World Health Organization

REGIONAL OFFICE FOR Africa

Integrated Disease Surveillance and Response

District Level Training Course

Participant Modules

July 2011

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REGIONAL OFFICE FOR Africa

Integrated Disease Surveillance and Response

District Level Training Course | Introduction

July 2011

World Health Organization

Regional Office for Africa (AFRO)

Integrated Disease Surveillance and Response

District Level Training Course

Introduction Module

July 2011

Introduction

Integrated Disease Surveillance and Response (IDSR) is a strategy of the World Health Organization Regional Office for Africa for improving epidemiologic surveillance and response in the African region. Surveillance is the ongoing systematic collection, analysis, and interpretation of health data. It includes the timely dissemination and use of information for public health action.

During the last 10 years, new diseases, conditions and events resulted in revision of public health priorities for countries in the region. Although communicable diseases have long been the leading cause of illness, death and disability in African countries, non-communicable diseases such as hypertension and diabetes are emerging as threats to the well-being of African communities. Conditions and events such as malnutrition and maternal deaths are important targets for national health programs. The emergence of pandemic influenza highlighted the importance of having stronger surveillance links between community surveillance sources and the national surveillance and response system. Additionally, the integration of human and animal health surveillance has become a high priority in many countries. Finally, adoption of the International Health Regulations (2005) by countries in the African region includes the need to strengthen national core capacities for surveillance and response across all health systems. Because of these and other factors, guidelines for surveillance and response have been revised to incorporate new priorities while focusing on the ability of surveillance systems to identify health problems, report information in a timely manner, analyze data to provide information for action, confirm with laboratory testing, respond to outbreaks and other public health threats, monitor and evaluate performance of the health system, provide feedback and communicate with the community and with other levels and partners in the health system.

The purpose of this course is to introduce health staff to the skills and activities required for a functional disease surveillance system such that public health threats are detected in time to do something about them. In IDSR, all levels of the health system are involved in conducting surveillance activities for detecting and responding to priority diseases and conditions. Through the modules in this course, you will be able to practice using skills that will help to strengthen the use of data for action at the district level.

The *WHO-AFRO Technical Guidelines for Integrated Disease Surveillance and Response in the African Region* is the primary reference that you will use for this course.

* * * *

This module introduces you to:

1. The objectives of Integrated Disease Surveillance and Response
2. The objectives for this training course and how to participate in the course
3. How to apply the skills learned in the course

1.0 What is the Integrated Disease Surveillance and Response (IDSR) strategy?

Integrated Disease Surveillance and Response (IDSR) is a strategy for coordinating and integrating surveillance activities by focusing on the surveillance, laboratory and response functions of the national disease surveillance system. Instead of using scarce resources to maintain separate vertical activities, resources are combined to share activities and processes and to collect information from a single focal point at each level.

The objectives of the IDSR are to:

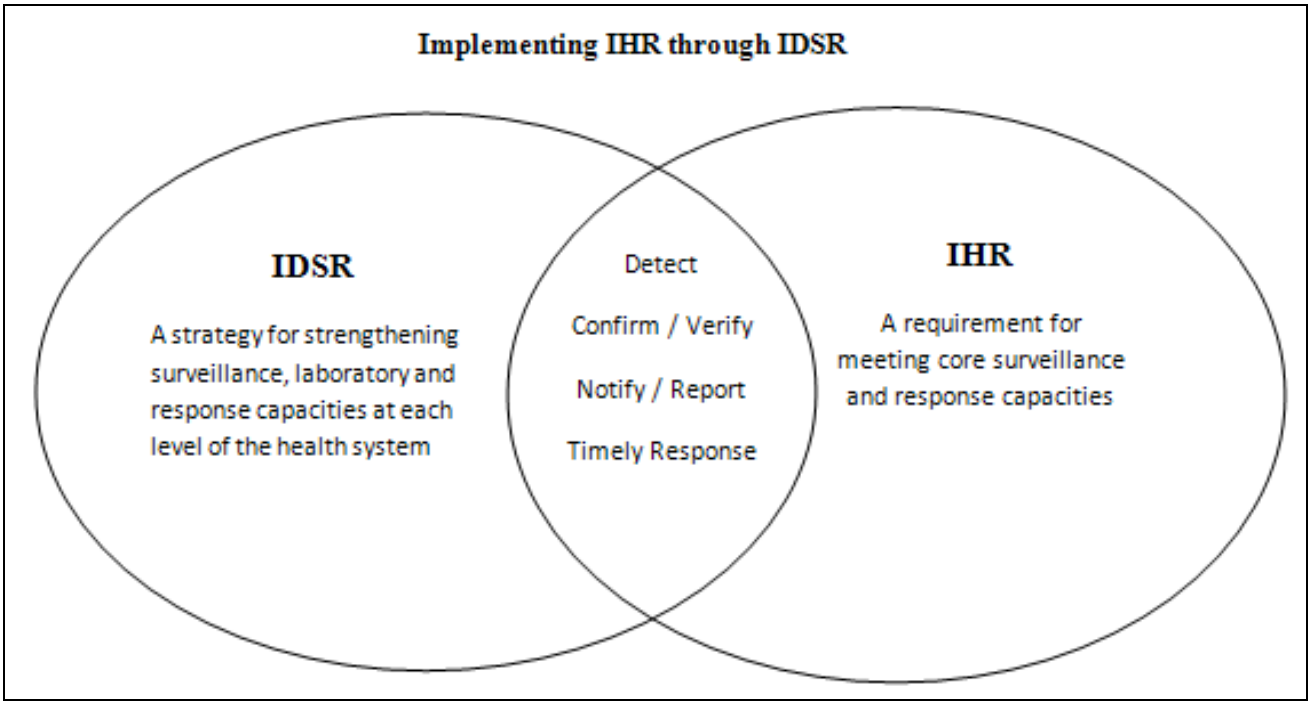
- Conduct effective surveillance activities
- Integrate multiple surveillance systems to use resources more efficiently
- Improve the use of information for detecting, investigating and responding to public health threats
- Improve the flow of surveillance information throughout the health system

In this course, you will have an opportunity to know and use skills that are relevant to carrying out surveillance and response actions especially at the district level.

2.0 What are the International Health Regulations (2005)?

The purpose of the International Health Regulations (IHR) is to prevent, protect against, control and provide public health response to the international spread of disease in ways that are relevant and restricted to public health risks, and which avoid unnecessary interference with international traffic and trade. IHR (2005) is a binding and legal instrument. Among the several requirements in the IHR (2005) is a call for strengthening of national capacity for surveillance and control of public health events of national and international concern. The IHR (2005) is not a separate surveillance system. Instead, it requires strengthening the existing surveillance capacities in countries so that they meet international standards. Member States in the African Region recommended that IHR (2005) be implemented within the IDSR framework. This means that

IDSR and IHR share common functions such as detection, reporting, confirmation, verification, notification, reporting and timely response.



3.0 Define disease surveillance

Surveillance is the ongoing, systematic collection, analysis, and interpretation of health data. It includes the timely dissemination of the resulting information to those who need it for action. Surveillance is also used for planning, implementation, and evaluation of public health practices at any level of the health system. There are several types of surveillance used in disease programs:

- Health facility- or community-based surveillance: a term to describe when a particular location is the focus of surveillance activities
- Sentinel surveillance: a health facility or reporting site designated for early warning of pandemic or epidemic events. The site is usually designated because it is representative of an area or is in an area of likely risk for a disease or condition of concern.
- Laboratory-based surveillance: surveillance conducted at laboratories for detecting events or trends that may not be seen as a problem at other locations

- Disease-specific surveillance: This is surveillance that involves activities aimed at targeted health data for a specific disease.

Regardless of the type of surveillance, remember that surveillance is data that is used for action!

4.0 How are surveillance functions described in this course?

The *Technical Guidelines for Integrated Disease Surveillance and Response* (2010) presents a comprehensive vision of a disease surveillance and response system. In IDSR, all levels of the health system are involved in surveillance activities for responding to priority diseases and conditions. These activities include the following core functions:

- Identify cases and events
- Report suspected cases, conditions or events to the next level.
- Analyze and interpret findings
- Investigate and confirm suspected cases, outbreaks or events
- Prepare to respond to public health events
- Respond to public health events
- Communicate with and provide feedback to health workers and the community
- Evaluate and improve the system.

The matrix on pages 14 and 15 of the Technical Guidelines for Integrated Disease Surveillance and Response (2010) illustrates the skills and activities for carrying out these functions at each level of the health system. While the modules in this course are relevant for any level of the health system, each module in this course is from the perspective of how the district can carry out each function.

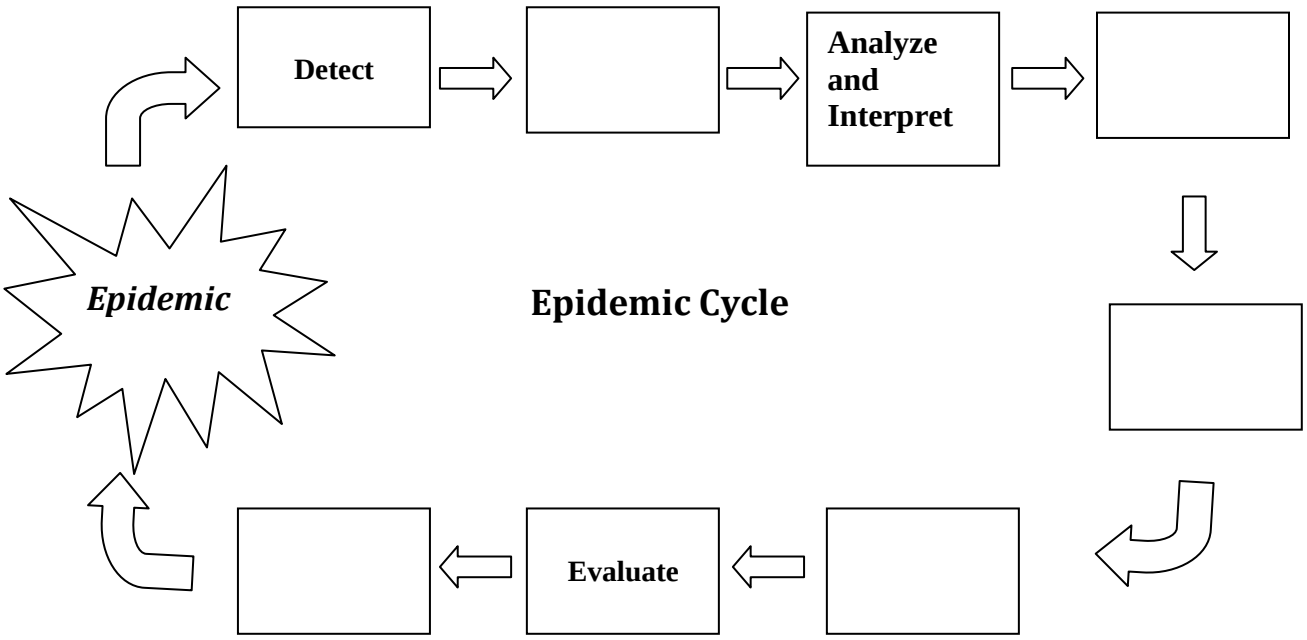
Figure 1 is an incomplete flow diagram of an epidemic cycle.

* * * *

Use information in the Technical Guidelines to fill in the blank boxes with **appropriate terms** from the following list:

- **Prepare**
- **Respond**
- **Report**
- **Investigate and Confirm**
- **Communication (Feedback)**

Figure 1



5.0 What is the purpose of the training course?

The purpose of this training course is to improve the skills and knowledge of health staff to carry out activities that contribute to the national disease surveillance, laboratory and response system. These are skills which should result in more timely detection and response to the leading causes of illness, death and disability in African communities and improve their well-being.

Previous IDSR and IHR (2005) assessments of national surveillance and response systems have shown that:

1. Written standard case definitions for national priority diseases are not always readily available especially at the health facility or at district level.
2. Health workers were expected to complete multiple reporting forms from different health programmes and then forward them to the central level. There was little or no analysis at the lower level.
3. No standard disease outbreak investigation forms were used.
4. In many cases, the local public health laboratories were not used effectively during the investigations.
5. The District epidemic management committees or intersectoral emergency committees did not exist in many countries.
6. Supervisory visits were not always carried out regularly nor consistently. Feedback to the lower levels was scarce, and, where feedback occurred, it was mainly verbal.

Disease surveillance and response systems in many countries face serious challenges in achieving reliable surveillance and response outcomes. Most countries do not have the minimum IHR core capacities requirements for surveillance, reporting, notification, verification, and response in place including appropriate activities at the ports of entry. In order to address these shortcomings, the *Technical Guidelines for Integrated Disease Surveillance and Response* (IDSR) and this set of training modules on IDSR have been developed for use by health workers to enhance the implementation of IDSR skills and activities.

6.0 Target audience

These modules are intended for training and updating health workers particularly those involved in disease surveillance at different levels of the health system. The suggested target audience is the following:

- Clinical practitioners (doctors, nurses, clinical officers, and medical assistants)
- Public health officers.
- Environmental health workers.
- Laboratory workers.
- Data/record managers.
- Students (clinical, public health, environmental health and laboratory)
- IHR focal points , WHO contact point, competent authority at Point of Entry (PoE)
- Other relevant personnel: IHR Food, chemical, radio nuclear, legal/lawyer and communication officers

7.0 Learning objectives

The general objective:

The general objective of this training is for health workers to have the opportunity to practice skills and activities involved in surveillance and disease control. They will gain appropriate knowledge and skills for using data to detect and respond to priority diseases, conditions and events and thereby reduce the burden of illness, death and disability in African communities.

The specific objectives:

The specific objectives of this training are to enable participants to:

1. Identify cases and events of public Health importance
2. Report suspected cases or conditions or events of public Health importance
3. Analyze and interpret data on priority diseases and events
4. Investigate and confirm suspected cases, outbreaks or events
5. Be prepared for outbreaks or events of public health concern.

6. Respond to outbreaks or events of public health concern
7. Supervise and provide feedback.
8. Monitor and evaluate IDSR/IHR Implementation.

8.0 Course methods and materials

The basic course materials are:

- Technical guidelines for integrated disease surveillance and response in the African region.
- Training modules for integrated disease surveillance and response.
- International Health Regulations (2005) second edition.

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Integrated Disease Surveillance and Response

District Level Training Course | Module 1

Identify cases of priority diseases, conditions and events

July 2011

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Regional Office for Africa (AFRO)

Integrated Disease Surveillance and Response

District Level Training Course

Module 1

Identify cases of priority diseases, conditions and events

July 2011

The modules comprising the Integrated Disease Surveillance and Response District Level Training Course were prepared by the World Health Organization Regional Office for Africa (AFRO) and the Centers for Disease Control and Prevention (CDC) with support from the United States Agency for International Development (USAID) Africa Bureau. WHO-AFRO & CDC (2010). *Integrated Disease Surveillance and District Level Training Course, Module 1: Identify cases of priority diseases, conditions and events*. Brazzaville, Republic of Congo and Atlanta, USA.

Introduction

Surveillance is a process for collecting, analyzing and interpreting health data. The results that are obtained from surveillance are used to detect public health events and take action to respond to them. Every level has a role to play in carrying out all functions of surveillance to keep communities healthy. Health staff at all levels of the health system carry out surveillance activities so that they can detect and respond quickly to health events that are of concern to their communities, districts, provinces and country. These priority events include communicable or non-communicable diseases, and other events involving water, food, or other environmental contamination due to chemical, radiological or other risk factors. This course presents the main functions of surveillance which are to:

- Identify priority diseases, conditions, and events
- Report priority diseases, conditions, and events
- Analyze and interpret data
- Investigate and confirm outbreaks
- Respond to outbreaks and other public health events
- Provide supervision and feedback
- Monitor and evaluate the surveillance system

This course includes several modules that provide an opportunity to practice using the skills that are included in your country's Technical Guidelines for Integrated Disease Surveillance and Response.

* * * *

This module will describe and allow you to practice the following skills:

1. Use standard case definitions to identify diseases for reporting to the health system.
2. Involve the community in disease surveillance
3. Improve local laboratory capacity to detect priority diseases, events, and conditions.

1.0 Use standard case definitions to identify diseases for reporting to the next level

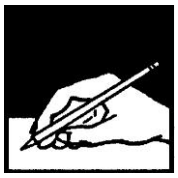
Using case definitions makes sure that every case is diagnosed in the same way. Standard case definitions let health staff compare the numbers of cases of the disease or condition that occurred in one time or place with the number occurring in another time or place.
Using the same case definition throughout a national system allows the public health staff to monitor accurately priority diseases or conditions and identify thresholds for public health action.

When health facilities and districts use different case definitions, monitoring the trend of a disease or event is difficult. Without using the same definitions, urgent action such as investigating the cause of the change in the trend will not be possible.

Using standard case definitions is also important for carrying out the International Health Regulations (2005). Even at the district level, health staff should know and use the case definitions for reporting diseases that are a concern for local communities and also for those that could spread to neighbouring districts, provinces or countries.

Your facilitator will present information about identifying sources of information for disease events in a community and about using standard case definitions at the district, health facility and community.

You may also read this information in the Technical Guidelines on pages 33 to 35 and review the points in Annex A starting on page 21. When you have finished, you may begin Exercise 1.



Exercise 1

In this exercise, you will practice identifying sources of information. Read the short case study and answer the questions. When you have completed the exercise, your facilitator will conduct a group discussion.

* * * *

A local radio station announced that a cluster of deaths from a mysterious disease occurred in Salgaa village. The patients are presenting with fever, headache, muscle pains and backache. According to the radio report, four adults and two children have died within the last four days. The district health authorities are investigating the outbreak.

1. The district team has been gathering information to verify the report heard on the radio. What are possible sources of information about health events in this district?

