasionally the carrier state may persist for several months.

Case Management Administering ORS and/or IV fluids as soon as possible is the primary intervention in case management to prevent death due to severe dehydration. The general steps to be taken are:

- Isolate patients to prevent spread
- Assess the patient's level of dehydration
- Treatments include fluid replacement and antibiotics

For details refer to appropriate guidelines and treatment regimen.

Control and Prevention

In addition to the steps described in **Section 2.0**, the following actions should be taken for a suspected outbreak of cholera.

- Assess water supply
- Ensure safe water supply through boiling or chlorination
- Establish treatment camps where necessary
- Improve environmental sanitation
- Ensure proper excreta disposal
- Ensure food safety
- Educate communities and relatives caring for patients about the importance of seeking appropriate treatment without delay, and the importance of safe drinking water (chlorinate or boil), properly cooked food and regular personal hygiene.
- Intensify surveillance and case detection
- Work with other sectors to ensure safe drinking water and food safety

Supplies

- ORS
- Antibiotics
- IV solution
- IV needles
- Cotton wool
- Adhesive tape
- Disposable gloves

Specimen Collection and Processing for Laboratory Confirmation

- Refer to “Job Aid for Laboratory Confirmation” (for health facilities and districts).

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Disease-Specific Protocols for
Outbreak Management and Laboratory Confirmation:

Bacillary Dysentery

Standard Case Definition Any person with diarrhoea and visible blood in stool and with abdominal pain and cramps.

Infectious Agent Bacillary dysentery is an intestinal infection caused by a group of Shigella bacteria that can be found in the human gut. Large-scale epidemics of bloody diarrhoea are usually caused by *Shigella dysenteriae* type 1 (SD 1).

Action Threshold Two or more cases in a week at a health facility is a suspected outbreak. Immediately initiate outbreak investigation and response activities.

Mode of Transmission Bacillary dysentery is transmitted directly by faecal material of a patient/carrier or indirectly through contaminated food and water. Infection may occur after consuming a small number of the germs. Therefore, chance of spread among household members or in institutions can be very high. It occurs more commonly amongst young children.

Clinical Signs and Symptoms The illness is characterised by sudden onset of fever, diarrhoea with abdominal cramps and nausea or vomiting. The stool may contain blood and mucus. Mild and asymptomatic illness can occur. Illness is self-limited and usually lasts 4 to 7 days, but can last for weeks. Complications include toxic dilatation of large intestine and acute kidney disease. SD 1 is usually the most serious with case fatality rates sometimes as high as 20% in hospitalised cases.

Incubation Period Usually 1 - 3 days, but can be up to 7 days.

Case Management Case management is similar to the management of cholera patients.

- Isolate patients to prevent spread.
- Assess the patient's level of dehydration
- Treatments include fluid replacement and antibiotics

For details refer to appropriate guidelines and treatment regimen.

Control and Prevention

- Proper case management, including proper diagnosis, patient assessment and treatment based on antibiotic sensitivity results.
- Isolate patients to prevent further spread.
- Identify high-risk population groups, such as those living in crowded and unsanitary conditions.

- Community education on proper food handling, hygiene, and water and environmental hygiene.
- Keep the premises and kitchen utensils clean. Dispose rubbish properly.
- Keep hands clean and fingernails trimmed.
- Wash hands properly with soap and water before eating or handling food, and after toilet or changing diapers.
- Drinking water should be boiled.
- Purchase fresh food from reliable sources.
- Wear clean washable aprons and caps during food preparation.
- Clean and wash food thoroughly.
- Cook food thoroughly.
- Consume food as soon as it is prepared.
- Exclude infected persons and asymptomatic carriers from handling food and from providing care to children.

Supplies

- ORS
- Antibiotics
- IV solution
- IV needles
- Cotton wool
- Adhesive tape
- Soap

Specimen Collection and Processing for Laboratory Confirmation

- Refer to “Job Aid for Laboratory Confirmation” (for health facilities and districts).

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Disease-Specific Protocols for
Outbreak Management and Laboratory Confirmation:

Plague

Standard Case Definition Any person with sudden onset of fever, headache and painful swelling of inguinal and axillary lymph nodes or cough with blood stained sputum.

Infectious Agent Plague is an infectious disease caused by a gram-negative bacillus bacteria known as *Yersina pestis.*

Action Threshold A single case at a health facility is a suspected outbreak. Immediately initiate outbreak investigation and response activities.

