ETHIOPIAN PUBLIC HEALTH ASSOCIATION

LEADERSHIP IN STRATEGIC INFORMATION TRAINING PROGRAM

Facilitator manual

(Module 1, Module 2 and Module 3)

June 2014
Addis Ababa, Ethiopia

Approval of the Training Material

The Federal Ministry of health of Ethiopia has been working towards standardization and institutionalization of in-service (IST) trainings at national level. As part of this initiative the ministry developed a national in-service training directive and implementation guide for the health sector. The directive requires all in-service training materials fulfill the standards set in the implementation Guide. Accordingly, the ministry reviews and approves existing training materials based on the IST standardization checklist annexed on the IST implementation guide.

All in-service training materials shall to be reviewed and approved by the ministry accordingly; as part of the national IST standardization process, this **Leadership in Strategic Information** IST material has been reviewed based on the standardization checklist and approved by the ministry in January 2014.

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Acknowledgment

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Introduction to EPHA

EPHA is a legally registered national, autonomous, non-profit and a voluntary professional association working for an optimal standard of health care for the people of Ethiopia. It promotes better health care services to the public and high professional standards through advocacy, active involvement and networking. EPHA is committed to improve the health and living status of the people of Ethiopia through the dedicated and active involvement of its members in collaboration with all concerned. In collaboration with CDC, MOH and universities, School of Public Health, EPHA has been providing the leadership in strategic information (LSI) training program in order to build the capacity of health professionals to strengthen the combat against HIV/AIDS epidemic.

Leadership in Strategic Information (LSI) Training Program

Whether at global, regional, country, community or individual level, every policy, strategy, program, project, job or task involves decision making. These decision makings are a process of identifying, selecting and implementing/taking alternatives. Right strategic information used at the right time, in the right form is needed to make correct decisions. This is also true for the health sector, and that is why the ministry of health (MOH) in collaboration with its partners has worked on HMIS, DHS, HIV surveillance, emergency disease survey and the like to collect and utilize strategic information for decision making. To use such strategic information and others similar inputs for decision making, the sector also needs to have capable human resources that strengthen the health system so that the sector could be able to collect, analyze , interpret and present the information for evidence based decision making.

Rational of the training:

In Ethiopia, a need exists to develop capacity in the public health sector to use strategic information to improve the needs assessment, planning, and monitoring and evaluation of the full range of interventions and activities to combat the HIV/AIDS epidemic at the sub national level. Leaders training need Epidemiological concepts like study design, and statistical methods including descriptive statistics and data analysis for evidence based decision making.

This need stems from several factors including limited experience and training in epidemiology, data management and analysis, etc. among public health personnel, limited experience with strategic planning for and monitoring and evaluation of public health programs. Furthermore, most public health personnel, working on HIV/AIDS -related activities and other health related MDGs have limited exposure to the full range of interventions and the overall strategy for combating the health problems. To address the experience and workforce gaps in Ethiopia's public health sector, in collaboration with in CDC, MOH and Addis Ababa, Jimma and Gondar Universities, EPHA has developed and been providing the leadership in

strategic information (LSI) training program in order to build the capacity of health professionals at the regional level to strengthen the combat against the HIV/AIDS epidemic and other important public health issues and build health communities.

LSI Training Program follows skill-based and modular training strategy implemented to improve the capacity of national and regional public health personnel to build their capacity, and use strategic information for planning, implementation and monitoring and evaluation of HIV/AIDS interventions and activities based on their evidence. Additionally, these trainings lacked a field component to allow participants to practice and apply the training skills.

The training goal: Deliver technical assistance and mentoring of trainees to build national and regional public health personnel capacity, and use strategic information for planning, and monitoring and evaluation of HIV/AIDS interventions and activities based on their evidence.

General objective: To develop capacity in the public health sector to use strategic information to improve skills for the need assessment, planning process and monitoring and evaluation of the full range of interventions and activities to combat the HIV/AIDS epidemic at the various level of the health system and to meet the MDGs as desired. This is, therefore, believed to lay down the cornerstone for national health research capacity foundation.

Core competencies of leadership in strategic information

The trainees should demonstrate the following core competencies after successful completion of the training.

- Planning public health interventions
- Public health leadership
- Public health surveillance
- Management of outbreaks
- Data collection using appropriate scientific techniques
- Analysis and interpretation of health related data
- Utilization of strategic information for appropriate decision making in public health
- Monitoring and evaluation of public health interventions

At the end of the training, the participants will be able to

- Make use of the available health information in the health system
- Describe how systems thinking influence our day to day activates and achievements
- Apply the key management principle in the context of leadership
- Apply epidemiological methods in public health practice
- Apply statistical methods in managing and analysis health related data
- Plan and implement monitoring and evaluation of health programs
- Apple to conduct public health surveillance focusing on HIV/ADIS and other health problem
- Describe how outbreaks should be investigated and managed

Who should take this training?

This training manual is prepared to build the capacities of leadership skills of health and health related professionals working in the public health sector with a minimum qualification of first degree are eligible to participate in the training.

REQUIREMENTS TO SERVE AS A TRAINER

Instructors need to have a minimum academic rank of Assistant Professor and take training skill training

What are the materials prepared for this training?

1. **Facilitator's Guide:** The facilitator's guide is designed to be used by a course facilitator. It provides the course facilitator with guidelines for training delivery and suggestions for answers to the questions posed to participants. Each learning session of the Facilitator's Guide corresponds to a learning session in the Participant's module.
2. **PowerPoint Presentation:** There are PowerPoint presentations to be used by the Facilitator when conducting discussions with participants. The PowerPoint presentations are related to the Facilitator's Guide and are numbered and referenced with it so that the Facilitator can easily use them.
3. **Participants Modules**: The Participant's module serves a dual function. First, it is the roadmap, which guides the participant through each module of the training. Second, it contains the training content and individual and group exercises in line with the Facilitator's Guide.

Training Approach and Methodology

The training uses a participatory and problem-solving approach to facilitate the learning process. It is based on a participatory approach to learning, with participants working in teams to solve problems related to the topic under discussion and prepare results for presentation in plenary sessions. It offers participants a systematic approach to acquiring the knowledge and skills they need.

A combination of the following training methods is used for this course to make the class interesting and easy to follow-up.

- Interactive lectures and feedbacks;
- Participants individual and small group discussions and presentations;
- Individual and group exercises; and
- Role plays.
- Prepare the pre-test and post-test questions which will be used to assess the level of achievement of the learning objectives by the trainees.
- Brainstorming
- Experience sharing

What are the roles of the facilitators?

The facilitator is the overall manager of the training; he/she should have a thorough knowledge in leadership strategic information skills and have previous experience with a participatory approach to training. A strong commitment to this approach is essential to presenting the training effectively.

During discussion or when wrapping up a session the facilitator should emphasis on the points participants should remember. He/she gives them feedback on their performance on individual and group activities and invites them to express their suggestions to be conceptualized and contextualize the topic for improving the training and/or the mode of delivery.

The Participants' modules were prepared separately to assist you in the preparation and delivery on this subject. You as a facilitator are expected to expand, modify and add points that you find important for the knowledge of your participants, because it might not be a complete material. It will be further expanded by exercising the different activities that are identified in the Guide. Most of the activities are group works which help the users to explore their experiences. As a facilitator any of the modules you are advised to read the general instructions before going into the specific module you are assigned to present. The training consists of 3 modules that will be delivered in sequence.

What preparation is needed?

The facilitator should read all training materials well in advance notes as he /she read the material. He/she must be very familiar with the material in the Facilitator's Guide, Participant's modules. The facilitator should work hard to develop and deliver the training effectively.

What equipment/materials are needed?

The following equipment/materials are needed for the delivery of the course.

- LCD for PowerPoint presentations with a notebook computer and power point
- Projector screen for slide projection
- Flipcharts – for classroom and working groups
- Large whiteboard

- Whiteboard marker in a selection of colors
- Normal marker in a selection of colors to write on flipcharts.
- Notebook and ballpoint pen for each participant
- Sticky tape for posting flipcharts to make them visible to participants
- Participant's Manual
- Laptop computer
- Pointer

Training Session

As a Facilitator:

- Check the arrival of the participants on time including yourself;
- Ensure the availability of teaching and learning materials;
- Make sure that the organization of the training rooms;
- Introducing of the participants including the facilitator is highly essential so as to create conducive learning environment;
- Develop an agreed upon Ground Rules with the participants whereby all have to be governed upon;
- Encourage active participation of the participants, and don't forget this is an adult learning;
- Openly demonstrate your energy for the subject matter.

How much time is needed to complete the training?

The training consists of a series of three modules, each lasting two weeks, conducted over six months. A suggested timetable is provided for each activity of each session and program schedule. The remaining time would be used for group presentations, group discussions, role plays and discussion by the facilitator.

How is the course evaluated?

A questionnaire is included in the Facilitator's guide. It focuses on participants' opinions about how training helped them and how it might be improved. Conduct the evaluation at the end of the training in order to provide as much feedback as possible.

Climate setting

Ensure that the physical environment is comfortable, well lit, and adequately equipped. Create a psychological environment where participants feel accepted, respected, and supported. Participants should be required to make silent their mobile phones while in class.

Room setup

Because this course uses a combination of interactive and experiential techniques, the classroom should have tables and chairs that can be rearranged easily. For didactic presentations, the room should be set up so that all participants can see the slides or overhead projections. A U-shaped arrangement is recommended as it allows the facilitator to maintain eye contact with all

participants and participants can also interact with each other. For interactive activities, informal arrangements work best. In either case, you might need to arrive early to organize the room.

Resource tools

Resource tools are used following each subsection of the manuals. The tools include objectives, individual activities, group activities, and facilitator's presentations. The tools are labeled with the following icons so you can easily identify each tool's category.

	Objectives
	Individual Activity
	Group Activities
	Facilitator's/plenary presentation

Notes for facilitator's: participants and facilitator will be introduced among each other. Since the training is offered under participatory training approach participants are expected to know each other and participate actively in group work and class discussions. Moreover the training objectives and content will be reviewed at the outset so that participants can know what is covered in the training and express what their expectations are.

Acronym/Abbreviation

AIDS	Acquired Immunodeficiency Virus
AR	Attributable Risk
ART	Antiretroviral Therapy
CDC	Center for Disease Control
CI	Confidence interval
DHS	Demographic health System
EPHA	Ethiopian Public Health association
HIV	Human Immunodeficiency Virus
HMIS	Health Management Information System
LSI	Leadership Strategic Information
M&E	Monitoring and evaluation
MDGs	Millennium Development Goal
MDR	TB Multidrug Resistance Tuberculosis
MOH	Ministry of Health
MTCT	Mother to Child Transmission
OC	Oral contraceptive
OR	Odd Ratio
PAR	Population Attributable Risk
RR	Relative Risk
SMART	specific, measurable, achievable, reliable and timelines
SMDP	Sustainable Management Development Program
STD	sexual transmitted Disease
SWOT	Strength Weakness Opportunity and Treat
VCT	Voluntary Counseling and Testing

Module 1: *LEADERSHIP, DESCRIPTIVE EPIDEMIOLOGY & DESCRIPTIVE BIOSTATISTICS*

Overview

This module on LSI training is part of the modular package therefore, part of the modular package mainly addressing basic and pertinent issues related to leadership, introduction to biostatistics and epidemiology and their applications in undertaking health research focusing on:

The purpose of this module is to help the health sector leaders/teams understand the basic concepts, roles, styles and attributes of leadership; and its difference from the concept of strategic information and its management; the concepts and components of strategic leadership, with emphasis on situational analysis; opportunities and constraints; and implementation. Inspiring vision, systems thinking and mental models are also addressed with the application of biostatistics and epidemiology. The final session of leadership part are presented the most important concepts and tools called SMDP. This understanding will help the leaders define and use important management information and make it accessible to provide a context for integrated and strategic decision making.

Promoting knowledge and skill on how to use epidemiology on health practitioners in making a decision and answer health problems and meet the interest of regional health problem. This venture is a testimony of fruitful collaborative leadership building project undertaking based on excellent ***public private partnership*** between the Ethiopian MOH and Regional States' Health Bureaus and one hand and the Ethiopian Public Health Association and CDC on the other.

Epidemiology and biostatistics are one of the topics in Leadership in Strategic Information (LSI) Training Program. It divided in to two major parts; descriptive and analytic Epidemiology and also introduction and analytical biostatistics

- The descriptive part covers the basic concepts of Epidemiology, functions of epidemiology, infectious disease process, and measures of disease occurrence, descriptive epidemiologic designs and hypothesis generation.
- Introduction part cover the main concept of biostatistics, such as Roles of Biostatistics in public health and medicine, data quality and type, data collection method and data organization, presentation and summarization
- In the analytic part of epidemiology and biostatistics will be covered in module 2

Hence, equipping all who are involved in the system about the relevancy of leadership for strategic information is vital. That is why this Module is organized and prepared. The Module is

prepared in simple, understandable and user friendly ways. It emphasizes the main areas on leadership for strategic information and it is supported with different activities. This Module is a snap shot on information. So it is necessary to read different references and also to visit the internet to widen your scope.

Goal of the module

- To equip trainees with the capacity to use data to improve assessment, planning, surveillance, and monitoring and evaluation of health programs by applying leadership, epidemiologic and biostatistics approaches

General objective of the module

At the end of these training participants will be able to;

- Make use of the available health information in the health system
- Describe how systems thinking influence our day to day activates and achievements
- Apply the key management principle in the context of leadership
- Describe the application of epidemiological methods in public health practice
- Describe basic statistical techniques in managing and analysis health related data

Detail Training Content

Module 1 is organized in three parts. The first part is Leadership. Descriptive epidemiology is addressed in the second part; the third part is Introduction to biostatistics. The following is, therefore, the detail content training activities.

