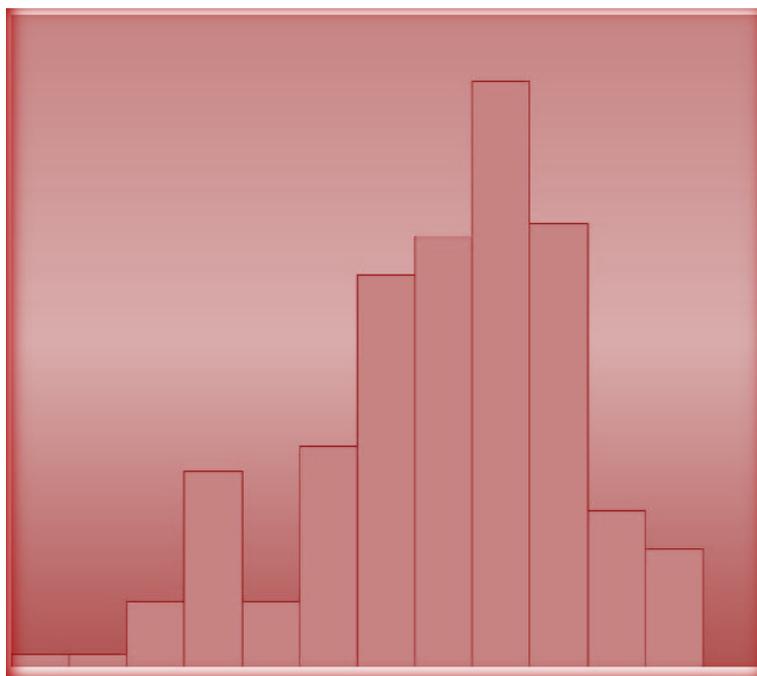


# Basic Level Public Health Emergency Management Training Module

## Facilitator Modules



October 2012

# **Facilitator Module**

## **Public Health Emergency Management Basic Level Training**

**October 2012**

# **Public Health Emergency Management Basic Level Training**

## **Facilitator Modules**

**Module 1: Introduction to the modules**

**Module 2: Early warning and surveillance**

**Module 3: Public Health Emergency Response**

**Module 4: Public Health Emergency Preparedness**

**Module 5: Recovery from Public Health Emergency**

## Abbreviations

AR	Attack rate
CLRF	Case Based Laboratory Reporting Format
CRF	Case Fatality rate
CTC	Cholera treatment center
DERF-R	Daily Epidemic Reporting Format for Region
DERF-W	Daily Epidemic Reporting Format for Woreda
DPPB	Disaster Prevention Preparedness Bureau
EHNRI	Ethiopian Health and Nutrition Research Institute
EPRP	Emergency Preparedness and Response Plan
FETP	Field Epidemiology Training Program
HEW	Health Extension Worker
IDSR	Integrated Disease Surveillance and Response
MOH	Ministry of Health
MOU	Memorandum of Understanding
NGOs	Non-Governmental Organizations
PEA	Post Epidemic Assessment
PHE	Public Health Emergency
PHEM	Public Health Emergency management
PPE	Personal Protective Equipment
RRT	Rapid Response Team
TOR	Terms of Reference
WHO	World Health Regulation
WRF	Weekly reporting Format
WRF-HEW	Weekly reporting Format for Health Extension Workers

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All Regional PHEMs

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## Module 1: Introduction to the Modules

### 1. Introduction

This module introduces you to two parts of the first module. Firstly, general instructions, which consist of key points that will help you to prepare your respective presentations and manage sessions. Secondly, it includes specific instructions for delivering module 1 which is the first module for the course on the Public Health Emergency Management Basic Level training. As a facilitator of any of the modules you are advised to read the general instructions before going into the specific module you are assigned to present.

This training consists of 5 modules that will be delivered in sequence:

Module 1 Introduction

Module 2 Early warning and surveillance

Module 3 Response

Module 4 Preparedness

Module 5 Recovery

### 1.1 General instructions for the facilitators

#### 1.1.1 Preparation

As a facilitator you are expected to collect participant and facilitator's modules, PHEM Guideline, other reference materials and additional specific guidelines as indicated in a session guide. All the other teaching aids would be availed by coordinators of the course. Sessions would start by PowerPoint presentation which should be limited in number. As a facilitator you are expected to take into consideration any updates of the PHEM activities, new strategies, policies or otherwise in your preparation.

The facilitator and participant module provides you with the following:

- The learning objectives
- Gives essential notes for teaching
- Indicates resources including additional materials
- Teaching learning methods and resources for instruction
- Duration of each session and specific instructions (teaching plan)

#### 1.1.2 Checking the Teaching Plan

In order to prepare a teaching plan for a session you will be presenting, you need to review the activities and exercises given in both the facilitator and participant modules and also the slides for presentation if available. Detailed activities are indicated in each module. However, you may need to revise the schedule in accordance to the situation.

When you are selecting an optional approach other than the indicated, consider:

- What the participants have already learned
- The amount of time available for the module

- What aspects of the module should be emphasized

After preparing yourself for the session based on teaching plan, you need to follow the schedule indicated in the guide.

### **1.1.3 Teaching Methods**

Generally, the following teaching methods are proposed for the course.

**Readings** – for readings ask the participants to read resource materials including specific topics where pages are indicated.

**Lecture - discussion-** lectures will be conducted based on lectures from the contents of the modules. The lectures should be conducted mixed with discussions using different methods such as asking questions, brainstorming and others.

The lectures should be concise and specific. The lectures are intended to provide basic filled epidemiology/PHEM knowledge to the participants in a way that is interactive and engaging. Most of the contents will be drawn from the modules and presented in bullets.

Remember the following points when preparing and giving a lecture:

- Read through the relevant material so that you are familiar with the content and how to apply it.
- Limit the number of slides you use to about one for every three minutes of presentation.
- Keep your slides simple with only two or three points.
- When you show a slide, explain all of the content on that slide.
- Review your slide show to ensure that it can be read from the back of the room.
- Think of two or three discussion questions that you can ask during the presentation. This will keep the audience engaged and highlight the main points of the presentation.
- Summarize your main points at the end and ask for questions.
- Speak slowly and clearly. Use simple language. Make eye contact with the participants.

**Small Group Discussion-** In this method, ask participants to do the exercises in pairs or small groups. This will provide them with opportunities to practice using the information they have learned. Small group work is particularly helpful for people who are intimidated by larger groups. Advise small groups to nominate a chairperson and secretary. After groups complete their worksheets, review the correct answers so that they can identify any mistakes. Encourage participants to ask questions if they do not understand an answer.

**Individual Work-** in using this method, ask participants to complete some of the exercises on their own reflecting on their knowledge and experiences. Practicing skills will help them understand the material and demonstrate that they have learned it

completely. After participants complete their worksheets, review their work, discuss with them and correct answers so that they can identify any mistakes. Encourage participants to ask questions if they do not understand an answer.

**Large Group Discussion-** this method facilitates presentation of several discussion points interacting with the entire group. This may happen during lectures, presentation by small groups, etc. Your role as the facilitator is to provide the discussion topics and follow-up questions and to moderate the discussion. Some participants may be very vocal or aggressive. You can set time limits on responses and encourage the quieter participants to engage in these discussions.

**Mentorship** - this teaching method includes provision of technical and advisory support to the trainee during the on- job-training in the second part of the training program. The mentors will be experts in the field including PHEM staffs that will be assigned to each trainee at the end of the class-based course. A specific guide is prepared for describing the roles and responsibilities of mentors and mentees. Participants will return back after 5 months and present the outputs at the respective training sites or PHEM facilities.

#### **1.1.4 Key Concepts for Enhancing Adult Learning**

Your target audiences are Woreda and zonal level PHEM experts or focal points of health facilities including hospitals and health centers. Teaching adults requires a different set of skills compared to teaching children and young people. The key concepts of Adult learning will help you to effectively conduct this training

The following concepts may help you understand some of the elements that distinguish the adult learner from the child learner.

- **Self-concept:** Adults see themselves as autonomous and want to preserve or enhance their self-esteem. The training is in-service training and need to be considered different from a college-based training.
- **Experience:** Adults bring their entire span of life experiences with them into any situation. Adults have trouble with information that conflicts with things they have learned previously. The group you are facilitating may have experiences in PHEM or surveillance activities.
- **Readiness to learn:** Adult learners are more likely to be motivated to learn something new if it is immediately relevant to their daily work. The learners would be interested if exercises and examples are related to their experiences and believe that the knowledge and skills help them to improve their performance.
- **Time perspective:** Adults have a problem-centered time perspective and a desire to become better problem-solvers right away. Your learners are challenged with many day-to-day problems and would be excited if the training is expected to provide them new skills.

#### **1.1.5 How to manage sessions**

- Ensure that all participants have materials and supplies need
- Ensure that there are no obstacles to learning (noise, light, room, space...)
- Monitor the progress of each participant
- Ask assistance from course coordinator or any responsible person

## 2. Specific instruction for modules (Teaching plan guide)

Time	Activity	Specific instructions
<b>Monday (Day 1)</b>		
8:00-8:30	Registration of Participants	
8:30-8:45	Opening Remarks	
8:45-9:40	<p>Introduction the course</p> <ol style="list-style-type: none"> <li>1. Introduce yourself, facilitators, coordinators and the participants (10 minutes)</li> <li>2. Introduce the schedule and the course (5min)</li> <li>3. Make ground rules (5min)</li> <li>4. Conduct pretesting (30min)</li> <li>5. Address any concerns and questions of the participants including administrative issues (5min)</li> </ol>	<ul style="list-style-type: none"> <li>➤ Ask participants to introduce: name, academic background, current job/responsibility</li> <li>➤ Ask participants to make ground rules for conducting the course.</li> <li>➤ Write each suggestion on a flipchart and then post is on the wall.</li> <li>➤ Provide information on administrative issues, materials, and others</li> </ul>
<b>Module 1: Introduction to the modules</b>		
9:40-10:30	<p>List expectations Introduction to the modules, purpose, use of the modules, target audience, teaching – learning methods, learning resources</p> <p>(source: participant module)</p>	<p>Ask participants what their expectations are. Write it on Flipchart and post it on the wall. This will be a good guide for the facilitators and the course coordinators in order to make sure most of it is covered</p> <p>Ask participants some examples of local challenges that are dictating the establishment of a surveillance system. Present introduction to the modules Present the main points written under the introduction to the modules in the participant</p>

		<p>module.</p> <p>The main points to address include: African and national context, PHEM background, briefing on advanced training and basic level training,</p> <p>Present the purpose of the training/modules</p> <p>Present the scope of the modules</p> <p>Present the objectives of the module</p> <p>Explain how to use the modules</p> <p>Present teaching learning method and resources</p> <p>Explain the duration of training and expected outputs</p>
<b>10:30-11:00</b>	<i>TEA BREAK</i>	
<b>Module 2: Early warning and surveillance</b>		
<b>11:30-1:30</b>	<p>2.1 Introduction early warning and surveillance</p> <p>2.1.1 Learning Objectives</p> <p>2.1.2 Teaching methods and materials</p> <p>2.1.3 Definition of terms</p>	<p>Briefly present the objective of the module</p> <p>Ask the participant to define terms listed in the module</p> <p>Allow brainstorm on definition of surveillance</p>
<b>1:30-2:30</b>	Lunch	
<b>2:30-4:00</b>	<p>2.2 Basic Epidemiology for Public Health</p> <p>2.2.1 Definition of epidemiology</p> <p>2.2.2 Epidemiological Concepts and Principles</p> <p>2.2.3 Rates Commonly Used in Epidemiology</p> <p>2.2.4 Distribution diseases in public health</p>	

<b>4:00-4:15</b>	TEA BREAK	
<b>4:15 – 5:30</b>	2.3 Early Warning 2.3.1 Definition of early warning and surveillance 2.3.2 Major indicators of early warning system	
<b>Day 2</b>		
<b>8:30 -10:15</b>	2.3.3 Components of early warning system 2.4 Public Health Surveillance 2.4.1 Objectives of Surveillance 2.4.2 Definitions of disease surveillance for different health levels 2.4.3 2.4.4 Core functions of surveillance	
<b>10:30-10:45</b>	TEA BREAK	
<b>10:45 -12:30</b>	Exercise 2.1	
<b>12:30-1:30</b>	LUNCH BREAK	
<b>1:30 -3:15</b>	2.4.5 Impact of early and late detection of an outbreak in surveillance 2.4.6 Reporting periodicity of surveillance data in Ethiopia 2.4.7 Reporting data tools of surveillance	
<b>3:15-3:35</b>	TEA BREAK	
<b>3:15 -4:00</b>	Exercise 2.2	
<b>Day 3</b>		
<b>8:30-10:15</b>	2.5 Surveillance data analysis, interpretation and communicating findings	
<b>10:15-10:30</b>	TEA BREAK	
<b>10:30 -12:30</b>	Exercise 2.3	
<b>12:30-1:30</b>	LUNCH BREAK	
<b>Module 3: Public Health Emergency Response</b>		