Clinical Features:
Bubonic plague: enlarged, painful lymph nodes, fever, chills and prostration;
Septicaemic plague: fever, chills, prostration, abdominal pain, shock and bleeding into skin and other organs;
Pneumonic plague: fever, chills, cough and difficulty breathing; rapid shock.

If untreated, the case fatality rate for plague can be as high as 50%.

Mode of Transmission Flea-borne, from infected rodents to humans; Direct contact with infected tissues or fluids from handling sick or dead animals; Respiratory droplets from humans with pneumonic plague.

Plague outbreaks usually begin as the “bubonic” type from the bite of an infected flea. Subsequent cases may appear as septicaemic or pneumonic plague, which occurs from direct exposure to respiratory droplets.

Incubation Period A person usually becomes ill with bubonic plague 2 to 6 days after being infected.

Period of Communicability Fleas remain infective for months under suitable conditions of temperature and humidity.

Case Management Isolate patients and their clothing and provide proper antibiotic therapy.

Control and Prevention Control and preventive measures are directed toward reducing the threat of infection in humans in high-risk areas through three techniques:

Environmental management: 1) Close surveillance for human plague cases, and for plague in rodents and 2) The use of an effective insecticide to control rodent fleas when human plague cases and rodent outbreaks occur.

Public health education:

- Eliminating food and shelter for rodents in and around homes, work places, and recreation areas by making buildings rodent-proof;
- Surveillance for plague activity in rodent populations by public health workers or communities reporting rodents found sick or dead to DMO/CHMT;
- Use of appropriate and licensed insecticides to kill fleas during wild rodent plague outbreaks to reduce the risk of humans;
- Treatment of pets (dogs and cats) for flea control.

Preventive drug therapy: Chemoprophylaxis of immediate contacts

Supplies

- Antibiotics
- Gram stain
- Antibiotic sensitivity testing materials
- Rodenticide and insecticide

Specimen Collection and Processing for Laboratory Confirmation

- Refer to “Job Aid for Laboratory Confirmation” (for health facilities and districts) -- *(still under development)*

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Disease-Specific Protocols for
Outbreak Management and Laboratory Confirmation:

Measles

Standard Case Definition Any person with history of fever, skin rash and any of the following: cough, runny nose and red eyes.

Infectious Agent The measles virus is a member of the genus *Morbillivirus* of the family *Paramyxoviridae.*

Action Threshold 5 cases at a health facility is a suspected outbreak {Note: according to the "Manual on Measles Surveillance for Health Workers in Tanzania" EPI/MOH the action threshold is a "Single Suspect Case"}. Immediately initiate outbreak investigation and response activities.

Clinical Signs and Symptoms Early symptoms, prodromal stage, include: fever, cough, runny nose, and/or conjunctivitis (red eyes). This stage usually lasts from 2 to 4 days, with a range from 1 to 7 days. Koplik spots (reddish spots with a white centre on the buccal mucosa) occur from 1 to 2 days before the rash to 1 to 2 days after the rash. A maculopapular rash appears 2 to 4 days after the prodromal stage and lasts for 5 to 6 days. The rash usually appears on the face and upper neck, and then spreads to the body, arms and legs.

Measles can lead to many different complications: croup, bronchitis, bronchiolitis, pneumonia, conjunctivitis, myocarditis, hepatitis, and encephalitis. Measles can also make the body more susceptible to ear infections or pneumonias caused by bacteria. Symptoms and complications of measles are usually most severe. Complications are more common in children below five years of age and in adults over age 20.

Mode of Transmission Measles is spread through airborne droplets by direct contact with nasal or throat secretions from infected persons. These droplets are inhaled and the virus attaches to the lining of the airways and begins multiplying, causing disease. Measles is a highly contagious disease, and about 90% of nonimmunised persons will develop measles if they live in the same house as someone who has the disease.

Incubation Period The incubation period for measles is about 9 to 11 days between exposure and prodromal symptoms, or about 2 weeks between exposure and the appearance of a rash.

Period of Communicability Persons with measles are contagious from 5 days after exposure to 5 days after the rash appears.

Case Management:

For uncomplicated cases, the following supportive measures are required:

- Controlling fever using tepid sponging and giving analgesic,
- Nutritional support, and
- Vitamin A: 100,000 units for children under one year and 200,000 units for children above one year. Repeat these dosages the following day.