2. What type of information would you gather from each of the sources you have listed?

3. Think about the most recent outbreak or unusual health event that happened in your district. Describe the event and then list the sources of information your district team consulted.

Let your facilitator know when you have completed this exercise.

2.0 Update district procedures for surveillance and response

At least once a year, your district should update information about the catchment area. This is so that you will have up-to-date information about the target populations and public health activities in the district. For example, you may want to update the population size, location and risk factors for target populations such as:

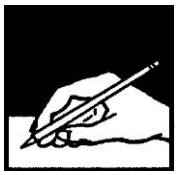
1. Children less than 5 years of age
2. School-aged children
3. Women of childbearing age
4. All adults and children of different age groups
5. People living in refugee settlements in your area

Also include the location of major public health programs in your district such as public, private, and non-governmental organizations that provide clinical services or public health activities. Examples include clean water projects, immunization services, maternal and newborn care, or programs for feeding malnourished children.

Include in the update a list of the health facilities, Points of Entry and other locations that are sources of information about health events in the district. Make sure that the focal points at these locations know the priority diseases, conditions and events that are of concern and provide them with information about the case definitions and when to report.

Your facilitator will present information about improving procedures for surveillance in the district and the importance of involving the community.

You may also read this information on pages 35 to 37 of the Technical Guidelines. When you have finished reading the information, you may begin Exercises 2 and 3.



Exercise 2

In this exercise, you will review how standard case definitions are used in your district.

* * *

1. On the next page, look at the chart that lists priority diseases, conditions and events. Circle those that are included in the list of priority diseases, conditions and events in your district.

2. Next to each disease that you circled in question 1, place a tick mark (√) to show whether reporting sites use a standard case definition to report cases or deaths to the district.

3. How often do you update the description of key target populations in your catchment area?

4. How often do you update the list of reporting sites in the district?

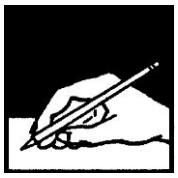
5. Do all sites know what diseases to report and the case definitions for reporting them?

6. Do you include district laboratory sites in your list?

Table 1.1: IDSR Priority Diseases, Conditions and Events

<table>
<tr><th>Epidemic prone diseases</th><th>Diseases targeted for eradication or elimination</th><th>Other major diseases, events or conditions of public health importance</th></tr>
<tr><td rowspan="3">Acute haemorrhagic fever syndrome*
Anthrax
Chikungunya
Cholera
Dengue
Diarrhoea with blood (Shigella)
Measles
Meningococcal meningitis
Plague
SARI**
Typhoid fever
Yellow fever
*Ebola, Marburg, Rift Valley, Lassa, Crimean Congo, or West Nile Fever

**National programmes may wish to add Influenza-like illnesses to their priority disease list</td><td>Buruli ulcer
Dracunculiasis
Leprosy
Lymphatic filariasis
Neonatal tetanus
Noma
Onchocerciasis
Poliomyelitis</td><td>Acute viral hepatitis
Adverse events following immunization (AEFI)
Diabetes mellitus
Diarrhoea with dehydration in children less than 5 years of age
HIV/AIDS (new cases)
Hypertension
Injuries (consider road traffic accidents)
Malaria
Malnutrition in children under 5 years of age
Maternal deaths
Mental health (consider epilepsy)
Rabies
Severe pneumonia less than 5 years of age
Sexually transmitted infections
Trachoma
Trypanosomiasis
Tuberculosis</td></tr>
<tr><td colspan="2">Diseases or events of international concern</td></tr>
<tr><td colspan="2">Human influenza due to a new subtype
SARS
Smallpox
Any public health event of international or national concern (infectious, zoonotic, food borne, chemical, radio nuclear, or due to unknown condition.</td></tr>
</table>



Exercise 3

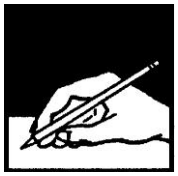
In this exercise, you will practice finding case definitions in the Technical Guidelines. In the table below, there are columns with headings for a **suspected case** and a **confirmed case** definition at the district or health facility. There is also a column for signs or symptoms that are used for reporting a **suspected case by the community**. In the following exercise, you will need to refer to Section 9 starting on page 229 of the IDSR Technical Guidelines or to Annexes 1A and 1B (pages 43 through 56) to find the missing information. When you have located the missing definition, record it in the box below. The first example for cholera has been done for you.

* * *

Table 1.2: Using Standard Case Definitions

DISEASE	DEFINING A CONFIRMED CASE	DEFINING A SUSPECTED CASE	
		HEALTH FACILITY	COMMUNITY
Cholera	A suspected case in which *Vibrio cholerae* has been isolated in the stool.	Any person aged 5 years or more with severe dehydration or dies from acute watery diarrhea.	Any person 5 years of age or more with lots of watery diarrhoea
Meningococcal meningitis			Any person with fever and neck stiffness
Acute hemorrhagic fever syndrome			Any person who has an unexplained illness with fever and bleeding or who died after an unexplained severe illness with fever and bleeding

DISEASE	DEFINING A CONFIRMED CASE	DEFINING A SUSPECTED CASE	
		HEALTH FACILITY	COMMUNITY
Poliomyelitis		Any child less than 15 years of age with sudden onset of paralysis (AFP) or person of any age in whom the clinician suspects polio	
Dracunculiasis	A person presenting with a skin lesion with itching and a blister living in endemic area		
Neonatal tetanus	Any newborn with a normal ability to suck and cry during the first two days of life, and who, between the 3rd and 28th day of age, cannot suck normally, and becomes stiff or has convulsions or both.		
Tuberculosis		Any person with a cough 3 weeks or more	



Exercise 4

In this exercise you will practice using case definitions to identify priority diseases for surveillance. Read each short case story and answer the question. You will need to use the list of case definitions in Annexes 1A or 1B between pages 43 and 56 in the Technical Guidelines to answer each question. You can also look for the information in Section 9 starting on page 252 of the Technical Guidelines.

* * *

1. A health center in your district has reported a suspected case of cholera to the district. What case definition should the health center use to report the suspected case?

2. You would like to ask the community to help identify possible cholera cases within the community. According to Annex 1B, what signs and symptoms should communities use when they report information to the health facility?

3. Is this a definition that would be useful in communities in your district? What are local terms for reporting these signs or symptoms?

Let your facilitator know when you have completed Exercises 3 and 4.

3.0 Describe the role of the laboratory in detecting priority diseases, events and conditions

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

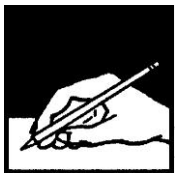
Laboratory confirmation of diagnoses of diseases, conditions and events under surveillance is essential for disease surveillance because laboratory results help to:

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

Your facilitator will present information about improving local laboratory capacity for surveillance and response in your district. You will also hear information about the role of laboratories at each level of the health system and the importance of laboratory networks in your district or area.

You may read this information on pages 37 to 39 of the Technical Guidelines and review the Annexes to Section 1.0 of the Technical Guidelines starting on page 41.

When you have finished, you may begin Exercises 5 and 6.



Exercise 5

In this exercise, you will work with a small group and practice finding information from the Technical Guidelines about what is needed for laboratory confirmation of priority diseases.

To do this exercise, you will record information about laboratory confirmation in the table that begins on the next page. Decide on four diseases that are a priority in your district. Then, in the first column, write down in each row four important diseases from your district or area. Then each person in your group can pick one disease and record it in the table using information from Section 9 of the Technical Guidelines (starting on page 252). At the end of the exercise, each person will present the information they found to the rest of the group.

In the first row, as an example, poliomyelitis has been done for you.

* * *

Table 1.3: Laboratory Confirmation for Priority Diseases

SUSPECTED DISEASE OR CONDITION	DIAGNOSTIC TEST	SPECIMEN TO COLLECT	WHEN TO COLLECT	HOW TO PREPARE, STORE AND TRANSPORT SPECIMEN	RESULTS
Poliomyelitis	Isolation of polio virus from stool	Stool	Collect a sample from every suspected AFP case. Collect 2 specimens 24 to 48 hours apart within the first 14 days of onset of paralysis	• Place stool in clean, leak-proof container and label clearly. • Immediately place in refrigerator or cold box not used for storing vaccines or other medicines • Transport specimens so they will arrive at designated polio laboratory within 72 hours of collection • When there is a delay, and specimen will not be transported within 72 hours, freeze specimen at -20°C or colder. Then transport frozen specimen with dry ice or cold packs also frozen at -20°C or colder.	Preliminary test results are usually available 14-28 days after receipt of specimen by the laboratory. If wild polio virus is detected, the national program will plan appropriate actions.

SUSPECTED DISEASE OR CONDITION	DIAGNOSTIC TEST	SPECIMEN TO COLLECT	WHEN TO COLLECT	HOW TO PREPARE, STORE AND TRANSPORT SPECIMEN	RESULTS
(1)					
(2)					
(3)					
(4)					

Exercise 6

In this exercise, you will review all of the skills you practiced in this module. Please read this case report and then answer the questions at the end of the report. Be prepared to contribute your answers to a group discussion. You will need to use the list of case definitions in Annexes 1A or 1B between pages 43 and 56 in the Technical Guidelines to answer each question. You can also look for the information in Section 9 starting on page 252 of the Technical Guidelines.

* * * *

Human Influenza caused by a new sub-type

On the 17th of January 2010 (3.00 am), a 23 year-old woman named Lambda died from severe acute respiratory illness. Her death occurred within 48 hours of admission to a private hospital. The country, Ringah, had been experiencing an avian influenza outbreak among poultry. So the district team was asked to investigate Lambda's death.

The team learned that Lambda was first admitted for her illness to a private medical centre in Sondu city on 11 January 2010. She said her symptoms began on 8 January 2010. Her chief complaints were severe abdominal pain, high fever and vomiting. She developed cough and shortness of breath and was referred to a private hospital on 15 January 2010.

At the private hospital, the attending physician suspected infection with avian influenza because the patient reported exposure history to poultry before her onset of illness. She had bought a chicken in the market on 21 December 2009, and during the return to Lambda's home, the chicken died. Lambda was involved in de-feathering and preparing the chicken when she got home. Lambda was again involved in de-feathering and preparing poultry on 24 December 2009. Lambda did not report any other exposure to poultry after those two events.

The team also learned that the patient had been in close contact with her mother who died of acute viral pneumonia on 06 January 2010 (2.00 am).

Due to the circumstances of her death and exposure, the private hospital immediately alerted the district health authorities after Lambda's death.

* * *

You are a member of the investigating team in the district. Based on the information in the case report, please answer the following questions:

1. What would be your suspected case definition?

2. What sources of information would you consult during the investigation?

3. What specimen(s) should be collected to confirm the diagnosis?

4. How should the specimen have been prepared, stored and transported?

5. What steps could be done to improve reporting from the private health facilities where she sought care?

6. What steps would you take to improve community surveillance for suspected cases or deaths due to priority diseases, conditions, or events?

Points to remember:

1. Use standard case definitions to ensure that cases and suspected cases are recorded accurately across your district.
2. Update the information about your catchment area at least once a year so that you know who your target populations is and the ongoing public health activities.
3. Make sure local laboratories are included in the surveillance and laboratory networks.

World Health Organization

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Integrated Disease Surveillance and Response

District Level Training Course | Module 2

Report priority diseases, conditions and events

July 2011

World Health Organization

Regional Office for Africa (AFRO)

Integrated Disease Surveillance and Response

District Level Training Course

Module 2

Report priority diseases, conditions and events

July 2011

Introduction

Every level of the health system has a role in carrying out ongoing surveillance for priority diseases, conditions and events. If a disease is identified at a local level, for example, but the information is not reported to the next level, an opportunity for timely response is lost. Gathering data about diseases, conditions and events in a health facility, district or other administrative area helps the health management teams to use the data for action and to:

- Identify emerging problems and plan appropriate responses
- Take action in a timely way
- Monitor disease trends in the area
- Evaluate the effectiveness of the response

The decision about what, when and where to report disease information will depend on specific disease control priorities and activities in your country or district. This module focuses on requirements for immediate reporting with case-based data and regular (weekly, monthly or quarterly) reporting of summary data. In addition to priority diseases that are targets of national policy, districts should also report any unusual event that has the potential to affect human health.

* * * *

This module will describe and allow you to practice the following skills:

1. Immediately report information about acute epidemic-prone diseases or events.
2. Immediately report information about diseases with potential to be public health events of national or international concern.
3. Regularly report summary disease information to the next level.
4. Improve the flow of data to improve timely reporting in your area.

1.0 Immediately report information about acute epidemic-prone diseases or events

Immediate reporting means that information about a disease, condition, or event is reported to the next level as soon as an epidemic-prone disease is suspected or is otherwise required to be reported immediately because it is a potential public health event of national concern, or required by the International Health Regulations (2005).

The information that is reported immediately is often referred to as **case-based reporting**. This means that specific information about each case is included in the report. The information is obtained through a preliminary investigation of the suspected case and includes:

- Geographic and patient location
- Patient identification and demographic information
- Information about onset of symptoms, vaccine history and information about any relevant risk factors
- Laboratory results

Your facilitator will present an example of the case-based reporting form.

Table 2.1: Diseases Requiring Immediate Reporting

Acute Flaccid Paralysis (AFP)	Maternal death
Acute hemorrhagic fever syndrome (Ebola, Marburg, Lassa Fever, RVF, Crimean-Congo)	Measles
Adverse effects following immunization (AEFI)	Meningococcal meningitis
Anthrax	Neonatal tetanus
Chikungunya	Plague
Cholera	Rabies (confirmed cases)
Cluster of SARI	SARS
Dengue fever	Smallpox
Diarrhoea with blood (*Shigella*)	Typhoid fever
Dracunculiasis	Yellow fever
Influenza due to new subtype	Any public health event of international concern (infectious, zoonotic, food borne, chemical, radio nuclear or due to an unknown condition)

2.0 Report summary information for priority diseases, conditions and events

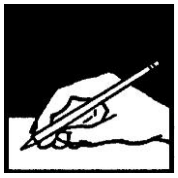
Summary information is the total number of cases and deaths seen in a particular time period (for example, weekly, monthly, or quarterly). This is information that is important for detecting emerging diseases or other health events and should be analyzed and used for action. For example, weekly reporting provides data for monitoring trends of diseases or conditions in order to detect epidemics. Monthly reporting about other endemic diseases is used for monitoring progress with or impact of prevention and control activities. It can also assist the other levels in detecting emergent or unusual events.

During weekly reporting, use "zero reporting." **Zero reporting** means that you should record a 0 (zero) on the reporting form when no cases of an immediately reportable disease have been diagnosed during the week. Submitting a zero for each immediately reportable disease when no cases were detected during the week tells the staff at the next level that a complete report has been filed.

Table 2.2: Diseases Requiring Monthly or Quarterly Reporting

Acute viral hepatitis	Malaria
AIDS (New Cases)	Malnutrition in children under 5 years
Buruli ulcer	Mental health (Epilepsy)
Diabetes mellitus	Noma
Diarrhoea with severe dehydration in children under 5 years of age	Onchocerciasis
HIV (new detections)	Severe pneumonia in children under 5 years of age
Hypertension	Sexually transmitted diseases (STIs)
Influenza-like illness	Trachoma
Injuries (Road Traffic Accidents)	Trypanosomiasis
Leprosy (quarterly)	Tuberculosis (quarterly)
Lymphatic Filariasis	Underweight Newborns (less than 2500 g)

Your facilitator will present information about reporting case-based information to the next level. You will also hear information about the purpose and procedures for reporting summary information to the next level. You may also read this information in the Technical Guidelines on pages 63 to 67.



Exercise 1

There are two parts to this exercise. In Part A, you will look at a list of priority diseases, conditions and events. You will use your experience from your own district (or facility) to record how often you report information about each disease to the next level. Then you will compare your answer with the recommendation in the guideline. You may do this exercise individually or in a small group with others who work in your same district or area. Part B begins on page 2:10.

* * * *

Part A:

Table 2.3: Reporting Priority Disease Information to the Next Level in Your District

Disease	Is this a priority disease or condition in your district?	How often do you report information to the next level?	What is the recommendation for frequency of reporting from your national IDSR guidelines?
Cholera			
Meningococcal meningitis			
Viral Hemorrhagic Fevers (Ebola, Marburg, Rift Valley Fever)			

Disease	Is this a priority disease or condition in your district?	How often do you report information to the next level?	What is the recommendation for frequency of reporting from your national IDSR guidelines?
Poliomyelitis			
Dracunculiasis			
Neonatal tetanus			
Tuberculosis			

Part B:

In this part of the exercise, answer the following questions using information about your own district (or facility). Be prepared for a group discussion when everyone has completed this part of the exercise.

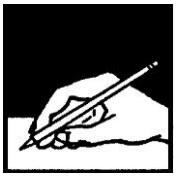
1. What diseases or conditions do you report to the next level at least weekly? How do you report weekly data to the next level? Is there a standard form that you use? What methods of communication do you normally use for weekly reporting?

2. What diseases or conditions do you report to the next level at least monthly? How do you report monthly data to the next level? Is there a standard form that you use? What methods of communication do you normally use for monthly reporting?

3. What diseases do you report immediately in your district? Do you report case-based data?

4. Have you ever needed to report an unusual event or cluster due to an unknown cause? What were the signs and symptoms that you reported?

Let your facilitator know when you are ready for the group discussion.



Exercise 2

In this exercise, you will decide whether a disease, condition or event requires immediate, weekly or monthly reporting, or if the event is a possible public health event of international concern. This exercise has three case stories. Read each case story and answer the questions that follow each one. To answer this question, refer to the tables on pages 64 and 67.
Also look at Annexes:

- 2A: IDSR immediate case-based reporting form
- 2B: IDSR case-based laboratory reporting form
- 2C: IHR (2005) decision instrument

* * * *

Exercise 2: Case 1

On 1 April 2010, Amina, a 25 year old fish monger from Bibi neighborhood in Kati town (Njali District) reported to Kati Health centre complaining that she has had watery diarrhea for the last day. She had also vomited twice that morning. She lived in the same household with her three children, husband and her step-mother. There have been episodes of cholera in a neighboring Bahati district in the last 3 months. Amina travelled there three days ago to go to her auntie's funeral.