Part 1.Leadership

1. Strategic information for leadership in health care
2. Situational analysis and planning
3. Leadership concepts
4. Inspiring vision
5. Systems thinking
6. Mental model
7. Emotional intelligence
8. Concepts of strategic leadership
9. Strategic leadership, implementation of change
10. Process improvement

Part 2: Descriptive Epidemiology

1. Introduction
    - Definition

- Scope of epidemiology
- Assumptions in epidemiology
- Levels of disease occurrence
- The infectious diseases process (chain of disease transmission)

2. Measures of occurrence (incidence and prevalence)
3. Descriptive epidemiologic studies
4. Hypothesis generation

Part 3: Descriptive Biostatistics

1. Introduction
   - Definitions of terms and concepts
   - Roles of Biostatistics in public health and medicine
   - Variable, data and information
   - Data quality
   - Changing the type of data
2. Data Collection Methods
   - Introduction to data collection tools
   - Sources of data and types of data collection methods
   - Criteria to select data collection methods
   - Designing a Questionnaire
   - Steps in designing questionnaire
3. Data organization, Presentation and Summarization
   - Data organization
   - Frequency distribution
   - Graphical presentation
   - Summery measures
4. Probability and probability distributions

   Sampling and sample size determination

Guide for facilitator:

- Ensure the availability of the following training materials before starting the training
  - LCD projector
  - Softcopy of PPT presentations and participant manual
  - Printed copies of pre-test questions
  - Flip chart
  - Colored markers and white board

Methods of teaching

- . Lecture
- Brainstorming
- Experience sharing
- Small group's discussions
- Individual/group discussions

Class presentations

- Introduce yourself,
- Give the trainees overview of the whole module as described in the notes below
- Inform trainees about who will deliver each of the sessions
- Encourage participants to actively participate in all sessions
- Administer pre-test questions

Time schedule

On Leadership strategic information program

On the first module, Leadership and descriptive epidemiology and biostatics

Week I	**Monday**	**Tuesday**	**Wednesday**	**Thursday**	**Friday**
08:30 – 10:15 am	**Registration** Introduction to the overall course Introduction to STI	Inspiring vision	Strategic leadership – Implementation	SMDP Process improvement Steps II	SMDP Process improvement Steps VI
10:15 – 10:30 am	B r e a k				
10:30 – 12:30 pm	Situational analysis and planning M02	Systems Thinking	Strategic leadership – opportunities and constraints	SMDP Process improvement Steps III	SMDP Process improvement Steps VII
12:30 – 02:00 pm	Lunch				
02:00 – 03:30 pm	Concepts of Leadership & management	Mental Models	SMDP Process improvement Overview	SMDP Process improvement Steps IV	Survey Protocol development
03:30 – 03:45 am	B r e a k				
03:45 – 05:15 pm	Concepts of Leadership & management	Emotional Intelligence	SMDP Process improvement Steps I	SMDP Process improvement Steps V	Survey Protocol exercise

Week 2	Monday	Tuesday	Wednesday	Thursday	Friday
08:30 – 10:15 am	Introd. to descriptive Epidemiology	Introduction to Biostatistics (Types of variable)	Measure of dispersion	Reference citation and Endnote	Survey Protocol exercise
10:15 – 10:30 am			B r e a k		
10:30 – 12:30 pm	Measures of occurrence (incidence and prevalence)	Introduction to biostatistics(scales of measurement, questioner, data collection)	Probability and probability distribution	Reference citation and Endnote	Protocol Presentation
12:30 – 02:00 pm			L u n c h		
02:00 – 03:30 pm	Descriptive epidemiologic studies	Data presentation (Tables, Graphs, Maps, and Charts, Frequency distribution)	Sample size determination	Reference citation Exercise	Protocol Presentation
03:30 – 03:45 am			B r e a k		
03:45 – 05:15 pm	Hypothesis generation	Descriptive data analysis (Data summarization Measure of central tendency)	Sampling Methods	Survey protocol exercise	Protocol Presentation

Part one: Leadership

Overview

The guides are general instructions on necessary preparations, time management and how to start and manage the sessions. The notes for facilitators, on the other hand, include specific instructions for delivering sections. Slide presentations are prepared from the module contents to aid presentation by facilitator. The facilitators are free to adapt and revise them within the scope of module`s contents. For example, illustrations may be updated or added considering relevance to the training.

Contents part one

Leadership

1. Strategic information for leadership in health care
2. Situational analysis and planning
3. Leadership concepts
4. Inspiring vision
5. Systems thinking
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9. Strategic leadership, implementation of change
10. Process improvement

Session 1: STRATEGIC INFORMATION FOR LEADERSHIP IN HEALTH CARE

Learning Objectives

After completing this session, you are expected to be able to

- Differentiate data and information;
- Use different methods of data collection and analysis;
- Make use of the available Health Information in the health care system;
- Describe Health Management Information System, HIS reform in the Ethiopian context
- Generate proper information for decision making and future use;
- Identify the major challenges of information use and find solutions;
- Identify and formulate different indicators;
-

Basic Concepts of Data and Information

In this unit basic concepts and definitions of data and information are presented. The differences between the two are well explained. You have to make sure that you have read and understood the notes and activities which are presented on the **Participants' module**.

Activity1.1 (10 minutes)**: Begin** with brainstorming. Explain what we mean by and how to conduct brainstorming.

- List down the points on a Flip chart.
- Discuss with the participants.
- Wrap up and brief them on the important areas on data and information.

Activity1.2 (20 minutes): is scheduled for group work. The main issues in this part of the unit are:

- To be able to explain and share the information flow in the working areas.
- To list down the means of health data collection.

At the end of the group discussion, they should present their works and you have to give short briefing and share your experience on the discussed issue.

Activity1.3 (20 minutes) is scheduled for group work. The main issues in this part of the unit are on the types of information that are relevant to the working area. The participants are expected to explain and differentiate what performance and operational information are.

Activity1.4 (20 minutes) is a group work. The expectation after the group work is that the participants are able to

- Share their experience in Information Management Cycle in the areas where they had been working;
- Explain the components of IMC.

Activity1.5 (20 minutes) is a group work. The expectation after the group work is that the participants are able to show the meanings and importance of IS, MIS, HIS, and HMIS.

The whole issues on health information are described here. After the presentations, your explanation in-depth is highly essential.

Activity1.6 (15 minutes) is discussion in pair. The expectation after the pair works is that the participants are able to

- Verify the importance of health and health related reports,
- Explain the characteristics of a good report.

As you know without reports it is not able to get evidences. Report has to be given high emphasis and your capitalizing on this issue is mandatory. At the end of the discussion you need to explain the quality i.e. accuracy, timely and completeness of a report.

Activity1.7 (20 minutes) is group discussion. The expectation after the discussion is that the participants are able to

- Explain the importance of feedback,
- develop different health and health related indicators,
- Identify characteristics of good indicators.

Activity1.8 (10 minutes) is discussion in pair. The expectation after the pair works is that the participants are able to

- Consolidate and apply their understanding of the shift from reactive to proactive language whenever giving any feedback.

The table is wrongly filled so the participants have to re-shuffle and put the right word/phrase in the right column. Feedback, whether it is positive or negative, have to be given at each step in the hierarchy. It has to be educative, supportive, that brings new insight and change to the receiver. Hence, at the end of the discussion you are requested to give emphasis on the importance and developing the habit of giving feedback, which is proactive.

The correct answer is

Reactive Language	**Proactive Language**
There is nothing I can do	Let's look at what we can do
That's is the way I am	How can I be more effective?
She makes me so mad	I can control how I feel
They won't allow that	May be we can negotiate
I have to do that	I choose to do what is appropriate

I must	I prefer
I will	Should I?
No one will help me	Will you?

Session 2: SITUATIONAL ANALYSIS AND PLANNING

Allocated Time (1:30 minutes)

Learning objectives:

By the end of this session participants will be able to:

- Understand the principles of situational analysis with special reference to HIV
- Understand the various stages and components situational analysis
- Define Health needs assessment and its purpose
- Establish the importance of situational analysis
- Understand the objective of problem identification and priority setting
- Apply a systematic approach toward prioritization of identified problems.

Basic premises of health planning

Describe the three important elements that are highly interdependent in any health system: the community, the health service delivery system and the environment where the first two elements operate (refer to figure 4 and other related descriptions provided on the Participant's module for further discussion.

Activity 2.1: Individual exercise (15 minutes)

- Ask the participants to define the terms planning and health planning
- Allow time for a few responses and list them on the flip chart.
- Wind up the exercise emphasizing on the following key points:
  - ✓ Planning is a systematic process of identifying and specifying desirable future goals and out-lining appropriate courses of action and determining the resources required to achieve them.
  - ✓ Health planning should aim at improving the health status of a given population while safe-guarding equity and fairness of access as well as responsiveness of the health system to the perceived needs of the community. The health plan should achieve this goal through the provision of efficient and effective health services, taking into account available resources and the available means and methods of health care.
  - ✓ Explain the planning cycle
  - ✓ Explain that preparation for planning is the first step towards the development of the plan and planning itself requires considerable time and resources.

Activity 2.2: Group exercise (25 minutes)

- ✓ Ask the participants to reflect on the way planning is carried out in their work place: If all these steps are being observed, and if so, do you think they are sufficient?
- ✓ If they do not follow these steps, how else do they go about planning?
- ✓ Do they think that they may improve their planning process by applying these steps?
- ✓ Then let them ask themselves: Are these steps necessary? What if I skip any of them? Will I still be able to achieve my objectives?
- ✓ Allow time for a few responses and list them on the flip chart.
- ❖ Use various illustrative examples presented on the participant's manual for further discussion.
- ❖ Define health needs and describe the categories (medically perceived and community perceived) based on the notes presented on the participant's manual.
- ❖ Explain the formal and informal sources of information on health services and resources based on the notes presented on page 34 of the participant's module
- ❖ Discuss the primary and secondary data sources for problem identification in situation analysis based on the notes presented the participant's manual.

Activity 2.3: Group work (25 minutes)

- ➢ Let the participants break into small groups of 5 to 6 and choose a chair person and a speaker who will report back their work to the whole group.
- ➢ Let them practice problem analysis using a problem tree through the following steps:
  a) Start by writing the problem statement on a large single sheet of paper that is pinned to the wall. Each member of the group will be given cards and pens.
  b) Ask them to write down what they think are the main causes of the stated priority health problem. Let them write only one cause on each card and in as few words as possible.
  c) For each cause, they should continue to ask themselves the question "BUT WHY?" & write down one answer per card.
  d) Arrange the cards under the problem statement on the wall, thus creating a problem tree.
  e) As they analyze problems and look at their causes they may realize that they wish to formulate the problem in a different way. For example, what appeared as a problem of lack of supplies for their immunization program may, when they analyse it, turn out to be a problem of health planning or communication.
  f) After describing the immediate and associated causes of a problem they then describe the possible consequences of not addressing the problem. These are put above the problem and this completes the problem tree. They will realize that all the causes and consequences are described negatively.
  g) The last step is to review the problem tree they have just constructed. Going through each of the causes they have identified, let them ask themselves "*Is this something we can change in the facility/district/region?*" They should focus on what is within their scope of power to improve, even if only in a small way.
- ➢ Summarize the discussion using the following example of problem tree for the core problem of poor ANC attendance.

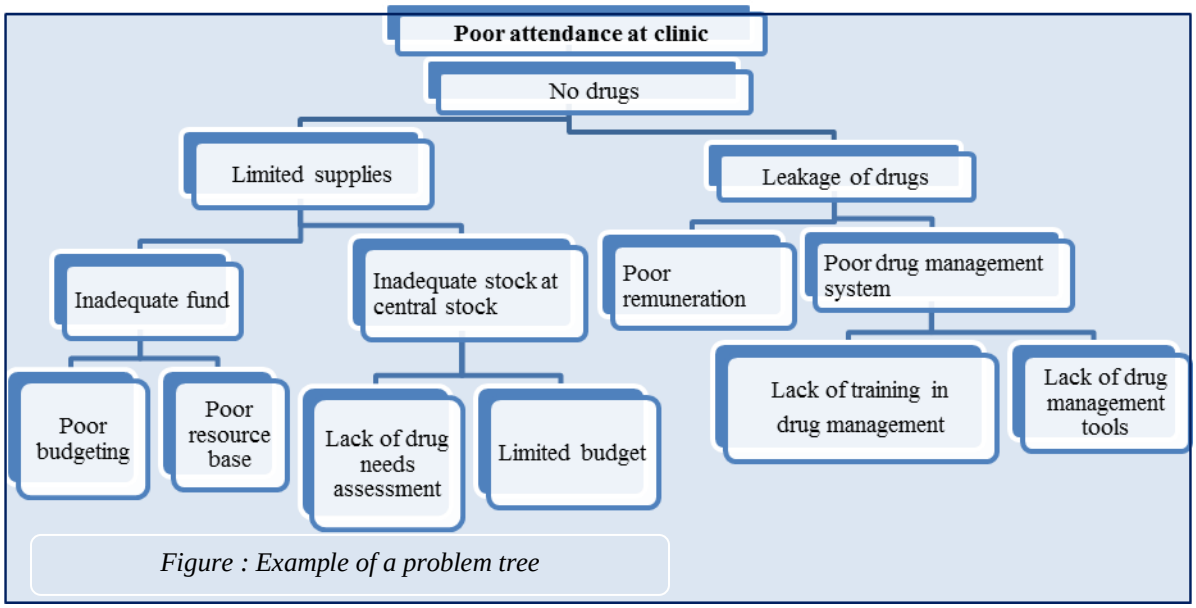

Figure : Example of a problem tree

Priority setting (the remaining time will be used the other summery and presentation)

- ❖ Make sure that you have read and understood notes given about priority setting on the Participants' module.
- ❖ As a continuation of the above section (problem analysis), give the participants the chance to prioritize the identified root causes.

Session 3: CONCEPTS OF LEADERSHIP

Allocated time: 1:30 hour

Learning Objectives:

Upon completion of this session , participants will be able to:

- ➢ Describe the definitions of leadership,
- ➢ Differentiate different leadership practices,
- ➢ Identify the different types of leadership theories, styles, skills and roles,
- ➢ Discuss on the difference between managers and leaders,
- ➢ Explain the common myths and realities about leadership.