A child with any one of the following signs has severe or complicated measles:

- Recent severe weight loss,
- Cough or rapid breathing, or drawing in of the chest,
- Three or more loose stools a day,
- Damage to the cornea,
- Discharge from the ear(s),
- Convulsions, or
- Coma.

For complicated measles cases the following measures should be taken.

- Vitamin A: 100,000 units for children under one year and 200,000 units for children above age one year. Repeat these dosages the following day.
- Treat pneumonia or otitis media with the appropriate antibiotics.
- Give ORS for diarrhoea.
- Provide high quality diet for malnutrition.

It is important to communicate the following to caretakers of children with measles.

- Continue breast-feeding, or give as much weaning foods and fluids as the child will take.
- Yellow fruits and vegetables, and dark green leafy vegetables are important for recovery.
- Give ORS if there is any sign of dehydration. Be sure that the caretaker knows the signs and symptoms for dehydration and how to mix and give the child ORS.
- Control the child's fever to reduce the risk of convulsion by keeping the child at as normal a temperature as possible.
- Bring the child for treatment if:
    - the general condition worsens,
    - breathing becomes rapid or difficult,
    - diarrhoea continues or there are signs of dehydration,
    - the child is not able to drink, or
    - the eyes become painful, cloudy, or there is a change in vision.

- For uncomplicated measles, the fever will decline within one week and the rash will fade within 10 to 14 days.
- The child may be vulnerable to other diseases for up to one year after contracting measles. Consequently, the mother should bring the child to a health facility as early as possible for any illness occurring within one year after measles.

Control and Prevention
Measles is prevented by a vaccine that can be given before, or within 3 days after, exposure to the disease. Infants are generally protected from measles for 6 to 8 months after birth, due to immunity that was passed on from their mothers. Older children are usually immunised against measles according to state regulations.

Tanzania is implementing an accelerated measles control strategy with a goal of achieving a case fatality rate of less than 1% at district level. Case fatality rates in districts with low vaccination coverage can be as high as 20%. The other aim is to increase the inter-epidemic period to more than four years in children above five years of age. For more information and questions concerning measles outbreak control consult the EPI programme.

Supplies
To reduce wastage and to prevent shortages of vaccine, auto-disposable needles/syringes and waste disposal containers, all requests for additional measles vaccine and other supplies should consider the following information:

- the date of the report of the outbreak;
- the number of measles cases by location;
- a geographical description of the area for intensified immunisation;
- the estimated population of the area to be covered;
- the age distribution of the measles cases;
- the age range of the population to be immunised;
- plans for ensuring re-immunisation at age 9 months, if immunisation below age 9 months will be implemented;
- the current balance (doses) of vaccine at the district store;
- the amount (doses) of additional vaccine required;
- when the vaccine is needed; and
- the quantity of vaccination cards or other vaccination supplies required.

Specimen Collection and Processing for Laboratory Confirmation

- Refer to “Job Aid for Laboratory Confirmation” (for health facilities and districts).

Feb 2004

Disease-Specific Protocols for
Outbreak Management and Laboratory Confirmation:

Cerebrospinal Meningitis

Standard Case Definition Any person with sudden onset of fever (more than 38.5^{o}C per rectal or 38^{o}C axillary) and any one of the following: neck stiffness, altered convulsions, or bleeding under the skin.

Infectious Agent Cerebrospinal meningitis is an acute bacterial infection caused by *Neisseria meningitis*. There are more than 13 serogoups, but types A and C cause epidemics in Sub-Sahara Africa. 80 percent of cases occur in the age group below 30 years. 90 percent of outbreaks are due to type A. Outbreaks usually last 10 to 14 weeks, but can vary from 4 to 20 weeks.

Tanzania is outside the meningitis belt, but sporadic cases appear in all regions every 5 to 10 years.

Action Threshold A single case is a suspected outbreak. Immediately initiate outbreak investigation and response activities.

Clinical Features Acute onset of fever and intense headache accompanied by neck/back stiffness, mental changes (agitation, confusion, coma), nausea, vomiting and frequently a rash or bleeding under the skin.

Mode of Transmission By direct contact with droplets from the nose and throat. Infection is usually subclinical or asymptomatic with carrier prevalence reaching as high as 25%.

Incubation Period From 2 to 10 days, but usually 3 to 4 days.