1. When should the health staff report this case to the next level?

2. What information should be collected and reported about this case?

3. Use information from Amina's case to record information on the form that is on the next page. You may need to leave some rows blank because you may not have all of the information you need.

IDSR Case Report Form		
Variables / Questions		**Answers**
1	Country	
2	Reporting Site (Health Facility, Camp, …)	
3	Reporting District	
4	Disease/Event (diagnosis): *	
5	In-patient or Out-patient?	
6	Date seen at health facility (day/month/year)	
7	Patient Name(s)	
8	Date of Birth (day/month/year)	
9	Age (in years). You may use decimal numbers	
10	Sex: M=Male F=Female	
11	Patient's residence: Village/Neighbourhood	
12	Town/City	
13	District of residence	
14	Urban/Rural? (U=Urban R=Rural)	
15	Address, (cell)phone number … If applicable, name of mother and father if neonate or child	
16	Date of onset (day/month/year) of first symptoms	
17	Number of vaccine doses received in the past **	
18	Date of last vaccination	
19	Laboratory results	
20	Outcome: (Alive, Dead, Transferred out, Lost to follow-up or unknown)	
21	Final Classification: Confirmed, Probable, Compatible, Discarded, Suspected or Pending	
22	Date health facility notified District (day/month/year)	
23	Date form sent to district (day/month/year)	
24	Record's unique identifier	
25	Person completing form: name, function, signature	

***** Disease/Event (Diagnosis)**:**
AFP, Anthrax, Cholera, Bloody Diarrhoea, Dracunculiasis, Neonatal Tetanus, Measles, Meningitis, Yellow fever, Dengue, Chikungunya, Viral Hemorragic Fever, Plague, Any other event or disease of public health importance (Specify)

****** Measles, Neonatal Tetanus (TT in mother), Yellow Fever, and Meningitis only.
For cases of Measles, NT (TT in mother), Yellow Fever, and Meningitis; 9=unknown.
For Measles, TT, YF- documented by card. For Meningitis, by history.)

Exercise 2: Case 2

In August 2008, a ship offloaded more than 500 tons of toxic waste in a country named Majani. The waste was transferred into tankers owned by a local firm. The agreement was that the waste would be treated and disposed of safely. Over a period of one week following the offloading, approximately 600 to 1000 people presented at the local teaching hospital for assessment and treatment. The patients included adults, many children and young infants. There were three deaths reported, and these were patients who had died one day after presenting with acute symptoms of nosebleed, nausea and vomiting, headache, skin lesions, eye irritation and respiratory distress. Initial laboratory analyses indicated that the substances had a strong smell and consisted of many toxic chemicals including organochlorines and hydrogen sulphide. There were reports that public authorities may have authorized local dumping of the substances because they were told it was sewage.

1. When should the health staff have reported this case to the next level?

2. What information should be collected and reported about this event?

3. What questions do you think the national IHR Focal Point should ask about this case? Refer to the IHR decision instrument at the end of this module on page 2:22 or on page 75 of the Technical Guidelines.

Exercise 2: Case 3

On the 17th of January 2010 (3.00 am), a 23 year-old woman named Lambda died from severe acute respiratory illness. Her death occurred within 48 hours of admission to a private hospital. The country, Ringah, had been experiencing widespread infection of avian influenza outbreak among poultry. So the district team was asked to investigate the case.

The team learned that Lambda was first admitted to a private medical centre in the city Sondu for her illness on 11 January 2010. She said her symptoms began on 8 January 2010. She developed a high fever (above 38^0C), cough and shortness of breath and was referred to a private hospital on 15 January 2010.

At the private hospital, the attending physician suspected infection with avian influenza because the patient reported exposure history to poultry before her onset of illness. She had bought a chicken in the market on 21 December 2009, and the chicken had died during the trip back to her home. She was involved in de-feathering and preparing the chicken when she got home. She was again involved in de-feathering and preparation of poultry on the 24 December 2009. Lambda did not report any other exposure to poultry after that (e.g., in the week before onset of her illness).

The team also learned that the patient had been exposed to her mother who died of acute viral pneumonia on 06 Jan 2010 (2.00 am).

Due to the circumstances of her death and exposure, the private Hospital immediately alerted the district health authorities after Lambda's death.

1. Use the information above to fill in the form on the next page.

2. What additional information is needed to complete the form?

IDSR Case Report Form		
Variables / Questions		**Answers**
1	Country	
2	Reporting Site (Health Facility, Camp, …)	
3	Reporting District	
4	Disease/Event (diagnosis): *	
5	In-patient or Out-patient?	
6	Date seen at health facility (day/month/year)	
7	Patient Name(s)	
8	Date of Birth (day/month/year)	
9	Age (in years). You may use decimal numbers	
10	Sex: M=Male F=Female	
11	Patient's residence: Village/Neighbourhood	
12	Town/City	
13	District of residence	
14	Urban/Rural? (U=Urban R=Rural)	
15	Address, (cell)phone number … If applicable, name of mother and father if neonate or child	
16	Date of onset (day/month/year) of first symptoms	
17	Number of vaccine doses received in the past **	
18	Date of last vaccination	
19	Laboratory results	
20	Outcome: (Alive, Dead, Transferred out, Lost to follow-up or unknown)	
21	Final Classification: Confirmed, Probable, Compatible, Discarded, Suspected or Pending	
22	Date health facility notified District (day/month/year)	
23	Date form sent to district (day/month/year)	
24	Record's unique identifier	
25	Person completing form: name, function, signature	

***** Disease/Event (Diagnosis)**:**
AFP, Anthrax, Cholera, Bloody Diarrhoea, Dracunculiasis, Neonatal Tetanus, Measles, Meningitis, Yellow fever, Dengue, Chikungunya, Viral Hemorragic Fever, Plague, Any other event or disease of public health importance (Specify)

****** Measles, Neonatal Tetanus (TT in mother), Yellow Fever, and Meningitis only.
For cases of Measles, NT (TT in mother), Yellow Fever, and Meningitis; 9=unknown.
For Measles, TT, YF- documented by card. For Meningitis, by history.)

3.0 Improve routine reporting practices

- Many people are responsible for recording information about patients seen in health facilities.
- The flow of information must be reliable whether it is within a facility, between reporting sites in a district, between the community and the district, and from district to the national level.
- Building good working relationships with community informants is a way to make sure that information about health events, especially unusual or unexplained events, reaches health authorities in time to take action to prevent unnecessary death and illness.

Your facilitator will present information about improving reporting practices in your area and making strong links to improve community-based surveillance. You may also read this information in the Technical Guidelines on pages 68 and 69.

Exercise 3

You will use information from your own district or facility to see if the necessary forms and procedures are in place.

* * * *

Review this list of reporting forms. Then answer the two questions for each form. One asks about the availability of the form. Place a tick (√) in the column to show if these are paper or electronic forms. The last column asks you to describe how data is reported if you do not have paper or electronic forms.

Table 2.4: Checklist for Reporting Forms in Your District

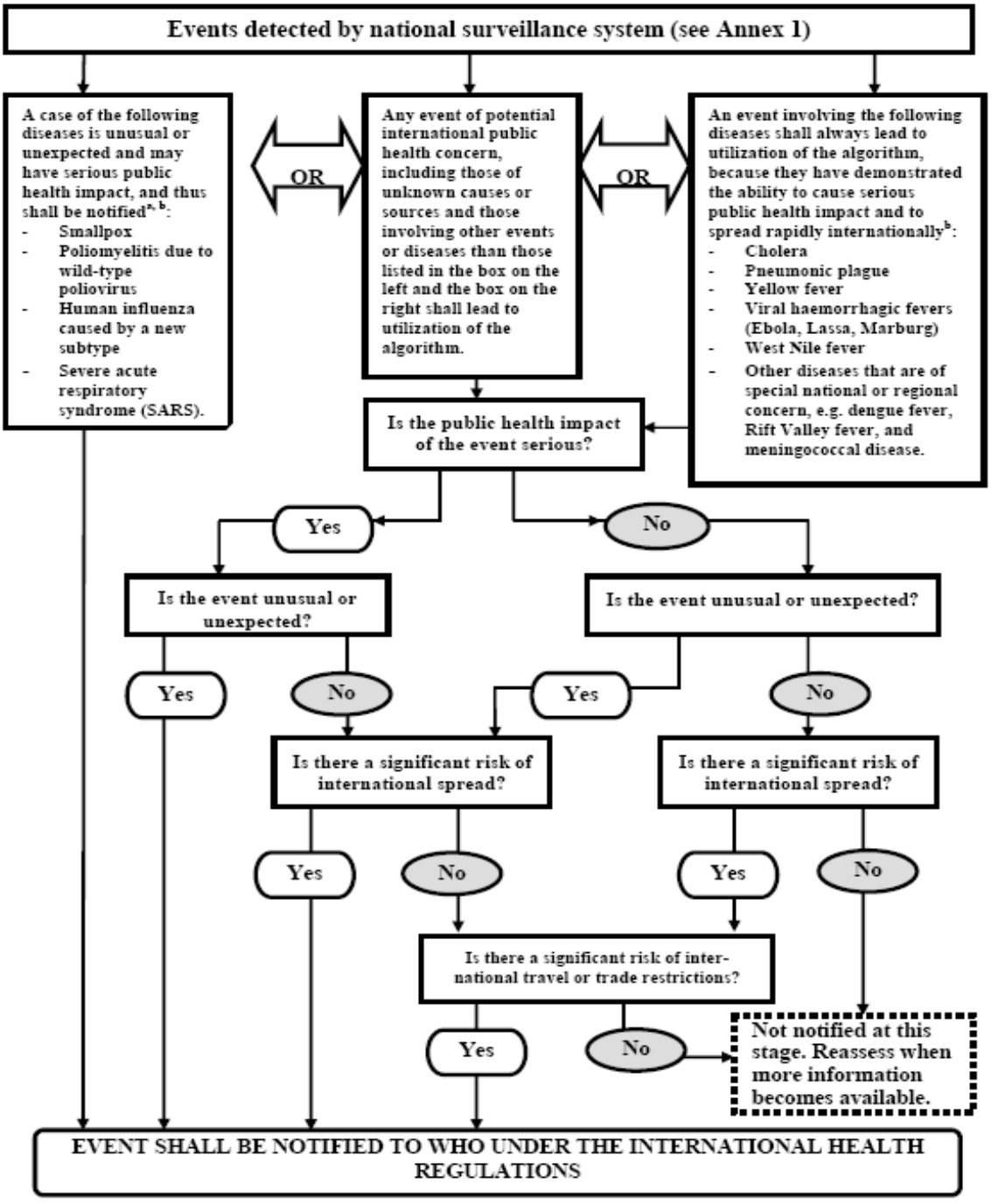
Reporting form	Are these forms available in your work site?		How do you report data if paper or electronic means are not available?
	Paper form	Electronic	
Case-based reporting form			
Lab-specimen-based reporting form			
Line list[1]			
Routine weekly form			
Routine monthly form			

[1] A line list is a chart of cases that includes important demographic data, such as name or identification number, age, sex, date of onset, date of death and case classification. Typically, new cases are added to a line listing as they are identified.

Points to remember:

1. Report priority diseases to the next health level at appropriate time intervals
2. Know which diseases and events require immediate reporting and which ones can be reported monthly
3. Be sure that you know who to send your reports to at the next health level and what format you should send them in.
4. Do your best to involve laboratories and community stakeholders in the reporting process to foster communication and develop a clear profile for the disease and target populations.

Figure 1: IHR Decision Instrument



[a] As per WHO case definitions.
[b] The disease list shall be used only for the purposes of these Regulations.

EXAMPLES FOR THE APPLICATION OF THE DECISION INSTRUMENT FOR THE ASSESSMENT AND NOTIFICATION OF EVENTS THAT MAY CONSTITUTE A PUBLIC HEALTH EMERGENCY OF INTERNATIONAL CONCERN

The examples appearing in this Annex are not binding and are for indicative guidance purposes to assist in the interpretation of the decision instrument criteria.

DOES THE EVENT MEET AT LEAST TWO OF THE FOLLOWING CRITERIA?

<table>
<tr><td rowspan="4">Is the public health impact of the event serious?</td><td></td></tr>
<tr><td>I. Is the public health impact of the event serious?</td></tr>
<tr><td>1. Is the number of cases and/or number of deaths for this type of event large for the given place, time or population?</td></tr>
<tr><td>2. Has the event the potential to have a high public health impact?

THE FOLLOWING ARE EXAMPLES OF CIRCUMSTANCES THAT CONTRIBUTE TO HIGH PUBLIC HEALTH IMPACT:

✓ Event caused by a pathogen with high potential to cause epidemic (infectiousness of the agent, high case fatality, multiple transmission routes or healthy carrier).
✓ Indication of treatment failure (new or emerging antibiotic resistance, vaccine failure, antidote resistance or failure).
✓ Event represents a significant public health risk even if no or very few human cases have yet been identified.
✓ Cases reported among health staff.
✓ The population at risk is especially vulnerable (refugees, low level of immunization, children, elderly, low immunity, undernourished, etc.).
✓ Concomitant factors that may hinder or delay the public health response (natural catastrophes, armed conflicts, unfavourable weather conditions, multiple foci in the State Party).
✓ Event in an area with high population density.
✓ Spread of toxic, infectious or otherwise hazardous materials that may be occurring naturally or otherwise that has contaminated or has the potential to contaminate a population and/or a large geographical area.</td></tr>
<tr><td>3. Is external assistance needed to detect, investigate, respond and control the current event, or prevent new cases?</td></tr>
</table>

	THE FOLLOWING ARE EXAMPLES OF WHEN ASSISTANCE MAY BE REQUIRED: ✓ Inadequate human, financial, material or technical resources – in particular: – Insufficient laboratory or epidemiological capacity to investigate the event (equipment, personnel, financial resources) – Insufficient antidotes, drugs and/or vaccine and/or protective equipment, decontamination equipment, or supportive equipment to cover estimated needs – Existing surveillance system is inadequate to detect new cases in a timely manner.
	IS THE PUBLIC HEALTH IMPACT OF THE EVENT SERIOUS? **Answer "yes" if you have answered "yes" to questions 1, 2 or 3 above.**

Is the event unusual or unexpected?	**II. Is the event unusual or unexpected?**
	4. *Is the event unusual?* THE FOLLOWING ARE EXAMPLES OF UNUSUAL EVENTS: ✓ The event is caused by an unknown agent or the source, vehicle, route of transmission is unusual or unknown. ✓ Evolution of cases more severe than expected (including morbidity or case-fatality) or with unusual symptoms. ✓ Occurrence of the event itself unusual for the area, season or population.
	5. *Is the event unexpected from a public health perspective?* THE FOLLOWING ARE EXAMPLES OF UNEXPECTED EVENTS: ✓ Event caused by a disease/agent that had already been eliminated or eradicated from the State Party or not previously reported.
	IS THE EVENT UNUSUAL OR UNEXPECTED? **Answer "yes" if you have answered "yes" to questions 4 or 5 above.**

Is there a significant risk of international spread?	**III. Is there a significant risk of international spread?**
	6. *Is there evidence of an epidemiological link to similar events in other States?*
	7. *Is there any factor that should alert us to the potential for cross border movement of the agent, vehicle or host?* THE FOLLOWING ARE EXAMPLES OF CIRCUMSTANCES THAT MAY PREDISPOSE TO INTERNATIONAL SPREAD: ✓ Where there is evidence of local spread, an index case (or other linked cases) with a history within the previous month of: – international travel (or time equivalent to the incubation period if the pathogen is known) – participation in an international gathering (pilgrimage, sports event, conference, etc.) – close contact with an international traveller or a highly mobile population. ✓ Event caused by an environmental contamination that has the potential to spread across international borders. ✓ Event in an area of intense international traffic with limited capacity for sanitary control or environmental detection or decontamination.
	IS THERE A SIGNIFICANT RISK OF INTERNATIONAL SPREAD? **Answer "yes" if you have answered "yes" to questions 6 or 7 above.**

international restrictions?	**IV. Is there a significant risk of international travel or trade restrictions?**
	8. *Have similar events in the past resulted in international restriction on trade and/ travel?*
	9. *Is the source suspected or known to be a food product, water or any other goods might be contaminated that has been exported/imported to/from other States*?

Disease-Specific Case Based Reporting forms can be found in Annex A-J of Section 9, starting on page 379 of the Technical Guidelines.

World Health Organization

REGIONAL OFFICE FOR Africa

Integrated Disease Surveillance and Response

District Level Training Course | Module 3

Analyze and interpret data

July 2011

World Health Organization

Regional Office for Africa (AFRO)

Integrated Disease Surveillance and Response

District Level Training Course

Module 3

Analyze and interpret data

July 2011

Introduction

Organizing and analyzing data is an important function of surveillance. Data analysis provides information for taking relevant, timely and appropriate public health action. For example, when you analyze surveillance data, you can:

- Observe trends over time and alert other health staff about emergent events or unusual patterns.
- Identify geographic areas of higher risk.
- Characterize personal variables such as age, gender or occupation that place a person at higher risk for the disease or event.

The following table explains types of analysis, objectives for using that type of analysis, tools for displaying the data and methods for analyzing that type of data. You can find this table on Page 87 of the IDSR Technical Guidelines.

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

In general, analyzing routine surveillance data should include the following questions:

- Have any priority diseases or other public health events of concern been detected during the reporting period (this week, for example)? Is an epidemic or unusual public health event suspected?
- Of the cases, deaths or events detected, how many were confirmed?
- Where did they occur?
- How does the observed situation compare to previous observation periods of time this year? For example, when compared to the start of the reporting period, is the problem increasing?
- Are the trends stable, improving or worsening?
- Is the reported surveillance information representative enough of the reporting site's catchment area? Out of all the sites that should report, what proportion has actually been reported?
- How timely were the data received from the reporting sites?