Make sure that you have read and understood notes given about the basic concepts and practices of leadership on **session three** of the **Participants' module.**

Activity 3.1 (5 minutes) Individual exercise (refer to Participant's module)

- ✓ Allow participants to reflect on the positive and negative influences of a leader (one for each), whom they know and have worked with in their personal and professional lives.
- ✓ List the participant responses on the flipchart, noting for the common or frequent ones.

Activity 3.2 (5 minutes) Group exercise (refer to Participant's module)

- ✓ Let the participants break into small groups of 5 to 6 and choose a chair person and a speaker who will report back their work to the whole group.
- ✓ Tell them to discuss on the individual experiences in Activity 3.1.
- ✓ Ask the spokesperson for each group to briefly report back to the whole group using flipchart on the common experiences from their exercise in activity 3.1.
- ✓ Allow a few minutes for large group discussion.
- ✓ Wrap up the discussion by relating the common characteristics of leaders from the participants' experience, with the concepts and practices of effective leadership that you have discussed.

Make sure that you have read and understood notes given about the different theories of leadership on **session three** of the **Participants' module**.

Activity 3.3 (10 minutes): Individual exercise (refer to Participant's module)

- ✓ Ask where the participants their understanding about the key limitations of trait theories.
  - ✓ List the participant responses on the flipchart and wrap up the discussion by using the following feedback.

Feedback to Activity 3.3

The approach is limited because it is characterized by subjective judgments of what is a good leader and because the list of traits can be very long. It also does not help inform the development of future leaders, or the application of leadership skills. The traits approach has largely been discarded in the study of leadership.

Activity 3.4 (10 minutes) Individual exercise (refer to Participant's module)

- ✓ Ask where the participants would place themselves on the Blake and Mouton leadership grid? Whether they have high/low concern for people and production (which of the five styles applies to them)
- ✓ For each of the leadership styles, allow participants to think of at least one individual, not necessarily in health care, who leads in this way.
- ✓ Ask which of these leadership styles is the most appropriate in health care.
- ✓ List the participant responses on the flipchart and wrap up the discussion by using the following feedback

Feedback to Activity 3.4

The 'team leadership' style is the one which encourages the active participation of health care professionals. However, there will be circumstances when 'authority-compliance' works better. Think of the people you identified as adopting the different styles, and think about which are the most effective. You will probably find it is the team management style. If your own style is not team leadership, then you could consider using the team leader you identified as a role model.

Activity 3.5 (10 minutes)

Think of an individual or group who you lead in your organization or think of the leaders in your organization and their relationship with a certain group.

1) Using Fiedler's contingency model, would you say your health care organization's situation is:
    a. Very favorable?
    b. Very unfavorable?
2) If Fiedler is correct, should health care managers be:
    a. More relationship-oriented?
    b. More task-oriented?

✓ Write down two reasons why this may be true.

✓ Wrap up the discussion by using the following feedback.

Feedback to activity 3.5

1) In health care, at senior levels, 'leader–member relations' are often poor. There is a divide between clinicians and managers, with clinicians suspicious of the power they perceive managers to have and vice versa. In many situations the degree of task structure is low. And, as you saw previously, there is little positional power. The situation is therefore very unfavorable.
2) According to Fiedler, a task-oriented leader will perform better than a relationship-oriented one. You may have included the following reasons.
    a) Relationship-oriented leaders become de-motivated and de-energized when faced with unremitting hostility.
    b) In the short term, clinicians can often not be persuaded to act in the best interests of the organization if this conflicts with the best interests of their own or of their patients. If it is necessary to curtail their activity they may respond only to actions like the removal of resources (e.g. beds). This kind of action requires task-oriented leaders.
    c) Task-oriented leaders do not spend time finding out what other people's goals are but concentrate on their own. Relationship-oriented leaders try to accommodate the aspirations of other people. In health care this may prove so complex that they become bogged down and lose sight of their own goals.

Activity 3.6 (5 minutes)

✓ Ask the participants to identify and to reflect on a range of situations in which they as team leaders used the leadership styles or in which their team leaders used these styles, using the table given on the Participants' module.

✓ Wrap up the discussion by using the following feedback.

Feedback to activity 3.6

The situations you have described will be unique to your experience. However, in path-goal relationships, when a task is highly structured and goals readily apparent, then leaders should not give directions or over-manage a situation. However, when a task is unstructured and the goals unclear, more directive leadership is welcomed. You may have found examples of both. According to the theory, effective leadership is based on both the willingness of the leader to help others in terms of direction and support, and the needs and willingness of others to want to be helped.

Activity 3.7 (10 minutes)

- ✓ Ask the participants to think of the members of their own teams if they are high or low in 'task readiness; which leadership style they should adopt for each of them; if their own task readiness is high or low; which leadership style their line managers should adopt with them.
- ✓ Wrap up the discussion by using the following feedback.

Feedback to activity 3.7

It is likely that you, as a leader, will have a predominant style that may or may not be suitable for dealing with certain situations. It is worth finding out where your pre-dominant style lies, since this may help you identify your weaker leadership capabilities that need to be developed. Hence, if you predominantly use a direct 'telling' approach, this model suggests that its use with a senior clinician holding high positional power is unlikely to be the best approach. Moreover, if you prefer a 'facilitative' approach to management, the model suggests that the least senior members of a team often work better to structured directives since they need direction and may lack the maturity and knowledge to contribute to participative decision-making. Managers working in health care organizations, or across health and social care, often lack the power of direct command (or the knowledge of the best approach to take) and so must use participating styles of leadership to engage stakeholders in the design of service delivery methods.

Before you present the details about negotiation skill, let the participant's workout Activity 3. 8 given below

Activity3. 8 (10 minutes)

- ✓ Ask them to think of a specific conversation or meeting that resulted in conflict or negative feelings, perhaps a time when they had to tell a work group that they needed to improve their performance.
- ✓ Let them identify the person or people they spoke to and the purpose of their conversation.
- ✓ For each step, let them write their answers for the following questions:
  a) Objective level—what did you observe?
  b) Reflective level—what did you feel? What did you assume about the other's feelings?
  c) Interpretative level—what new insights can you get from this review?
  d) Decisional level—what immediate action can you take? What do you need to explore further?
- ✓ Wrap up the discussion by using the following feedback.
- ✓ Compare the participants' work with the following example of completed exercise.

Feedback to activity 3.8

Objective level*—what did you observe?*

Two people were present—myself and a doctor I supervise. We sat in my office, where it was hot and stuffy. I had shut the door to reduce the noise from the hallway and keep our conversation private. I had several comments from the suggestion box that were complaints from clients who had to wait because the doctor had arrived late. When I had shared my concerns with her, she turned red and waved her hands and talked in an agitated way. After that, she gave short answers to my questions.

Reflective level*—what did you feel? What did you assume about the other's feelings?*

I had felt quite anxious at the start of this conversation and I had determined that her behavior was unacceptable, no matter what the excuse might be! After I read the comments from the suggestion box out loud, she appeared angry. I felt my own anger rise and tried unsuccessfully to repress it. I was angry about her lack of sympathy for our clients. After her outburst, the doctor seemed to withdraw and become emotionally distant.

Interpretative level*—what new insights can you get from this review?*

Because the conversation was very emotional, I failed to find out why the doctor was arriving late almost every day. I focused exclusively on the clients and their needs but did not explore the doctor's needs or the reasons for her arriving late. As her supervisor, I could have focused on enlisting her help in figuring out what had to be changed in order for her to arrive on time. It would have helped to discuss the negative impact that her behavior was having on the work climate of our group. For example, it is hard on her colleagues when they must deal with resentful clients.

Decisional level*—what immediate action can you take? What do you need to explore further?*

I will approach her with a friendlier demeanor and set up another supervisory appointment. For the next meeting, I will set an agenda, share it with her ahead of time, and stick to it in the meeting. We will explore the root causes of her persistently late arrival and try to solve the problem together. We will set benchmarks for new behavior and arrange a follow-up meeting to discuss her progress.

Source: Management Sciences for Health (2005)

Read about the PICO workbook as given on the Participants' module and give them the chance to do activity 3.9 so that they can plan their negotiation to achieve intended results.

Activity3.10: Group work (10 minutes)

- After dividing into small groups, each group will select a topic or challenge to be discussed that is sufficiently real to generate a spirited conversation. This topic should relate to their works, so that they won't be self-conscious.
- Read the specific instructions given for the activity in the Participants' Manual and
- Wrap up the discussion by using the following feedback.

Feedback to activity 3.10

Explain that for a team to function well, it needs all four roles played in a productive way. For a team member to be effective, s/he must be able to play any of the four roles. Go around to each team and ask the team members whether the four roles were present in a balanced way, or whether there was too much of one role or the other. Point out that these roles can also be played in a nonproductive way. For example, one person can do all the initiating and dominate, or someone can only follow and never question the value of the actions. One person can get stuck in opposing and never go along with the proposals of the group. Finally, have the teams discuss the feedback and propose ways to correct imbalances.

Activity 3.11: Group discussion (10 minutes)

- ✓ Read the specific instructions given for activity 3.11 in the Participants' module and
- ✓ Wrap up the discussion by using the following feedback.

Feedback to activity 3.11

Quadrant I: represents things that are "urgent and important." Quadrant I activities are usually "crises" or "problems." They are very important, but look out! Quadrant I can consume you. As long as you focus on it, it keeps getting bigger and bigger until it dominates your work. There will always be crises that require immediate attention, but how many things are really urgent?

Quadrant II includes activities that are "important but not urgent." It is the quality quadrant, where we plan and anticipate, and prevent things that otherwise might become urgent. Quadrant II is the heart of effective personal management.

Quadrant III includes things that are "urgent, but not important." Plenty of us spend too much time in this quadrant. The urgency sometimes is based on someone else's priorities. It is easy to believe that something that is urgent is also important. Look at what you classified as "urgent and important" in Quadrant I. Ask yourself if the urgent activity contributed to an important strategic objective. If not, it probably belongs in Quadrant III.

Quadrant IV includes activities that are "not urgent and not important." It is the "waste of time" quadrant. Chatting, reading jokes, and gossiping are examples of these activities.

Session 4: INSPIRING VISION

Allocated time: (1.45 minutes)

Learning objectives

At the completion of studying this session you should be able to:

✓ Define the concepts of,

✓ Identify areas in which you can apply inspiring and shared vision in your organization

✓ State how inspiring and shared vision influence your day to day activities and achievements

Read and discuss about inspiring and shared vision in the Participants' module and facilitate group activities 4.1 and 4.2.

Session 5: SYSTEMS THINKING
Allocated time: (2 hours)
Learning objectives

At the completion of studying this session participants will be able to:

- Define the concepts of systems thinking,
- Identify areas in which you can apply systems thinking in your organization
- State how systems thinking influence your day to day activities and achievements

Read and discuss about systems thinking in the Participants' module and facilitate group activities 5.1 and 5.2.

Session 6: MENTAL MODEL
Allocated time: (1: 30 minutes)

Learning objectives

At the completion of studying this session participants will be able to:

- Define the concepts of mental model,
- Identify areas in which you can apply mental model in your organization
- State how mental model influence your day to day activities and achievements

Read and discuss about mental model in the Participants' Manual and facilitate group activities 6.1 and 6.2.

Session 7: EMOTIONAL INTELLIGENCE

Allocated time :(1:30 minutes)

Learning objective

	At the completion of studying this session you should be able to: • Define the concepts of emotional intelligence, • Identify areas in which you can apply emotional intelligence in your organization • State how emotional intelligence influence your day to day activities and achievements

Read and discuss about emotional intelligence in the Participants' Manual and facilitate group activity 7.1.

Session 8: CONCEPTS OF STRATEGIC LEADERSHIP

Allocated time: **(1:45 minutes)**

Learning objectives:

	Upon completion of this session, participants will be able to: • Describe the concepts of strategy, elements of strategy and strategic leadership • Describe the difference between leadership and strategic leadership • Describe the strategic leadership tasks • Apply the SWOT analysis tool • Understand the concept of strategy influence as a learning process • Describe on the key competencies of strategic thinking and ways of engagement

Read the specific topics presented on the Participants' module about the definition and elements of a strategy, strategic leadership and tasks and strategic learning process, including ways of engaging in strategic thinking, strategic influencing and strategic acting.

Activity 8.1 (20 minutes)

✓ Ask the participants to reflect back to their work place and identify what aspects of strategy are most challenging as a learning process, which are most helpful for leaders to understand

and learn to apply. (What specific strategic thinking competencies challenge their strategic leadership practices?)

- ✓ Allow time for a few responses and list them on the flip chart.
- ✓ Summarize the exercise by using the following feedback.
- ✓ Tell them that two competencies, that is, visioning and systems thinking will be covered in other units independently; and the third competency (Reframing/Focusing) will also be addressed in detail with situation analysis and planning session.

Feedback to Activity 8.1

The following five strategic thinking competencies have been identified as challenges for the strategic leadership practice of most leaders.

1. Scanning
2. Visioning
3. Reframing (Focusing)
4. Making common sense
5. Systems thinking

Activity 8.2: Group work (30 minutes)

- ✓ Let the participants break into small groups of 5 to 6 and choose a chair person and a speaker who will report back their work to the whole group.
- ✓ Ask them: What does it mean by strategic acting? Is it different from what most managers probably spend most of their working day in an acting mode by constantly doing something: making decisions, taking a call, hurrying to one meeting after another, finishing almost-overdue reports, and so on?
- ✓ Allow 10 minutes for the small group discussions
- ✓ Ask the spokesperson for each group to briefly report back to the whole group using flipchart.
- ✓ Allow a few minutes for large group discussion.
- ✓ Wrap up the discussion by giving an example that one can use the fanciest computers to gather the numbers, but in the end s/he has to set a timetable and act.
- ✓ Explain that there may be a certain kind of tension between thinking and acting but, when such thinking is prolonged, it delays action. There may also be another kind of tension which can occur when continuous action precludes critical thinking.