<b>1:30-4:00</b>	3.1 Introduction (20 minutes) 3.2 Learning Objectives (10 minutes) 3.3 Definition of terms(10 minutes) 3.4 Purpose of outbreak investigation(30)	
<b>4:00-4:15</b>	TEA BREAK	
<b>4:15-5:30</b>	3.5 When to Conduct an investigation (30 minutes) 3.6 Steps of outbreak investigation (45minutes)	
<b>Day 4</b>		
<b>8:30-10:30</b>	3.6 Steps of outbreak investigation (120 minutes)-continued	
<b>10:30-10:15</b>	TEA BREAK	
<b>10:15-12:30</b>	3.6 Steps of outbreak investigation (30 minutes)-continued 3.7 Exercise 1 (105 minutes)	
<b>12:30-2:00</b>	LUNCH BREAK	
<b>2:00-4:00</b>	3.8 Exercise 2 (120 minutes)	
<b>4:00-4:15</b>	TEA BREAK	
<b>4:15-6:15</b>	3.9 Group presentation (120 minutes)	
<b>Day 5</b>		
<b>Module 4: Public Health Emergency preparedness</b>		
<b>8:30-8:40</b>	4.0 Introduction to preparedness (10 minutes)	
<b>8:40-10:15</b>	4.1 Learning objectives (5 minutes)	

	4.2 Teaching methods and materials (5 minutes) 4.3.1 Co ordination and collaboration (20 minutes) Exercise 4.1 (45 minutes)	
<b>10:15-10:30</b>	<b><i>TEA BREAK</i></b>	
<b>10:30-11:00</b>	4.4 Vulnerability assessment and risk mapping (30 minute)	
<b>11:00-11:15</b>	4.5 preparing an epidemic preparedness and response plan (15 minutes)	
<b>11:15-12:30</b>	Exercise 4.2	
<b>12:30-1:30</b>	<b><i>LUNCH BREAK</i></b>	
<b>1:30 – 2:30</b>	Exercise 4.2	
<b>2:30- 2:50</b>	Capacity building (20 minutes)	
<b>2:50 -3:15</b>	Exercise 4.3	
<b>3:15-3:35</b>	<b><i>TEA BREAK</i></b>	
<b>3:35:10:30</b>	Exercise 4.3	

<b>10:30 – 11:00</b>	Monitoring and Evaluation ,indicators for properness(30 minutes)	
<b>11:00 – 11:30</b>	General discussion	
<b>Day 6</b>		
<b>Module 5: Recovery from Public Health Emergencies</b>		
<b>8:30-9:40</b>	<ul style="list-style-type: none"> <li>5.1 Introduction</li> <li>5.2 Learning Objectives</li> <li>5.3 Teaching Methods and Resources <ul style="list-style-type: none"> <li>5.3.1 Teaching Methods</li> <li>5.3.2 Teaching resources</li> </ul> </li> <li>5.4 Contents of the module <ul style="list-style-type: none"> <li>5.4.1 Definition of Terms</li> <li>5.4.2 Purpose of Recovery from Public Health Emergencies</li> <li>5.4.3 When to Conduct recovery activities</li> <li>5.4.4 Scope and challenge</li> </ul> </li> </ul>	
<b>9:40-10:00</b>	TEA BREAK	
<b>10:00-6:30</b>	<ul style="list-style-type: none"> <li>5.4.5 Post Epidemic Assessment and its interventions</li> <li>5.4.6 Monitoring and Evaluation of Recovery and Rehabilitation</li> <li>5.4.7 Practical Exercises</li> <li>Post test</li> <li>Evaluation of the training</li> <li>Orientation on the two output and the mentorship process</li> </ul>	

## Module 2: Early warning and surveillance

### 2.1 Introduction

Introduce Module 2 with a brief presentation based on the introduction to early warning and surveillance Section 3 of the PHEM Guidelines, page 19.

Emphasize these points in your presentation:

**Early Warning** is a process with set of defined activities that helps to provide advance information of an incoming threat in order to facilitate the adoption of measures to reduce its potential health impact.

The purpose of early warning is to enable the provision of timely and effective information to the public and to responders, through identified institutions that allow preparing for effective response or taking action to avoid or reduce risk.

**Surveillance** is the process of gathering, analyzing, and dissemination of information for the purpose of proper planning, implementation, and evaluation of health services/interventions. It is also defined as “Information for Action”. A functional disease surveillance system is essential for defining problems and taking action. Proper understanding and use of this essential epidemiological tool (public health surveillance) helps health workers at the woreda and health units to set priorities, plan interventions, mobilize and allocate resources, detect epidemics early, initiate prompt response to epidemics, and evaluate and monitor health interventions. It also helps to assess long term disease trends.

For this modules you will emphasise on the concepts of basic epidemiology and the following functions of surveillance:

- Identifying priority disease and conditions for surveillance
- Reporting priority disease and conditions under surveillance
- Data analysis, interpretation and communication of findings

### 2.2 Learning objective:

- Explain the basic concepts of applied epidemiology
- Describe early warning and a surveillance system
- Identify priority diseases and conditions for surveillance and define reportable disease based on standard and community case definitions
- Identify sources of information for event base surveillance
- Describe laboratory based surveillance
- Describe reporting of priority diseases, conditions, and events under surveillance,
- Perform surveillance data analysis, interpretation, and communicate results

## **2.3 Teaching methods and resources:**

### **2.3.1 Teaching Methods:**

- Lecture with discussion by facilitators
- Exercises (individual and group)
- Case studies
- Reading assignments (Individual and group reading)
- Mentorship during on-job-training

### **2.3.2 Teaching Resources**

- Participants training module for early warning and surveillance
- PHEM guideline
- Case studies
- PHEM data
- PowerPoint slides
- Pictures
- Computer
- Flipchart
- Markers
- White or black board

### **Explain your role as the facilitator**

Explain to the participants that you are the facilitator of this course and that your role includes:

- Guiding the group through the modules by providing lectures, facilitate discussions assigning readings and reviewing exercises
- Answering questions when they arise or finding the answers if you don't know them
- Clarifying information that is confusing
- Providing individual feedback on exercise
- Leading group discussions
- Encouraging participants to consider ways that this knowledge can be applied to their daily work

### **Introduce your presentation**

Present the basic concepts of basic epidemiology and main functions of surveillance which are:

- Identify priority diseases, conditions, and events
- Report priority diseases, conditions, and events
- Analyze and interpret data
- Monitor and evaluate the surveillance system

A power point presentation has been provided for you as a standard template. You may use it exactly as it appears or alter it as you see necessary.

## **2.4 Content of the Module**

Describe the contents of module that are:

- Definitions of Terms
- Epidemiological concepts in public health
- Early warning and surveillance

### **2.4.1 Definition of terms**

Introduce to participants some epidemiological terms and their definition.

### **2.4.2 Basic Epidemiology for Public Health Workers**

Explain that this course will provide an understanding of the epidemiologic methods, concepts and issues that are critical for the assessment, analysis, and interpretation of health-related data. Participants will be given the opportunity to work in small groups to apply these concepts to short exercises and case studies. Topics to be covered include surveillance and basic epidemiologic measures - Epidemiologic Concepts: Descriptive Epi & Rates, Measures of Association & Risk.

#### **2.4.2.1 Define epidemiology**

Epidemiology is the study of the distribution and determinants of disease in human populations.

#### **2.4.2.2 Describe the core Epidemiological Concepts and Principles**

The core concepts and principles that guide the discipline of epidemiology are:

- Health events and diseases are not randomly distributed in a population, but rather that they occur according to a pattern or patterns of some sort.
- Observing and recording these patterns allows us to identify the determinants, or causes, of health events and diseases.
- The focus is not on individuals, but rather on entire populations, in which the distribution and determinants of events and diseases are studied.

- Epidemiology uses rates to compare distributions and determinants of events and diseases among populations of different sizes, providing the basis for the development of public health prevention and control programs.

### **2.4.2.3 Rates Commonly Used in Epidemiology**

The three key rates commonly used in public health are:

- Mortality rates
- Incidence rates
- Prevalence

### **2.4.2.4 Distribution diseases**

Let participants know that there are four aspects of disease distribution:

1. The burden of the disease —**“how many persons are affected?”**
2. Persons affected- **“who is getting the disease, or who are the persons affected?”**
3. Place—**“where are the affected persons?”**
4. Time—**“when are persons most commonly affected or when are the diseases most common, and is the frequency or distribution changing over time?”**

The answers to these descriptive epidemiology questions about a disease or event can be useful in many ways; they can provide us with information to better predict and therefore provide a response to outbreaks, and can also provide clues to the determinants, or causes, of a disease.

### **2.4.3 Early Warning and Public Health Surveillance**

Define early warning and public health surveillance, review the major indicators of early warning on page 19 of PHEM guideline, and present the following slides:

1. The two components of early warning system
2. Objectives of Surveillance:
3. Review the definition of disease surveillance for different health levels:
4. Core functions of surveillance:
5. Impact of early and late detection of an outbreak

Emphasize the following:

- Early detection can have a major impact in reducing the numbers of cases and deaths during an outbreak.

- The impact of EARLY detection and response in reducing the disease burden caused by an outbreak in an emergency situation is WIDE OPPORTUNITY FOR CONTROL.

### ***Discuss the reporting periodicity of surveillance data in Ethiopia***

The identified 20 disease and conditions in Ethiopia are classified in the PHEM guideline in to two reporting periods depending on their epidemic potential, diseases targeted for elimination and eradication as indicates in PHEM guideline page 23.

**Review with participant the periodicity of reporting and reporting tools on page 30 and 31 of the PHEM guideline**

#### **Periodicity:**

- ***Immediate reporting***
- ***Weekly reporting***

Reporting tools –Review PHEM guideline page 31.

Page 32 Table3- 4 of the PHEM guideline shows different formats to be used by different levels of the health system and periodicity of reporting. Review and go through each section of the following reporting formats so that participants will have familiarity and understanding of each variable. Focus on the mostly used forms.

### **2.5 Surveillance data analysis, interpretation and communication**

Explain that measuring events, such as disease or health events, is at the heart of public health surveillance and resource allocation.

Let participants know that one of the simplest methods of measuring is just simply counting. However, explain that simple counts often do not provide all of the information needed to understand the relationship of a health event to the population in which the event occurred. Counts alone are also insufficient for describing the characteristics of a population and for determining risk.

Explain that the key is to relate the frequency of an event to an appropriate population and let participants learn that for this purpose we use ratio, proportion and rates and show how they are calculated with example.

Let participants know that the four measures of disease frequency or severities that are commonly used in public health are and show them how to calculate.

- Prevalence,
- incidence,
- mortality, and
- case-fatality

## 2.5 Practical Exercises

### Exercise 2.1 – Rates commonly used in public health

**Note to the facilitator:** Because rates are so important in practice of epidemiology and public health, as a facilitator you have presented information about the three rates commonly used in basic epidemiology (mortality rate, incidence rate and prevalence).

Give the following hypothetical questions and be ask participants to calculate rates.

1. In a country X, in 2004, 44,770 residents died and the country's population was 6,207,046 that year. Calculate the mortality rate for country X?

**Answer:**

*To calculate the mortality rate we divide the number of deaths by the total population and multiply by 100,000.*

$$(44,770 / 6,207,046) \times 100,000 = 721.3 \text{ per } 100,000 \text{ population}$$

2. From Meskerem 1 to Pagumen 5 in 2003, there were 586 cases of new cases of measles diagnosed in Woreda X, and the woreda population 935,670 that year. What is the incidence rate of measles in woreda X in 2003?

**Answer:**

*To calculate the incidence rate we divide the number of new cases by the total population and multiply by 100,000.*

$$(586 / 935670) \times 100,000 = 62.6 \text{ per } 100,000 \text{ populations}$$

3. In woreda Y there were 20,000 residents reported with malaria, and the total population that year was 663,661. What is the prevalence of malaria in woreda Y?