Each site that collects or receives data should prepare and follow an analysis plan for analyzing routine surveillance information (refer to Annex 3A on page 103 of the Technical Guidelines).

* * * *

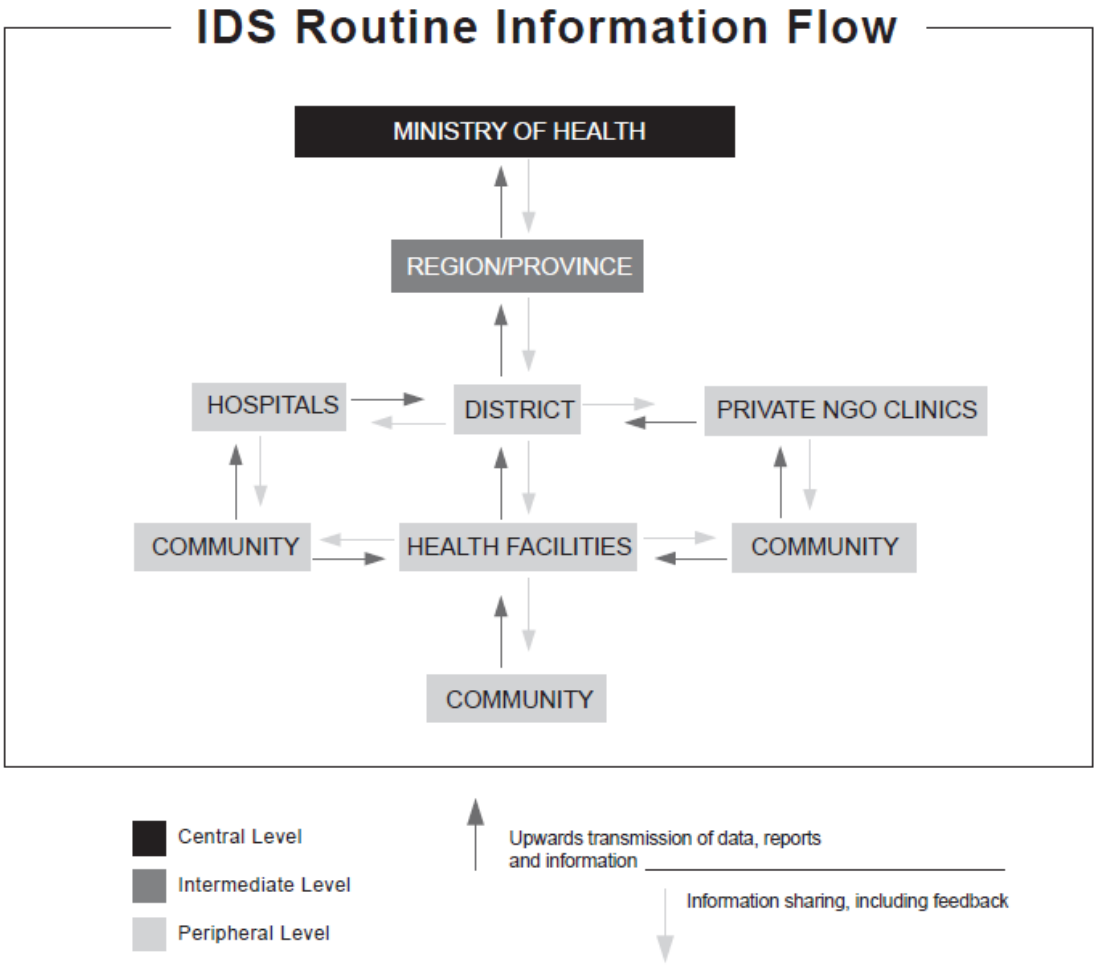
This module will describe and allow you to practice the following skills:

1. Collect and organize data for analysis.
2. Use tables, graphs and histograms to analyze trends.
3. Use maps to analyze location of populations at risk.
4. Use tables to describe characteristics of the affected population.
5. Draw conclusions about analysis results.
6. Make recommendations based on the conclusions.

Your facilitator will present information on receiving, handling and storing data from reporting sites. You may also read this information in the Technical Guidelines on pages 84-86.

Exercise 1

Look at the diagram below. Then answer the following questions:



1. Locate your level on this diagram. Record the names of some of the sites that report surveillance data to you routinely. Also record the number of sites that report to you.

2. Is there a designated focal person for surveillance and response at each of the sites?

3. How do you communicate with the sites?

4. How is data delivered to you from these sites? For example, do you receive data electronically, by telephone or by hand?

5. Do you provide feedback to those sites about the reporting?

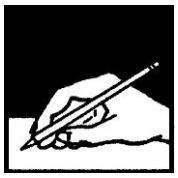
6. Where do you send your aggregate reports?

7. How do you communicate with the level above you when you send your aggregate reports?

8. Do you routinely receive feedback about those reports?

9. Do you know where to report a public health event of national or international concern?

Tell your facilitator when you have completed this exercise.



Exercise 2

Review a Health Center Register

Zahanati Health Centre serves a population of about 10,000 people in its catchment area. The health facility provides both curative and maternal and child health care services. The basic information of those attending the outpatient department is summarized in the registers below:

Table 3.1: Extract from the register of Zahanati Health Centre, new cases received from 6 to 10th May 2010.

ID No.	Date of attendance	Name	Village	Sex	Age	Suspected disease / syndrome
01	6/5/10	A.M.	C	M	6 mos	Pneumonia
02	6/5/10	T.F.	A	M	2 yrs	Measles
03	6/5/10	N.N.	C	M	22 yrs	Injury
04	6/5/10	Y.E.	C	F	28 yrs	Malaria
05	6/5/10	I.L.	B	F	7 mos	Meningitis
06	6/5/10	R.E.	B	F	8 mos	Pneumonia
07	6/5/10	K.L.	D	F	4 yrs	Malaria
08	6/5/10	T.I.	A	M	13 yrs	Malaria
09	6/5/10	A.F.	D	F	15 yrs	Acute Flaccid Paralysis
10	6/5/10	D.O.	D	F	24 yrs	Meningitis
11	7/5/10	K.M.	A	M	22 yrs	Dysentery
12	7/5/10	U.G	A	F	9 mos	Fracture
13	7/5/10	P.F.	C	M	11 mos	Measles
14	7/5/10	H.I.	C	F	24 yrs	Abortion

ID No.	Date of attendance	Name	Village	Sex	Age	Suspected disease / syndrome
15	7/5/10	G.T.	C	F	21 yrs	Malaria
16	7/5/10	W.T.	A	F	16 yrs	Tuberculosis
17	7/5/10	R.Y.	B	M	2yrs	Diarrhoea
18	8/5/10	A.C.	C	M	1 yr	Pneumonia
19	8/5/10	Z.U.	B	F	1 yr	Malaria
20	8/5/10	A.C.	C	M	11 mos	Scabies
21	8/5/10	J.F.	B	M	15 yrs	Malaria
22	8/5/10	M.M.	B	F	18 yrs	Dysentery
23	8/5/10	L.M.	B	M	5 yrs	Wound
24	8/5/10	P.L.	C	M	1 yr 10 mos	Diarrhoea[2]
25	8/5/10	Z.E.	A	M	16 yrs	Injury
26	8/5/10	A.B.	C	F	25 yrs	Haemorrhagic fever
27	8/5/10	S.R.	B	F	17 yrs	Malaria
28	9/5/10	A.K.	C	F	4 mos	Meningitis
29	9/5/10	T.T.	B	M	3 yrs	Abscess
30	9/5/10	W.F	B	M	12 yrs	Meningitis
31	9/5/10	K.K.	B	F	2 yrs 10 mos	Malaria
32	9/5/10	L.D.	A	F	16 yrs	Cholera
33	9/5/10	D.B.	B	F	1 yr 8 mos	Pneumonia
34	9/5/10	A.N.	B	F	21 yrs	Tuberculosis
35	9/5/10	L.S.	A	M	1 yr 5 mos	Severe diarrhoea
36	9/5/10	B.D.	A	M	11 mos	Pneumonia

[2] Count diarrhoea and severe diarrhoea as “diarrhoea”.

ID No.	Date of attendance	Name	Village	Sex	Age	Suspected disease / syndrome
37	9/5/10	P.K.	B	F	1 yr	Malaria
38	9/5/10	K.R.	A	F	2 yrs 5 mos	Scabies
39	10/5/10	K.A.	D	M	26 yrs	Injury
40	10/5/10	P.N.	D	F	4 yrs	Pneumonia
41	10/5/10	S.A.	D	F	3 yrs	AIDS
42	10/5/10	M.A.	A	F	2 yrs	Diarrhoea
43	10/5/10	E.R.	C	F	16 yrs	Injury
44	10/5/10	U.H.	A	M	22 yrs	AIDS
45	10/5/10	Y.L.	C	M	18 yrs	Malaria
46	10/5/10	W.C.	A	F	4 mos	Malaria

1. Using data from the Zahanati H.C Register, show the distribution of patients by disease or syndrome by completing the following table. First write out all of the diseases and syndromes found in the outpatient department. To record frequency, place a tick (√) or slash (/) in the column for each instance of a suspected case or syndrome.

Table 3.2: Distribution of patients by frequency and proportion of disease/syndrome in Zahanati HC.

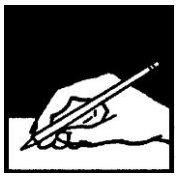
	Disease/syndrome	**Frequency**	**Proportion* %**
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
	TOTAL		

* To calculate the proportion (%) of pneumonia, use this formula:
Total number of pneumonia cases ÷ Total number of cases x 100 = % pneumonia cases

2. What are the top 5 disease conditions by proportion recorded in the Zahanati Health Centre?

3. Draw a bar graph to display the top 5 disease conditions by number of cases. Use the space below to create a grid and then draw the bar graph. If available, use graph paper or a computer. You may refer to the example on page 89 of the Technical Guidelines.

Bar Graph: Top 5 Disease Conditions Recorded in Zahanati Health Centre



Exercise 3

Analyze data by person

In this exercise, you will practice analyzing person data for a particular disease or condition. To complete this exercise, you will use the information about the Zahanati Health Center found in the tables for Exercise 2.

1. Refer to Table 3.1 in Exercise 3. Locate the columns for "age" and "sex." Summarize the distribution of patients by age and sex from the Zahanati Health Centre to complete Table 3.3.

Table 3.3: Distributions of Zahanati HC patients by age and sex, 2008

Age group	**Sex**		**Total**
	Male	**Female**	
0-4 years			
5- 14years			
15 years and above			
Total			

2. Which groups of patients are seen most often?

3. In the table below, summarize the distribution of malaria patients by village from Zahanati Health Centre using the data in Table 3.1.

Table 3.4: Distribution of malaria patients recorded in Zahanati HC by Village, 1996

Village	Number of patients
A	
B	
C	
D	
Total	

4. What conclusion can you make from this table about the patients and villages where they live?

1.0 Use thresholds for public health action

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

In this training, you will hear about two types of thresholds: an alert threshold and an epidemic threshold. Not every disease or condition uses both types of thresholds, although each disease or condition has a point where a problem must be reported and an action taken.

An ***alert threshold*** tells health staff and the surveillance team that further investigation is needed. Depending on the disease or condition, an alert threshold is reached when there is one suspected case (as for an epidemic-prone disease or for a disease targeted for elimination or eradication) or when there is an unexplained increase in number of cases for any disease. An alert threshold is also reached when health staff review weekly or monthly summary reporting and they see an unusual pattern.

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

Suggested thresholds for taking action in specific diseases or conditions are presented in Section 9.0 of the Technical Guidelines.

Your facilitator will provide additional information about thresholds. Then you will do Exercise 4.

Exercise 4

In this exercise, you will practice finding information about alert and epidemic thresholds in the Technical Guidelines. To complete this exercise, fill in the blank spaces in Table 3.5. Refer to the information provided in the TG guidelines starting on page 229. Also refer to, "Summary guidelines for priority diseases and conditions" in section 9. The row for cholera is completed for you as an example.

Table 3.5: Use thresholds for public health action

Disease	Alert threshold	Steps to take	Epidemic threshold	Steps to take
Cholera	A single suspected case	▪ Report case-based information immediately. ▪ Manage and treat the case ▪ Enhance strict hand-washing and isolation procedures. ▪ Conduct case-based investigation ▪ Obtain stool specimen for lab confirmation	If a suspected case is confirmed	▪ Establish treatment centre ▪ Strengthen case management ▪ Survey the availability of clean drinking water. ▪ Work with community leaders to limit the number of funerals or other large gatherings ▪ Promote safe preparation of food ▪ Promote safe disposal of human waste.
Severe acute respiratory Illness (SARI)				

Disease	Alert threshold	Steps to take	Epidemic threshold	Steps to take
Onchocerciasis				
Diabetes				
Food borne				

Exercise 5

In this exercise, you will practice using thresholds to detect outbreaks from summary reporting. First, read the case story and review the data in Table 3.10. This is data about using alert and epidemic thresholds for meningococcal meningitis. Answer the questions that follow the table.

* * * *

Dr. Perfection, the former Ndousi District Medical Officer was the new Central Region Medical officer. He had replaced Dr. Everbusy who has been awarded a four-month scholarship to study Applied Epidemiology at the local university.

As he became familiar with his new office he found summary reports of meningococcal meningitis from five districts that had not been acted upon by Dr. Everbusy.

Table 3.6 is a summary table with the meningococcal meningitis reports from the 5 districts in Central Region.

Table 3.6: Meningitis cases by week Central Region, 2008

District	**Population**	**wk 1**	**wk 2**	**wk 3**	**wk 4**	**wk 5**	**wk 6**	**wk 7**	**wk 8**	**wk 9**	**wk 10**
Jamano	106550	2	3	2	1	0	2	2	0	2	3
Tarik	245907	1	2	11	9	16	16	20	42	42	57
Boula dougou	150279	15	16	16	8	14	8	9	9	12	11
Koilel	81032	1	0	2	1	1	1	4	3	3	3
Ankoubar	253181	4	3	5	4	3	4	8	6	8	5

1. Give Dr. Perfection some help by calculating the weekly attack rates for each District and complete the table below.

(Weekly meningitis attack rate= weekly meningitis cases ÷ population at risk X 100,000)

Table 3.7: Attack rates of meningitis cases by week and District, central region, 2008

District	Pop	Wk 1	AR 1	WK 2	AR 2	WK 3	AR 3	WK 4	AR 4	WK 5	AR 5	WK 6	AR 6	WK 7	AR 7	WK 8	AR 8	WK 9	AR 9	WK 10	AR 10
Jamano	106550	2		3		2		1		0		2		2		0		2		3	
Tarik	245907	1		2		11		9		16		16		20		42		42		57	
Boula dougou	150279	15		16		16		8		14		8		9		9		12		11	
Koilel	81032	1		0		2		1		1		1		4		3		3		3	
Ankoubar	253181	4		3		5		4		3		4		8		6		8		5	

3. Based on the calculated attack rates, name the districts that have been in the alert phase anytime after Week 1 and before Week 10. Also name those that have exceeded the epidemic threshold.

Hint: Alert Threshold= 5/100,000, Epidemic Threshold= 15/100,000

4. In the space provided below, draw a line graph of attack rates of meningococcal meningitis by week for Tarik District. Label the horizontal axes that represent the alert and epidemic thresholds for Tarik district on the same graph. Hint: First draw a grid and label the axes and then draw the line graph.

Line Graph: Attack rates of meningococcal meningitis by week for Tarik

Refer to the graph you have just drawn and answer the next two questions. It may be useful to mark these answers on the line graph so that you can see what they look like.

6. When was the alert phase exceeded?

7. When was epidemic threshold exceeded?

Exercise 6

In this exercise, you will practice all of the steps from this module. You will review variables recorded on a line list[3]. Use the line list to analyze outbreak data according to time, person and place. Read the brief case story and then review the line list on the next 6 pages. Answer the questions that follow.

Following an outbreak of Ebola Hemorrhagic Fever in Bandurana District, the District Management Team received a line list of all the cases from the field team summarized in Table 3.8 on the next page.

[3] A line list is a chart of cases that includes important demographic data, such as name or identification number of the patient and the age, sex, date of onset, date of death and case classification. Typically, new cases are added to a line list as they are identified.