✓ Summarize the key message of the activity by using the following feedback:

Feedback 8.2
If you're like most managers and executives, the demands on you for action of one kind or another may seem so nonstop that you find precious little time for thinking. In this sense you are acting all the time. Managers and executives, often by both their roles and dispositions, are busy people. But the focus of this discussion is not on all forms of acting; it is on the more specific idea of strategic acting: committing resources to build sustainable competitive advantage. This is the kind of decisive action that is consistent with the strategic direction of the organization that leaders carry out despite the ambiguity, complexity, and chaos inherent in organizational life.

Activity 8.3: Group discussion (30 minutes)

✓ Let the participants break into small groups of 5 to 6 and choose a chair person and a speaker who will report back their work to the whole group.
✓ Ask them to discuss the following situations in Ethiopia and come up with a strategy that shows what you can do as a strategic health leader for the next few decades.
  A) Hospital health care service
  B) Health extension program
  C) Cancer treatment and diagnosis
  D) Military health service
✓ Ask the spokesperson for each group to briefly report back to the whole group using flipchart.
✓ Allow a few minutes for large group discussion.
✓ Summarize the session with the following implications drawn about strategic leadership.
  - Strategic leadership is crucial to meet organizational objectives, patient expectations and strive with excellence in the 21st century.
  - Strategic leadership is not reserved for those at the top.
  - It is not enough to be a good strategic leader yourself; you have to foster strategic leadership in others, too.
  - Strategic leaders blend the skills of thinking, acting, and influencing to drive strategy as a learning process in their organizations.

Session 9: STRATEGIC LEADERSHIP, IMPLEMENTATION OF CHANGE
Allocated time: **(2 hours)**

Learning objectives:

At the end of this session, participants will be able to:
- Define the key management practices in the context of leadership.
- Describe the eight steps to successful change management
- Describe the levels of resistance to change and their management

Read the specific topics presented under session 9 on the Participants' module about the implementation of change help the participants to work out the subsequent activities.

Activity 9.1: Applying the factors of success in leading change

Activity is based on the Kotter's eight factors of success in leading change assuming that they are the team leaders responsible for a change initiative. Each member of the group should fill out the questions given in a table on the Participants' module, providing an explanation for their answers in the column marked "Comments."

Session 10: PROCESS IMPROVEMENT

Allocated time: (6 hours)

Learning objectives

At the end of this session , participants will be able to:
Apply the seven steps of process improvement, namely:

- Define process,
- Measure Process Performance,
- Analyze Causes of Variation,
- Generate & **Plan** Improvement Ideas,
- Implement Change (**Do**),
- **Study** Results of Change,
- **Act** Accordingly

Process improvement is a systematic, data-based method for improving the quality of work processes. It uses team decision-making to improve processes that affect the quality of services or products for a customer. The operational definition of quality used in this process improvement training is satisfying the customers' wants and needs for service, while at the same time achieving the technical standards for public health practice. This unit takes you through the seven-step method using 11 tools applied to a case example of an antiretroviral therapy process for HIV infection. Therefore, read the specific steps of process improvement under Unit Ten on the Participants' Manual about case example presented below.

Case Example

To learn how to apply the process improvement steps and tools, and to understand how they link together, we will use one case example throughout. We will work through the seven-step method using the example of the delivery of Antiretroviral Therapy (ART) for Human Immunodeficiency Virus (HIV) infection in a community health center. Acquired Immunodeficiency Syndrome (AIDS) is a disease of the body's immune system caused by the human immunodeficiency virus (HIV). The death of infection-fighting white blood cells leaves the body vulnerable to life-threatening conditions such as infections and cancers. Voluntary Counseling and Testing (VCT) for HIV usually involves two counseling sessions: one before taking the HIV test, known as pre-test counseling, and one following the test, when the results are given, often referred to as post-test counseling. VCT centers and counselors often use rapid HIV tests that only require a drop of blood or some cells from the inside of one's cheek.

CD4 cells are one type of infection-fighting white blood cells. The CD4 cell count is a measure of the number of CD4 cells in a sample of blood. The CD4 cell count is one of the most useful indicators of the health of the immune system and the progression of HIV/AIDS. ART is a treatment with drugs that inhibit the ability of retroviruses, such as HIV, to multiply in the body. The case example deals with the process of customers attending VCT clinics and receiving counseling and testing. If their test is positive, patients may be eligible for ART based on the CD4 count and other criteria defined in the guidelines for ART from the World Health Organization. If eligible for ART, patients will receive regular supplies of ARV drugs and counseling to ensure adherence.

Part 2: DESCRIPTIVE EPIDEMIOLOGY

Overview of the facilitator

The guides are general instructions on necessary preparations, time management and how to start and manage the sessions. The notes for facilitators, on the other hand, include specific instructions for delivering sections. Slide presentations are prepared from the module contents to aid presentation by facilitator. The facilitators are free to adapt and revise them within the scope of module`s contents. For example, illustrations may be updated or added considering relevance to the training.

Contents of part 2

Guide for facilitator:

- Ensure the availability of the following training materials before starting the training
  - LCD projector
  - Softcopy of PPT presentations
  - Printed copies of pre-test questions
- Introduce yourself, if not already introduced in the first phase of the training
- Give the trainees overview of the whole module as described in the notes below
- Inform trainees about who will deliver each of the sessions
- Encourage participants to actively participate in all sessions
- Administer pre-test questions

Session 1: Introduction to Epidemiology

Allocated time: 1:45 minutes

Learning Objectives:

	At the end of this session, participants will be able to: ✓ Define epidemiology ✓ List the uses of epidemiology ✓ Describe the interactions between host, agent, and environment
Read the specific topics presented on the Participants' module about the definition and elements of a epidemiology, use of epidemiology, basic types of epidemiology and their approaches.	

Notes to the facilitator:

Ask the participants to brainstorm and define Epidemiology.

Encourage trainees through guidance, feedback and by complimenting

Write down the key words participants mention while they define epidemiology and give the chance to them to explain each term

Uses of Epidemiology

Notes to the facilitator:

Ask the participants to brainstorm on uses of Epidemiology from their life experience.

Ask them if they think they used Epidemiology so far even in their daily routine lives?

Encourage trainees through guidance, feedback and by complimenting

Write down the key words participants mention while they define epidemiology and give the chance to them to explain each term

The following are the main uses of Epidemiology:

Notes to facilitator:

Ask trainees to discuss in pairs on what major functions epidemiology are related with disease prevention?. Allow about 5 minutes for discussion and then elaborate the concept.

Conclude this session by stating that:

- ✓ Most people find themselves involved with epidemiology through the use they make of the results of studies or sometimes as participants in investigations.
- ✓ All professionals involved in health care should have an understanding of the subject so that they can use epidemiological methods in the study of health and disease.

Basic epidemiological Approches

Notes to the facilitator:

Ask participants to list examples of diseases in each level of occurrence

Give a five minutes group discussion for them to discuss and list out five diseases of public health importance belonging to each level

Notes to facilitator:

Invite participants to summarize main points they have learned in the session and make remarks in line with the points mentioned in the summary section below.

Session2: Measures in Epidemiology

Allocated time: **2 hours**

Learning Objectives:

At the end of this session, participants will be able to:

- Understand the purpose of measuring the frequency of a disease

*"I often say that when you can measure what you are speaking about, and express it in numbers, you know something about it; but when you cannot express it in numbers, your knowledge is of ameager and unsatisfactory kind; it may be the beginning of knowledge, but you have scarcely, in your thoughts, advanced to the stage of Science, whatever the matter may be."**Lord Kelvin (Kenneth Rothman, Modern Perspectives in Epidemiology, 1 ed. Boston, Little Brown, 1986, page 23)***

Read the specific topics presented on the Participants' module about the concept of measure epidemiology and elements of epidemiology measurement and their approaches.

Notes to the facilitator:

Ask participants to list what things can be measured in Epidemiology and Health.

Ask them if they think they used any Epidemiology measure so far?

Let them come up with possible measures that can be done from secondary data in their health institution.

Notes to facilitator: Use icebreaker here so that the participants can be refreshed and able to follow the next section.

Take notes:

- Mortality rate and ratio, Proportion
- Prevalence and incidence

Session 3: Descriptive Epidemiologic Studies

Allocated time: 1:30 minutes

Learning objective

At the end of this session, participants will be able to:

- ✓ Discuss the different types of descriptive designs
- ✓ Apply the descriptive approaches during data collection and analysis

Read the specific topics presented on the Participants' module about the concept of epidemiology design and types of epidemiology study design and the concept of descriptive study design and their importance.

Guide for facilitator:

- Get prepared by reading the module notes including the exercises and the reference materials
- Start the session by introducing the session as described below and then let one of the trainees read the objectives
- Inform the trainees about presence of exercises which involve calculations and interpretation of measures of association

Take notes

- Define Design
- Classification of epidemiology study design
- How to select a study design

Notes to facilitator:

Invite participants to summarize main points they have learned in the session and make remarks in line with the points mentioned in the summary section below.

Session 4: Hypothesis generation

Allocated time: **1: 30 minutes**

Learning Objectives

At the end of this session, participants will be able to:

- ✓ Describe the importance of hypothesis generation
- ✓ Describe the approaches to generate hypotheses for a field investigation of an outbreak

Read the specific topics presented on the Participants' module about the concept of hypothesis generation and their steps to generate a hypothesis:

Guide for facilitator:

Get prepared by reading the module notes including the exercises and the reference materials

- Start the session by introducing the session as described below and then let one of the trainees read the objectives
- Inform the trainees about presence of exercises which involve calculations and interpretation of measures of association

Take notes:

- Hypothesis generation
- Steps of hypothesis generation

Exercise:

1. From the above epidemic curve can you tell the incubation period for hepatitis A?
2. *Is this epidemic curve consistent with a point-source epidemic? (That is, do all of the cases occur with one incubation period?)*
3. *What is the peak of the outbreak?*

Notes to facilitator:

Invite participants to summarize main points they have learned in the session and make remarks in line with the points mentioned in the summary section below.

Part 3: Descriptive Statistics

Overview of the facilitators

These notes are intended to provide the student with a conceptual overview of statistical methods with emphasis on applications health related research. This subsection briefly cover definition of

terms, uses of biostatical methods in health sciences, followed by detailed descriptions of variables.

Contents of part 3

Descriptive Biostatistics

1. Introduction
   - Definitions of terms and concepts
   - Roles of Biostatistics in public health and medicine
   - Variable, data and information
   - Data quality
   - Changing the type of data
2. Data Collection Methods
   - Introduction to data collection tools
   - Sources of data and types of data collection methods
   - Criteria to select data collection methods
   - Designing a Questionnaire
   - Steps in designing questionnaire
3. Data organization, Presentation and Summarization
   - Data organization
   - Frequency distribution
   - Graphical presentation
   - Summery measures
4. Probability and probability distributions

   Sampling and sample size determination

Guide for facilitator:

- Ensure the availability of the following training materials before starting the training
  - LCD projector
  - Softcopy of PPT presentations
  - Printed copies of pre-test questions
- Introduce yourself, if not already introduced in the first phase of the training
- Give the trainees overview of the whole module as described in the notes below
- Inform trainees about who will deliver each of the sessions
- Encourage participants to actively participate in all sessions
- Administer pre-test questions

Session 1: Introduction to biostatistics

Allocated time: 1: 45 minutes

Learning objectives

	At the end of this session, the trainees are expected to: • Define statistics/biostatistics • Explain the main uses of statistics and statistical methods in health sciences • Identify types of data/variables

Read the specific topics presented on the Participants' module about the difference between statistics and biostatistics, types of variable and their application in research:

Make a note on the following points:

- Statistics and Biostatistics.
- Application of Biostatistics in research, decision making, policy design etc
- The two branches of biostatistics
- Types of variables

- Variable, data and information
- There are six dimensions to assess the quality of data.

Ask participants:

- To list the application of biostatistics in their field of study
- To list the six dimensions of data quality assessment methods
- To give examples for each dimension
- The type of variables

Exercises

- Case study is given with list of variables.

- Question: Classify the variables according to their type

Session 2: Data Collection Method

Read the specific topics presented on the Participants' module about the data collection method and their criteria for selection of methods of data collection. Data collection is the process of gathering and measuring information on variables of interest, in an established systematic fashion that enables one to answer stated research questions, test hypotheses, and evaluate outcomes.

Allocated time: **2 hours**

Learning Objectives

	At the end of this session, the trainees are expected to: • Identify the different methods of data collection, • Describe the criterion for the selection of a method to collect data • Design a questionnaire. • Identify the different steps of designing questionnaire

Make notes on the following points:

- Differentiate between data and information?
- Sources of data
- Data collection methods
- Steps in designing questionnaire
- Criteria to choose data collection methods
- Qualitative data collection methods

- **Project the slide with the discussion points and ask participants to share their experience and expertise**

	**Discussion points** • Data and information • Sources and types of data • Selection of data collection methods • Designing Questionnaire

Exercises

1. *Identify at least 10 variables to answer the objective of estimating proportion of trainees who to determine age at first sex and marriage.*

2. *Design the questionnaire and collect data from the training participants*

Session 3: Data organization, Presentation and Summarization

Allocated time: **4: 45 minutes**

Learning Objectives

	At the end of this section the trainees are expected to: • Explain the purpose of descriptive statistics • Construct appropriate frequency tables for a variable • Present the data using a variety of diagrammatic methods • Compute and interpret measures of central tendency and dispersion • Identify the types of skewness • Explain the impact of skewness on the measures of central tendency and dispersion. • List the strengths and weaknesses of summary measures

After read the topics presented on the Participants' module about the methods of data organization, summarization, Make a note on the following points:

- Methods of data organization
- General principles of constructing tables
- Graphical presentations

- Numerical summery measurs

	**Group Exercise (30 minutes)** • Form three groups • Distribute the following methods for each group ✓ Tabular presentation ✓ Diagrammatic presentation ✓ Numerical summery measures • Apply the these methods on the data collected from the training participants • Present your work to the group during general discussion

Exercises

1. Urinary concentrations of lead exercises
2. Smallpox campaign against smallpox exercises
3. Annual physical exams exercises

Session 4: Probability and probability distribution

Allocated time: 2 minutes

Learning Objectives

	Up on completing this section, the trainees are expected to: • Define and understand probability concepts distributions • Calculate probabilities and understand probabilities • Differentiate and apply commonly used probability distributions

This session helps participants to understand the theory of probability and probability distribution. After reading the specific topic from the participant module be able to make notes on the following Issues:

- Probability concepts
- Random variable
- Probability distribution
- Discrete probability distribution (binomial)
- Continuous probability distribution (Normal)

	**Group Exercises (20 minutes)** ➢ Ask the participants to brainstorm on what probability and probability distribution are. List their responses on the flipchart. ➢ Ask the participants the application of probability ➢ Ask the participants to compute and explain the distribution of some of the variables they ➢ included in their questionnaire

Finally Conclude this session by answering any questions participants might have about probability and probability distribution.