Period of Communicability Until the bacteria *N. meningitis* are no longer present in discharges from the nose or throat, or until appropriate antibiotic therapy.

Case Management Treat suspect cases with a single dose IM of chloramphenicol in an oily suspension (long acting). Prompt treatment is essential.

Control and Prevention

- Proper case management
- Use of vaccine against N. meningitis types A and C during epidemics. Vaccination coverage of more than 80% of the population in an infected area within ten days of the onset of the epidemic. When resources are limited, target those at greatest risk, such as crowded areas like schools and prisons.

- Inform the community about the risks for spread, overcrowding and sleeping in poorly ventilated rooms.
- Active surveillance, early diagnosis, and immediate and appropriate treatment are essential.

Supplies

- Gram stain materials
- Culture and sensitivity test materials
- Soluble chloramphenicol for injection
- Auto-disable needles and syringes
- Vaccine, *N. Meningitis* type A & C, during epidemics

Specimen Collection and Processing for Laboratory Confirmation

- Refer to “Job Aid for Laboratory Confirmation” (for health facilities and districts).

Feb 2004

Disease-Specific Protocols for
Outbreak Management and Laboratory Confirmation:

Acute Flaccid Paralysis (AFP)

Standard Case Definition Any child less than 15 years of age with acute flaccid paralysis including Guillain-Barre' Syndrome, or any person with paralytic illness at any age when polio is suspected.

Infectious Agent AFP is not actually a disease but a syndrome, a category of symptoms. However, AFP represents a suspect infection of wild poliovirus, types 1, 2, or 3, an enterovirus.

Action Threshold A single case of AFP is regarded as a suspect outbreak of polio. Immediately initiate outbreak investigation and response activities.

Clinical Features For polio: fever, fatigue, headaches, vomiting, constipation, stiffness in neck, and pain in the limbs. Muscles in the legs are more affected than arms. Limb(s) become floppy and lifeless (AFP). Because in the early stages it is difficult to differentiate polio from other forms of AFP, two stool specimens must be obtained from all AFP cases for testing for the presence of poliovirus.

Mode of Transmission The wild poliovirus is spread primarily by faecal-oral transmission from another infected person. For every one case of paralysis there are 100 asymptomatic persons infected. The peak season for transmission in Tanzania is July through September.

Incubation Period For polio: 4 – 35 days for paralytic cases.

Period of Communicability **I**t is still not entirely known how long the wild poliovirus may persist, although the virus persists in the throat for about one week and in stools for 3 – 6 weeks or longer.

Case Management For all AFP: supportive care and provision of rehabilitation services where needed.

Control and Eradication (polio eradication)

- Routine OPV immunization
- National Immunization Days
- Active, thorough, and timely surveillance

Supplies

- OPV
- Cool box
- Ice packs
- Transport containers

Specimen Collection and Processing for Laboratory Confirmation

- Refer to “Job Aid for Laboratory Confirmation” (for health facilities and districts).

Feb 2004

Disease-Specific Protocols for
Outbreak Management and Laboratory Confirmation:

Yellow Fever

Standard Case Definition Any person with sudden onset of fever, followed by jaundice within two weeks of first symptoms with a history of travelling from an endemic area.

Infectious Agent Yellow fever is caused by an arthropod borne virus from the *Flavivirus* genus of the family *Flaviviridae*.

Action Threshold Single suspected case is an outbreak. Immediately initiate outbreak investigation and response activities.

Clinical Features Sudden onset of fever followed by jaundice within 2 weeks of onset of the first symptoms. Haemorrhagic manifestations and signs of renal failure may occur.

Mode of Transmission Yellow fever is transmitted to humans by the *Aedes aegypti* mosquito. There are three types of transmission cycle for yellow fever: sylvatic, intermediate and urban.

- *Sylvatic (or jungle) yellow fever:* In tropical rainforests, yellow fever occurs in monkeys that are infected by wild mosquitoes. The infected monkeys can then pass the virus onto other mosquitoes that feed on them. These infected wild mosquitoes bite humans entering the forest.
- *Intermediate yellow fever:* In humid or semi-humid savannahs of Africa, small-scale epidemics occur. These behave differently from urban epidemics; many separate villages in an area suffer cases simultaneously, but fewer people die from infection. Semi-domestic mosquitoes infect both monkey and human hosts. This area is often called the "zone of emergence", where increased contact between man and infected mosquito leads to disease. This is the most common type of outbreak seen in recent decades in Africa. It can shift to a more severe urban-type epidemic if the infection is carried into a suitable environment (with the presence of domestic mosquitoes and unvaccinated humans).
- *Urban yellow fever:* Large epidemics can occur when migrants introduce the virus into areas with high human population density. Domestic mosquitoes (of one species, *Aedes aegypti*) carry the virus from person to person; no monkeys are involved in transmission. These outbreaks tend to spread outwards from one source to cover a wide area.