**Answer:**

*We calculate it by dividing the number of people with the disease of interest by the number in the total population and then multiplying by 100 to express it as a percentage.*

$$(20,000 / 663,661) \times 100 = 3\%$$

## Exercise 2.2 – Reporting priority disease and conditions for early warning and surveillance

**Notes to Facilitator:** For this exercise, participants will work alone. Ask them to answer the following questions using information from their own Woreda. When they have completed the exercise, ask people to share their answers. When a participant offers his/her answer, acknowledge them and then ask the group to discuss alternative methods or answers.

Review the following tables in PHEM Guideline with participants and ask the following question about their current reporting practice.

- Immediate and weekly reportable diseases in Ethiopia - Table 3.1
- Formats to be used and the periodicity of reporting in different level – Table 3.4
- List of diseases and their level of reporting procurers and format to be used – Table 3.5

1. Based on your reporting experience at your woreda:
  - a. What diseases or conditions do you report to the next level immediately or weekly?
  - b. How do you report immediately and weekly data to the next level?
  - c. Is there a standard form that you use?
  - d. What methods of communication do you normally use for immediately or weekly reporting?
2. Use the information on your 1<sup>st</sup> case (Workneh's) above fill in the cases based reporting format (CRF) on page 109 of the PHEM Guideline.

*Ask volunteer to share their filled case based reporting format and let the class discuss*

3. What other different reporting tools are being used in your woreda to facilitate the reporting of identified diseases and conditions to the next level?

### **Answers:**

- Weekly report form for health extension workers (WRF\_HEW)
- Weekly disease report form for outpatient and inpatient cases and deases (WRF)
- Daily epidemic reporting format for Wereda (DERF-W)
- Daily epidemic reporting format for region (DERF-R)
- Line list – for reporting from health facility to woreda/zone/region/national and for use during outbreaks
- Rumor log book for suspected outbreaks and/or events
- Case based laboratory reporting format (CLRF)

4. The reportable 20 disease and conditions in Ethiopia are classified in to two reporting periods depending on their epidemic potential, diseases targeted for elimination and eradication (see page 23 and 30).

a. What steps and procedures do you follow for immediate reporting:

**Answers:**

*Immediate reporting of suspected identified outbreak should be notified to the next level within 30 minutes. For the immediately reportable diseases, a single suspected case is considered as a suspected epidemic.*

- *From community or health post or health centre to woredas health office within 30 minutes,*
- *From Woreda health office to zone/region within another 30 minutes,*
- *From Zone to regional within another 30 minutes,*
- *From Region health bureau to Federal level within another 30 minutes,*
- *MOH to WHO within 24 hrs of detection,*

*The procedure of reporting can be verbally or by telephone, radiophone or use an electronic methods such as email, fax, mobile short message service, tall free call service (a service doesn't charge you when you call and accessible 24 hr a day. The number for this service at Federal level is 971. Official reporting using Case Based Reporting format or line listing should follow immediately*

b. What steps and procedures do you follow for weekly reporting:

**Answers:**

*Currently 7 diseases and conditions are identified to be reported weekly to the next reporting level. Reporting of the total number of cases and deaths seen within a week (Monday to Sunday) and should be reported to the next level as follows:*

- *Health facilities report data from Monday to Sunday to Woreda every Monday till midday;*
- *Woredas to zone/region every Tuesday till midday;*
- *Zone to region every Wednesday till midday;*
- *Region to EHNRI every Thursday,*
- *EHNRI to WHO every Friday.*

### **2.3 Exercise – Data analysis, interpretation and communicating findings**

**Notes to Facilitator:** *This exercise asks participants to utilize all of the skills they have learned so far to analyze, interprets, and present a surveillance data. Ask participants to read the case study and then discuss the questions with a small group of 2 or 3 people. When participants have finished the exercise, ask for a group representative to present his or her answer for each question. Allow different groups to respond for each question.*

Answers have been provided below. After groups give their answers, ask if there is anything to add. If the sample answer is different, discuss why it is the correct answer.

#### Case Study 1:

A number of Meningococcal Meningitis cases are being reported from 2 adjacent health posts in your woreda which has a total of 1 government hospital, 2 government health centres, 34 health posts, 2 missionary health centres, and 1 police hospital. The same week 35 health facilities reported to you on time. The number of Meningococcal Meningitis cases were; week1 it was 4; week2 also 4, week3=3; week4=4; week5=5; week6=7; week7=8; week8=10; week9=9; week10=8 and week11=6. The Meningococcal Meningitis cases were 40 males and 28 females. There age groups of those reported with meningitis were: 0-4 years were 8., 5-14 years were 20, 15-30 years were 25, and 15 were above 30 years old. 38 were from Kebele X and 30 were from Kebele Y. The total population of the 2 kebeles where the report come from is 27000 (Kebele X=15,000, Kebele Y=12,000). The demographic characteristics of your woreda population was: 13,000 males, 14,000 female, 2000 were 0-4 years of age, 5,000 were 5-14 years old, 8,000 were 15-30 years old, and 12,000 were more than 30 years old.

Using the above case study answer the followings:

1. Before you analyze the Meningococcal Meningitis cases you received for your Woreda, you need to check the completeness of the data. Calculate the completeness of the report?

**Answer:**

$$\text{Completeness} = \frac{\text{the number of health facilities reported in that week}}{\text{total number of health facilities expected to report}} \times 100$$

$$35/40 \times 100 = 87.5\%$$

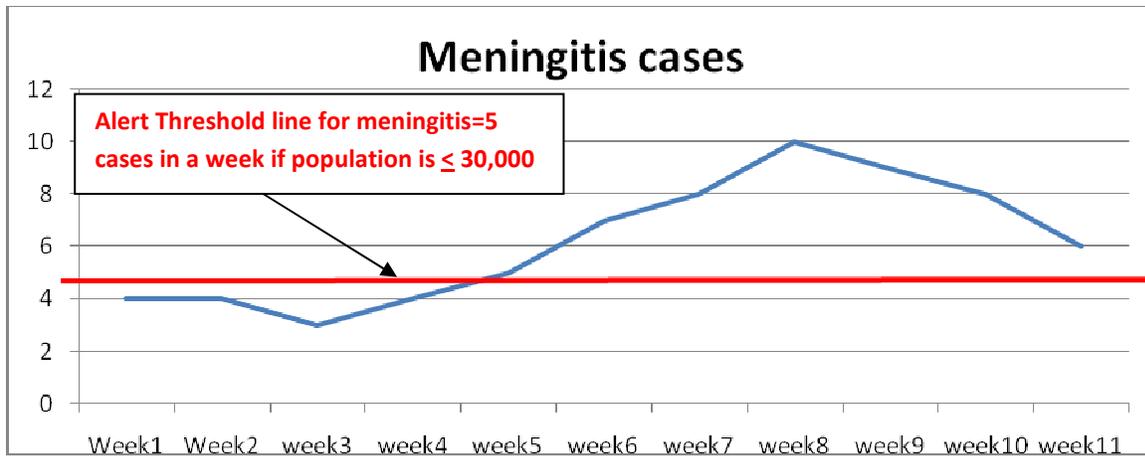
2. On which day of the week (timeliness) do your woreda's have to report meningitis cases to the Zonal health department?

**Answer:**

*Tuesday*

3. Draw a line graph showing the trend of Meningococcal Meningitis cases in your Wereda?

**Answer:**



4. Bases on the above data do you suspect an outbreak of Meningococcal Meningitis cases in your Wereda?

**Answer:**

Yes

*If yes what is your justification?*

*Bases on the population of my woreda of 27,000 the 7 cases of meningitis reported on week 6 was over the alert threshold line.*

If Pop. < 30,000: five cases in a week or doubling of cases over 3 week period,

If Pop. > 30,000: AR=10/100,000 population per week

5. Calculate the attack rate of Meningococcal Meningitis for Kebele X, Y and your Woreda as a whole?

$$AR = \frac{\text{Number of new cases during specified period}}{\text{Number of susceptible persons}} \times 100$$

**Answer:**

$$68/27,000 \times 100 = 0.25\%$$

6. Analyse the meningitis data of your Woreda by place, person and time.

**Answer:**

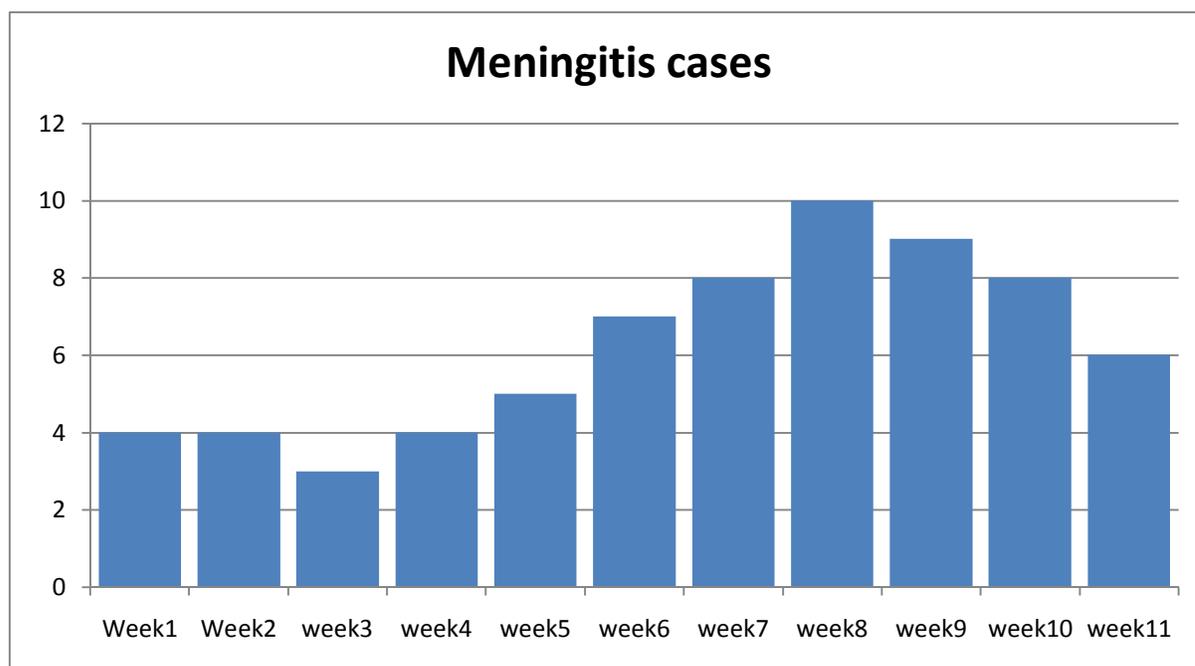
a Place – Calculate the rates of meningitis per 1000 persons for the two kebeles and your woreda?

	Population	# of cases	Percent
Kebele x	15,000	38	0.25%
Kebele Y	12,000	30	0.25%
Total Woreda	27,000	68	0.25%

- b Person – Calculate the rates of meningitis per 1000 by age groups and sex in your Woreda and compare?

Demographic	Population	No. of meningitis	Rate per 1000
<b>Sex</b>			
Male	13,000	40	3.1
Female	14,000	28	2.0
<b>Age groups</b>			
0-4	2,000	8	4.0
5-14	5,000	20	4.0
15-30	8,000	25	3.1
More than 30 years	12,000	15	1.2

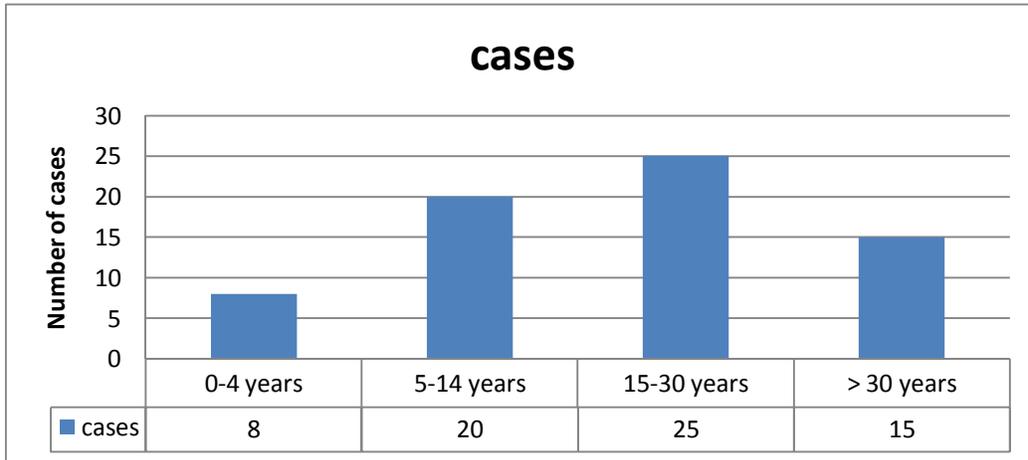
- c Time – Compare the number of meningitis cases reported in your Woreda by week of report and draw a histogram and compare?