Exercises

1. *Binomial distribution application*
2. *Normal distribution application*

Session 5: Sampling and sample size determination

Allocated time: **3 hours**

Learning objectives

	After successfully completed this session, the trainees are expected to: ✓ Define the key terms used in sampling ✓ Distinguish between random and non-random methods of sample ✓ identify the different methods of random sample ✓ understand the advantages and disadvantages of random sampling methods ✓ understand the importance of estimating sample size and influencing

	factors ✓ Compute an appropriate sample size for different study objectives.

Read the specific topic from the participant module and make a note on the following Issues:

- What is sampling? Why Sampling? How to do sampling?
- Steps in sampling
- Why not to study the whole population?
- The link between target and study population
- Two methods of sampling; probability and non-probability
- Techniques of probability sampling
- Techniques of non-probability sampling
- Sample size determination for different cases

	**Group work (20 minutes)** Divide the participants into sub groups ✓ Ask participants to brainstorm on what sampling is and the different techniques. List their responses on the flipchart. ✓ Ask the participant to discuss and propose one researchable problem for each group ✓ Ask participants to choose appropriate sampling method for their proposed research. ✓ Ask participants to determine sufficient sample size for their proposed research

Finally Conclude this session by answering any questions participants might have about sampling and sample size determination.

Exercises (*Practical problems)*

1. Cohort study of oral contraceptive (OC) use in relation to risk of MI among women of childbearing age.

2. Case-control study of oral contraceptive (OC) use in relation to risk of MI among women of childbearing age

Module 1 pre and posttest Answer Key:

Pre and post test

Instruction: give you answers for the following questions and encircle the letter for your answers

1. In leadership a person can not
   a. exerts influence over others
   b. inspires others
   c. Motivates others
   d. direct others' activities
   e. None of the above
   Answer: B

2. Managerial health care leaders are
   a. internally focused
   b. externally focused
   c. Flexible
   d. Stable
   e. All of the above
   Answer: E

3. Health care leadership mainly encompasses
   a. management
   b. planning
   c. strategy
   d. influence
   e. communication
   Answer: C

4. Which one of the following is true about leadership
   a. leadership is not intellectual or cognitive but emotional
   b. Leadership is not at all about personality
   c. Leadership is all about practice
   d. Leadership is not reciprocal process
   e. Leadership is a means to an end.
   Answer: C

5. The competencies a leader needs depends on
   a. the situation:
   b. traits of the leader
   c. Behavior of the employee
   d. Skills of the leader
   e. All of the above
   Answer: E

6. Several studies regarding leadership traits have proven which of the following:
   a. Leadership traits are universal.
   b. No specific list of successful leadership traits exists.

c. Leadership traits, skills, and behaviors are common.
d. Successful leaders have similar personalities.
e. None of the above

Answer: A

7. The contingency and path-goal theories of leadership are considered
a. autocratic
b. organizational
c. situational
d. Unrealistic
e.None

Answer: B

8. Vision, charisma, integrity, and symbolism are all on the list of attributes associated with what type of leaders?
a. Contingency
b. Informal
c. Transformational
d. Transactional
e.None

Answer: C

9. Strategic leadership involves
a. strategic thinking and strategic planning
b. strategic acting and influencing
c. Strategic management
d. All of the above
e. None of the above

Answer: D

10. Key activities and competencies for strategic leaders include:
a. visioning and strategic decision making;
b. development of organizational key capabilities
c. the creation of meaning and purpose for the organization
d. All of the above
e. none of the above

Answer: D

11. Leadership qualities include all except:
- moral courage, integrity, intellect, clarity of thought,
- loyalty, willpower and determination to lead,
- knowledge, self-confidence, enthusiasm,
- communication, judgment, pride, humanity, decisiveness,
- None of the above

Answer: D

12. Strategic leadership differs from strategic management, True/False. **Answer: True**

13. Strategic Leadership differs from leadership, True/False. **Answer: False**

14. Strategic leaders need to see things in new and different ways, True/False. **Answer. True**

15. Strategic health care leaders look nearer things distant and are decisive in the face of uncertainty, True/False. **Answer: True**

16. Strategic health care leaders understand the needs, styles, and motivations of others, and use that information to communicate with them and influence them, True/False. **Answer: False**

17. Which of the following about biostatistics is **NOT** correct?

a. Primary data is data collected from record
b. Inferential statistics is drawing conclusion based on information obtained from sample
c. Descriptive statistics is a ways organizing and summarizing data
d. Sample is a subset of a study population
e. None of the above

Answer: A

18. What is a parameter?

a. It is a description measure computed from data of a sample
b. Is a characteristic which takes different values in different persons
c. It is a description measure computed from data of a population
d. It is any aspect of an individual or object that is measured/observed
e. None of the above

Answer: A

19. What is qualitative variable

a. It is a variable or characteristic which can be measured quantitatively
b. It has usually a notion of magnitude increment
c. It is a variable that can be measured and expressed numerically
d. It is a variable or characteristic which can only be sorted by name or categories
e. None of the above

Answer: D

20. When data are symmetrically distributed?

a. 99% of the sample exist within 2 standard deviations
b. 95% of the sample exist within 2 standard deviations
c. 5% of the sample exist within 2 standard deviations
d. 68% of the sample exist within 2 standard deviations
e. None of the above

Answer B

21. Which of the following is measure of dispersion?

a. Measuring the average weight of students
b. Measuring the sum weight of students
c. Measuring the difference between the mean and mode of a distribution
d. Measuring standard deviation of weight of students
e. None of the above

Answer: D

22. Which of the following is **true** about variance

a. Variance is sum of difference of each value to the mean
b. Variance has equal unit of measurement to the measured value
c. Variance is square root of the standard deviation
d. Variance is the square of the standard deviation
e. None of the above

Answer: D

23. Which of the following is **NOT** correct

a. Standard error is usually greater than standard deviation
b. Standard error increases with increase in sample size
c. The standard error is always smaller than the standard deviation
d. Standard error and standard deviation are usually the same
e. None of the above

Answer: B

24. Which of the following is **true** about ratio, proportion and rate

a. All ratios are proportions b. All proportions are rates
c. All ratios are rates d. All of the above e. None of the above
Answer: B

25. Which sampling procedure is better to represent the source population

a. Cluster sampling b. Convenience sampling
c. Subjective sampling d. simple random sampling e. None of the above
Answer: D

26. Sample size determination is important

a. To minimize cost b. to increase the effect of chance
c. Minimize estimate of measurement d. to estimate real equality
e. None of the above
Answer: A

27. The term '**Distribution**' in epidemiology refers to health related phenomena regarding:

a. Occurrence of health related condition by disease, death and health
b. Experience of health related incident in time, person and health
c. Occurrence of health related event in place, disease and time
d. Occurrence of health related event in person, place and time
Answer. D

28. What are the difference between a clinician and public health view of the world?

a. The main focus of the clinician is on the public
b. Major goal of the public health is diagnosis and treatment of a disease
c. The clinician asks himself on what is wrong on my patient
d. A clinician thinks on prevention and control of disease
e. None of the above
Answer: C

29. Which of the following is **NOT** directly related to the use/ scope of epidemiology

a. Prescription of the right drug to the right patient.
b. Investigation of the etiology of disease in a community
c. Identification of population at risk
d. Recognition of changes in disease pattern in a community
e. Planning for health needs
Answer: A

30. Which of the following are **NOT** core functions of epidemiologist?

a. Public health surveillance b. Investigation of an outbreak
c. Data analysis d. Evaluation
e. None of the above
Answer: E

31. Which of the following terms are more descriptive

a. Counting b. Observe
c. Count cases (events) d. Comparing e. None of the above
Answer: A

32. When do we find lots of cases if a disease is found in…

a. Endemic b. epidemic
c. Sporadic d Pandemic e. None of the above
Answer: B

33. Which of the following study designs uses entire population as study subject?

a. Case control study b. cross-sectional study

c. case series d. correlational study e. None of the above

Answer: D

34. To determine prevalence of HIV/AIDS in a high school what study design would you prefer?

a. Case control study b. cross-sectional study

c. case series d. correlational study e. None of the above

Answer: A

35. In general, descriptive study tries to ask the following questions **except**?

a. Who? b. Where

c. Why d. When e. None of the above

Answer: C

36. Which of the following is **NOT** major use of descriptive analysis?

a. Useful for allocating resource efficiently
b. To plan effective prevention and control
c. To generate a hypothesis
d. To test a hypothesis
e. None of the above

Answer: D

Module 2: *Analytical Epidemiology and Biostatistics with Software Application*

overview

Descriptive epidemiology and biostatistics has been discussed in the previous phase of module 1. Do you remember the purpose of descriptive epidemiology and biostatics? How about types of descriptive designs? Descriptive epidemiology is concerned with study of frequency and distribution of diseases and other health related events in a population. The types of descriptive designs include case-study, case-series, cross-sectional and ecological designs. Descriptive designs also help to generate hypothesis about causal factors which are tested using analytic designs. Each session begins with brief introduction, and a list of learning objectives that you should be able to achieve when the session is completed. Following the objectives, session contents are listed, and the main reference material is then mentioned, whereas list of all references is indicated at the end of the session. Then, the session contents are discussed. Meanwhile, questions are raised and exercises given for practice in order to help you understand key concepts. Towards the end of each session, summary of the main points is presented. Inferential biostatistics deals with the process of making inferences regarding population characteristics through the application of estimation and hypothesis theories. In the sessions and sub-sessions that follow, the concepts of inference statistical. In addition, correlation, linear regression and logistic regression concepts and methods are included.

Goal of the module

To train trainees with the capacity of public health practitioner to use Epidemiology and inferential biostatics with the application of epidemiological and statistical software in health related information analysis for applying making admission.

General Objectives of the Module

To train public health sector workers with the capacity of analytical epidemiology and biostatistics with the application of statistical software for making right decision in public health sector leaders in the nation.

After completing this module, participants will be able to;

- ✓ Apply epidemiological methods in public health practice
- ✓ Apply statistical technics and managing and analysis health and health related data
- ✓ Use data management and statistical software

Contents of the Module

The Module is organized in two parts. The first part is analytic epidemiology and the second part is inferential to biostatistics. The two parts are given for a given period of two weeks, each lasting one week.

Part 1: ANALYTIC EPIDEMIOLOGY

1. Introduction to analytic epidemiology
2. Analytic epidemiologic studies
    - Analytic ecological and cross-sectional studies
    - Case-control studies
    - Cohort studies
3. Measures of association and impact
4. Chance, Bias and confounding
5. Establishing causation in epidemiology
6. Validity and precision

Part2: Inferential statistics

1. Estimation and hypothesis testing
2. Correlation and Regression

Statistical software

- SPSS statistical software
- EpiInfo or EpiData epidemiological software

Guide for facilitator:

- Ensure the availability of the following training materials before starting the training
  - LCD projector
  - Softcopy of PPT presentations and participant manual
  - Printed copies of pre-test questions
  - Flip chart
  - Colored markers and white board

Methods of teaching

- . Lecture
- Brainstorming
- Experience sharing
- Small group's discussions
- Individual/group discussions

Class presentations

- Introduce yourself,
- Give the trainees overview of the whole module as described in the notes below
- Inform trainees about who will deliver each of the sessions
- Encourage participants to actively participate in all sessions
- Administer pre-test questions

Time schedule of Leadership strategic information program

On the second module

Week 1	**Monday**	**Tuesday**	**Wednesday**	**Thursday**	**Friday**
08:30 – 10:15 am	Registration(Introduction to course Introduction to analytical epidemiology	Measures of Association	Causality	Chi-squer test And correlation	Review projects Mentors
10:15 – 10:30 am	**B r e a k**				
10:30 – 12:30 pm	Analytic study design: Case-control study,	Measures of impact	Screening	Introduction Linear regression	Review projects mentors
12:30 – 02:00 pm	**L u n c h**				
02:00 – 03:30 pm	Analytic study design: cohort study,	Chance, bias, confounding and effect modification	Inferential statistics (estimation and Hypothesis testing)	Introduction Logistic regression	Review projects mentors
03:30 – 3:45 am	**B r e a k**				
3:45 – 05:15 pm	Exercise Mentor	Exercise Mentor	Continued ----- Inferential statistics (estimation and Hypothesis testing)	Exercise Mentor	Incorporate all the given comment with mentors

* Note: the exercises in the afternoon are specifically for the information taught in the morning session of that day.

Week 2	**Monday**	**Tuesday**	**Wednesday**	**Thursday**	**Friday**
08:30 – 10:15 am	Introduction to Epi-info	Data cleaning/ Transformational Merging, data comparison	Introduction to SPSS	Data Coding and decoding, cleaning	Protocol Presentation
10:15 – 10:30 am	**B r e a k**				
10:30 – 12:30 pm	Make View (Develop template)	Data analysis using EPI-Info	Data entry Defining variable	Data analysis using SPSS	Protocol Presentation
12:30 – 02:00 pm	**L u n c h**				
02:00 – 03:30 pm	Data entry using the developed template (data entry)	Data manipulation and create data base Data Exercise	Data transformation from EPI info to SPSS. Data management	Data analysis(SPSS) and interpretation of the result	Protocol Presentation
03:30 – 3:45 Pm	**B r e a k**				
3:45 – 05:15 pm	Study Protocol	Study Protocol	Study Protocol	Exercise for SPSS	Protocol Presentation

*Note: For the data exercises participants will use either their data or a dataset provided to them. Participants will work in Epi-info/ SPSS.