Table 3.8: Line List from Bandurana District for Ebola Outbreak—October to November, 2000

ID	Name	Age in years	Sex	Head of Household	Division	Village	Date of onset	Week of onset	Date Hospitalised	Outcome (1=Dead, 0=Alive)	Date of Death	Case classify-cation	Blood sample taken	Date blood sample taken	Result	Occupa-tion
3101	L.P.	20	M	Poun	Zanza	Zanza	12-Oct	40		1	16-Oct	Probable	N			Student
3102	A.I	44	F	Benga	Zanza	Zanza	30-Oct	43		1	4-Nov	Probable	N			Farmer
3103	E.N.	7	M	Ambe	Zanza	Zanza	12-Nov	45		1	18-Nov	Probable	N			None
3104	I.P.	47	F	Ambe	Zanza	Zanza	27-Nov	47		1	3-Nov	Probable	N			Farmer
3105	F.I.	2.5	M	Benga	Omo	Doum	11-Oct	40		1	17-Oct	Probable	N			None
3106	E.I.	13	F	Benga	Omo	Bea	11-Oct	40	18-Oct	1	22-Oct	Probable	N			Student
3107	K.L.	20	M	Lota	Omo	Bea	12-Oct	40		1	23-Oct	Probable	N			Hunter
3108	I.A.	39	F	Benga	Omo	Doum	24-Oct	42	24-Oct	1	29-Oct	Confirmed	Y	24-Oct	Positive	HCW
3109	L.S.	17	F	Lota	Omo	Andza	25-Oct	42		1	4-Nov	Probable	N			Farmer
3110	E.M.	44	F	Lota	Omo	Andza	25-Oct	42	26-Oct	1	4-Nov	Confirmed	Y	26-Oct	Positive	HCW
3111	I.J.	46	M	Benga	Omo	Bea	29-Oct	43		1	6-Nov	Probable	N			Hunter
3112	E.B.	38	F	Kabo	Omo	Doum	4-Nov	44		1	8-Nov	Probable	N			Farmer
3113	K.D.	40	M	Lakou	Omo	Bea	6-Nov	44		1	10-Nov	Confirmed	Y	11-Nov	Positive	Game Ranger
3114	A.Y.	60	F	Benga	Omo	Bea	16-Nov	45		1	19-Nov	Probable	N			Farmer
3115	N.R.	22	F	Kabo	Omo	Doum	16-Nov	45		0		Confirmed	Y	2-Dec	Positive	Farmer
3116	M.N.	28	F	Kabo	Omo	Doum	15-Nov	45		0		Probable	N			Farmer

3117	A.M.	40	M	Nossi	Omo	Bea	14-Nov	45		1	23-Nov	Confirmed	Y	24-Nov	Positive	Hunter
3118	A.J.	40	F	Benga	Omo	Bea	15-Nov	45		0		Probable	Y	3-Dec	Pending	Farmer
3119	N.A.	20	F	Benga	Omo	Bea	16-Nov	45	30-Nov	0		Probable	Y	2-Dec	Pending	Farmer
3120	N.O.	24	M	Lakou	Omo	Bea	15-Nov	45		1	23-Nov	Confirmed	Y	23-Nov	Positive	Hunter
3121	E.P.	22	F	Nossi	Omo	Bea	15-Nov	45	25-Nov	0		Confirmed	Y	24-Nov	Positive	Farmer
3122	E.B.	20	F	Nossi	Omo	Bea	18-Nov	46	24-Nov	1	26-Nov	Probable	N			Farmer
3123	I.O.	50	F	Nossi	Omo	Bea	18-Nov	46	24-Nov	1	24-Nov	Confirmed	Y	24-Nov	Positive	Farmer
3124	N.M.	26	M	Ambe	Omo	Bea	13-Nov	45	13-Nov	1	24-Nov	Confirmed	Y	24-Nov	Positive	Hunter
3125	I.C.	16	F	Benga	Omo	Bea	15-Nov	45		1	21-Nov	Probable	N			Student
3126	K.N.	10	M	Lakou	Omo	Bea	17-Nov	46		1	21-Nov	Confirmed	Y	22-Nov	Positive	Student
3127	S.E.	25	M	Kabo	Omo	Doum	16-Nov	46		1	21-Nov	Confirmed	Y	22-Nov	Positive	Hunter
3128	M.S.	45	F	Lakou	Omo	Bea	17-Nov	46	24-Nov	1	24-Nov	Confirmed	Y	24-Nov	Positive	Farmer
3129	B.S.	8	F	Lakou	Omo	Bea	17-Nov	46		1	23-Nov	Confirmed	Y	24-Nov	Positive	None
3130	E.J.	43	M	Aucun	Omo	Centre	20-Nov	46		0		Confirmed	Y		Positive	None
3131	O.E.	16	M	Lakou	Omo	Bea	20-Nov	46	25-Nov	1	29-Nov	Confirmed	Y	24-Nov	Positive	Student
3132	M.R.	18	F	Odob	Omo	Andza	20-Nov	46		0		Probable	N			Farmer
3133	E.Y.	1.5	M	Rouja	Omo	Bea	16-Nov	45		1	23-Nov	Probable	N	24-Nov	Positive	None
3134	K.C.	14	M	Lakou	Omo	Bea	15-Nov	45	23-Nov	0		Confirmed	Y	3-Dec	Positive	Student
3135	K.R.	23	F	Nossi	Omo	Bea	23-Nov	46		0		Probable	N	8-Dec		Farmer

3136	K.E.	6	M	Lakou	Omo	Bea	23-Nov	46	23-Nov	0		Probable	N	3-Dec		None
3137	E.B.	38	F	Kabo	Omo	Bea	18-Nov	46	23-Nov	0		Probable	N	28-Nov		Farmer
3138	I.A.	26	M	Benga	Omo	Bea	20-Nov	46		0		Suspected	N			Hunter
3139	M.G.	19	M	Ambe	Omo	Bea	23-Nov	46		0		Suspected	N			Hunter
3140	N.N.	18	F	Ambe	Omo	Bea	22-Nov	46	24-Nov	0		Confirmed	Y	2-Dec	Positive	Farmer
3141	A.I.	28	M	Kabo	Omo	Bea	24-Nov	47		0		Confirmed	Y	24-Nov	Positive	Hunter
3142	D.D.	31	M	Ambe	Omo	Bea	24-Nov	47		0		Confirmed	Y	26-Nov	Positive	Farmer
3143	T.O.	22	M	Ambe	Omo	Bea	24-Nov	47	29-Nov	0		Confirmed	Y	2-Dec	Positive	Hunter
3144	Y.N.	25	F	Ambe	Omo	Bea	25-Nov	47		0		Suspected	N			Farmer
3145	O.A.	3	M	Nossi	Omo	Bea	26-Nov	47	26-Nov	1	28-Nov	Probable	N			None
3146	I.M.	5	F	Nossi	Omo	Bea	26-Nov	47	29-Nov	1	2-Dec	Confirmed	Y	2-Dec	Positive	None
3147	E.E.	1.5	M	Nossi	Omo	Bea	29-Nov	47	29-Nov	0		Confirmed	Y	5-Dec	Pending	None

1. Refer to the line list from Bandurana District on the last 7 pages. In the table below, record the number of cases and deaths for each date from the Bandurana line list. You may work with a partner or small group to count and record the cases and deaths.

Table 3.9: Distribution of cases and deaths of Ebola by date of onset in Bandurana, 1st October to 30th November 2010

Date of onset of symptoms	Weeks	Cases	Deaths
01-Oct 2010	39		
02-Oct 2010	40		
03-Oct 2010	40		
04-Oct 2010	40		
05-Oct 2010	40		
06-Oct 2010	40		
07-Oct 2010	40		
08-Oct 2010	40		
09-Oct 2010	41		
10-Oct 2010	41		
11-Oct 2010	41		
12-Oct 2010	41		
13-Oct 2010	41		
14-Oct 2010	41		
15-Oct 2010	41		
16-Oct 2010	42		
17-Oct 2010	42		
18-Oct 2010	42		
19-Oct 2010	42		
20-Oct 2010	42		
21-Oct 2010	42		

Date of onset of symptoms	Weeks	Cases	Deaths
22-Oct 2010	42		
23-Oct 2010	43		
24-Oct 2010	43		
25-Oct 2010	43		
26-Oct 2010	43		
27-Oct 2010	43		
28-Oct 2010	43		
29-Oct 2010	43		
30-Oct 2010	44		
31-Oct 2010	44		
01-Nov 2010	44		
02-Nov 2010	44		
03-Nov 2010	44		
04-Nov 2010	44		
05-Nov 2010	44		
06- Nov 2010	45		
07- Nov 2010	45		
08- Nov 2010	45		
09- Nov 2010	45		
10- Nov 2010	45		
11- Nov 2010	45		
12- Nov 2010	45		
13- Nov 2010	46		
14- Nov 2010	46		
15- Nov 2010	46		

Date of onset of symptoms	Weeks	Cases	Deaths
16- Nov 2010	46		
17- Nov 2010	46		
18- Nov 2010	46		
19- Nov 2010	46		
20- Nov 2010	47		
21- Nov 2010	47		
22- Nov 2010	47		
23- Nov 2010	47		
24- Nov 2010	47		
25- Nov 2010	47		
26- Nov 2010	47		
27- Nov 2010	48		
28- Nov 2010	48		
29- Nov 2010	48		
30- Nov 2010	48		
Total			

2. In the space provided below, use the date of onset to draw a histogram (or epidemic curve) of cases due to Ebola. You may use graph paper if it is available or use a spreadsheet program if you are using a computer.

Epidemic Curve: Ebola outbreak in Bandura District—2010

3. Describe the features of the graph you have drawn.

4. Using the data from the line list, do a person analysis and record the cases by age group and sex.

Table 3.10: Ebola cases by Age and Sex in Bandurana

Age group (in Years)	Females	Males	Total
Below 10			
10-19			
20-29			
30-39			
40-49			
50-59			
60 and above			
Total			

5. In the space provided below, draw a bar graph of the Ebola cases using the information from the table above. The bar graph will represent Ebola cases by age group and sex.

Bar Graph: Distribution of Ebola cases by age and sex in Bandurana—2010

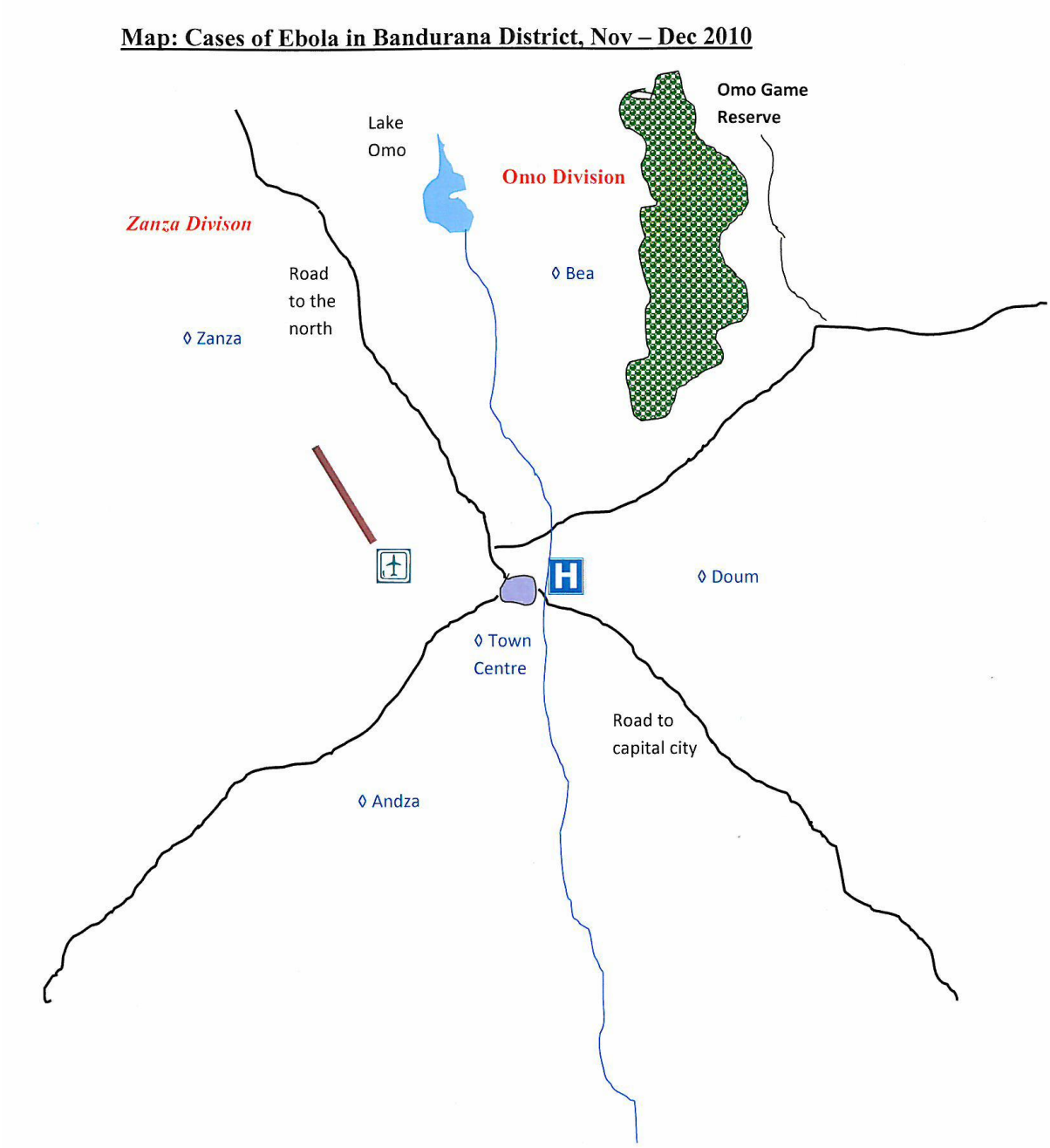
6. In the table below, analyze the distribution of cases by occupation. Be sure to calculate the case fatality ratio.

Table 3.11: Ebola Cases by Occupation in Bandurana, October to November 2010

Occupation	Cases	Died	Survived	Case Fatality by Occupation
Student nurses				
Farmer				
None				
Hunter				
Game Ranger				
Health Care Workers				
Total				

7. Which occupation is most affected?

8. Use the Village variable on the line list to plot the cases of Ebola on the map of the district below:



9. Which areas are most at risk for transmission?

Without analysis, we do not have data for action.

Points to remember:

1. Data analysis is a critical aspect of surveillance
2. There are several methods available to you for analyzing data depending on the information you are trying to present. For example, if you want to analyze a disease profile for a district, you can create a spot map for a visual representation of cases by location.
3. After you have compiled and analyzed data you can summarize your findings and use them for public health action.

World Health Organization

REGIONAL OFFICE FOR Africa

Integrated Disease Surveillance and Response

District Level Training Course | Module 4

Investigate and confirm suspected cases, outbreaks and other events of public health importance

July 2011

World Health Organization

Regional Office for Africa (AFRO)

Integrated Disease Surveillance and Response

District Level Training Course

Module 4

Investigate and confirm suspected cases, outbreaks and other events of public health importance

July 2011

The modules comprising the Integrated Disease Surveillance and Response District Level Training Course were prepared by the World Health Organization Regional Office for Africa (AFRO) and the Centers for Disease Control and Prevention (CDC) with support from the United States Agency for International Development (USAID) Africa Bureau. WHO-AFRO & CDC (2010). *Integrated Disease Surveillance and District Level Training Course, Module 4: Investigate and confirm suspected cases, outbreaks and other events of public health importance*. Brazzaville, Republic of Congo and Atlanta, USA.

Introduction

- The results of an investigation of the causes of an outbreak or other public health event lead to identification and assessment of people exposed to the disease or affected by the unusual health event.
- The investigation provides relevant information for taking immediate action and improving longer-term prevention activities.
- The steps for conducting an investigation of a suspected outbreak or other acute health event can also be used to investigate other public health problems in the district such as detection of an increase in a chronic or non-communicable disease.

The purpose of an investigation is to:

- Verify the outbreak or the public health event and determine the health risks.
- Identify and treat additional cases that have not been reported or recognized.
- Collect information and laboratory specimens for confirming the diagnosis.
- Identify the source of infection or cause of the outbreak or public health event.
- Describe how the disease is transmitted and characteristics of the populations at risk.
- Select appropriate response activities to control the outbreak or public health event.

* * * *

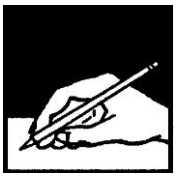
This module will describe and allow you to practice the following skills:

1. Know when to decide to investigate an outbreak
2. Verify and report an outbreak or public health event
3. Describe what might be happening
4. Plan to conduct a response
5. Analyze the investigation results to determine what caused the outbreak or event
6. Prepare an outbreak report

As you complete this module, you may refer to the disease specific guidelines in Section 9 of the technical Guidelines on page 229. Note that each disease specific guideline includes specific information about collecting and handling laboratory specimens for confirming suspected cases.

Your facilitator will introduce the purpose for investigating a report of an outbreak or other public health event. You may also read this information in the Technical Guidelines on pages 109 to 111.

Your facilitator will also present information about the International Health Regulations (IHR (2005)) and the IHR decision instrument. This will include page 75 in Annex 2C from an earlier section.



Exercise 1

In this exercise, you will read about an outbreak and the steps that were taken to investigate it. Answer the questions that follow each part of the case study. Your facilitator may suggest that participants do this exercise in pairs or small groups of 3 to 4 people. At the end of the case study, there will be a group discussion

* * * *

An unknown disease outbreak in Shotolu District, Nizata.

On 4th September 2008, the District Medical Officer (DMO) of Shotolu District received a report of an outbreak of an unknown disease that had affected Gonu and Mizasha villages in the District. Patients were presenting with sudden onset of fever, headache, chills, weakness and swelling in the groin. Others were presenting with cough and blood-stained sputum. There were reports that two adults had already died from this cluster of symptoms.

1. The DMO suspected plague. What action should he now take?

2. What is plague?

3. Should this outbreak be reported to the MOH national level?

4. Should this outbreak be notified to the IHR focal point at the national level?

5. The DMO compared the information he had with the IHR decision instrument (see Annex 2C on page 75 of the Technical Guidelines). How should he respond to the following questions:

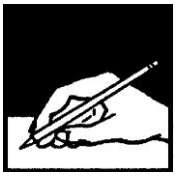
5A: Is the public health impact of the event serious:

5B: Is the event unusual or unexpected?

5C: Is there a significant risk of international spread?

5D: Is there a significant risk of international travel or trade restriction?

5E: Should the District Medical Officer notify the IHR focal point?



Exercise 2

Continued Case Study from Shotolu District

In this exercise, you will practice finding recommendations for laboratory confirmation of this outbreak. Please refer to the plague-specific guidelines for laboratory confirmation starting on page 33 of the Technical Guidelines.

1. How does the DMO verify the existence of an outbreak of plague?

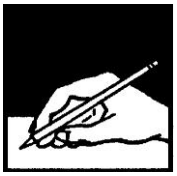
2. What specimens should be collected for laboratory confirmation?