Incubation Period Symptoms occur within three to six days after exposure.

Period of Communicability Blood of patients is infective for mosquitoes shortly before onset of fever and for the first 3 – 5 days of illness.

Case Management There is no definitive treatment for yellow fever; however, patients should be given supportive treatment like fluids, food, antipyretics, and psychosocial support. The patient should be isolated and sleep under a mosquito net. Health workers should observe universal protective measures.

Control and Prevention Vaccination is the single most important measure for preventing yellow fever. In populations where vaccination coverage is low, vigilant surveillance is critical for prompt recognition and rapid control of outbreaks. Mosquito control measures can be used to prevent virus transmission until vaccination has taken effect. Yellow fever vaccine is safe and highly effective. The protective effect (immunity) occurs within one week in 95% of people vaccinated. A single dose of vaccine provides protection for 10 years and probably for life, but is not included in the EPI schedule. Mass vaccination should be conducted for an epidemic for those living in the *Aedes aegypti* infected areas. Other control measures include:

- Patient isolation
- Vector control – In general, eliminating potential mosquito breeding sites is an important and effective means for controlling mosquito-transmitted diseases. However, mosquito control programmes against wild mosquitoes in forested areas are not practical or cost-effective for preventing sylvatic infections. Spraying to kill adult mosquitoes during epidemics may have value by interrupting virus transmission. This "buys time" for immunity to develop after an emergency vaccination campaign.
- Use of insecticide-treated mosquito nets
- Educate the community about mosquito transmission and the need to eliminate breeding sites in the community

Supplies

- Yellow Fever vaccine
- Auto-disable needles and syringes
- Insecticide (if recommended)

Specimen Collection and Processing for Laboratory Confirmation

- Refer to “Job Aid for Laboratory Confirmation” (for health facilities and districts).

Feb 2004

Disease-Specific Protocols for
Outbreak Management and Laboratory Confirmation:

Viral Haemorrhagic Fevers
(including Yellow Fever)

Standard Case Definition Any person with mild or severe illness with fever and unexplained bleeding from the nose, gums, vagina, skin or eyes, vomiting blood or blood in stool.

Infectious Agents Viral haemorrhagic fevers (VHF) are severe and life-threatening disease caused by a number of different viruses including Lassa virus, Marburg and Ebola viruses, Crimean-Congo haemorrhagic fever (CCHF) virus, and Rift Valley fevers virus for Yellow Fever.

Reservoirs for each virus include: *Lassa Fever:* wild rodents; *Crimean Congo HF:* hares, birds, rodents and infected ticks; *Ebola Virus:* unknown; *Marburg Virus:* possibly monkeys.

Action Threshold A single case is a suspected outbreak. Immediately initiate outbreak investigation and response activities.

Mode of Transmission *Lassa Fever:* Direct or indirect contact with urine of infected rodents; person-to-person by sexual contact or inoculation with blood; laboratory-acquired infection. *Crimean Congo HF:* Bite of infective adult tick; nosocomial transmission from patients to medical workers by accidental inoculation of blood; butchering infected animals. *Ebola Virus* and *Marburg Virus: p*erson-to-person transmission by inoculation with infected blood, and sexual transmission.

Clinical Features: Early symptoms are non specific and include high fever, general body weakness, headache, and muscle and joint pains. Ebola and Marburg often cause a measles-like rash after 4-7 days. Obvious bleeding is a later or terminal event. Fever may last as long as 16 days with temperature up to 41^{o} C. The case fatality rate varies depending on the particular virus involved, but can be as high as 90 percent.

It is difficult to make a firm diagnosis solely on clinical grounds, so epidemiological evidence is essential in assessing a feverish patient with a history suggestive of VHF. Risk categories are as follows:

Minimum risk:
This category includes febrile patients who have: 1) not been in known endemic areas before the onset of illness; or 2) been in endemic areas or in contact with a known or suspected source of a VHF, but in whom the onset of illness was more than 21 days after their last contact with any potential source of infection.