Part 1: ANALYTIC EPIDEMIOLOGY

Overview of the facilitator

The guides are general instructions on necessary preparations, time management and how to start and manage the sessions. The notes for facilitators, on the other hand, include specific instructions for delivering sections. Slide presentations are prepared from the module contents to aid presentation by facilitator. The facilitators are free to adapt and revise them within the scope of module`s contents. For example, illustrations may be updated or added considering relevance to the training.

Contents

Part 1: ANALYTIC EPIDEMIOLOGY

1. Introduction to analytic epidemiology
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    - Analytic ecological and cross-sectional studies
    - Case-control studies
    - Cohort studies
3. Measures of association and impact
4. Chance, Bias and confounding
5. Establishing causation in epidemiology
6. Validity and precision

Guide for facilitator:

- Ensure the availability of the following training materials before starting the training
  - LCD projector
  - Softcopy of PPT presentations
  - Printed copies of pre-test questions
- Introduce yourself, if not already introduced in the first phase of the training
- Give the trainees overview of the whole module as described in the notes below
- Inform trainees about who will deliver each of the sessions
- Encourage participants to actively participate in all sessions
- Administer pre-test questions

Session 1: Introduction to Analytic Epidemiology

Allocated time: 1:30

Learning Objectives

At the end of this session, participants will be able to:

- Describe the purposes of analytic epidemiologic designs
- Explain analytic concepts in identifying determinants
- Mention the types of analytic designs

Notes to facilitator: Inform the trainees that the main reference material is the one mentioned in participant module and a full list of references is mentioned at the end of the session. Indicate where they can get or if possible provide the reference materials.

Purposes of Analytic Epidemiology

Notes to facilitator: Ask participants to share their view by answering the question given below. Encourage trainees through guidance, feedback and by complimenting.

✓ **Warm-up Question:** What is the concern of analytic epidemiology?

- ✓ Some points of Analytical epidemiology include:

- ✓ To identify causal factors in the prevention and control of a disease
- ✓ To measure degree of contribution of risk factors for prioritizing interventions
- ✓ To determine causal and contributing factors during epidemic investigation and control
- ✓ To establish prognostic factors that would help in clinical management of patients
- ✓ To find out reasons for success or failure of programs during program evaluation
- ✓ To detect factors related with better health for health promotion.

Notes to facilitator: Inform the trainees about the fact that the question below is key to analytic epidemiology and ask them to discuss in pairs and then reflect their answer to the whole group. Allow about 5 minutes for discussion and then

Warm-up question: How do you think an association between exposure and a heath outcome can be assessed?

Example: In a building, 30 of 100 residents became ill with gastroenteritis. What made these 30 individuals ill?

- The possible hypothesized causes for the illness could be contaminated common water source or contaminated fish in cafeteria commonly used by the residents
- In order to identify the real cause of the illness, making comparison is the key step. Comparing the 30 sick to the 70 healthy ones with regard to proportion exposed to hypothesized causes, is one method. Another method is to compare those exposed with non-exposed with regard to proportion who become ill.

After reading the main topic of types of analytic epidemiologic designs and makes notes for the following point:

- Observational design
- Interventional design

Notes to facilitator: Invite participants to summarize main points they have learned in the session and make remarks in line with the points mentioned in the

Session 2: Analytic Epidemiologic Studies: Analytic Ecological and Cross-sectional Studies, case control

Allocated time: 30 minutes

Guide for facilitator:

- Read the module notes and the reference materials listed at the end of the session
- Start the session by introducing the session as described below and then let one of the trainees read the objectives

Learning Objectives

At the end of this session, participants will be able to:

- Describe the design of analytic ecological and cross-sectional studies
- Describe the limitations of analytic ecological and cross-sectional studies
- Recognize applications of analytic cross-sectional design

Notes to facilitator: Inform the trainees that the main reference material is the one mentioned participant module and a full list of references is mentioned at the end of the session. Indicate

After reading the participant module and additional other reference make a note for the following topic

- The difference between ecological study and cross-sectional study

Analytic Ecological Studies

Notes to facilitator: Start this session by asking participants to pinpoint the difference between ecological and cross-sectional studies. Then proceed with presentation of the contents. During presentation emphasize on the fact that ecological studies can be

Notes to facilitator: Invite participants to share their experience regarding use of

Notes to facilitator: Conclude the above session by mentioning the fact the trainees can employ ecological design to make use of aggregate secondary data available in their respective work areas. Then proceed to the next section. Start the section by asking who

Analytic Cross-sectional Studies

Notes to facilitator: Invite participants to summarize main points they have learned in the session and make remarks in line with the points mentioned in the summary section below.

Notes to facilitator: Invite those participants who used analytic cross-sectional design to share their experience on how they have designed their study.

case control study

Allocated time: **1:30 minutes**

Guide for facilitator:

- Read the module notes and reference materials listed at the end of the session
- Emphasize on discussion of case-control design that can be done using secondary data
- Start the session by introducing the session as described below and then let one of

Learning Objectives

At the end of this session, participants will be able to:

- Outline the design of case-control studies
- Describe the limitations of case-control studies
- Identify applications of case-control designs

Make a note after reading the participant module and other reference:

- ✓ what is Case-control Studies
- ✓ Types of Case-Control Studies
- ✓ Selection of case and control
- ✓ Sample size determination on case control study
- ✓ Assessment of outcome and exposure status
- ✓ Analysis and interpretation
- ✓ Merit and demerit of case control study

Notes to facilitator: Inform the trainees that the main reference material is the one mentioned in participant module and a full list of references is mentioned at the end of the session. Indicate where they can get or if possible

Notes to facilitator: Start this session by asking participants if they have the experience with case-control studies? Invite them to share their views and

Notes to facilitator: Ask participants to break into groups 5. Assign each group to one of the topics below and to record an answer for the questions on the flipchart. Finally after they finished, ask a group representative to

Question for self-practice:

The following research objectives can be met through the conduct of case-control studies. For each objective identify who will be the cases, controls, exposed and not exposed?

- Assessment of determinants of neonatal mortality
- Assessment of determinants of Goiter
- Assessment of determinants of MDR TB
- Assessment of determinants of Epilepsy
- Assessment of factors associated with delayed care seeking among HIV infected individuals

Notes to facilitator: Ask the question below in order to enhance participants understanding of the design and ability to identify its

Question for self-practice:

Which of the research objectives listed in the previous question do you think can be achieved using secondary data? Can you think of other research areas that can be carried out using secondary data available in your setting?

Notes to facilitator: Use icebreaker here so that the participants can be refreshed and able to

Notes to Facilitator: This exercise asks participants to utilize all of the knowledge they have learned so far. 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

Question for self-practice:

Suppose you have developed a hypothesis that states 'HIV infection among TB patients is associated with development of MDR TB'. Then you decide to conduct a case-control study using secondary data. How would you define a case and a control for the study? Where would you find the cases and controls? What do you think would be the possible sources of error in the study?

Notes to facilitator: Invite participants to summarize main points they have learned in the session and make remarks in line with the points mentioned in the summary section below.

Session 3: Cohort Studies

Allocated time: 1: 30 minutes

Guide for facilitator:

- Read the module notes and reference materials
- Emphasize on discussion of retrospective type of cohort study which is done using secondary data
- Start the session by introducing the session as described below and then let one of the

Learning Objectives

At the end of this session, participants will be able to:

- Describe the design of cohort studies
- Describe the limitations of cohort studies
- Identify applications of cohort designs

Notes to facilitator: Inform the trainees that the main reference material is the one mentioned in the specific topic from the participant module and a full list of references is mentioned at the end

Notes to facilitator: Remind participants that one limitation of case-control studies is temporal bias. Then ask them how such bias can be avoided. After listening their views conclude by stating that starting a study with identification of exposure status that is then followed up can avoid such bias. Inform them such design is called cohort and with this remark continue discussion of the

After reading the main topic "cohort study" forms the participant module and other reference and make a notes:

- Definition of cohort study
- Types of cohort study
- Selection of exposer variable

- Analysis and interpretation of the study

Notes to facilitator: Ask participants to break into groups 5. Assign each group to one of the topics below and to record an answer for the questions on the flipchart. Finally after they finished, ask a group representative to present their answer with brief

Question for self-practice:

The following research objectives can be met through the conduct of cohort studies. For each objective identify who will be the exposed, non-exposed, those with the outcome and those without the outcome.

- Assessment of determinants of neonatal mortality
- Assessment of determinants of Goiter
- Assessment of determinants of MDR TB
- Assessment of association between HIV and development of MDR TB
- Assessment of factors associated with AIDS mortality

Notes to facilitator: In order to make sure they understand the retrospective cohort design, ask them to explain its difference with case-control study. Then ask the question below in order to enhance their understanding of difference in applications of the two types of cohort studies. Also suggest to the participants that they can employ the retrospective cohort

Question for self-practice:

Which of the research objectives listed in the previous question do you think can be achieved using retrospective cohort design? Can you think of other research areas that can be carried out using secondary data available in your setting?

Notes to facilitator: Use icebreaker here so that the participants can be refreshed and able to follow the next section.

Sources of error in cohort studies

Notes to facilitator: Ask participants if they remember the sources of error in cohort studies. Let them mention the sources of error one by one. Encourage all trainees to

Question for self-practice:

Suppose you wanted to identify factors associated with MTCT of HIV among infants born to HIV infected mothers using a retrospective cohort design. Who will be your source population, exposed and non-exposed? What are the possible sources of error in the study?

Notes to Facilitator: For this exercise, participants will work alone. Ask them to answer the following question based on what they have learnt so far. When they have completed the exercise, ask them to share their answers. When a participant offers his/her answer, acknowledge them and then ask the group to discuss alternative methods or answers

Question for self-practice:

Suppose you wanted to assess factors associated with HIV sero-discordance among couples visiting ART clinic, using secondary data. Which analytic design would you prefer to use? Justify your answers.

Notes to facilitator: Invite participants to summarize main points they have learned in the session and make remarks in line with the points mentioned in the summary section below.

Session 4: Measures of Association

Allocated time: 1: 45 minutes

Guide for facilitator:

- Get prepared by reading the module notes including the exercises and the reference materials
- Start the session by introducing the session as described below and then let one of

Learning Objectives

At the end of this session, participants will be able to:

- Define the measures of association
- Explain applications of the measures of association
- Compute and interpret values of measures of association

Notes to facilitator: Inform the trainees that the main reference material is the one mentioned from the participant module and a full list of references is mentioned at the end of the session. Indicate where they can get or if possible provide the reference

Relative Risk (RR)

Note to the facilitator: Ask the participants to define RR before telling

Note to the facilitator: Ask the participants to answer the question below so as to enable them identify the numerator and denominator for RR.

Warm-up question: Which parameters in the two-by-two table are the numerator and denominator of RR?

Notes to facilitator: Illustrate the calculation and interpretation of AR using the example below. First allow participants to try and work on the

Example: Let's calculate RR from findings of a hypothetical cohort study conducted to assess association between malaria during pregnancy and low birth weight

Malaria during pregnancy	Low birth weight		
	Yes	No	Total
Yes	50	50	100
No	100	800	900
Total	150	850	1000

RR= [50/100] / [100/900]

RR= 4.5

The RR calculated from the hypothetical data indicates that women who had malaria during pregnancy were 4.5 times more likely to deliver a low weight baby than those who didn't have malaria during pregnancy.

N.B: Statistical significance of the association is assessed using a corresponding p-value or confidence interval (CI).

Odds Ratio (OR)

Note to the facilitator: Stimulate the participants and draw their attention by mentioning that the OR is a commonly used measure of association and they are likely to use it in their current or future research undertaking and encounter it while reading literatures. Reminding the need to have full understanding the measure,

Note to the facilitator: Ask the participants to answer the question below so as to enable them identify the numerator and denominator for OR. In addition, ask them

Warm-up question: From the 2 by 2 table above, identify the parameters to be used as numerator and denominator of OR.

Notes to facilitator: Illustrate the calculation and interpretation of AR using the example below. Elaborate the difference in interpretation from RR.

Example: Consider a hypothetical case-control study conducted to assess association between low birth weight and neonatal mortality among 100 cases and 400 controls. Let's calculate OR from findings of the study indicted in the table below.

Table 5.4. Hypothetical case-control study of association between low birth weight and neonatal mortality

Birth weight	Neonatal death		
	Yes	No	Total
Low	60	100	160
Normal	40	300	340
Total	100	400	500

$$OR = \frac{60 \times 300}{100 \times 40}$$

$$OR = 4.5$$

The OR calculated from the hypothetical data indicates that the odds of dying at neonatal age for those with low birth weight was 4.5 times than for those with normal birth weight.

N.B: Statistical significance of the association is assessed using a corresponding p-value or confidence interval (CI).

Notes to facilitator: Invite participants to summarize main points they have learned in the session and make remarks in line with the points

Note to facilitator: Ask participants to work on the exercise individually. Give them 25 minutes to do the exercise. Ask a volunteer to demonstrate the calculations on a flip chart and answer for the following questions with brief explanation to the participants. When the volunteer offers his/her

Exercise

Suppose you are interested to test whether sexually transmitted infection increases risk of HIV infection. You then conducted a study among individuals tested for HIV and managed to review last 5 years data from registers in HIV counseling and testing unit of a hospital and come-up with the findings indicated in the table below.

Had history of symptoms of sexually transmitted infection	HIV test results		
	Positive	Negative	Total
Yes	40	100	140
No	60	1800	1860
Total	100	1900	2000

Use the information given above to answer the following questions.

a) Which analytic design was, most likely, employed in the study?

b) Which measure of association would you calculate from the data?

c) Calculate and interpret the measure of association.

d) What are the possible sources of error in the study?

Answer

a) Which analytic design was, most likely, employed in the study?

The design used was most likely comparative cross-sectional because data about exposure status and outcome status is collected simultaneously.

b) Which measure of association would you calculate from the data?