3. When should the specimen be collected?

4. In your health system, where should you send plague specimens for confirmation?

5. What information should accompany the specimens?

6. Does your district keep supplies for collecting, packaging and shipping plague specimens? For example, does your team have a reliable supply of Cary Blair transport media?



Exercise 3

Continued Case Study from Shotolu District

In this exercise, you will analyze data about the outbreak in Shotolu District. The DMO developed a summary of information about cases and deaths that occurred during the outbreak. Review the table below and then answer the questions that follow.

Table 4.1: Plague outbreak in Shotolu Nizata, from 1 to 14 September, 2008

Date	Cases	Deaths
1-09-08	2	1
2-09-08	2	1
3-09-08	8	0
4-09-08	4	0
5-09-08	5	0
6-09-08	3	0
7-09-08	0	0
8-09-08	1	0
9-09-08	4	0
10-09-08	2	0
11-09-08	5	0
12-09-08	5	0
13-09-08	5	0
14-09-08	2	0
Total	**48**	**2**

1. Draw a line graph to show epidemic of plague in Shotolu using the data provided in Table 4.1. Use the space provided below to draw your graph. If graph paper or computers are available, you may choose to use those for creating your graph.

Line Graph: Plague Outbreak in Shotulo—2008

2. Review the graph you created in Question 1. Describe what the graph shows, beginning with the onset of the first case.

3. What was the **case fatality rate** in the first 2 days?

4. What was the **overall case fatality rate** for the outbreak?

5. Why do you think there is a difference between the two periods?

The District rapid response team also summarized the cases of plague by locality and sex as seen in Table 4.2

Table 4.2: Distribution of cases by village and sex in Shotula District

Village	**Population at risk**	**Cases of plague**		**Total cases**	***Attack rate per 100000**
		Male	**Female**		
Gonu	30,000	12	7	**19**	
Mizasha	20,000	12	3	**15**	
Wandali	40,000	4	9	**13**	
Makamekwe	10,000	0	1	**1**	
Total	**100,000**	**28**	**20**	**48**	

6. Calculate the Attack Rate (incidence rate) for each village in Shotolu District. Record your answer in the blank column in Table 4.2.

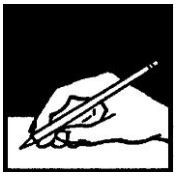
* **Attack rates** = total number of cases ÷ Total population at risk of the disease X 100,000

7. Did the disease affect males and females equally? (Assume the male to female ratio in the general population is 1:1)

8. Table 4.3 shows the distribution of cases by age group. It also gives the population at risk within those categories. The DMO was able to compare attack rates between the different age groups. Which age groups were **most** affected by Plague?

Table 4.3: Distribution of cases by age

Age group (yrs)	Population at risk	Number of cases	Attack rate per 100,000 population
0-4	20,000	14	
5-9	15,000	13	
10-14	15,000	11	
15-19	10,000	6	
20 and above	40,000	4	



Exercise 4

In this exercise, you will use the available information to characterize the outbreak and identify response actions.

* * * *

1. Based on your answers to previous questions, what do you think placed each of the particular groups at risk of getting disease in Shotolu?

1A: What do you think are the different risks for males versus females?

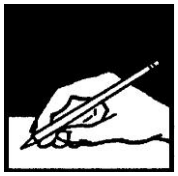
1B: What about the different age groups?

1. Refer to Section 9 of the Technical Guidelines and decide on recommendations for controlling this outbreak in each of the following areas:

    2A: Case Management:

    2B: Case Reporting:

    2C: Community Actions:



Exercise 5

In this exercise, you will have another opportunity to practice the steps for investigating an outbreak. Work with a partner or a small group of 3 to 4 participants to complete this second case study. When you have completed the exercise, your facilitator will provide feedback about your progress. As you do this exercise, refer to the disease specific guidelines for Rift Valley Fever on page 337 of the Technical Guidelines.

* * * *

Case Study: Hemorrhagic Fever Disease Outbreak in Buran District

In early December 2006, the District Medical officer of Health Buran District in Eastern Province reported several unexplained deaths associated with fever and generalized bleeding to the Ministry of Health. By 20 December, several cases were admitted to the hospital presenting with high fever headache, vomiting blood, abdominal pain, jaundice and sudden death. Those mostly affected were young herdsmen in contact with sick goats, sheep and cattle. The local veterinary health officials also reported high rates of spontaneous abortion and death among domestic livestock

The community lives in a dry area where herdsmen are gone from the village for long periods of time. When the area floods, the roads often become rivers or heavily rutted from rains and the village becomes difficult to reach. The DMO suspected an outbreak of Rift Valley Fever (RVF) based on the previous outbreak that occurred in December 1997 following the massive El Niño rains flooding. Presence of the *Aedes* mosquito has been documented in the village as well. He therefore sent case definitions to the district health facilities.

1. How is RVF transmitted?

2. What is a suspected case definition for Rift Valley Fever (RVF)?

3. What is a confirmed case definition for RVF?

4. What action should the District Medical Officer take?

5. The Ministry of Health subsequently sent a Rapid Response Team to investigate the outbreak. Which experts might be included on the initial investigation team?

6. What should the Rapid Response Team do in the field?

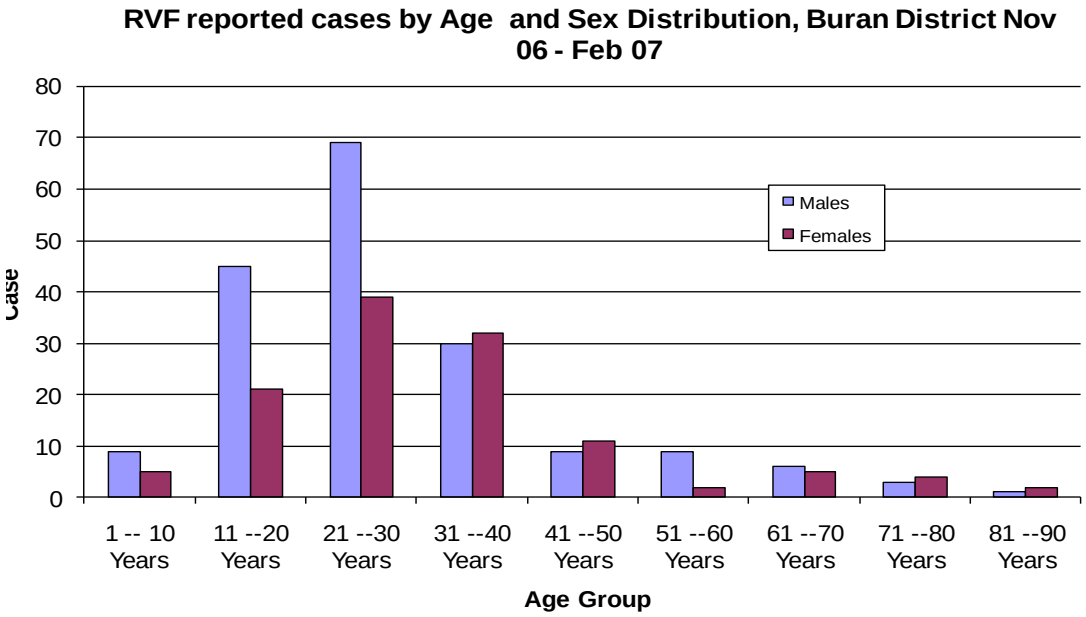
7. What tools should the team take with them to the field?

8. The team collected samples for testing using Polymerase Chain Reaction (PCR). What type of laboratory samples should be collected to confirm the disease?

9. What is the type of sample?

10. How will they be transported?

Figure 1: RVF reported cases by age and sex, Buran District 06-07



11. Which laboratory in your health system will assist with safe handling, shipping, storing and processing of this specimen?

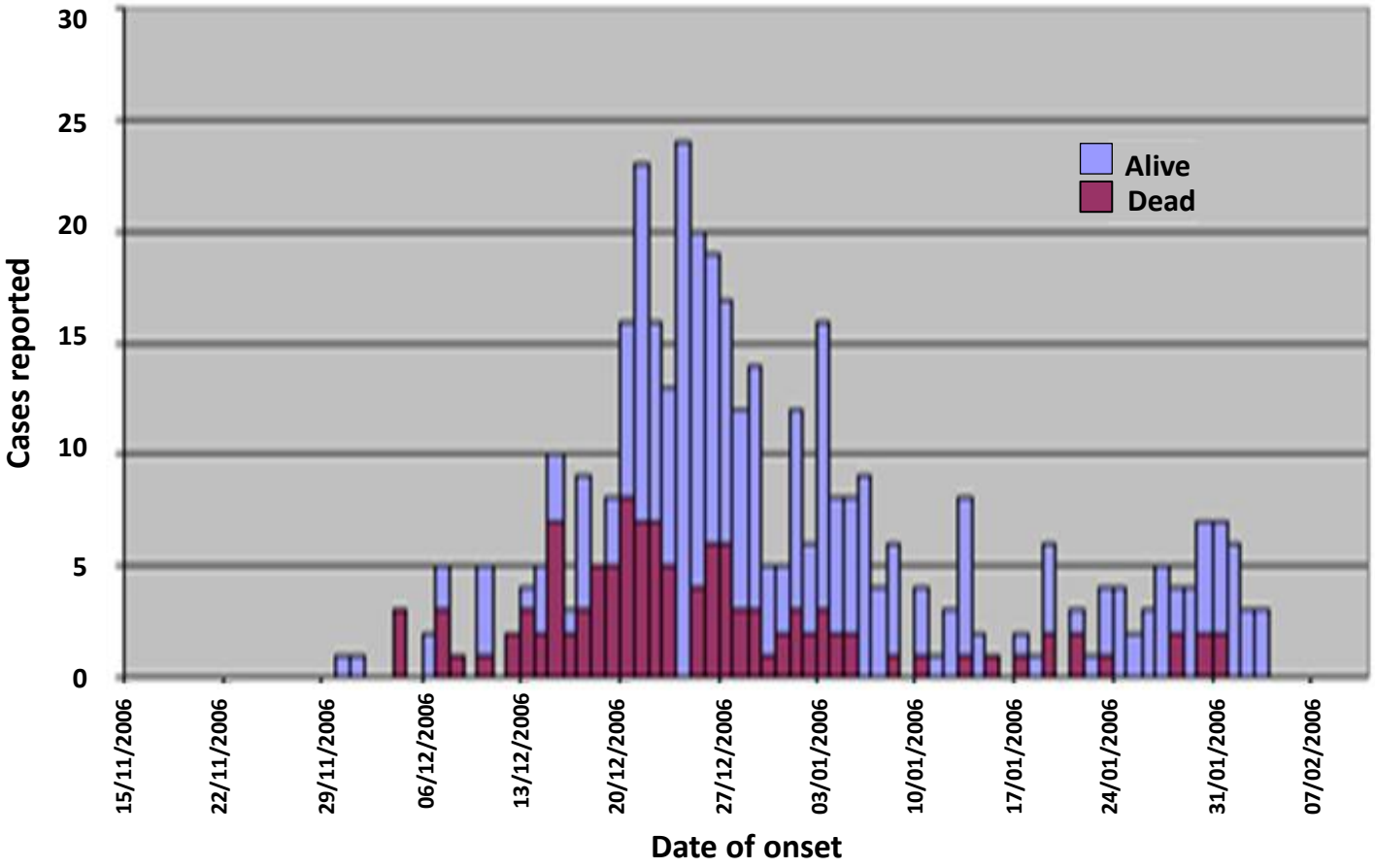
12. Based on your knowledge of RVF and information provided in Figure 1 above, why do you think particular categories of people were most affected?

During the investigation, you received more information on the outbreak. The most frequently reported RVF risk factors during the 2 weeks preceding illness onset were drinking unboiled (raw) milk (72%); living within 100 meters of a flooded area (70%); having an ill animal (67%); drinking milk from an ill animal (59%); working as a herdsman (50%); having a dead animal in a herd (50%); and slaughtering an animal (42%). Approximately 9% of patients reported close contact with another household member who was sick with RVF.

13. What are the key messages to reduce the transmission of the disease in the community?

14. What would be the most appropriate way to communicate health information to this nomadic community?

Figure 2: Distribution of cases by time Buran District, Nov 2006- January 2007.

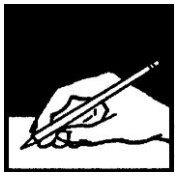


15. The graph in Figure 2 is an epidemic curve of the RVF outbreak in Buran. An epidemic curve describes the distribution of cases over time. Describe what you see in this epidemic curve.

The ban on animal slaughter was announced by the Ministry of Agriculture and Livestock on 27 December 2006. Vaccination of cattle and goats began on 7 January 2007. The Ministry also banned the movement of livestock from the infected areas.

16. Insert arrows on figure 2 indicating when the Ministry of Agriculture and Livestock was announced the ban on movement of livestock and when vaccination of the livestock started.

17. In your opinion, was the ban on slaughter of animals and starting vaccination of livestock effective in breaking the transmission of RVF? Explain your answer referring to figure 2.



Exercise 6

In this case study, you will practice evaluating an outbreak and obtaining information for use in a report. Review this case study about an outbreak of measles and then answer the questions about the results of the outbreak response.

* * * *

An outbreak of measles in Onori

Demography:

Onori is an archipelago consisting of 10 islands. It is about 500 km off the coast of Galen, a country in Africa. It has a population of 430,000 people, 65% of which inhabit the two biggest islands of the archipelago.

The majority of people from Onori migrate out of the country for economic reasons. In fact, the major revenue of the country is obtained from money sent home from Onorians living and working abroad.

Only 10% of the country's food requirement is produced locally and the adult literacy rate is estimated at 80%.

Health Services

Health Services are delivered through both government and private providers. There are 2 central hospitals, 3 regional hospitals, 18 health centers, 20 dispensaries and 87 PHC centers. The doctor-patient ratio is 1:2500; while the nurse-patient ratio is 1: 1500. Onori has been measles free for several years. Measles elimination is the goal of Onori Health Services. The WHO target for measles elimination is 2020.

The Outbreak

Reporting

An outbreak of measles began on 16 August 2008 in Onori. A total of 44 cases were recorded over the outbreak period. The first cases were recorded in Victa, the capital of the biggest Island of the Onori archipelago. While doing an institutional outpatients and admissions register review at the Onori Central Hospital on 17 August 2008, a member of the polio STOP team was impressed about record keeping at the Hospital. He noticed in the admission register of the Paediatrics Isolation Unit that one case of "Suspected Measles" had been recorded, however, he did not find any records of acute flaccid paralysis cases. He faithfully submitted a zero case AFP surveillance report to the Epidemiologist of the Onori Health Services for the week ending 19 August 2008. He did not report the "Suspected Measles" because he was tasked with only STOP team activities.

Confirming Diagnosis

The suspected case was later confirmed to be due to measles in the laboratory by the detection of anti-measles IgM antibodies.

The EPI Program in Onori

Routine EPI coverage (<1Yr) in Onori declined from 79.4% in 2004 through 76.7% in 2005 to 69.6% in 2007. Factors responsible for this decline were not immediately known.

Disease Surveillance in Onori

Human resource capacity building for AFP Surveillance in Onori was carried out in 2004 and 2007 for national surveillance personnel. In August and September 2008 when the first cases of Measles outbreak were detected in the hospitals, the Onori Epidemiologist faxed a report to WHO indicating "No measles cases" and " No AFP cases" since did he not receive the measles case report from the STOP team member.

* * * *

Following a rumor of a suspected outbreak of measles, an epidemiologist was sent to investigate the outbreak and summarized the findings as shown in Table 4.4

Table 4.4: Line List—Measles outbreak in Onori Archipelago

Reg No.	Name	Community	Sex	Age	Wk of Adm	Vaccination Status	Lab Test IgM+	Outcome
1	GK	Osinya	F	11mos	1	No	+Ve	Dead (D)
2	PG	Osinya	M	8yrs	1	No	+Ve	Alive (A)
3	JK	Osinya	M	3yrs	2	No	+Ve	A
4	WL	Osinya	F	38yrs	2	No	+Ve	A
5	WW	Osinya	F	4yrs	3	No	+Ve	A
6	OM	Osinya	M	2yrs	3	Yes	+Ve	D
7	SO	Osinya	F	2.5yrs	4	No	+Ve	A
8	OD	Osinya	F	6yrs	2	Yes	+Ve	A
9	ER	Osinya	F	4yrs	5	Yes	+Ve	A
10	DS	Osinya	M	1yr	6	No	+Ve	A
11	LK	Osinya	M	4yrs	6	Yes	+Ve	A
12	RE	Osinya	M	2yrs	6	No	+Ve	A
13	LO	Osinya	M	6yrs	7	No	+Ve	A
14	KO	Salama	F	15yrs	7	Yes	-	A
15	PO	Osinya	M	4yrs	7	Yes	+Ve	A
16	DE	Osinya	F	7yrs	7	No	+Ve	A
17	GS	Osinya	F	8yrs	7	Yes	+Ve	A
18	FK	Salama	F	2yrs	7	No	+Ve	D
19	NU	Salama	M	37yrs	8	No	+Ve	A
20	PQ	Osinya	F	3.5yrs	8	Yes	+Ve	D
21	KS	Salama	M	7yrs	8	No	+Ve	A
22	KA	Salama	F	5yrs	8	Yes	+Ve	D

Reg No.	Name	Community	Sex	Age	Wk of Adm	Vaccination Status	Lab Test IgM+	Outcome
23	NK	Salama	F	5yrs	8	No	+Ve	A
24	HD	Salama	M	6yrs	8	No	+Ve	A
25	XE	Vicente	M	1yr	8	No	+Ve	A
26	MA	Salama	M	7yrs	8	No	+Ve	D
27	ER	Vicente	F	5yrs	8	Yes	+Ve	D
28	BN	Vicente	M	9yrs	8	No	+Ve	A
29	MZ	Salama	F	8yrs	9	Yes	+Ve	A
30	MX	Vicente	M	12yrs	9	No	+Ve	A
31	BD	Vicente	F	11yrs	9	No	+Ve	A
32	AW	Cruz	F	9.5yrs	9	Yes	+Ve	D
33	QA	Tarime	M	12.5yrs	9	No	+Ve	A
34	WE	Cruz	M	10yrs	9	No	+Ve	A
35	DC	Tarime	F	14yrs	9	No	+Ve	A
36	BT	Cruz	M	3yrs	10	No	-	A
37	NX	Tarime	M	19yrs	10	No	+Ve	A
38	MZ	Cal	F	18yrs	10	Yes	+Ve	A
39	NX	Cal	F	30yrs	11	No	+Ve	A
40	POO	Cata	M	34yrs	11	No	+Ve	A
41	HDS	Cata	F	33yrs	11	No	-	A
42	SER	Domingo	M	5yrs	12	No	-	A
43	MJT	Kigumo	M	38yrs	12	Yes	+Ve	A
44	JSD	Mina	F	2yrs	13	No	-	D

1. Using the information provided in the line list (Table 4.4) of measles outbreak in Onori, complete the number of cases, cumulative cases and proportion of cumulative cases in this table.