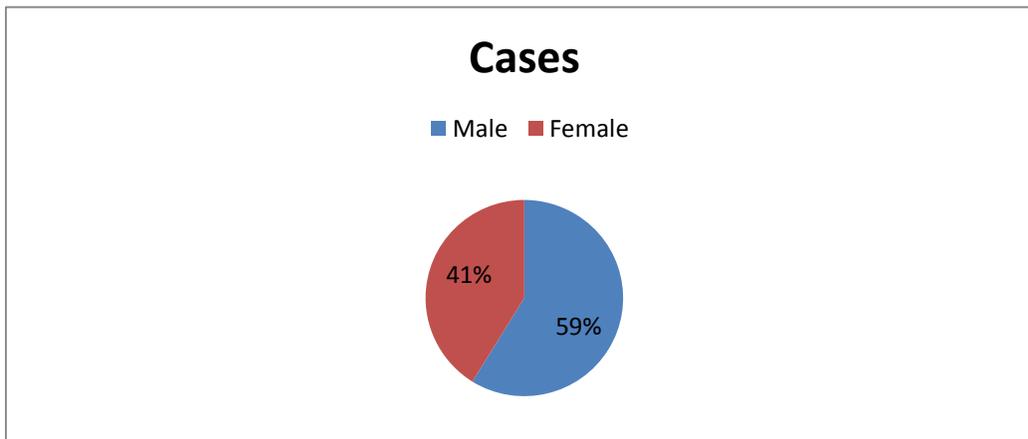
7. Draw
- I. A bar graph by age group
  - II. A pie chart by sex.

**Answer:**

- I. A bar graph by age group



II. A pie chart by sex.



8. How do you interpret the finding?

**Answer:**

*87.5% of health facilities have reported to the woreda health bureau on time.*

*Starting week 3 the number of cases was increasing and at week 6 cases passed the alert threshold line for the woreda population, leading to the suspicion of an outbreak.*

*The attack rate of meningitis in the woreda was 0.25%, the CFR was 0. More Males than females were affected by the outbreak. Younger population, who were less than 15 years old were more affected than older population in the woreda. The pick of the outbreak was week 8.*

9. How do you communicate about your finding with Your Woreda RRT?

**Answer:**

- *Inform the woreda RRT the about the occurrence of meningitis outbreak in the woreda and recommend the RRT for response/action.*
- *Communicate the outbreak situation to the zonal, regional and national PHEM offices.*
- *Provide feedback to reporting facilities to raise an awareness of the outbreak.*

**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.

## **Module3: Public Health Emergency Response**

### **3.1 Introduction**

Introduce Module 3 with a brief presentation based on the introduction provided on PHEM guideline, page 48.

### **3.2 Learning Objectives**

Ask a participant to read the learning objectives. Then present and explain each of the objectives to the class.

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

- Define cluster, outbreak, and epidemic
- List the reasons that health agencies investigate reported outbreaks
- List and describe the steps in the investigation of an outbreak
- Draw and interpret an epidemic curve
- Calculate the appropriate measure of the association from two by two table
- Identify Interventions of specific outbreak
- Communicate findings of outbreak investigation in scientific way

### **3.3 Teaching Methods and Resources**

#### **3.3.1 Teaching Methods**

This module is designed to first provide participants with information then provide examples of how to apply the information and conclude with an opportunity to practice applying the information or skill. In order to facilitate this process you can use several different teaching methods

- Brainstorming
- Lecture presentation
- Exercises
- Group presentations

#### **3.3.2 Teaching resources**

Present the course materials:

- Participants Basic Level PHEM Training Module
- PHEM guideline
- LCD projector
- Computer
- Flip chart
- Marker
- Notebook and pen

## 3.4 Contents of the module

The major contents of this module are the following:

- Definition of terms
- Purpose of outbreak investigation
- When to conduct an outbreak investigation
- Steps of outbreak investigation
- Practical Exercises

### 3.4.1 Definitions of Terms

Ask the participants to define the following terms and allow discussion in large group.

1. What is an epidemic?
2. What is Outbreak Investigation?
3. What is Cluster?
4. Distinguish the term epidemic, outbreak and cluster

**Epidemic:** the occurrence of more cases of disease than expected in a given area or among a specific group of people over a particular period of time. Usually, the cases are presumed to have a common cause or to be related to one another in some way

**Outbreak:** epidemic limited to localized increase in the incidence of disease

Cluster: aggregation of cases in a given area over a particular period without regard to whether the number of cases is more than expected

### 3.4.2 Purpose of Outbreak Investigation

Ask for participants to answers to the following questions and then facilitate discussion in large group.

1. What is the purpose of investigating an outbreak? Why can't you take action on just a rumor or report only?
2. What do you think would be important steps to investigate a reported outbreak?

Ask a participant to read and explain the purpose of outbreak investigation.

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

### 3.4.3 When to Conduct an investigation

Ask for participants to answers to the following questions:

1. How you uncover the outbreak?

## 2. How you justify the need to investigate the outbreak?

Ask a participant to read when to conduct an outbreak investigation?

Conduct an outbreak investigation when:

- A report of a suspected epidemic of an immediately notifiable disease is received,
- An unusual increase is seen in the number of deaths during routine analysis of data,
- Alert or action thresholds have been reached for specific priority diseases,
- Communities report rumors of deaths or about a large number of cases that are not being seen in the health facility,
- A cluster of deaths occurs for which the cause is not explained or is unusual (for example, an adult death due to bloody diarrhea).

### 3.4.4 Steps of Outbreak Investigation

Emphasize these points in your presentation:

- An investigation provides important and relevant information for deciding on how to respond to the suspected outbreak or public health event.
- The steps for investigating:

Ask the participants to share their experiences to the whole class.

Ask the participants to read the steps of outbreak investigation.

In investigating an outbreak it is an important to follow the following steps. However, in reality it might not follow the steps mentioned

1. Prepare for fieldwork
2. Establish the existence of an outbreak
3. Verify the diagnosis
4. Define and identify cases
5. Analyze data collected in terms of time, place and person
6. Develop hypotheses
7. Evaluate hypotheses
8. Refine hypotheses and carry out additional studies
9. Implement control and prevention measures
10. Communicate findings

### 3.4.5 Monitoring and Evaluation

**Note to Facilitator:** Ask the participants to mention the elements to be monitored during response to outbreaks and what indicators to be used to monitor response activities as brainstorming. Briefly present elements to be monitored, indicators, units of measurements and targets. In your presentation, focus on the following issues. For more detail read PHEM Guideline page 87-88.

What elements are to be monitored for response activities?

What are the key monitoring indicators for public health emergency response?

**The following are some of the elements to be monitored:**

- Disease trends in order to assess the effectiveness of the response measures, the extension of the outbreak and risk factors
- Resources assessment of the rational utilization, adequacy and sufficiency and determination of additional needs
- Effectiveness of the response: case fatality rate, incidence rate
- Implementation status of the identified intervention activities (program coverage, safe water coverage, immunization, hygiene and sanitation activities, public communication and education, ITNs distribution, etc.

**Monitoring indicators for public health emergency response**

- Proportion of rumors of PHE verified within 3 hours of initial notification
- Percentage of woredas with functional RRTs
- Percentage of outbreaks that have been investigated within 48 hours
- Percentage of outbreaks that have CFR within the accepted norm
- Proportion of suspected outbreaks of epidemic prone diseases in which lab confirmation are completed according to the guideline
- Proportion of PHE with prevention and control measures initiated within 48 hours of identification of risks and characterization of threats
- Percentage of outbreaks contained with an acceptable containment time (as per specific guidelines recommendation)

**Points remember**

❖ The purposes of outbreak investigation are:

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

❖ Outbreak investigation is warranted when:

- A report of a suspected epidemic of an immediately notifiable disease is received,
- An unusual increase is seen in the number of deaths during routine analysis of data,
- Alert or action thresholds have been reached for specific priority diseases,
- Communities report rumors of deaths or about a large number of cases that are not being seen in the health facility,
- A cluster of deaths occurs for which the cause is not explained or is unusual (for example, an adult death due to bloody diarrhea).

❖ Steps of Outbreak Investigation are:

1. Prepare for fieldwork
2. Establish the existence of an outbreak
3. Verify the diagnosis
4. Define and identify cases
5. Analyze data collected in terms of time, place and person
6. Develop hypotheses
7. Evaluate hypotheses
8. Refine hypotheses and carry out additional studies
9. Implement control and prevention measures
10. Communicate findings

### 3.5 Exercises

#### *Case study 1*

**Notes to Facilitator:** Ask participants to break into groups of 2 or 3 to complete Case Study 1. Explain that suggestions for this exercise can be found on page 48-66 of the Technical Guidelines. Ask a representative from each group to record an answer for the following questions on the flipchart. Finally after they finished ask the group representative to present their answer with brief explanation to the class room. Answers for the questions are included below. If any correct answers are missing, add them to the list and discuss why they might be helpful.

Scenario 1: A suspected outbreak of a foodborne disease which occurred after attending a wedding ceremony on morning of Tir 27, 2003 in a small town X was reported to your Woreda health office on the same day in the afternoon. The patients present with vomiting, diarrhea and abdominal pain.

1. As Woreda PHEM Officer what first actions do you take?

**Answer:**

- *Call to health facility and verify the existence of an outbreak.*
  - *Decide the need for investigation,*
  - *Team establishment,*
  - *Collect all materials (reporting tools, guidelines, Personal protective equipment, laboratory materials etc.)*
2. What is the composition of the team that you need to send to the field to investigate the situation? Why?

**Answer:**

- *Epidemiologist/PHEM Officer*
- *Doctor or Health Officer or Nurse*
- *Laboratory technologist or technician*

- If available other professionals (e.g. Environmental Health Technologist or technician)

Scenario 2: The Woreda RRT who went to the site (town X) has found the list of 25 cases who have the symptoms mentioned above from Health Center record and 5 more cases by searching among of most of the attendants of the wedding ceremony.

The line list of the suspected cases is as follows.

SN	Name	Town	Sex	Age	Time of onset	Vomiting	Diarrhea	Abdominal pain	Others
1	GK	X	F	20	7:30	1	1	1	0
2	PG	X	M	44	8:00	1	1	1	0
3	JK	X	M	7	8:30	1	0	1	1
4	WL	X	F	47	8:45	1	0	1	0
5	WW	X	F	10	8:45	1	0	1	1
6	OM	X	M	13	8:45	1	1	1	0
7	SO	X	F	20	7:30	1	1	1	0
8	OD	X	F	39	7:30	1	1	1	0
9	ER	X	F	17	7:30	1	0	1	0
10	DS	X	M	44	7:00	1	1	1	0
11	LK	X	M	46	8:30	0	1	1	0
12	RE	X	M	38	9:00	1	0	1	0
13	LO	X	M	40	8:00	0	1	1	0
14	KO	X	F	60	8:00	1	0	1	0
15	PO	X	M	22	7:00	0	1	1	0
16	DE	X	F	28	8:45	0	1	1	0
17	GS	X	F	20	7:30	1	1	1	0
18	FK	X	F	44	7:00	0	1	1	0
19	NU	X	M	7	8:00	1	0	1	1
20	PQ	X	F	47	7:30	1	0	1	0
21	KS	X	M	40	8:30	1	0	1	0
22	KA	X	F	40	8:00	0	1	1	0
23	NK	X	F	20	7:30	0	1	1	0
24	HD	X	M	24	8:00	1	1	1	0
25	XE	X	M	22	7:00	1	1	1	0
26	MA	X	M	20	6:00	1	0	1	0
27	ER	X	F	50	8:30	1	1	1	0
28	BN	X	M	26	7:30	1	0	1	0
29	MZ	X	F	16	7:00	1	0	1	0
30	MX	X	M	10	8:30	1	0	1	1

3. What could be the case definition that was used by the Woreda RRT? What information helped them to generate case definition?