One can compute the prevalence ratio or the odds ratio.

c) Calculate and interpret the measure of association.

OR=12; interpretation: the chance of being HIV positive is 12 times higher among those who had history of STD than those who didn't.

d) What are the possible sources of error in the study?

The major possible sources of error in this study include: temporal bias and information bias

Session 5: Measures of Impact

Allocated time: 2 hours

Guide for facilitator:

- Get prepared by reading the module notes including the exercises and the reference materials
- Start the session by introducing the session as described below and then let one of the trainees read the objectives
- Inform the trainees about presence of illustrations of calculations and interpretation of measures of impact using example

Learning Objectives

At the end of this session, you should be able to:

- Define the measures of impact
- Explain applications of the measures of impact
- Compute and interpret values of measures of impact

Notes to facilitator: Inform the trainees that the main reference material is the one mentioned below and a full list of references is mentioned at the end of the session. Indicate where they can get or if possible provide the reference materials.

Notes to facilitator: Draw attention of the trainees by mentioning that the session starts with AR which is the simplest and its understanding is the basis to understand other measures impact in the subsequent sections.

Attributable Risk (AR)

Notes to facilitator: Illustrate calculation and interpretation of AR using the example below. Make sure they understand the concept of AR before proceeding to next sections so as to enhance easy understanding of and avoid confusion with other measures of impact.

Example: Consider the hypothetical cohort study conducted to assess association between malaria during pregnancy and low birth weight. Let's calculate AR from findings of the study indicated in the table below.

Hypothetical cohort study of association between malaria during pregnancy and low birth weight

Malaria during pregnancy	Low birth weight		
	Yes	No	Total
Yes	50	50	100
No	100	800	900
Total	150	850	1000

AR= [50/100] - [100/900] = 0.39 or 39%; the value of AR implies that 39% low birth weight deliveries that occur among women who had malaria during pregnancy are attributable to malaria.

Population Attributable Risk (PAR)

Notes to facilitator: In order to stimulate the participants and enable to differentiate scope of the previous measures from population level measures ask them the following question.

Warm-up question: Do you think the amount of disease risk in the population attributable to specific exposure would be equal, higher or lower that the AR?

Notes to facilitator: To make sure the participants understand the concept of PAR, ask them the question below. Then, elaborate by discussing its calculation and interpretation using the

Warm-up question:

Is it possible to calculate PAR from the data in the previous example of a cohort study conducted to assess association between malaria during pregnancy and low birth weight? In order to calculate PAR, incidence rate of delivery to low birth weight baby among all pregnant women in the population is required. If the sampled 1000 pregnant women are assumed to represent all pregnant women in the population, the incidence (50 in exposed + 100 in non-exposed) will be (150/1000) 15%. The PAR would then be: 15% - 11% = 4%. This implies that 4% low birth weight deliveries among the population of pregnant women are due to malaria infection during pregnancy.

Notes to facilitator: Illustrate how to calculate and interpret PAR% using the example below and give the participants assignment to try the calculation using the alternative formula indicated above.

Population Attributable Risk Percent (PAR %)

Example: Let's calculate PAR% for the cohort study in the previous example of a cohort study conducted to assess association between malaria during pregnancy and low birth weight.

PAR% = [15% - 11%] / 15% = 26.7%; the value indicates that 26.7% of low birth weight deliveries among pregnant women is attributable to malaria.

Notes to facilitator: Invite participants to summarize main points they have learned in the session and make remarks in line with the points mentioned in the summary section below.

Session 6: bias,chance and confounding

Allovated time: 1:30

Learning Objectives

After completing this lesson, participants will be able to:

- Explain how chance (random error) might explain an association between exposure and disease.
- Distinguish between selection bias, information bias, and other types of biases in observational studies.
- Discuss the impact of confounding on observational studies.
- Identify ways to minimize confounding.

Read and discuss about chance, bias, confounding and effect modification in the Participants' Manual and make a short note

- Chance
- Bias
- Confounding
- Effect modification

Notes to the facilitator: Give the participants to brainstorm to understand the difference between chance and bias. Encourage trainees to discuss potential sources of bias

Ask the participants to reflect back to their project activities and identify what aspects of bias are most challenging as a learning process, Key points about bias:

- Bias threatens internal validity, and makes the study's validity or accuracy questionable.
- Distortion of the association cannot be corrected by statistical manipulation.
- Bias can affect all types of study designs.
- Larger sample size does not eliminate bias; a larger sample size may simply yield a more precise estimate of biased results if the biases are strong

Confounding and Effect Modification

Notes to the facilitator: Give the participants to brainstorm to understand the difference between confounding and effect modification. Encourage trainees to discuss the effect of confounders and their controlling mechanisms

Effect modification

Example: Diarrhea and Breastfeeding: Stratified by Age of Infant

Overall

Breast fed	Cases	Controls
Yes	120	136
N0	50	204

Odds Ratio =3.6, 95% CI = 2.4-5.5 p < 0.0001

The investigators then stratified the data by age of the infant, and computed a stratum-specific odds ratio for infants less than 1 month of age and infants greater than or equal to one month of age.

Stratum 1

Breast fed	Cases	Controls
Yes	10	3
N0	7	68

OR = 32.4, 95% CI = 6-203, p<0.0001

Stratum 2

Breast fed	Cases	Controls
Yes	110	133
N0	43	136

OR = 2.6, 95% CI = 1.7-4.1, p<0.0001

What do you conclude from these data? (It appears that lack of breastfeeding is a huge problem in the infants younger than 1 month, less so for infants 1 month or older.)

Would you be content to present the summary, or would you present the stratum-specific effects?

How to tell if Effect Modification is Present

There are two approaches to assessing the presence of effect modification.

The first is to use judgment — are the two effects really that different from a clinical or public health point of view? If not, combine. If so, leave separate.

The second method involves statistical tests such as tests for interaction, homogeneity, or heterogeneity. However, remember that statistical differences do not necessarily mean important differences from a public health or clinical point of view.

Class activity:

1. Let's say you have four odds ratios -- crude OR, stratum 1 OR, stratum 2 OR, and an adjusted (Mantel-Haenszel) OR.

A. Which two odds ratios do you compare to look for confounding? (crude and adjusted)

B. Which two odds ratios do you compare to look for effect modification? (stratum 1 and stratum 2)

2. For each variable in the table below, indicate whether you think there's confounding, effect modification, both, neither, calculation error, or you can't tell from the data provided.

Here's a hint: look for effect modification first -- compare stratum 1 and stratum 2. If they are pretty close, compare them with the adjusted (which should be the weighted average) just to make sure that it looks correct, then compare the crude and adjusted.

Variable A - confounding (stratum-specific OR's are very close)

Variable B - effect modification

Variable C - both (not that you would want to summarize)

Var. A Var. B Var. C Var. D

Crude	4.0	4.0	4.0	4.0
Stratum 1	5.1	1.0	1.0	2.9
Stratum 2	4.9	6.0	6.0	3.1
Adjusted (MH)	5.0	4.0	2.1	Not calculated
Example of:	____	____	____	____

Variable D - confounding (stratum-specific OR's are very close).

Stratified Analysis / Confounding Exercise

Note to the facilitator on the exercise

Time: 1 Hour (Dependent upon translation).

Following the presentation and this exercise, the student should be able to:

1. Create a two-by-two table from listed data from a retrospective cohort study, and calculate the appropriate measure of association.
2. Perform a stratified analysis, calculate the appropriate measures of association, and reach appropriate conclusions about the results of the analysis. Follow the detail description of the procedures provided in the following paragraphs

Description of the Exercise

This exercise is designed to provide practical application of the some of principles included in the Stratified Analysis / Confounding presentation, specifically stratified analysis of two foods in a foodborne outbreak.

Training Techniques: Individual exercise

Assessment of the Learner: The learners will be assessed through observation by course facilitators to identify whether individuals are able to perform the different calculations required to complete the exercise.

Prerequisites: The students should receive the presentation related to confounding prior to beginning this exercise.

Recommended Class Size: The suggested class size for this activity is from 12-24 persons, depending upon the number of facilitators available to assist with conducting this exercise

Instructor Profile: The instructor should be experienced in tabulating data from a line listing into a two-by-two table, calculating risks (attack rates) and risk ratios, performing stratified analyses (including analyzing two exposures simultaneously using a two-by-four table), interpreting the results of these analyses, and explaining these tasks and results to students. The instructor/facilitator for this exercise should either be a native speaker of the language of the participants or work with an interpreter to communicate with the students.

Evaluation of the Training: This exercise will be evaluated as part of the Stratified Analysis / Confounding component of the instruction for Module 2. In addition, assessment by a focus group may be arranged to obtain feedback from the participants about the effectiveness of the exercises.

Reading the Training Materials

☑	**Checklist**
	1. Review the ***Stratified Analysis*** / ***Confounding*** lecture prior to conducting the activity along with reading any applicable instructor notes included with the presentation. 2. Read through the entire Stratified Analysis / Confounding exercise to gain an understanding of the flow of the exercise.

Preparing the Materials

☑	**Checklist**
	1. Prepare the appropriate number of copies of the *Stratified Analysis / Confounding — Participant's Guides* based on the number of participants in the class, plus one or two extras. 2. Contact representatives from the training facility to determine whether overhead or digital projectors are available for use during the instruction. 3. Depending upon the equipment available, bring either overhead (transparency) or digital (PowerPoint) projector. 4. Bring transparencies or PowerPoint file with table shells and answers.

Preparing the Classroom

☑	**Checklist**
	1. Before or on the day of the class, meet with representatives from the training facility to ensure that the requested equipment is available. Using the transparencies or PowerPoint file with table shells and answers, test the equipment to ensure that it is operable and no changes need to be made to the materials. 2. Ensure that there is are sufficient handouts, calculators, and pencils available for the participants

Conducting the Exercise

The following is a detailed description of the steps necessary to conduct the *Stratified Analysis / Confounding Exercise*. Listed below is the information needed to conduct the exercise in a step-by-step manner. The column on the left side provides you with an overview of what should be conducted at each step in the process. The column on the right provides you with detailed information regarding what should be discussed at each step.

Outline	**Details**
💬Begin the exercise by displaying the Objectives either on an overhead or digital projector.	Introduce the exercise by explaining that "***the purpose of this exercise is to provide practice in…*** • **Creating two-by-two tables from listed data from a retrospective cohort study, and calculating the appropriate measure of association, and** • **Performing stratified analyses, calculating appropriate measures of association, and reaching conclusions about the results of your analyses."**
✍Provide each of the participants with a copy of the handout: *Stratified Analysis / Confounding — Participant's Guide*	• Each participant should receive a copy of the handout *Stratified Analysis / Confounding — Participant's Guide*
💬Present the details of the exercise to the students by… • Describing the dataset to the students, and • Describing the tasks	• "On page 52 you can see a listing of data from a retrospective cohort study. To facilitate your analysis, we have listed Information on cases, that is, persons who developed gastroenteritis, on the left, and information on non-cases on the right. The listing indicates whether each person ate soup and/or dumplings. Your ultimate task will be to figure out whether the soup or dumplings or both was the likely vehicle. Question 1 asks you to tabulate the data into a two-by-two table for each food. Then Questions 2 and 3 ask you to stratify one food by the other. Finally, Question 4 uses a 2-by-4 table to analyze the two foods simultaneously."
💬Direct the students to answer Question 1. • Prompt the students to tell you	• Ask a student to read Question 1. • "Now tabulate the data and fill in the two-by-two table. Be sure to calculate the totals, then the risks or attack rates, and finally, the appropriate measure of association. What is the appropriate measure of association for these data?

Outline	Details
the appropriate measure of association for a retrospective cohort study.	Remember, these data are from a retrospective cohort study." • Call on someone to answer. [Correct answer is *risk ratio* or *relative risk*. If student says *odds ratio*, review basic principles of measures of association from cohort and case-control studies. • Show overhead or PowerPoint slide with table shell. • "OK, take about 5 minutes to complete these two tables."
✍Students tabulate data, complete tables on page 53 of handout.	• Walk around the room to provide help to anyone who needs it. **This step should take about 5 minutes.**
💬Bring the class back together and ask for volunteers to report their answers.	• "Can someone tell me the numbers that should go in cells a, b, c, and d of the Soup two-by-two table?" Call on someone. • "Can someone else give me the totals?" • "Can someone else tell me the risks (attack rates)?" • "Can someone else tell me what the risk ratio is for soup and illness?" • Show overhead or PowerPoint slide with answers. • Repeat for dumpling table. • Ask if there are any questions about this analysis, and be prepared to answer questions.
💬Direct the students to read and answer Question 2a. • Prompt students to describe how the tables should be labeled before entering the data. •	• "Both soup and dumplings had elevated risk ratios. So let's see if we can figure out if both foods may have been vehicles in this outbreak, or if only one was the likely vehicle." Ask a student to read Question 2a. • "Before you begin this analysis, let's agree on how these tables should be labeled, so we will all agree on what goes into the tables. Question 2 asks you to analyze dumplings, stratified by soup. So what should go along the left side of the table, that is, where it says, 'Ate <blank>?' What should go in the blank?" [Answer: dumplings.] • "What would stratum 1 be?" [Answer: did not eat soup] • "What would stratum 2 be?" [Answer: ate soup] • "OK, let's take a few minutes to fill in the table, totals, risk, and risk ratio for each stratum."
✍Students tabulate data, complete tables on page 53 of module.	• Walk around the room to provide help to anyone who needs it. **This step should take about 5 minutes.**

Outline	Details
💬 • Bring the class back together and ask for volunteers to report their answers.	• As earlier, solicit answers from several different students. • Show overhead or PowerPoint slide with answers. • "The risk ratio for stratum 1 is 5.0. The risk ratio for stratum 2 is 5.0. What was the crude risk ratio for dumplings? [Answer: 5.0.] • Ask if there are any questions about this analysis, and be prepared to answer questions.
💬✍Direct the students to read and answer Question 2b. • Review the calculation of the Mantel-Haenszel risk ratio. • Students complete stratum-specific analysis of dumplings stratified by soup.	• Ask a student to read Question 2b. • "Before you begin your calculations, let's review the calculation of the Mantel-Haenszel summary risk ratio. First, let's review the numerator. For each stratum, multiply 'a' by 'H0' (the total number of unexposed) and multiply by T (the total number in the stratum. Do this for each stratum, then add the two together. That's the numerator for the MH-RR. Then calculate 'c' times H1 divided by T for each stratum, and add those two results together. That's the denominator. Finally, divide the MH-numerator by the MH-denominator, and you've done it!" • "If stratum 2's risk ratio equals 5.0 and stratum 1's risk ratio equals 5.0, what would you expect the MH-RR to be equal to?" [Answer: 5.0] • "Now go ahead and try it." • Walk around the room to provide help to anyone who needs it. **This step should take about 5 minutes.**
💬 • Bring the class back together and ask for volunteer to report Mantel-Haenszel summary risk ratio.	• Solicit answer from one or more students. [Answer should be 5.0] • Ask if there are any questions about this analysis, and be prepared to answer questions.
💬 • Direct the students to read and answer Question 2c. • Lead discuss of how to assess confounding.	• Ask a student to read Question 2c. • Ask, "How do we assess if confounding is present? What numbers would you compare?" [Answer: crude RR vs. MHRR] • Ask, "Is there confounding?" [Answer: no, crude RR and MH-RR are identical, both = 5.0] • Ask, "Any questions?"