Moderate risk:
This category includes febrile patients who have: been in an endemic area during the 21 days before the onset of illness, but who have none of the additional risk factors that would place him or her in the high risk category; or not been in a known endemic area but who may have been in adjacent areas during the 21 days before the onset of illness, and who have evidence of severe illness with organ failure and/or haemorrhage that could be due to VHF and for which no alternative diagnosis is currently evident.

High risk:
This category includes febrile patients who:

a) have been in an endemic area during the three weeks before illness and:
   - have lived in a house or stayed in a house for more than 4 hours where there were ill, feverish persons known or strongly suspected to have a VHF;
   - or took part in nursing or caring for ill, feverish patients known or strongly suspected to have a VHF,
   - or had contact with body fluids, tissue or the dead body of such a patient;
   - or are a laboratory health or other health worker who has, or has been likely to have come into contact with the body fluids, tissues or the body of a human or animal known or strongly suspected to have a VHF;
   - or were obviously categorised as “moderate” risk, but who have developed organ failure and/or haemorrhage.

b) have not been in an endemic area but during the three weeks before illness:
   - cared for a patient or animal known or strongly suspected to have a VHF;
   - or came into contact with the body fluids, tissues or dead body of such a patient or animal;
   - or handled clinical specimens, tissues or laboratory cultures known or strongly suspected to contain the agent of VHF.

Incubation Period The incubation period of these VHFs ranges from 3 to 21 days. Ebola virus 2-21 days; Marburg virus 3-9 days; Lassa fever: 6 – 21 days; CCHF 3-12 days and Rift Valley fever 3 – 12 days.

Period of Communicability *Lassa Fever:* during the acute febrile phase when virus is present in the throat; three to nine weeks from onset of illness while virus is excreted in the urine. *Crimean Congo HF:* it is usually not directly transmitted from person to person; nosocomial infections are common; infected tick remains infective for life. *Ebola Virus* and *Marburg Virus:* as long as blood and secretions contain virus.

Case Management Strict isolation of patients is essential. Patients should also be placed under a mosquito net to prevent further transmission. Effective antiviral therapy is not available, except for Lassa fever (ribavirin), therefore

treatment is symptomatic. The most important measure is management of fluid and electrolyte balance. Oral medications and rehydrations are best when possible to limit risk of hospital acquired infection. The patient's family and close contacts should be informed about the likelihood of sexual transmission during the convalescence period.

Control and Prevention

- Use of standard precautions with all patients
- Isolate the patient
- Wear protective clothing
- Disinfect reusable supplies and equipment
- Dispose of waste safely
- Use of safe burial practices
- Mobilise community resources and community education
- Make advance preparations to use VHF isolation precautions
- Vector control (depending on which VHF: mosquito, rodent, tick)

Supplies

- Gloves
- Disposable and auto disable needles and syringes
- ORS
- Electrolyte solution

Specimen Collection and Processing for Laboratory Confirmation

- Refer to "Job Aid for Laboratory Confirmation" (for health facilities and districts).

Feb 2004

CASE INVESTIGATION FORMS

LAB SUPPLEMENTALS

Check List

Disease Outbreak Management

☐ **Verify the reported outbreak**

Do the reported cases meet the action threshold?

☐ **Notify** e.g. District Commissioner, District Executive Director, RMO

☐ **Prepare and conduct investigation**

[ ] Organise your team
[ ] Select community and plan logistics
[ ] Prepare budget
[ ] Meet with officials

☐ **Confirm the diagnosis**

Collect and send specimens according to laboratory protocol.

☐ **Isolate cases as needed and treat them**

[ ] Drugs and supplies are adequate for treating patients
[ ] Establish treatment camps where needed
[ ] Sufficient staff available for providing treatment
[ ] Isolate suspected water or food sources when applicable

☐ **Search for additional cases**

[ ] Notify other health facilities
[ ] Notify communities
[ ] Intensify surveillance of inpatient/outpatient records

☐ **Collect information**

[ ] IDSR Case Investigation forms and line lists are available
[ ] Data collection supervised ensuring complete and accurate information

Check List
Disease Outbreak Management

☐ **Compile and analyse data**

Use the *Integrated Disease Surveillance and Response: Surveillance Data Analysis Book* to help guide your analysis.