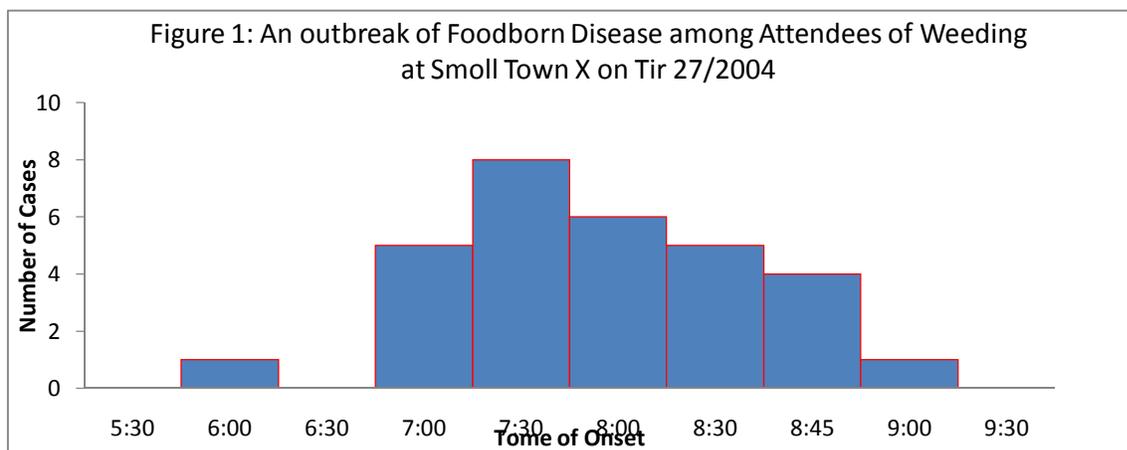
**Answer:**

*Any person presenting with abdominal pain, vomiting and diarrhea in small town X those attended weeding ceremony on Tikimt27. The case definition during the outbreak should include clinical picture, time and place of the outbreak.*

4. Draw an epidemic curve of the outbreak and tell the type of “source of outbreak” and explain it?

**Answer:**

- *It is a point source outbreak (all cases were exposed to the same source at the same time on weeding in small town x). All cases were lasted within one incubation period).*
- *The exposure period is relatively brief,*
- *It has a sharp upward slope and a gradual downward slope*



5. What further information the RRT need to collect to know the possible source of infection?

**Answer:**

*To have more information to generate hypothesis the RRT should interview with each of the complaints, they should address the following and others*

- *Where they were before they developed the illness*
- *What exposure they had together*
- *Time of exposure*
- *What kind of food and drinking items they took*

6. To identify the cause of the outbreak what kind of the samples and at least how many samples the RRT should collect? To which laboratory they could send?

**Answer:**

*Stool sample, if possible food sample, five samples*

Scenario 3: The Woreda RRT was informed that 80 people attended the wedding. The teams managed to interview 72 of them, 30 met the case definition. All cases ate from 7 items served at wedding. The investigation team identified the number of wedding attendees those ate and do not ate from each food items according to the table below.

Exposed to	People Who Ate				People Who Did not Eat				RR (d/h)
	Ill (a)	Not Ill (b)	Total (c = a+b)	AR (%) (d = a/c)	Ill (e)	Not Ill (f)	Total (g = e+f)	AR (%) (h = e/g)	
Doro wat	7	35	42		7	23	30		
Kitfo	10	26	36		8	28	36		
Kurt (Beef)	8	36	44		6	22	28		
Tibs	5	45	50		4	18	22		
Rice	8	33	41		7	24	31		
Fruits cocktail	6	22	28		9	35	44		
Mixed salad	20	11	31		3	38	41		

7. To test the association between exposure and the illness, what kind of analytical study is more appropriate? What is the appropriate measure of the association? Why?

**Answer:**

*Since the population is well-defined (all wedding participants) and the investigator can contact all the participants and easily determines each person's exposure to possible sources and vehicles (e.g., what food and drinks each guest consumed), and notes whether the person became ill with the disease in question; cohort (retrospective) is more appropriate approach. The appropriate measure of association is Relative Risk or Risk ratio because we can calculate attack rate.*

8. Calculate the attack rate for all food items.

**Answer:**

Exposed to	People Who Ate				People Who Did not Eat			
	Ill	Not Ill	Total	AR (%)	Ill	Not Ill	Total	AR (%)
	(a)	(b)	(c = a+b)	(d = a/c)	(e)	(f)	(g = e+f)	(h = e/g)
Doro wat	7	35	42	16.7	7	23	30	23.3
Kitfo	10	26	36	27.8	8	28	36	22.2
Kurt (Beef)	8	36	44	18.2	6	22	28	21.4
Tibs	5	45	50	10.0	4	18	22	18.2
Rice	8	33	41	19.5	7	24	31	22.6
Fruits cocktail	6	22	28	21.4	9	35	44	20.5
Mixed salad	20	11	31	64.5	3	38	41	7.3

9. Which food item shows the highest attack rate?

**Answer:**

*Mixed salad (which is 64.5%)*

10. Is the attack rate low among persons not exposed to that item?

**Answer:**

*Yes (it is 7.3%)*

11. Calculate and interpret the relative risk for each food items?

**Answer:**

The attack rate is calculated by dividing the attack rate among exposed to the attack rate among non-exposed.

Exposed to	People Who Ate				People Who Did not Eat				RR
	Ill	Not Ill	Total	AR (%)	Ill	Not Ill	Total	AR (%)	
	(a)	(b)	(c = a+b)	(d = a/c)	(e)	(f)	(g = e+f)	(h = e/g)	
Doro wat	7	35	42	16.7	7	23	30	23.3	<b>0.7</b>
Kitfo	10	26	36	27.8	8	28	36	22.2	<b>1.3</b>
Kurt (Beef)	8	36	44	18.2	6	22	28	21.4	<b>0.8</b>
Tibs	5	45	50	10.0	4	18	22	18.2	<b>0.6</b>
Rice	8	33	41	19.5	7	24	31	22.6	<b>0.9</b>
Fruits cocktail	6	22	28	21.4	9	35	44	20.5	<b>1.0</b>
Mixed salad	20	11	31	64.5	3	38	41	7.3	<b>8.8</b>

12. Which items were associated with the illness? Interpret it

**Answer:**

*Mixed Salad*

*Persons who ate the mixed salad were 8.8 times more likely to become ill than those who did not ate the mixed salad.*

13. If the lunch was served at 6:30 and the source of the outbreak is mixed salad, what could be the possible explanation for the case happened at 6:00?

**Answer:**

It could be an index case. He/she might be served before lunch time

\* \* \* \*

## Case Study 2

**Notes to Facilitator:** Ask participants to break into groups of 2 or 3 to complete Case Study 2. Explain that suggestions for this exercise can be found on page 48-66 of the Technical Guidelines. Ask a representative from each group to record an answer for the following questions on the flipchart. Finally after they finished ask the group representative to present their answer with brief explanation to the class room. Answers for the questions are included below. If any correct answers are missing, add them to the list and discuss why they might be helpful.

Scenario 1: On 17 Meskerem 2004, the health officer working in Y Health Center of reported one death associated with acute watery diarrhea and vomiting. By 20 Meskerem, the health officer reported 6 cases and 3 deaths to you, as Woreda PHEM Officer, by telephone. Since 2 weeks ago, you also have previous report that there was a confirmed cholera outbreak in Woreda X, which is the neighboring Woreda to the currently affected Woreda.

1. List all possible reasons that might justify initiation of an investigation?

**Answer:**

- *Cholera outbreak is neighboring Woreda which is adjacent to affected Woreda*
- *One suspected cholera cases should be targeted for investigation*
- *Possibility to affect more population*
- *Possibility of high transmission*
- *Possibility of high morbidity and mortality*
- *To identify source of the outbreak to take appropriate measures etc.*

2. How do you verify the existence of the outbreak?

**Answer:**

*As an investigator you should always check whether there is any change in cases definition, reporting procedure, laboratory error, new physician aware of reporting, change in denominator. For this case as RRT you should call to the health officer working at health center to be Shure the report is ended an outbreak.*

3. List all materials you must have before deployed to field?

**Answer:**

- *Different formats (case based formats, line list, outbreak reporting formats)*
- *PHEM guidelines and reading materials*
- *Supplies for collecting lab specimens*
- *Drugs and other supplies that might be required for response*
- *Infection prevention equipment such as personal protective equipment (PPE)*
- *Laptop and wireless network for report writing (if available) and*

- *Mobile phone with communication cost if necessary*
4. If the laboratory personnel have no this information so far, what kind of information do you give so that he or she has to prepare to take all laboratory materials required?

**Answer:**

- *Number of peoples affected*
- *Sign and symptoms*
- *Most possible differential diagnosis*
- *Type of health facility available in the area*
- *Advise to review materials*
- *Discuss and ensure that all lab materials are collected before departure*

5. To whom do you talk after you arrived at affected site?

**Answer:**

- *The head of health facility*
- *Health officer working on case management*
- *Laboratory person if available*
- *Kebele leader*
- *Affected peoples*

6. How do you verify the diagnosis?

**Answer:**

- *Review the medical records*
- *Check laboratory diagnosis if available*
- *If laboratory facility is not available collect samples and send to referral laboratory*
- *Talk to some patients so as to generate the hypothesis.*

Scenario 2: The Woreda RRT reached the site on 23 Meskerem and developed a summary of information about cases and deaths that occurred during the outbreak. The RRT identified a total of 33 cases and 8 deaths since the onset of the first case. To have more information they talked to some patients in the community. Up on the discussion, one of the patients told them that on 16 Meskerem 2004 one of their Kebele resident was died of diarrhea and vomiting after returning back from funeral ceremony of his relative in Woreda X. Following the funeral ceremony of his dead body on 18 Meskerem 2004, the cases were more expanded in the community by affecting new villages. The RRT sent five stool specimens to regional public health laboratory, four of them were tested positive for Vibrio-Cholera.

7. What prevention and control measures should RRT take at this stage?

**Answer:**

- *Health education to the community on food handling, hygiene and sanitation, treatment seeking etc*
- *Community mobilization on utilization and construction of latrine*
- *Establish cholera treatment centers (CTC) to make sure that the patients are treated in a separate rooms or compounds than other patients.*
- *Make sure that the infection prevention procedures are in place at the treatment center*
- *Training of health workers on case management (in case of cholera the CFR should be below 1% if the case were managed properly. But, in this outbreak the CFR is more than what expected, this shows that there could be a problem on case management*

8. How frequently should they communicate with Woreda Health Office?

**Answer:**

*The RRT has to communicate or report to the Woreda health office as frequently as possible, the minimum being twice per day.*

Scenario 3: The RRT together with Kebele Administration, start providing health education to the community at large, provide case management training for health workers and established cholera treatment center (CTC) on 24 Meskerem. On Tikimt 3, 2004 heavy rain occurred and the area was flooded. Following this situation the number of cases had been increasing and the RRT widely distribute water purification chemicals and kebele administration together with HEW conduct social mobilization on latrine construction, hand washing and utilization of water chemicals starting on Tikimt 6, 2004. At the end of the outbreak the RRT identified and summarized a total of 113 cases with 14 deaths from four villages in which a total of 6176 population lives. Review the tables below and then answer the questions that follow.

Village	Population			Case		
	Total	Male	Female	Total	M	F
Village A	1300	663	637	29	13	16
Village B	789	454	436	26	15	11
Village C	1987	526	505	39	16	23
Village D	2100	1071	1029	39	20	19
TOTAL	6176	2714	2607	133	64	69

9. By looking at the table which village does you think is most affected?

**Answer:**

*By just looking at the number of cases reported, you might say that village C and D is most affected but it is not true. It is difficult to know the most affected by just looking at the number of cases alone. It is important that attack rates be calculated.*

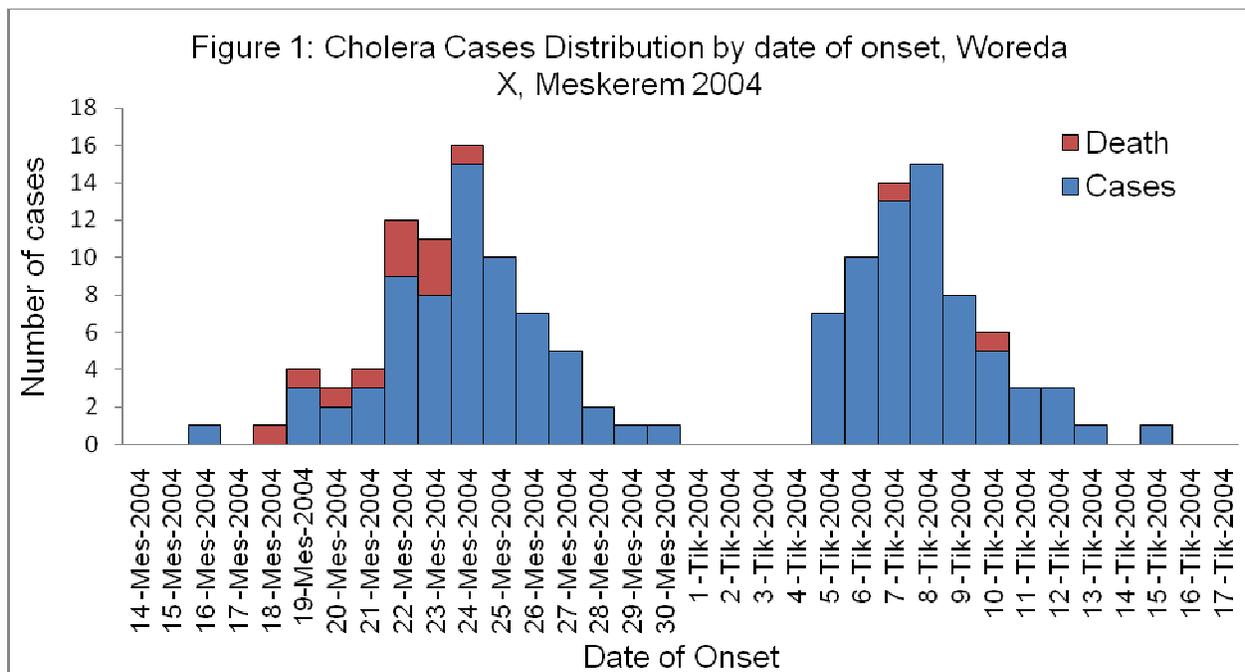
10. Calculate crude and sex specific attack rate and interpret the findings? Which Village is most affected?