Table 4.5: Number of measles cases reported in Onori by age, August 2008

Age Group (yrs)	**<1**	**1 to 4**	**5 to 9**	**10 to 14**	**15 to 19**	**20 to 24**	**25 to 34**	**35 and over**
No. Of cases	1	14	15	5				
Cumulative No. of cases	1	15	30	35				
Proportion of cumulative cases (%)								

2. Using the data in the table below, draw a graph showing the number of cases of measles reported per week since the beginning of the outbreak (start of epidemic is taken as week 1). Use the space provided below to draw your graph.

Table 4.6: Number of Cases by week of admission, August 2008

Week of epidemic	1	2	3	4	5	6	7	8	9	10	11	12	13
No of cases	2	1	3	2	1	3	6	10	7	3	3	2	1

Line Graph: Number of Measles Cases in Onori by Week—August 2008

3. Describe what you see in the graph.

4. Calculate measles incidence rate (attack) rate by community, by completing Table 4.7.

Table 4.7: Distribution of measles cases by community in Onori

Community	**Population**	**Number of cases**	**Incidence rate Per 100,000 population**
Osinya	121212	17	
Salama	12769	9	
Vicente	81799	5	
Cruz	26667	3	
Tarime	12121	3	
Cata	45866	2	
Domingo	9696	1	
Kigumo	3736	1	
Mina	8767	1	
Baraka	18181	2	
Total	**340814**	**44**	

*****Calculate the incidence rate (attack rate) by dividing the number of cases by the population at risk and multiplying by a factor such as100,000. In this case we assume that the whole population is at risk of getting measles.

5. Complete Table 4.8 by calculating and recording the Case Fatality Rate (CFR) for the remaining communities. The CFR is the proportion of fatal cases (i.e., the percentage of cases who died)

Table 4.8: Case-Fatality Rate for Onori Measles Outbreak

Community	Island	Population	No Of Cases	Mortality	Case-Fatality Rate (%)
Osinya	A	121212	17	2	11.8
Domingo	A	9696	1	0	
Cruz	A	26667	3	1	
Tarime	A	12121	3	0	
Baraka	A	18181	2	0	
Cata	A	45866	2	0	
Salama	B	12769	9	4	44.4
Kigumo	C	3736	1	0	
Vicente	D	81799	5	1	
Mina	E	8767	1	1	
Total		340814	44	9	20.5

6. What is the surveillance case definition of Measles and a Measles death?

7. Which of the islands have the highest case fatality rate (CFR)?

8. What could be the possible underlying factors responsible for a high CFR?

9. The cases from the measles epidemic were summarized by age group and vaccination status in order to further characterize the epidemic. The details are provided in Table 4.9. Calculate the proportion of cases by age category and by vaccination status as provided in the table.

Table 4.9: Distribution of cases by age and vaccination status

Age category	**Vaccinated**		**Unvaccinated**		**Total**
	#	**%**	**#**	**%**	
< 5 yrs	5		10		15
5yrs and above	9		20		29
Total	**14**		**30**		**44**

10. What do you think are possible causes of this epidemic?

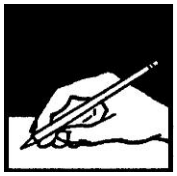
11. Considering your responses to the questions so far on this epidemic, what are your informed views on the following?

11A: Time interval between onset of Outbreak and Campaign.

11B: The selection of the islands targeted for the initial campaign.

11C: The age group targeted for the mass immunization.

12. What are some of the challenges facing Disease Surveillance in Onori?



Exercise 7

The purpose of this exercise is for you to practice completing a district outbreak report by calculating indicators and drawing conclusions about the response. First, read the following District Outbreak Report that describes an outbreak of Chikungunya. Read through the first four parts: Executive Summary, Introduction, Methods and Results. For a real report, you would have written these sections yourself. Then in Part IV, use information from the report to calculate the indictors about the timeliness and quality of the outbreak detection, investigation and response. Discuss parts V, VI and VII (the evaluation and recommendation sections) with a small group.

A blank District Outbreak Report form can be found in section 7A on page 191 of the Technical Guidelines.

District Outbreak Report

Outbreak of Chikungunya

Title/Description (include disease/condition investigated)

12 August- 15 September 2007	Touli Village, Faroush District
Period	Place (Villages, Neighborhoods, District, Province)

Executive Summary:

On 12 August, 2007, a rumor of suspected Chikungunya reached the health facility near Touli village. On 13 August, 4 cases of suspected Chikungunya were admitted to the health facility. The disease was confirmed by laboratory on 16 August. Subsequently, the District Public Health Management Committee was alerted on 17 August and the Rapid Response Team dispatched to Touli on the 20 August. The team immediately started active case finding and case management.

The vector control activities were initiated on 25 August and there were no new suspected cases of Chikungunya reported after 15 September.

I. Introduction:

On 12 August, 2007, a rumor of suspected Chikungunya reached the health facility near Touli village. On 13 August, 4 cases of suspected Chikungunya cases were admitted to the health facility near Touli. The health facility immediately reported the suspected cases to the DMO by phone. Blood samples were taken and sent to the district laboratory. Confirmation results were returned within 72 hours showing the specimens positive for Chikungunya. Health facility staff were trained on how to manage suspected cases of Chikungunya and protocols were made available in the outpatient and inpatient departments. As cases arrived at the health facility, health staff were able to treat patients by alleviating their pain with appropriate medications that were in adequate supply. Each case was recorded in a line list form. On 16 August, the health facility reported the confirmation to the DMO who immediately reported the confirmation to the national level. He also alerted other neighbouring health facilities to initiate active surveillance for Chikungunya cases. The District Public Health Management Committee was alerted about the suspected cases during their weekly meeting on 17 August. The investigation team arrived in Touli on 20 August and started active case finding and case management. The team found that cases lived near an illegally constructed dam for irrigation water that was blocking the local river. The area had become a breeding ground for mosquitoes. The Rapid Response Team initiated vector control intervention on 25 August. On the same day, the community was informed on how Chikungunya was spread and how they could protect themselves from mosquitoes. Finally, the RRT contacted the health facility to update the staff on the current state of cases and risk factors in Touli. Over the period of the outbreak (12 August-15 September) 45 cases were confirmed with no deaths. The final outbreak report was completed on 20 September and sent to the national level.

II. Methods:

The investigation occurred from 20 to 25 August in the village of Touli in Faroush District. The investigation team performed contact tracing and mapped the location of the cases. The team found that cases lived near an illegal dam that was causing the river to stop flowing. The area had become a breeding ground for mosquitoes. The investigation team treated cases

immediately. Blood samples were taken from each case and sent to the district laboratory. They started a mosquito control intervention on 25 August.

III. Results:

The first suspected case was reported from Touli village on 12 August. The first case seen in a health facility arrived from Touli on 13 August. Case tracing in the village identified 14 additional cases of Chikungunya. Lab results confirmed that each case was Chikungunya. The cases were clustered around an illegal dam in the village of Touli and mostly affected children under 5. The mosquito control efforts initiated by the district epidemic management committee decreased the mosquito population and resulted in a decline in cases over a one week period.

IV. Self-evaluation of the timeliness and quality of preparedness, outbreak detection, investigation, and response

Epidemic Preparedness

Indicator	Yes	No
Were adequate drugs and medical supplies available at the onset of the outbreak		
Were treatment protocols available to health workers?		
Does the district epidemic management committee regularly meet as part of epidemic preparedness?		

Outbreak Detection

Indicator	Date 1	Date 2	Interval
Interval between onset of index case (or occurrence of an unusual cluster at the community level) [date 1] to arrival of first outbreak case at the health facility [date 2] (Target: <3 days)			
Interval between initial outbreak case seen at the health facility (or date of outbreak threshold crossing at the health facility) [date 1] and reporting to the district health team [date 2] (Target: within 24 hours)			
Cumulative interval between onset of index case (or occurrence of an unusual cluster at the community or health facility) [date 1] to notification to the district [date 2] (Target: <7 days)			

Outbreak investigation

Indicator	Yes	No
Were case forms and line lists completed?		
Were laboratory specimens taken (if required)?		

Indicator	Date 1	Date 2	Interval
Interval between notification of district [date 1] and district field investigation conducted [date 2] (Target: within 48 hours)			
Interval between sending specimens to the lab [date 1] and receipt of results by the district [date 2] (Target: 3-7 days, depending on type of test)			

Outbreak response:

Indicator	Date 1	Date 2	Interval
Interval between notification of outbreak to district [date 1] and concrete response by the district [date 2] (Target: within 48 hours of notification)			

Evaluation and Feedback:

Indicator	Date 1	Date 2	Interval
Interval between end of the outbreak [date 1] and finalization of outbreak report with case forms/line list sent to national level [date 2] (Target: 2 weeks)			

Indicator	Yes	No
Did the outbreak management committee meet to review investigation results?		
Was feedback given to health facilities and community?		

V. Evaluation of other aspects of the response

VI. Interpretations, discussion, and conclusions

What information is missing that could help you complete this form?

VII. Recommended public health actions:

- **Community level:**

- **Health Facility:**

- **District:**

- **Provincial:**

Points to remember:

1. Understanding alert thresholds will help you know when to investigate an outbreak
2. Document all of the rumors, reports and verified information about an outbreak
3. Assemble an outbreak investigation team and consider all of the logistics that will need to be taken care of so that they can do their jobs, i.e., which vehicles can they use, what resources are available to them for fuel, food, etc. Who will they contact at the outbreak site?
4. Analyze the investigation results to determine what caused the outbreak or event and decide if there is immediate action that can decrease the severity of the effect.
5. Prepare an outbreak report to submit to the National Level

World Health Organization

REGIONAL OFFICE FOR Africa

Integrated Disease Surveillance and Response

District Level Training Course | Module 5

Prepare to respond to outbreaks and other public health events

July 2011

World Health Organization

Regional Office for Africa (AFRO)

Integrated Disease Surveillance and Response

District Level Training Course

Module 5

Prepare to respond to outbreaks and other public health events

July 2011

Introduction

A public health emergency such as an acute outbreak or public health event calls for an immediate response. Being prepared to detect and respond to such an event is an essential role of the district.

This module describes steps for organizing preparedness activities in the district. Preparedness activities should take place through the health system and may be guided by a national preparedness plan. The plan should address the roles and responsibilities for a national Public Health Emergency Management Committee and emergency Rapid Response Teams at the national, regional, and district, state or provincial levels. National preparedness guidelines are followed at the district level to develop contingency plans and other preparedness activities.

* * * *

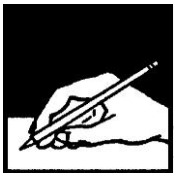
This module will describe and allow you to practice the following skills:

1. Identify functions of the emergency management committee
2. Define the roles and responsibilities of a district rapid response team
3. Describe the content of an epidemic preparedness and response plan
4. Identify the steps to setting up contingency stocks
5. Explain the importance of the steps involved in risk mapping for public health events

1.0 Organizing for a Public Health Response

Public Health Emergency Management Committee: The district-level public health emergency management committees (PHEMC) work closely with their counterparts at the regional and national levels to plan and monitor the implementation of public health emergency plans. PHEMCs are coordinating committees composed of technical and non-technical members from health and other sectors. The role of the PHEMC is to develop and oversee the implementation of emergency preparedness strategies, action plans, and procedures.

Rapid Response Team: A Rapid Response Team is a technical, multi disciplinary team that is readily available for quick mobilization and deployment in case of emergencies.



Exercise 1

Case study: An outbreak of a Viral Hemorrhagic Fever

In this exercise, you will identify the roles and responsibilities of an outbreak investigation team. Read the case story and then answer the questions that follow at the end of the case.

** * * *

Wilaya is a district in one of the countries in central Africa. It has a population of 469,700 persons (2007 census). Because of insecurity in the area, 60% of the people in the district are internally displaced. That is, they live in protected villages.

On the 8th of October 2010, an outbreak of an unusual illness in Wilaya District was reported to the Ministry of Health. It was reported by both the medical superintendent of Sarafu hospital and the acting district director of health services in Wilaya district. The focus of the outbreak was reported to be predominantly Kijiji, a remote village north of Wilaya municipality.

The illness was characterized by acute onset of fever, severe muscle pains, bleeding from multiple orifices (nose, mouth, anus and vagina) and death.

At the time of reporting, more than 10 people including 2 students had died from VHF related symptoms.

Due to the urgency, the Ministry of Health advised the DMOH to immediately send a team to the field to investigate the outbreak and to liaise with the local administration in setting up a local coordinating committee.

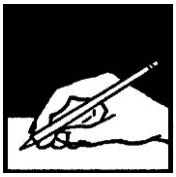
* * * *

1. Who should the DMOH send to the field to investigate?

2. What will be their roles?

3. Who should be included as members of the coordinating committee?

4. What will be their roles?



Exercise 2

Case Study: Water contamination

The recent floods made the Andu district impossible to reach. All road communication with the capital city had been cut. On Saturday, following a heavy rain, a fuel tanker slipped and rolled into the Ndoza river spilling 10 tonnes of benzene. Benzene is a chemical known to cause cancer and other health concerns. The river is the only main source of water and fish for three towns in the district of Andu. After hearing reports on the local radio, The Director of Medical services requested the local DMO to send a team to assess the situation and report back to her promptly.

* * * *

1. What should be the purpose of this investigation?

2. In addition to the DMO, who else should be a part of this team?

3. What are the main objectives of this team?

4. What are possible messages for the surrounding communities?

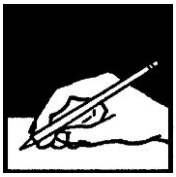
2.0 Preparing an epidemic preparedness and response plan

Your facilitator will present information about the purpose and key functions of an epidemic preparedness and response plan.

You can also find this information on page 137 of the Technical Guidelines.

Key sections of an epidemic preparedness and response plan:

1. Designated coordination committees
2. Elements of epidemiology of the event and surveillance including data management
3. Steps for carrying out a risk communication strategy including social mobilization
4. Operational actions according to expected phases of the epidemic
5. Laboratory: specimen collection, handling , transportation and processing
6. Case management , treatments (anti-viral, antimicrobial, decontamination, disinfection or others as indicated) & infection control
7. Pre- and post-exposure prophylaxis treatments
8. Immunization strategies
9. Rapid containment activities and additional methods if rapid containment fails
10. Capacity building including required training, sensitization meetings and simulation exercises
11. Logistics including supply lists for response activities
12. Environment, water and sanitation activities
13. Plans for monitoring the outbreak or event



Exercise 3

Preparing an epidemic preparedness plan

The purpose of this exercise is to review the parts of an epidemic preparedness plan. Read this brief case story and answer the questions that follow.

* * * *

Over the last five years, your district experienced outbreaks of yellow fever, cholera, meningitis and measles. These diseases resulted in many deaths. Most of the health workers have been trained in integrated disease surveillance and response. They are currently using the revised data collection tools targeting priority diseases.

As the disease surveillance focal person and a member of the health management team, the District Medical Officer asked you to assist in the preparation of the District epidemic preparedness plans.

* * * *

1. What are major topics to include in an epidemic preparedness plan for this district?

2. Suggest an outline of information that should be included in the background to the plan.

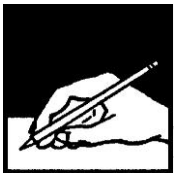
3. Using knowledge about your own district, fill in summary Table 5.1 with possible health officers or health units that would be responsible for carrying out a meningococcal meningitis preparedness checklist for your District.

Table 5.1: Checklist for meningococcal meningitis epidemic preparedness

Preparedness Strategy & activities	**Responsible Officer /unit**
1. Epidemic management committee	
2. Epidemic preparedness plan	
3. Training of personnel on Integrated disease surveillance	
4. Guidelines on epidemic meningococcal disease	
5. Contingency stocks of drugs and supplies	
6. Laboratory equipment and transport media	
7. Budget line for epidemic control	

Your facilitator will present on setting up contingency stocks of drugs, vaccines, reagents and supplies.

You can also find this information on pages 138-139 of the Technical Guidelines.



Exercise 4

Setting up contingency stocks

Ensuring a reliable availability of drugs and supplies is important for conducting an effective response. Review the example for cholera in Table 5.2, and then complete the columns with appropriate medicines and supplies for treatment of the diseases listed. Refer to the information in Annex 6A on page 163 of the Technical Guidelines to complete each row.

Table 5.2: Essential drugs and supplies for treatment of epidemic-prone diseases

Disease	**Drugs**	**Supplies**
Cholera	ORS, IV fluids (Ringer's lactate)	Chloride of lime, giving sets, disinfectants, Cary Blair medium
Dysentery		
Measles		
Meningococcal meningitis		
Poliomyelitis		

Points to remember:

1. Being prepared will help you be a better leader when an emergency occurs.
2. Being prepared can reduce the number of excess deaths in your district when an outbreak happens.
3. Establish an emergency management committee to increase communication between stakeholders before and during an emergency.
4. Create an epidemic preparedness plan that will strengthen your ability to respond to an outbreak
5. Maintain proper stocks of drugs, vaccines, reagents and supplies. This will assist everyone else in your health system to do their jobs well.