☐ **Interpret data** *Answer these questions:*

Person

1. How many cases and deaths have there been?
2. What is the case fatality rate?
3. Which age group is most affected?

Place

1. Which village(s) is/are affected?
2. What is the geographical distribution of cases?
3. Is the outbreak spreading?
4. Draw a map showing the distribution of cases.

Time

1. When did the cases occur? (date of onset of disease or date first seen at the health facility)
2. Are the number of cases increasing or decreasing?

☐ **Meet with epidemic response committee when necessary**

☐ **Organise outbreak response activities**

Use Disease specific protocol to help plan your response. Assign clear roles and responsibilities for each activity.

☐ **Implement response activities**

Monitor activities to ensure that they are effective.

☐ **Write final outbreak report**

Use the outline in Section 2.0 (9) of the Outbreak Management Manual or other technical guidelines.

☐ **Develop long term prevention strategies and activities**

Feb. 2004

Form10: Case investigation – Generic Reporting Form

Ministry of Health, Tanzania

Compulsory notification please complete all information in full

Reporting district_____

Generic Reporting Form – from Health facility/Health worker to District Health Team

☐ AFP ☐ Cholera ☐ Neonatal Tetanus ☐ Measles ☐ Meningitis ☐ Plague ☐ Yellow Fever

---

Assigned
By district ID number:_____ ------/-----/----- ----------
Reg District Year Onset Case Number

Received form at District-----./--------/------- at National level---------/--------/----------

---

Name(s) of Patient_____ Date of birth*--------/----------/------ (If DOB unknown) Age: ---------- years ---------- month (If<12months)
(name of – necessary for AIDS cases)

Patient's residence: Village/neighbourhood----------Sex: M= Male ☐ F= Female ☐

Town/City _____ District of Residence:_____ U = Urban R = Rural ☐

Locating Information-_____

(if applicable name of mother and father if neonate or child)

Date seen at health facility: ---------/------/--------- Number of vaccine doses----------
☐ Unknown

Date notified district : ---------/------/--------

(Measles, NNT (mother), Yellow fever, CSM only)

Date of last vaccination ---------/--------/---------

(Measles, neonatal tetanus (mother), Yellow fever, meningitis only)

Date onset: ---------/------/---------

In=Inpatient ☐ Outcome: ☐ 1. alive Final classification:----------
O=Outpatient 2. dead (Confirmed, probable, discarded, suspect)
3. Unknown

Person completing form:---------- Date sent form to district--------/-------/----

---

For health facility or district: If lab specimen is collected, complete following information. Send a Copy of this form to the lab with the specimen:

Date of specimen collection: ---------/------/--------- Specimen source: □ Stool □ Blood □ CSF

Other_____

Date specimen sent to lab: ---------/------/---------

For Laboratory: Complete this section and return the form to district team and clinician
(if results are not yet out , then tick A = Awaiting Results/Pending)

Date lab received specimen: ---------/------/--------- Specimen condition: □ Adequate □ Not adequate

Method used

Cholera : Direct exam*+----------
Culture: + - A
Meningitis: *N.Meningitidis* + - A
Culture*: S.Pneumonia* + - A
H.Influenza + - A
Latex Agglutination + - A
Shigella: ----Dys type 1---- other shigellae--- No shigellae
Plague : Culture + - A
IFA> 1: 64

Yellow fever: IgM+……
Measles: IgM+……
Rubella: IgM+……..
AFP: P1 P2 P3 Ent
W1 W2 W3 P
Viral haemorrhagic fevers:

	IgM		virus detection		
RVF:	+	-	+	-	A
Ebola	+	-	+	-	A
CCHF:	+	-	+	-	A
Lassa:	+	-	+	-	A
Marburg:	+	-	+	-	A

Typhoid - serological tests titre 1:80
- culture – *salmonella sp*. + - A
Pneumonia
– culture- *diplococcus pneumoniae* + - A

Other lab result:_____
(can be multiple methods) Give name of the test and the result

Date lab sent results to district: ----------/--------/---------- Other tests:_____

Name of lab sending results: _____

Lab person sending results_____

Date district received lab results: ----------/--------/----------

Name of district person receiving results _____

Date lab results sent to clinician: _____

District_____

Note: District is responsible for sending lab results to clinicians. Failure to do so will undermine cooperation with clinicians on report.