**Answer:**

Village	Population			Case			Attack Rate		
	Total	Male	Female	Total	M	F	Crude	M	F
Village A	1300	663	637	29	13	16	<b>2.2</b>	<b>2.0</b>	<b>2.5</b>
Village B	789	454	436	26	15	11	<b>3.3</b>	<b>3.3</b>	<b>2.5</b>
Village C	1987	526	505	39	16	23	<b>2.0</b>	<b>3.0</b>	<b>4.6</b>
Village D	2100	1071	1029	39	20	19	<b>1.9</b>	<b>1.9</b>	<b>1.8</b>
TOTAL	6176	2714	2607	133	64	69	<b>2.2</b>	<b>2.4</b>	<b>2.6</b>

As can be seen from the crude attack rate, it is village B that is most affected (AR = 3.3)

11. Look at the following graph and interpret. Why most of the deaths happened at the beginning of the outbreak? Why the trends is decreasing after 24-Meskerem? Why it rises again on 5-Tikimt? Why do cases kept decreasing significantly after Tik-8? What is the possible explanation for the occurrence of this outbreak?



**Answer:**

*Almost all of the cases reported within the first week. One possible reason is the absence of trained personnel on case management. As we can see from the graph above after the training was given for the health worker on Meskerem 24, 2004; the numbers of the deaths were significantly decreasing. The other possible reason could be the lack of community awareness on medical care seeking behavior.*

*Similarly the numbers of cases were decreasing after Meskerem 24, 2004; because the RRT start implementing prevention and control measures. The establishment of Cholera Treatment Center and training on case management might be the other reason, because treating in the Cholera treatment center can reduce infection.*

*The cases had been increasing again starting from Tikimt 5, 2004. The heavy rain occurred on Tikimt 3, 2004 might be one cause. Especially in the community in which the coverage and the utilization of latrine are low heavy rain could facilitate the expansion of Cholera in the outbreak setup.*

12. To whom do you report the findings of the outbreak investigation and how?

**Answer:**

*Primarily, the result of the outbreak investigation should be given as feedback to the health workers and Kebele leaders working on the prevention and control of the outbreak. The feedback could be oral or written report. Then well written report should be reported to Woreda Health office and to any other health partners those have stack on the prevention and control of the outbreak.*

13. Mention the major components of outbreak reporting format?

**Answer:**

The report of outbreak investigation should include introduction, methods, results, discussion, conclusion and recommendation. The introduction part could highlight the background of the disease and objectives of the outbreak investigation. The method section should be included what we did, how we approach to the situation. In the result section we write only what we found. Conclusion and recommendation must be from the result. Some facts that we know about the disease, but we did not found in our investigation could not be included in the result.

## Module 4: Public Health Emergency Preparedness

### 4.1 Introduction

Introduce Module 4 with a brief presentation based on the introduction to Section 2 of the PHEM Guidelines, page 6.

**Note to facilitator:** Ask participants to brainstorm on the definition of preparedness. Present the slides on introduction to preparedness including the aims and learning objectives

Emphasize these points in your presentation:

- Preparedness activities and tasks are those things that should be done prior to the occurrence of emergency.
- 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 Woreda.
- A vulnerability assessment provides a starting point to construct an overall plan that corresponds to the dimensions of identified risks
- This module describes steps for organizing preparedness activities in the Woreda.
- 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 different levels.

### 4.2 Teaching Learning Resources

- PHEM guideline
- LCD projector
- Flip Chart
- Markers
- Other reading materials
- Case studies
- Power Point slides

### 4.3 Teaching Methods and Resources

- Lecture discussion by facilitators
- Exercises (individual and group)
- Case studies
- Reading assignments (Individual and group reading)

## 4.4 Content of the module

- Coordination and collaboration
- Vulnerability assessment and risk mapping
- Planning for identified risks
- Capacity building
- Monitoring and Evaluation
- Exercises

### 4.4.1 Coordination and Collaboration

**Note to facilitator:** Present slides on the activities of coordination and collaboration. Ask participants to ready the activities and steps for effective coordination and collaboration on PHEM guideline on page. Ask participants to do exercise 4.1. Check the answers:

Main activities and steps required for effective coordination and collaboration

- Identify all sectors, collaborators and partners, their areas of intervention and capacity for public health emergency management;
- Develop a list and keep a register of all experts, institutions and organization and update the list yearly;
- Communicate with all partners and establish a coordination/collaboration forum;
- Develop a term of reference (TOR), memorandum of understanding (MOU) to guide the framework;
- Monitor and evaluate participation and implementation of public health emergency activities as per the TOR or MOU;
- Report the level of preparedness to the next higher level and share with all stakeholders on monthly basis or as required;
- Organize a Rapid Response Team (RRT) to initiate activities at the time of response;
- Review membership, TOR or MOU as per the findings.

**Note to Facilitator:** Ask the participants to identify key differences between the PHEMC and the Woreda RRT. Be sure to emphasize that the PHEMC is a planning and review board that creates the emergency preparedness plan for the woreda. They should be involved in policy creation and high level logistical planning. The Woreda RRT goes to the field and investigates rumors and outbreaks and then prepares the final reports and ensures the presence of woreda preparedness and response plans. Ask participants to do exercise 4.2

## 4.4.2 Vulnerability assessment and risk mapping

**Note to facilitator:** Present slides on the Definition vulnerability and risk mapping. Present slides on vulnerability assessment and risk mapping. Present slides on epidemic preparedness and response plan. Give exercises 4.2 on vulnerability assessment and risk mapping. Check the answers

### 4.4.3 Planning for identified risks

#### 4.4.4 Capacity building

Capacity building activities shall be carried out in order to effectively mitigate, prepare for identified risks, and respond to any occurrence of PHE events. The capacity building activity could focus on establishing and/or strengthening system and human resource needs related to PHEM: surveillance system, communication, laboratory and logistics.

##### 4.4.4.1 Planning for Logistic

The logistic part focuses on stockpiling drugs, vaccines (buffer stocks), personal protection equipment (PPE), emergency health kits, medical supplies required for prevention and control of epidemics, and nutritional supplements. This has to be augmented with securing funds for related operational activities.

##### 4.4.4.2 planning for system development

##### 4.4.4.3 planning for human resource

#### 4.4.5 Monitoring and Evaluation of PHEM preparedness

Measuring the level of preparedness of the PHEM system at different levels is critical to know the capacity of the program to handle outbreaks and any other emergencies in effective manner

**Monitoring:** is a routine and continuous tracking of planned activities over the process

This activity focuses on monitoring the implementation of identified activities indicated in the sub-process. Operationalizing developed plans through exercising, training, and real world events, and use after-action reports to support validation and revision of operational and Epidemic Preparedness and Response Plan (EPRP) is also a major activity that contributes to identifying flaws in our plan.

**Evaluation:** Assesses whether the objectives set are achieved or not.

#### Examples of monitoring indicators for preparedness

- a. Coordination and collaboration
  - Number of coordination forum activity reports
  - Number of coordinated responses given to health emergencies

- b. Vulnerability assessment and risk mapping
  - List of hot spot areas identified by type of hazard
  - Vulnerable groups identified by type of hazards
- c. Planning
  - Preparedness plan available
- d. Capacity building
  - Proportion of zones, and woredas with PHEM structure
  - Number of need-based trainings conducted
  - Proportion of ,zone, and woredas with available stockpile to cover at least one month at lower levels

## 4.5 Practical Exercise

**Notes to Facilitator:** Ask participants to share their experiences by answering the questions given below. First trainees document their individual experiences. Second they share their experiences with smaller group. Third each small group selects the best experience and present to the larger groups. Check the report with the answer given below.

### Exercise 4.1: Coordination and Collaboration

1. What is your experience in public health emergency?

**Answer.**

*There is no any specific answer to this question. Experiences may vary from woreda to woreda and exposure to public health emergency among the trainees. Trainees need to describe their experiences*

2. What structures do exist with regard to collaboration and coordination?

**Answer.**

*Public Health Emergency Management Committee, PHEM technical committee, and RRT*

3. Who should be included as members of the emergency management committee? What will be their roles?

**Answer**

*Members of Woreda Emergency management Committee are:*

- *Woreda administrator or equivalent*
- *Woreda head of health office*
- *Woreda head of Education office*
- *Woreda head of Agriculture office*
- *Woreda head DPPB*
- *Woreda head of water development office*
- *Woreda Female, youth and children affair office*
- *Woreda public communication office*

- *Woreda disease control officer/PHEM officer*
- *Woreda justice and office bureau*
- *Local and international NGOs*

*The role of Woreda Public Health Emergency Management Committee will be:*

- *Develop an emergency preparedness and response plan*
- *Establish a community communications plan for sharing information with communities*
- *Mobilize resources for emergency prevention and control including procurement of response and communication supplies*
- *Support the procurement of emergency materials and supplies*
- *Coordinate training of community, health facility, and woreda personnel on preparedness and response.*
- *Monitor and coordinate the response and disseminate findings to the relevant persons*

4. Who should the Woreda health Office send to the field to investigate? What was the role of RRT?

**Answer**

*Members of Rapid Response Team*

- *An epidemiologist or PHEM officer*
- *Laboratory technologist or technician*
- *Doctor or health officer or nurse*
- *If available other professionals(Environmental health technologist or technician)*

***The role of rapid response team:***

- *Investigate rumours, reported outbreaks, and other public health emergencies*
- *Propose appropriate strategies and control measures including risk communications activities.*
- *Prepare epidemic preparedness and response plan*
- *Coordinate rapid response actions with partners and other agencies.*
- *Initiate the implementation of the proposed control measures including capacity building*
- *Prepare detailed investigation reports*
- *Contribute to the final evaluation of the outbreak response*

5. What do you want to improve?

**Answer**

- *This depends on the type of priority gaps/problems identified by the participants*

## Exercise 4.2: Vulnerability assessment and risk mapping and planning

Instruct participants to share their experiences by answering the questions given below and Check the answers under each question

1. document your individual experiences by listing risks in your woreda

**Answer**

*The hazard/risk may vary from woreda to woreda and experience of each trainee*

2. Analyze the risks and prioritize using impact and likelihood table

**Answer**

*Ranking of the categories should be reconstructed based on two dimensions, i.e. impact and likelihood. Share your prioritized list with smaller group.*

**Answer**

*Prioritized list may vary from woreda to woreda*

3. Conduct risk evaluation using the risk matrix and develop EPRP plan.

**Answer**

*Ensure the risk matrix and EPRP plan are developed by the groups*

4. Ask the groups to present their work

## Exercise 4.3: Capacity Building

A woreda has 8 kebeles, with a population as follow:-KebeleAa= 45000, Bb= 35000, Cc= 45000, Dd=50000, Ee= 30000, Ff=10000, Gg=80000, &Hh = 55000

The tables below provide a national assumption and can give a general approach on how to estimate of the amount of supplies needed according to the number of people in area at risk. **Ask the participants to** construct a simple excel spread sheet to calculate the logistic, human resource, operational budget and supplies that are required for planning exercise.