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Integrated Disease Surveillance and Response

District Level Training Course | Module 6

Monitor, evaluate and improve surveillance and response

July 2011

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Integrated Disease Surveillance and Response

District Level Training Course

Module 6

Monitor, evaluate and improve surveillance and response

July 2011

The modules comprising the Integrated Disease Surveillance and Response District Level Training Course were prepared by the World Health Organization Regional Office for Africa (AFRO) and the Centers for Disease Control and Prevention (CDC) with support from the United States Agency for International Development (USAID) Africa Bureau. WHO-AFRO & CDC (2010). *Integrated Disease Surveillance and District Level Training Course, Module 6: Monitor, evaluate and improve surveillance and response*. Brazzaville, Republic of Congo and Atlanta, USA.

Introduction

Monitoring surveillance and response systems is important for tracking progress and finding out whether you are meeting the goals of the program. Monitoring in IDSR includes the routine and continuous tracking of the implementation of planned surveillance activities (for example, making sure that reports are received on time). Monitoring takes place regularly such as weekly, monthly or quarterly. In this way, problems can be detected in time to make improvements before the end of the year.

Evaluating surveillance and response systems helps to understand if the system has been working effectively. By evaluating information regularly, for example, at the end of a year, supervisors can decide if surveillance and response objectives have been achieved and if they are of high quality. Use the monthly monitoring data to do an evaluation at the end of the year. Questions that guide evaluation include:

- Are surveillance objectives for existing activities being met?
- Was surveillance data used for taking public health action?
- Did surveillance, laboratory and response activities have an impact on the outcome of health events in the district?

* * * *

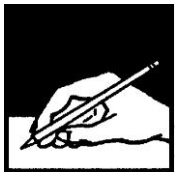
This module will describe and allow you to practice the following skills:

1. Use the district level core indicators for integrated disease surveillance and response.
2. Plan the monitoring and evaluation of integrated disease surveillance and response training.

Your facilitator will present information on identifying targets and indicators for evaluating an IDSR training program. You may also read this information on pages 198 to 200 of the Technical Guidelines.

Core indicators for the district level can be found on page 215 of the Technical Guidelines.

Indicators for monitoring progress with implementation of the International Health Regulations are on page 200.



Exercise 1

The purpose of this exercise is to practice finding the data you will need to calculate the IDSR core indicators for the district level. There are two parts to this exercise.

In Part A, you will fill in missing information about sources of information for monitoring data and suggestions for how often to calculate and indicator. Your facilitator may assign two or three indicators to each group.

In Part B, you will answer questions about your own district. Part B begins on page 6:8.

* * * *

Part A: Core indicators at the district level

In your group, review your assigned indicator carefully including information about the numerator and denominator. Then answer the following questions:

a) Describe how you will extract the data from the sources of information in order to calculate the indicator.

b) Suggest how often you think the data should be collected and analyzed.

c) Describe who should be responsible for collecting the data and calculating the indicator at district level.

d) In the table below, the first four columns have been filled in. You will work in pairs or a small group of 3 to review the indicators and complete the last two columns. Fill in the blank spaces for your assigned indicator in the table on the next 3 pages.

Table 6.1: Monitoring the IDSR core indicators at the district level

Indicator	Purpose	Numerator	Denominator	Source of information	How often do you calculate this indicator?
1. Proportion of health facilities submitting surveillance reports on time to the district	Measures the timeliness of submission of surveillance reports	Number of health facilities that submitted surveillance reports on time to the district	Number of health facilities in the district		
2. Proportion of cases of diseases targeted for elimination, eradication and any diseases selected for case-based surveillance reported with case-based forms or line lists.	Measures reporting of surveillance data with detailed information to use for further analysis	Number of diseases targeted for elimination, eradication, and any diseases selected for case-based surveillance in the district reported with case-based forms or line list	Total number of cases of diseases selected for case-based surveillance that occurred in the district		
3. Proportion of suspected outbreaks of epidemic-prone diseases notified to the higher level within 2 days or surpassing the epidemic threshold	Measures use of data and thresholds for early detection of outbreaks and timely reporting at the local level	Number of suspected outbreaks of epidemic-prone diseases notified to the province within 2 days of surpassing the epidemic threshold	Number of suspected outbreaks of epidemic-prone diseases in the district		
4. Proportion of priority diseases for which a current line graph[4] is available.[5]	Measures the practice and capacity of the district health management team to analyze surveillance data	Number of selected diseases (at least malaria and meningococcal meningitis in districts at high risk for meningitis) for	Total number of selected diseases with a line graph (at least malaria and meningococcal meningitis if district is at high risk for		

[4] The national IDSR team should define the list of diseases for which a line graph should be kept at the health facility level. AFRO recommends that at a minimum, health facilities maintain current line graphs for 1) weekly trend analysis of cerebrospinal meningitis, particularly in the meningitis belt countries, 2) monthly malaria inpatient cases and deaths in children under 5 years of age and 3) trends for malaria in children under 5 years of age.

[5] "Current" in this indicators means that the line graph display should reflect data within the past three months from the day of the assessment.

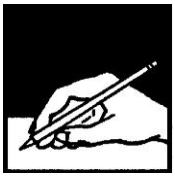
Indicator	Purpose	Numerator	Denominator	Source of information	How often do you calculate this indicator?
		which a line graph is available and current	meningitis)		
5. Proportion of health facilities that have current trend analysis (line graphs) for selected priority diseases	Measures the practice and capacity of the health facility team to analyze surveillance data	Number of health facilities that have current trend analyses for selected priority diseases	Total number of health facilities in the district		
6. Proportion of reports of investigated outbreaks that include analyzed case-based data	Measures availability of additional variables for further analysis	Number of outbreak investigation reports that include case-based data	Total number of outbreak investigation reports conducted in the district		
7. Proportion of investigated outbreaks with laboratory results	Measures capacity of laboratory to confirm diagnosis and involvement of laboratory in surveillance activities	Number of investigated outbreaks with laboratory results in a given time period	Total number of investigated outbreaks that occurred in a given time period		
8. Proportion of confirmed outbreaks with a nationally recommended public health response	Measures capacity of the district to respond to outbreaks	Number of confirmed outbreaks with a nationally recommended response	Number of confirmed outbreaks in the district		
9. Case fatality rates for outbreaks of priority diseases	Measures quality of case management	Number of deaths from each of the outbreak diseases	Number of cases from the same outbreak due to that disease		
10. Attack rate for each outbreak of a priority disease	Helps to identify the population at risk and efficacy of the intervention	Number of new cases of an epidemic-prone disease that occurred during an outbreak	Number of population at risk during the outbreak		

Part B:

1. Review the sources of data you recorded in the table. Do you have these sources available in your district?

2. If not, how do you collect information?

3. What are two specific actions you would need to do to improve the availability of sources?



Exercise 2

The purpose of this exercise is to practice calculating indicators for monitoring timeliness and completeness of district reporting. You will do this exercise individually and then work in your small group to make any corrections.

* * * *

1. Use the information in the table on the next page to calculate the timeliness of reporting for each health facility in the district. Record your answer in the second to last column, labeled T/N (T means "on time" and N means "total number of reports").

To calculate a proportion, use the equation below:

$$\frac{\textbf{Numerator: (Ex: \# of timely reports)}}{\textbf{Denominator: (Ex: Total \# of reports)}} \textbf{ X 100 = } \_\_\_\_\_$$

Next, calculate the completeness of reporting for each health facility and record the answer in the last column, labeled (N-W)/N. (N means the total number of reports and W means the number of reports not received.

Legend: T = arrived on time; L = arrived late; W = report not received; N= total number of reports

Country: Pacem District: Zahanati Year: 2010

Table 6.2: Timeliness and Completeness of Reports from Reporting Sites

Name of health Facility	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	T/N	(N-W)/N
Kamakwa	L	T	T	L	L	T	T	L	L	L	L	W		
Iridi	T	T	T	L	T	T	T	L	T	T	T	L		
Dunyu	W	L	L	W	L	W	L	L	W	L	T	T		
Orogo	T	T	T	T	T	T	T	L	T	T	L	T		
Kinjo	L	L	L	W	T	L	W	W	L	T	L	W		
Naima	T	T	T	T	T	L	L	T	T	T	L	L		
Ngimwa	T	T	T	T	T	L	T	T	T	T	T	T		
Sinde	W	W	W	W	W	L	L	W	L	W	W	L		

2. The WHO Africa regional target for timeliness of reporting is 80%. Which of the health facilities in the Zahanati District have reached the target?

3. The target for completeness is also 80%. List the health facilities that have reached or passed the target.

4. Why do you think these facilities have reached the target?

5. Which health facility had the best timely reporting?

6. Calculate the completeness of reporting for each health facility in the district.

7. Which health facility is doing poorly on reporting?

8. What could cause the poor reporting?

9. What action should be taken to rectify the situation?

Points to remember:

1. Decide how activities will be monitored and evaluated should be made during the development of the plans.
2. Monitor and revise plans.
3. Evaluate whether project objectives have been achieved.

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Integrated Disease Surveillance and Response

District Level Training Course | Module 7

Supervise and provide feedback

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Integrated Disease Surveillance and Response

District Level Training Course

Module 7

Supervise and provide feedback

July 2011

The modules comprising the Integrated Disease Surveillance and Response District Level Training Course were prepared by the World Health Organization Regional Office for Africa (AFRO) and the Centers for Disease Control and Prevention (CDC) with support from the United States Agency for International Development (USAID) Africa Bureau. WHO-AFRO & CDC (2010). *Integrated Disease Surveillance and District Level Training Course, Module 7:Supervise and provide feedback*. Brazzaville, Republic of Congo and Atlanta, USA.

Introduction

Supervision is a process of helping health staff improve their work performance. Supervision is not an inspection. Rather, good supervision aims to sustain good quality services rather than finding things that are wrong. In a good system, supervisors and health professional work together to review progress, identify problems, decide what has caused the problem and develop feasible solutions.

Use a supervisory checklist

Each health facility has unique problems and priorities that require specific problem solving and corrections. Create a unique checklist for each health facility. Revise the supervisory checklist as health facilities change or improve. Use it during future visits to help health staff monitor their activities and progress towards an improved system.

Conduct supervisory visits

Begin regularly scheduled supervision in the district. Provide feedback to health staff during each visit. Let the health staff know what is working well and what is not working. Also give feedback on how the data reported previously was used to detect outbreaks and take action to reduce illness, mortality and disability in the district. If improvements are needed, discuss solutions with the staff. Provide on-the-job training as needed if a problem is identified. Follow up on any request for assistance such as for emergency response equipment or supplies. 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. Visits of surveillance supervisors and regional or provincial disease control programs are good opportunities to discuss and improve disease control in your district.

* * * *

This module will describe and allow you to practice the following skills:

1. Supervise surveillance and response activities
2. Use the health facility surveillance checklist
3. Provide feedback to health personnel

1.0 Prepare a supervision plan

- Decide how often to monitor health staff performance.
- Ask health facility supervisors to make a schedule of the supervision they will conduct over the next year in their own facilities and to any community sites that report to the facility.
- Make sure that transport is available for supervision and for surveillance activities that require transportation.
- Include other reporting sites in supervision of district surveillance activities such as clinics, medical centres and community reporting sites in the overall plan. Include private health centres if feasible.
- Identify and obtain necessary resources for supervision.

Exercise 1

The purpose of this exercise is to practice finding and applying recommendations for supervision of surveillance activities in your district. Refer to pages 203 through 207 in the Technical Guidelines as you work in pairs of a small group to answer each of the following questions. Your facilitator will conduct a group discussion when everyone has completed the exercise.

* * * *

1. How is supervision of disease surveillance conducted between the districts and health facility levels in your district?

2. Do you use tools or checklists for supervision at the district level?

3. Do you have a supervision plan on disease surveillance in your area?

4. Where is it located?

5. How often is it used?

6. What should you consider when preparing a supervision plan on disease surveillance?

7. What should you do during disease surveillance and response supervisory visits?

8. How do you motivate the staff during the supervisory visits?

Exercise 2

Use the health facility surveillance check list

Below is the surveillance checklist for the Zahanati Health Center. As you can see, the health center did not score well on their last supervisory visit. As you review the checklist, consider the possible reasons for the issues that they faced and then recommend some solutions. You may do this exercise in pairs or in a small group. Your facilitator will assign one of two activities to each pair or group. At the end of the exercise, there will be a group discussion.

Table 7.1: Health facility surveillance checklist for Zahanati health center

ACTIVITY	SUPERVISORY QUESTION	ANSWER (Yes/No or Specified)	List possible causes of the omission or problem	List Possible Solutions
1. Data collection to identify Suspected Cases within health facilities	1. How often do you collect information from the community about reports of suspected cases or deaths due to a priority disease or condition?	**Rarely**	*Community doesn't know what to report*	*Distribute simplified case definitions. Include surveillance objectives in community health program activities*
2. Register cases	1. Are diagnoses of cases of priority diseases recorded in the clinic register according to the standard case definition?	**No**		
3. Report	1.Do health staff use a standard case definition to report the suspected cases and outbreaks?	**No**		

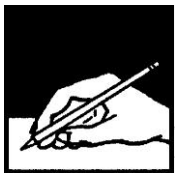
ACTIVITY	SUPERVISORY QUESTION	ANSWER (Yes/No or Specified)	List possible causes of the omission or problem	List Possible Solutions
	2. Do you record information about immediately notifiable diseases on a case form or line list?	**No**		
4. Analyze and Interpret	1. Do you plot the numbers of cases and deaths for each priority disease on a graph? (Ask to see the health facility's analysis book. Look to see if the trend lines are up-to date.)	**No**		
	2. Do you plot the distribution of cases on a map?	**No**		
5. Investigate and Confirm Reported Cases and Outbreaks	1. If an epidemic-prone disease was suspected, was it reported immediately to the district office?	**No**		
	2. For the cases of priority diseases needing laboratory tests seen since the last supervisory visit, how many had laboratory results?	**1 out of 25**		
	3. Are appropriate supplies available or set aside for collecting laboratory specimens during an urgent situation and show me the supply?	**No**		

ACTIVITY	SUPERVISORY QUESTION	ANSWER (Yes/No or Specified)	List possible causes of the omission or problem	List Possible Solutions
6. Respond	1. Are appropriate supplies available for responding to a confirmed case or outbreak *(for example, immunization supplies and vaccine, ORS, antibiotics, and so on*)?	**No**		
	2. Please show me the supplies for carrying out a recommended response.	**I can't**		
	3. Who is the outbreak coordinator for this facility?	**I don't know**		
	4. How often do you provide information and training in outbreak response to the staff of this facility?	**Rarely**		
7. Provide Feedback	1. How often do you report information to the community?	**Never**		
	2. Do you receive the latest bulletin from the *(central, sub national*) level?	**No**		
8. Evaluate and Improve the System	1. Were the last 3 routine monthly reports sent to the district office?	**No**		
	2. Were the last 3 routine monthly reports sent on time?	**No**		

ACTIVITY	SUPERVISORY QUESTION	ANSWER (Yes/No or Specified)	List possible causes of the omission or problem	List Possible Solutions
9. Epidemic Preparedness	1. What precautions do health staff (including laboratory staff) take routinely with all patients regardless of the patients' infection status?	**Minimum level of standard precautions:** **Very Few**		
	2. How do you estimate the number of supplies to set aside for use during an emergency situation?	**How supplies are estimated:** **They aren't**		

2.0 Evaluate performance of surveillance and response system

- Use indicators for measuring the quality of the surveillance system
- Identify the weak places in a surveillance system and try to understand what is causing them.
- Provide feedback to health facilities about the evaluation



Exercise 3

A Supervisory Visit to Afaya Health Facility

The purpose of this exercise is to practice giving feedback during a supervisory visit to Afaya Health Center. You will play one of the roles, or you may observe other participants playing the roles. Your facilitator will assign the roles to be played. After the role play, there will be a group discussion.

Dr Perfection, the district management officer, is meeting with the health facility team to give feedback about the results to the supervisory checklist. He thanks the team for their time during today's visit. Then he reports that in the visit today, he learned the following things:

- There is regular contact between the community health workers and the health facility so disease notification from the community is timely and being monitored.
- The clinic register is up-to-date, but it does not look like diagnoses are recorded according to the standard case definition.
- The line graphs for meningococcal meningitis and cholera are posted but they are not up-to-date. They are two months behind.
- A suspected case of human influenza H1N1 in the health facility catchment area was reported promptly to the district office during this quarter.
- Reporting of routine data to the district has been on time all year.
- The health facility said that they have not received a copy of the latest feedback newsletter from the district.
- A request by the health facility for specimen transport media has not yet been filled.

Dr Perfection wanted to know what two or three problems the health facility thought were the most important. Then they discussed possible causes for the problem and how improvements could be made.

When the role play has concluded, discuss the following questions:

1. How well did Dr Perfection communicate with the health facility team?

2. How did the health facility team decide on the most important problems? Do you agree with their conclusions?

3. Did they identify feasible solutions to the problems they discussed?

Points to remember:

1. Prepare supervision plans with health facility supervisors to ensure that supervisory visits will occur on a scheduled basis
2. Supervisory checklists make supervisory visits more objective and help you to be sure you haven't missed anything critical for evaluating the performance of the health facility
3. Supervisory visits are intended to help improve the functions of health facilities by providing constructive criticism and feedback.
4. Give feedback to the health facilities about their evaluation so that they know what needs to be improved in their facility. Feedback from you also shows them that you are paying attention to their work and that they are a valuable asset to the health care system of your district.