- Remind the participants that they can develop EPRP plan for other identified prioritized problems in their woreda

### AWD – General Assumption

At risk woredas = woredas affected at least once

Attack Rate = 0.2% (National attack rate) Depends on the region (you can calculate the exact figure if you have previous data )

Severe cases= 20% (you can calculate the exact figure if you have previous data)

Adult = 85%

Children U5 = 15%

Pregnancy = 2%

RL = 120 bag per 20 severe cases
ORS sachet (for 1 liter each)= 650 sachets for 100 cases
Doxycycline = 3 capsules per one severely ill case
Amoxicillin, 250 mg/5ml susp, 100ml/bottle= one bottle for one severely ill CHILD case
Erythromycin, 250 mg= 12 capsuls for 1 <b>severely ill Pregnant</b> case
Tetracycline (TTc) , 250 mg= 24 capsules for 1 severely ill case
IV cannula = one cannula for sever case
Scalp vein sets = one cannula for one sever case and 50% require it.
Asult Nasogastric Tube ( NGT) = one for one sever case, & 15% require it.
Pediatric Nasogastric Tube ( NGT) = One tube for one severe case, & 15% requir it
Large water dispensers with tap ( marked at 5 & 10 liter level) for making ORS solution in Bulk= 2 for every 100 patients
Bottles ( 1 liter) for ORS e.g empty IV bottles) = 20 for sever 100 patients
Bottles ( 0.5 liter) for ORS = 20 for sever 100 patients
Tumblers, 200 ml = 40 for every 100 patients
Wastage factor = 15%
CTC = 1 CTC with 10 bed. Bed occupancy rate 3 days

## Answer

AWD supply plan

S. N	Kebele	Pop	Total Expected cases	sever cases	ORS [sachets]	Zinc 20mg tablets (children)	RL/NS bag of 1000ml	Doxacycline 100 m, tab (Adults)	Amoxicillin 250mg disp.tab/PAC-100 (children)	Tetracycline 20mg, tab (PW)	Tetracycline 20mg, tab (PW)	PNGT	ANGT	IV Cannula	Scalp Vein	CTC
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	
			$B=0.2\% \times A$	$C=20\% \times B$	$D=6.5 \times B \times 1.15$	$E=B \times 15\% \times 10 \times 1.15$	$F=C \times 6 \times 1.15$	$G=3 \times C \times 85\% \times 1.15$	$H=C \times 15\% \times 12 \times 1.15$	$I=C \times 2\% \times 12 \times 1.15$	$J=C \times 2\% \times 24 \times 1.15$	$K=15\% \times C \times 1.15$	$L=85\% \times C \times 1.15$	$M=1.15 \times C$	$N=0.5 \times C \times 1.15$	$O=C/100$
1	A	45000	90	18	673	155.25	124.20	53	37	5	10	3	18	21	10	1
2	B	35000	70	14	523	120.75	96.60	41	29	4	8	2	14	16	8	1
3	C	45000	90	18	673	155.25	124.20	53	37	5	10	3	18	21	10	1
4	D	50000	100	20	748	172.50	138.00	59	41	6	11	3	20	23	12	2
5	E	30000	60	12	449	103.50	82.80	35	25	3	7	2	12	14	7	1
6	F	10000	20	4	150	34.50	27.60	12	8	1	2	1	4	5	2	1
7	G	80000	160	32	1,196	276.00	220.80	94	66	9	18	6	31	37	18	2
8	H	55000	110	22	822	189.75	151.80	65	46	6	12	4	22	25	13	2
		350000	700	140	5232.5	1207.5	966	410.55	289.8	38.64	77.28	24.15	136.85	161	80.5	11
Total																

Now trainees identified a total of 700 AWD cases of which 140 are severe, and they are supposed to establish 11 CTC sites. Ask them to calculate

1. Number of **HEW** and support staff required
2. Budget required for the training

### 3. Budget to run the CTC (operational cost)

#### Assumption for budget calculation

#### 1. For CTC case management training

- We are expected to establish 11 CTCs in the woreda ( for 140 sever cases)
- The duration of the training could be 3 days ( please consider Refreshment & stationers)
- Number HWs to be trained = 8 HWs per CTC site
- Support staffs = 5 per CTC site

#### 2. CTC Operational cost

##### Inside the CTC

- nurses, one medical doctor or HO, two cleaners and tow gourds for 24 hours
- One CTC has 10 beds and bed occupancy rate 3 days
- So, we can plan a duration of 30 days

##### Outside the CTC

- A team of one environmental health officer, one public health officer and one Lab technician
- One driver with vehicle
- Fuel and Maintenance for a vehicle
- Fuel = 6 km/lt & 50 km/day)

**For facilitator –provide the assumption in the box for participants to calculate their budget**

#### ***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.
- 6 Measuring the level of preparedness of the PHEM system at different levels is critical to know the capacity of the program to handle outbreaks and any other emergencies in an effective manner

## Chapter 5: Recovery from Public Health Emergency

### 5.1 Introduction

As facilitator, introduce the Module 5 with a brief presentation based on the introduction provided on PHEM guideline, page 67.

### 5.2 Learning Objectives

Ask a participant to read the learning objectives. Then present and explain each of the objectives to the class.

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

- Define recovery, rehabilitation and reconstruction
- Define major public health emergencies
- Understand post emergency assessment process
- Identify the possible intervention after public health emergencies

### 5.3 Teaching Methods and Resources

#### 5.3.1 Teaching Methods

This module is designed to first provide participants with information then provide examples of how to apply the information and conclude with an opportunity to practice applying the information or skill. In order to facilitate this process you can use several different teaching methods

- Brainstorming
- Lecture presentation
- Exercises
- Group presentations

#### 5.3.2 Teaching resources

Present the course materials

- Participants Basic Level PHEM Training Module
- PHEM guideline
- LCD projector
- Computer
- Flip chart
- Marker
- Notebook and pen

## 5.4 Contents of the module

The major contents of this module are the following:

- Definition of Terms
- Purpose of Recovery from Public Health Emergencies
- When to Conduct recovery activities
- Scope and challenge
- Post Epidemic Assessment and its interventions
- Monitoring and Evaluation of Recovery and Rehabilitation
- Practical Exercises

### 5.4.1 Definition of Terms

Ask the participants to define the following terms and allow discussion in large group.

- What is disaster?
- What is Recovery?
- What is Rehabilitation?
- What is Reconstruction?
- What is post epidemic assessment?
- What is major Public Health Emergencies?
- What is psychosocial support?

Give a brief presentation on the following terms

**Disaster:** A disaster is a serious disruption of the functioning of a society, causing widespread human, material, or environmental losses which exceed the ability of affected society to cope using only its own resources. Disasters are often classified according to their speed of onset (sudden or slow), or according to their cause (natural or man-made).

**Recovery:** Recovery is defined as the process of rebuilding, restoring, and rehabilitating the community following an emergency, but it is more than simply the replacement of what has been destroyed and the rehabilitation of those affected. It is a complex social and developmental process rather than just a remedial process. Actions taken during the period following the emergency phase is often defined as the recovery phase, which encompasses both rehabilitation and reconstruction. Recovery is a complex and long running process that will involve many more sectors and participants.

**Rehabilitation:** It refers to the actions taken in the aftermath of a disaster to enable basic services to resume functioning, assist victims' self-help efforts to repair physical damage and community facilities, revive economic activities and provide

support for the psychological and social well being of the survivors. It focuses on enabling the affected population to resume more-or-less normal (pre-disaster) patterns of life. It may be considered as a transitional phase between immediate relief and more major, long-term development.

**Reconstruction:** It is the actions taken to reestablish a community after a period of rehabilitation subsequent to a disaster. Actions would include construction of permanent housing, full restoration of all services, and complete resumption of the pre-disaster state. Reconstruction must be fully integrated into long-term development plans, taking into account future disaster risks and possibilities to reduce such risks by incorporating appropriate measures. Damaged structures and services may not necessarily be restored in their previous form or location. It may include the replacement of any temporary arrangements established as part of emergency response or rehabilitation.

**Psychosocial Support:** Psychosocial support is an approach to victims of disaster, catastrophe or violence to foster resilience of communities and individuals. It aims at easing resumption of normal life; facilitate affected people participation to their convalescence and preventing pathological consequences of potentially traumatic situations.

**Major public health incident:** It is defined as the occurrence of an outbreak or another disaster which disrupted the social, cultural, and psychological integrity of the community, interrupted health service provision or required additional health manpower and requires attention of the health sector.

**Post Epidemic Assessment:** It is the process of determining the impact of a disaster on a society. It is an interdisciplinary process undertaken in phases and involving on-the-spot surveys and the collation, evaluation and interpretation of information from various sources.

#### **5.4.2 Purpose of Recovery from Public Health Emergencies**

Ask for participants to answers to the following questions and then facilitate discussion in large group.

3. What is the purpose of recovery activities?
4. Why we conduct Post epidemic assessment?

Ask a participant to read and explain the purpose recovering from public health emergencies.

- To rebuild, restore, and rehabilitate the community following an emergency
- To reduce pathological consequences of potentially traumatic situations
- To identifying the extent of damage caused by an incident thorough conducting

post-event assessments

- To determining and providing the support needed to minimize future loss from a similar event.

### **5.4.3 When to Conduct recovery activities**

Ask for participants to answers to the following questions:

3. What are major public health emergencies?
4. Why we could not implement recovery activities for all public health emergencies?

For the purpose of PHEM, the recovery phase is needed when a major public health incident occur. When the emergency disrupted the social, cultural, and psychological integrity of the community, interrupted health service provision or required additional health manpower and requires attention of the health sector.

### **5.4.4 Scope and challenge**

Ask a participant to read the scope and challenges of recovering from public health emergencies from PHEM Guideline page (68). And present briefly.

The scope of the recovery activities range from identifying the extent of damage caused by an incident, conducting thorough post-event assessments and determining and providing the support needed for recovery and restoration activities to minimize future loss from a similar event.

The challenge is to find the right balance in restoring the system to its previous level and how much better it needs to be rebuilt. This will depend on the status of development of a country and what a country can afford to sustain. For a detail, read page 68 on the PHEM guideline.

### **5.4.5 Post Epidemic Assessment and its interventions**

**Notes to Facilitator:** Ask the participants the objectives of post epidemic assessment. Ask the participant intervention to be undertaken by health sector during recovery phase. Allow the participants to read PHEM Guideline from page 70-77. Briefly present the objectives and steps of recovery by addressing the following areas from PHEM Guideline.

The primary objective of assessment is to provide a clear, concise picture of the post-disaster situation, to identify relief needs and to develop strategies for recovery. It determines options for humanitarian assistance, how best to utilize existing resources, or to develop requests for further assistance. Define the actions and resources needed to reduce immediate threats to health and safety and to pre-empt future serious problems. The assessment must also identify the local response capacity, including organizational, medical, and logistical resources. The

assessment must help decide how best to use existing resources for relief. It must also identify the priorities of the affected people themselves. Knowledge of base line data is essential to identify the “starting point” for post-epidemic needs.

- Health system framework
- Health sector PEA and analysis matrix
- Using the analytical matrix for the assessment and monitoring
- Managing the PEA process and its outputs
- Staffing requirements and logistics for PEA health team
- Data collection process, assessment tools, methods and indicators
- Capacity assessment
- Links to other sectors and cross cutting issues

#### **5.4.6 Monitoring and Evaluation of Recovery and Rehabilitation**

Briefly present the monitoring and evaluation of recovery and rehabilitation activities indicators from PHEM Guideline page 89 by focusing on the following indicators.

- Proportion of post event assessments conducted for encountered major public health emergencies
- Proportion of rehabilitated health system
- Proportion of community affected by major PHE provided recovery support

### **5.5 Practical Exercises**

#### Case Study 1

**Notes to Facilitator:** Ask participants to break into groups of 2 or 3 to complete Case Study 1. Ask a representative from each group to record an answer for the following questions on the flipchart. Finally after they finished ask the group representative to present their answer with brief explanation to the class room. Answers for the questions are included below. If any correct answers are missing, add them to the list and discuss why they might be helpful.

Scenario 1: On 26 Nehase 2004 heavy rain fell in Town A. The rain fell for 24 hours and the environment was over flooded. Hundreds of thousands of people were stuck in office buildings, homes and bus stations around the town. The flood damaged living houses, schools, health centers, bridges and disrupted businesses, traffic and transportation, telephone and internet service. More than 100 people in and around the town lost their lives while thousands were left homeless and stranded with no food and supplies. Drinking water schemes were also damaged. Drug medical supply store was destroyed and taken by flood. Finally, after huge social and economical disruption the flood come back to normal. The town administration office reports the situation to Woreda health office.

1. If you were Woreda PHEM officer, what first action you could take at this moment?

**Answer:**

- *Start collecting baseline information and start filling in relevant information in the analytical matrix.*
- *Establish database of pre-existing health facilities.*
- *Start collecting information on functionality/damage of health facilities.*
- *Start collecting information on disease trends, and interventions done to mitigate health consequences of the disaster.*
- *Collect relevant reports that describe the health system and its performance.*
- *Prepare to send expert(s) to assist the affected area.*

2. How you identify priority for recovery activities

**Answer:**

- *Rapid Assessment*
- *Post epidemic/disaster Assessment*

3. If you need to conduct Post disaster assessment, list the possible steps you need to follow?

**Answer:**

- *Appoint Focal Health experts from partner organization to liaise with Woreda Health Office.*
- *Prepare for the training of the health component of the PEA as part of the usual 1-2 day workshop on PEA to formally initiate the PEA and train relevant stakeholders.*
- *Call for a meeting with health development partners, identify key stakeholders that can assist in the assessment.*
- *Establish a Steering Committee to oversee the health assessment and divide tasks*
- *Present PEA to the humanitarian health coordination; identify NGOs with an interest and capacity to support the recovery process.*
- *Develop time schedule, according to the overall deadlines of the PEA, including for example:*
  - *site visits to verify reports of damages,*
  - *workshops or focus group discussions to analyze the performance of health system functions,*
  - *regular meetings with the Steering Committee,*
  - *engagement with other sectors and cross cutting topics,*
  - *Validation workshop of first draft.*
- *Prepare for the donor conference when this is organized and advocate for the importance of health in the recovery framework and resource mobilization.*
- *Inclusion of the MOH in the governing structures to manage the allocation of funds to and/or within the health sector.*

4. Health center was disrupted and health service was interrupted by flood, what could you do to continuous the service?

**Answer:**

- *Establish tent for health service with full emergency package*
- *Delegate full time health personnel at tent to deliver health service*
- *Avail drugs and other medical supplies (by kits)*
- *Provide water by tracks*
- *Etc.*

5. What kind of health threats you could suspect and why?

**Answer:**

- *Water born disease (e.g. cholera), because source of drinking water might be contaminated*
- *Vector born diseases (e.g. Malaria), because favorable conditions might be happened for vectors*
- *Reproductive health*

Scenario 2: As a result of health section post disaster assessment, a lot of losses were identified. A total of 500 houses were destroyed and 2800 peoples were left without house. 300 were severely wounded and 150 were lost their child. Approximately, more than 100,000,000 birr economy was destroyed.

6. What kind of possible recovery activities you undertake?

**Answer:**

- *Psychosocial support*
- *Provision of drugs and other medical supplies*
- *Enhance routine surveillance*

7. How you undertake recovery activities?

**Answer:**

*Collaboration with other sectors and partners*

8. What kind of reconstruction activities you suggest as part of development

**Answer:**

- *Developmental activities ( such as reconstructing of health centers, water schemes, schools, houses, and restoring other destroyed public service area)*

## Annexes

### Annex 1: Pre and Post test

**Note to the facilitator:** Ask the participants to answer the following questions before you start lecture. Assess the answers and give them their score. Provide the same question at the end of the course

1. Which of the following activities is NOT part of preparedness?
  - A. Capacity Building
  - B. Detecting the pattern of the epidemic
  - C. Coordination and collaboration
  - D. Planning for risk mapping
  - E. Planning for identified risks

Answer: A

2. A vulnerability assessment provides:
  - A. A means to inform decision makers about the needs of preparedness at different levels
  - B. A tool to initiate public health emergency preparedness plan
  - C. The basis for monitoring trends of risks
  - D. All
  - E. None

Answer: B

Use the following steps of an outbreak investigation for Question 1:

1. Analyze data by time, place, and person
  2. Conduct a case-control study
  3. Generate hypotheses
  4. Conduct active surveillance for additional cases
  5. Verify the diagnosis
  6. Confirm that the number of cases exceeds the expected number
  7. Talk with laboratorian about specimen collection
3. For an investigation of an outbreak, what is the logical conceptual order of the steps listed above?
    - a. 1-2-3-4-5-6-7
    - b. 5-6-4-1-2-3-7
    - c. 6-5-3-1-2-7-4
    - d. 6-5-7-4-1-3-2

*Answer: D. Early steps include confirming that the number of cases exceeds the expected number, verifying the diagnosis, and preparing for field work (which includes talking with laboratorian about specimen collection). Next steps include conducting surveillance to identify additional cases; analyzing the data by time,*

*place, and person; generating hypotheses; and evaluating those hypotheses (for example, by conducting a case-control study).*

4. Which ways that a local health department uncovers outbreaks?
  - a. Performing descriptive analysis of surveillance data each week
  - b. Receiving calls from affected residents
  - c. Receiving calls from healthcare providers
  - d. Reviewing all case reports received each week to detect common features

*Answer: B, C. Most outbreaks come to the attention of health authorities because an alert clinician or a concerned case-patient (or parent of a case-patient) calls. The other methods listed occasionally detect outbreaks, but less frequently.*

5. A case definition during an outbreak investigation should specify:
  - a. Clinical features
  - b. Time
  - c. Place
  - d. Person
  - e. Hypothesized exposure

*Answer: A, B, C, D. A case definition for an outbreak should specify clinical criteria as well as appropriate time, place, and person characteristics. The case definition should NOT include the hypothesized exposure of interest. First, the hypothesized exposure may not turn out to be the true exposure, so inclusion of the hypothesized exposure as part of the case definition during the case-finding step may result in missed cases. Second, during the analytic step, disease status and exposure must be determined independently to avoid bias. Including exposure as part of the case definition means that all cases will, by definition, be exposed, while only some of the controls will likely be exposed. As a result, the exposure will appear to be associated with disease, not necessarily because it is the true exposure, but because of the case definition.*

6. The key feature of an analytic (epidemiologic) study is: (Select only one answer)
  - a. Analysis by time, place, and person
  - b. Calculation of a risk ratio or odds ratio
  - c. Use of Epi Info to analyze the data
  - d. Presence of a comparison group

*Answer: D. The key feature that characterizes an analytic (epidemiologic) study is presence of a comparison group. Single case reports and case series do not have comparison groups and are not analytic studies. Cohort studies (compares disease experience among exposed and*

7. Disease control measures can be directed at the:
  - a. Agent
  - b. Source
  - c. Mode of transmission

- d. Portal of entry
- e. Host susceptibility

*Answer: A, B, C, D, E. Disease control measures can be directed at the eliminating the agent (e.g. by sterilizing surgical equipment), interrupting transmission (e.g., reducing mosquito population, covering one's mouth when coughing), preventing entry into a host (e.g., wearing a mask, using insect repellent), or improving host defenses (e.g., by immunization).*

Use the information in the following paragraph and data in the table for Questions 22–25.

An outbreak of gastrointestinal disease occurred 24-36 hours after people had attended a wedding. Of the 203 attendees (including the bride and groom), 200 completed questionnaires and 50 reported illness compatible with the case definition. Tabulated food consumption histories are presented in the table below.

Food Item	Ate Specified Food			Did Not Eat Specified Food		
	Ill	Well	Total	Ill	Well	Total
Cake	46	138	184	4	12	16
Kitfo	45	55	100	5	95	100
Tibs	10	1	11	40	149	189

8. Which study design is most appropriate for this investigation?

- a. Descriptive study
- b. Case Control
- c. Cohort

Answer: C

9. The most appropriate measure of association for these data is the:

- a. Odds ratio
- b. Risk ratio

Answer: B

10. Which food is the most likely culprit?

- a. Cake
- b. Kitfo
- c. Tibs
- d. Can't determine from the data presented.
- e. Must be more than one food

*Answer: B. The Kitfo (risk ratio = 45% / 5% = 9.0) is the most likely culprit. It has a high attack rate among the exposed group, a low attack rate among the unexposed group, and can account for 45 out of the 50 cases.*

11. Public health surveillance includes which activities (multiple answer is possible)?

- a. Data collection
- b. Data analysis
- c. Data interpretation
- d. Data dissemination
- e. Disease control

*Answer: A, B, C, D. The term public health surveillance includes data collection, analysis, interpretation, and dissemination to help guide health officials and programs in directing and conducting disease control and prevention activities. However, surveillance does not include control or prevention activities themselves.*

12. Routine analysis of notifiable disease surveillance data at the woreda health office might include looking at the number of cases of a disease reported this week . . . (multiple answers is possible)

- a. And during the previous 2–4 weeks
- b. And the number reported during the comparable weeks of the previous 2–5 years
- c. By age, sex, kebele and or village of the patient

*Answer: A, B, C. Analysis by time often includes comparison with previous weeks and previous years. Analysis by place can include analysis of both numbers and rates.*

13. One week, a woreda health office received substantially more case reports of a disease in one Kebele than had been reported during the previous 2 weeks. No increase was reported in neighboring Kebeles. Possible explanations for this increase include which of the following (multiple answer is possible)?

- a. An outbreak in the county
- b. Batch reports
- c. Duplicate reports
- d. Increase in the county's population
- e. Laboratory error

*Answer: A, B, C, D, E. An increase in case reports during a single week might represent a true increase in disease (i.e., an outbreak). However, the increase can also represent an increase in the population (e.g., from an influx of tourists, migrant workers, refugees, or students); reporting of cases in a batch, particularly after a holiday season; duplicate reports of the same case; laboratory or computer error; a new clinic or health-care provider that is more likely to make a particular diagnosis or is more conscientious about reporting; or other sudden changes in the method of conducting surveillance.*

14. The primary reason for preparing and distributing periodic surveillance a feedback is which of the following (multiple answers is possible)?
- Document recent epidemiologic investigations
  - Provide timely information on disease patterns and trends to those who need to know it
  - Acknowledge/motivate the contributions of those who submitted case report

Answer: B. The primary purpose of preparing and distributing surveillance summaries is to provide timely information about disease occurrence to those in the community who need to know. The report also serves to motivate those who report by demonstrating that their efforts are valued and to inform health-care providers and others in the community about health department activities and general public health concerns.

I. Answer the following questions

1. What is public health surveillance?

*Answer: Surveillance is the process of gathering, analyzing, and dissemination of information for the purpose of proper planning, implementation, and evaluation of health services / interventions.*

2. Write at list three objectives of public health surveillance?

*Answer: Objectives of surveillance:*

- To detect epidemics/outbreaks so that they can be controlled in a timely manner,*
- To predict epidemics so that health services can plan to respond, prevent where possible, treat and control priority diseases,*
- To monitor trends of priority diseases in order that changing trends inform policy decision,*
- To evaluate an intervention so that effective and efficient actions/policies are identified and supported.*

3. List all immediately reportable diseases under Ethiopian surveillance

*Answer*

- Acute Flaccid Paralysis (AFP) / Polio*
- Anthrax*
- Avian Human Influenza*
- Cholera*
- Dracunculiasis / Guinea worm*
- Measles*
- NNT*
- Pandemic Influenza A*
- Rabies*
- Smallpox*

- k. SARS
- l. VHF
- m. Yellow fever

4. List the steps of outbreak investigation
- a. Prepare for field work
  - b. Establish the existence of an outbreak
  - c. Verify the diagnosis
  - d. Define and identify cases
  - e. Analyze data collected in terms of time, place and person
  - f. Develop hypotheses
  - g. Evaluate hypotheses
  - h. Refine hypotheses and carry out additional studies
  - i. Implement control and prevention measures
  - j. Communicate findings
5. Woreda 'X' has a population of 100,000. The proportion of children aged 6-59 months in the woreda is 15%. The woreda has low measles vaccination coverage is 50% in the last couple of years. The measles attack rate is 2% in children 6 -59 months of age. Fifty percent of the cases among the children were with severe measles.
- A. Calculate the expected number of measles cases and severe measles cases in children for the woreda.
  - B. Calculate the amount of Vitamin A capsule 100,000 IU and TTC eye ointment (2 tubes per child) and paracetamol syrup 125mg/5ml needed for uncomplicated measles. Please consider 15% wastage factor.

**Answer:**

- A. *Expected measles cases=300 Expected severe measles cases=150*
- B. *TTC eye ointment =690 tubes*  
*Vitamin A=1,035 Capsules*  
*Paracetamol 345 Bottles*