Outline	Details
• Repeat for Questions 3a, 3b, 3c (stratified analysis of soup stratified by dumpling.)	• Repeat as for Questions 2a-2c, can probably proceed a little faster. [Stratum-specific and MH risk ratios all equal 1.0, so confounding **IS** present – crude RR = 3.1 vs. MH-RR = 1.0.]
• Direct the students to read and answer Question 4a. • Students complete 2-by-4 table and accompanying calculations.	• Ask a student to read Question 4a. • Walk students through structure of 2-by-4 table, "Look at the top row. The labels to the left indicate that the top row represents subjects who ate both soup and dumplings. The left top box is for the number of persons who ate both foods and became sick. What number should go in the upper left cell?" [Answer: 20] "Now try filling out the rest of the table and performing the necessary calculations." • Walk around the room to provide help to anyone who needs it. **This step should take about 5 minutes.**
• Bring the class back together and ask for volunteers to report their answers to Question 4a.	• Ask for volunteers to provide numbers in cells, tow totals, risks, and risk ratios. • Explain as necessary. • Show overhead or PowerPoint slide with answers.
• Direct the students to read and answer Question 4b.	• Ask a student to read Question 4b. • "OK, what have we learned from all these calculations?" [Answer: dumpling is strongly associated with illness (RR=5), soup is not (MH-RR=1.0). Soup just looked bad because most people who ate the dumplings also ate the soup. In other words, dumplings confounded the soup-illness 2-by-2 table.]
• Wrap-up exercise by asking for questions and reviewing objectives.	• Ask, "Any questions about what we just did?" • Answer questions as necessary. • Ask a student to go back to page 1 and read the objectives. • After each objective, ask, "Did we cover that?" [Hopefully, students will say yes.]

The following are documents that must be distributed to the participants at the beginning of the exercise for their reference during discussion.

Food Consumption Histories, Foodborne Outbreak 1

Subject Number	Case?	Soup	Dumpling	Subject Number	Case?	Soup	Dumpling
1	Y	Y	Y	25	N	Y	Y
2	Y	Y	Y	26	N	Y	Y
3	Y	Y		27	N	Y	Y
4	Y	Y	Y	28	N	Y	Y
5	Y	Y	Y	29	N	Y	Y
6	Y	Y	Y	30	N	Y	Y
7	Y	Y	Y	31	N	Y	Y
8	Y	Y	Y	32	N	Y	Y
9	Y	Y	Y	33	N	Y	Y
10	Y	Y	Y	34	N	Y	Y
11	Y	Y	Y	35	N	Y	Y
12	Y	Y	Y	36	N	Y	Y
13	Y	Y	Y	37	N	Y	Y
14	Y	Y	Y	38	N	Y	Y
15	Y	Y	Y	39	N	Y	Y
16	Y	Y	Y	40	N	Y	Y
17	Y	Y	Y	41	N	Y	Y
18	Y	Y	Y	42	N	Y	Y
19	Y	Y	Y	43	N	Y	Y
20	Y	Y	Y	44	N	Y	Y
21	Y	Y	N	45	N	Y	N
22	Y	N	Y	46	N	Y	N
23	Y	N	N	47	N	Y	N
24	Y	N	N	48	N	Y	N

Answers

Question1. Analyze whether each food is associated with illness using the following table shells.

	Ill	Well	Total	Risk	Measure of

						Association
Ate Soup?	Yes	*21*	*29*	*50*	*42.0%*	*3.1*
	No	*3*	*19*	*22*	*13.6%*	
	Total	*24*	*48*	*72*	*33.3%*	

		Ill	Well	Total	Risk	Measure of Association
Ate Dumpling?	Yes	*21*	*21*	*42*	*50.0%*	*5.0*
	No	*3*	*27*	*30*	*10.0%*	
	Total	*24*	*48*	*72*	*33.3%*	

Question 2a. Stratify the analysis of dumplings and illness by soup. Calculate the stratum-specific measures of association.

Stratum 1: *Soup = No*

		Ill	Well	Total	Risk	MoA	
Ate *Dumplings*	Yes	*1*	*1*	*2*	*50.0%*	*5.0*	$aH_0/T = 0.91$
	No	*2*	*18*	*20*	*10.0%*		$cH_1/T = 0.18$
	Total	*3*	*19*	*22*	*13.6%*		

Stratum 2: Soup = Yes

		Ill	Well	Total	Risk	MoA	
Ate *Dumplings*	Yes	*20*	*20*	*40*	*50.0%*	*5.0*	$aH_0/T = 4.0$
	No	*1*	*9*	*10*	*10.0%*		$cH_1/T = 0.8$

Total	*21*	*29*	*50*	*42.0%*

MH MoA numerator = *0.91 + 4.0 = 4.91*

MH MoA denominator = *0.18 + 0.80 = 0.98*

MH MoA = *4.91 / 0.98 = 5.0*

Crude MoA = *5.0*

Question 2b. Calculate the Mantel-Haenszel measure of association.

See calculations above.

Question 2c. Is there evidence of confounding?

No confounding (Crude RR = MH RR = 5.0)

Question 3a. Stratify the analysis of soup and illness by dumplings. Calculate the stratum-specific measures of association.

Stratum 1: *Dumplings = No*

		Ill	Well	Total	Risk	MoA	
Ate *Soup*	Yes	*1*	*9*	*10*	*10%*	*1.0*	aH_0/T = *0.67*
	No	*2*	*18*	*20*	*10%*		cH_1/T = *0.67*
	Total	*3*	*27*	*30*	*10%*		

Stratum 2: *Dumplings = Yes*

		Ill	Well	Total	Risk	MoA	
Ate *Soup*	Yes	*20*	*20*	*40*	*50.0%*	*1.0*	aH_0/T = *0.95*
	No	*1*	*1*	*2*	*50.0%*		cH_1/T = *0.95*
	Total	*21*	*21*	*42*	*50.0%*		

MH MoA numerator = *0.67 + 0.95 = 1.62*

MH MoA denominator = *0.67 + 0.95 = 1.62*

MH MoA = *1.62 / 1.62 = 1.0*

Crude MoA = *0.67 + 0.95 = 3.1*

Question 3b. Calculate the Mantel-Haenszel summary measure of association.

See calculations above.

Question 3c. Is there evidence of confounding?

Yes, there is confounding (Crude RR of 3.1 is quite different from MH-RR of 1.0, and lies outside the stratum-specific RR's [both 1.0])

Question 4a. Tabulate the data into the following 2-by-4 table. For the top three rows, calculate risks (attack rates) and measures of association (each row's risk compared with the bottom row's risk).

Soup?	Dumpling?	Ill	Well	Total	Risk	Measure of Association
Yes	Yes	*20*	*20*	*40*	*50.0%*	*5.0*
Yes	No	*1*	*9*	*10*	*10.0%*	*1.0*
No	Yes	*1*	*1*	*2*	*50.0%*	*5.0*
No	No	*2*	*18*	*20*	*10.0%*	Reference
	Total	24	48	72	33.3%	

Question 4b. Is this outbreak consistent with only one food being the likely vehicle? If so, which one? If not, what is the evidence that both foods are likely vehicles?. Only dumplings are associated with illness. Soup is not associated with illness by itself, but most people who ate the dumplings also ate soup, so soup looked like it was associated with illness on crude analysis.

Establishing a causal association

Note to the facilitator
Brainstorming ○ Ascertainment of cause beyond statistical association ○ Theories of causation

Session 7: VALIDITY AND RELIABILITY

Allocated time: 1: 45

Learning Objectives

	After completing this lesson, participants will be able to: • Explain Validity and Reliability • Discuss different types of Validity and Reliability • Identify ways to maximize validity and reliability on measurements

Read and discuss about reliability and validity in the Participants' module and discussed with participant for their application.

Note to the facilitator
• Start with the general concepts of validity and reliability • Definitions and measurements by ○ Types of validity ○ Types of reliability

Session 8: Screening Program and Evaluation

Allocated time: 2 hours

Learning objective

	At the end of the chapter, the trainee will be able to • Define screening, validity and reliability • Calculate and interpret sensitivity and specificity of screening tests • Calculate and interpret reliability measurements of screening tests • Identify approaches of evaluating screening programs

Read and discuss about sensitivity and specificity in the Participants' module and discussed with participant for their application.

Note to the facilitator

- Start with the general concepts of validity and reliability
- Definitions and measurements by screening
  - Sensitivity and specificity

Note to the facilitator on the exercise

Following the presentation and this exercise, the student should

Create a two-by-two table for the two tests
Calculate the net sensitivity and specificity based on the formula provided

Net sensitivity = sens 1 + sens 2 – sens1 x sens 2
= 80% + 90% – (80% x 90%)
= 98%

Net specificity = spec 1 x spec 2

= 60% x 90%
= 54%

Net Gain and Net Loss

- In simultaneous testing, there is a net gain in sensitivity but a net loss in specificity, when compared to either of the tests used
- In sequential testing when positives from the first test are retested, there is a net loss in sensitivity but a net gain in specificity, compared to either of the tests used

Part 2: Inferential Statistics

Overview

The guides are general instructions on necessary preparations, time management and how to start and manage the sessions. The notes for facilitators, on the other hand, include specific instructions for delivering sections. Slide presentations are prepared from the module contents to aid presentation by facilitator. The facilitators are free to adapt and revise them within the scope of module`s contents. For example, illustrations may be updated or added considering relevance to the training.

Contents of part two

1. Estimation and hypothesis testing
2. Correlation and Regression

Guide for facilitator:

- Ensure the availability of the following training materials before starting the training
  - LCD projector
  - Softcopy of PPT presentations
  - Printed copies of pre-test questions
- Introduce yourself, if not already introduced in the first phase of the training
- Give the trainees overview of the whole module as described in the notes below
- Inform trainees about who will deliver each of the sessions
- Encourage participants to actively participate in all sessions
- Administer pre-test questions

Session 1: Statistical Inference

Allocated time: 3:00 hours

Learning Objectives

After completing this section, participants will be able to

- Define terms in inferential statistics
- Explain the difference between sample statistic and population parameter,
- Differentiate the symbols and abbreviations used in inference,
- Describe the sampling distribution of a statistic and define the standard error of a statistic,
- Compare and contrast point estimation and interval estimation,
- Construct confidence intervals to population values
- List and explain the steps in hypothesis testing,
- State how to decrease the probability of Type I and Type II errors,
- Understand the purpose of statistical hypothesis testing,
- Explain the difference between statistical significance and practical importance,
- statistical hypothesis and conduct testing

Read and discuss about the application of inferential statistics in the Participants' module and Make a note on the following Issues:

- Sampling distribution of sample mean and proportion
- Concept of statistical inference
- Estimation procedure and methods
- Advantage of interval estimation over that of point
- Components of interval estimation
- Interpretation of confidence level
- P-value and significance level
- Hypothesis testing and their types

- Elements of hypothesis testing
- Comparison of two means
- Test of association
- Different types of t test

	**Group exercises (30 minutes)** • Ask participants to brainstorm on what statistical inference is. • Ask them to use the data they collected from their colleagues and compute ➢ point and interval estimate both mean and proportion ➢ state the hypothesis for each variable ➢ test the hypothesis • Ask each group to present their result

Finally Conclude this session by answering any questions participants might have about statistical inference.

Exercises

Practical problems:

1. *Diabetes and Myocardial Infarctions amongst Navajo Indians*
2. *Researchers are conducting an RCT to determine whether exercise prevents fracture in women with osteoporosis.*

Session 2: Correlation and Regression

Allocation time: **3:30 minutes**

Learning Objectives

	At the end of this session, the trainees are expected to: • Identify and apply methods of analysis for continuous outcome variables • Apply correlation and regression analysis • Able to test the basic assumptions for linear regression • Explain the components of linear regression model

	• Apply logistic regression • Compute the parameters and interpret the result • Able to choose appropriate statistical model for the given data

Read and discuss about the application of regression and correlation in public health research in the Participants' module and Make a note on the following Issues:

- Correlation and their activity with merit and demerit
- Regression and their application
- Different between logistic regression and linear regression
- The goodness of fit of the model can be tested

	**Group exercises (25 minutes)** • Ask participants to brainstorm on what correlation and regression are. • Ask them to use the data they collected from their colleagues and compute → Correlation between pair of numerical variables → State the hypothesis of the coefficient and write the steps • Ask participants to list the possible application of linear regression in their field • Ask participants to list the assumption of the model

Finally Conclude this session by answering any questions participants might have about correlation and regression.

Exercises

- *Give sample data*
- *To compute correlation and interpret the result*
- Fit linear regression model
- Interpret the result from the simple model
- Fit simple logistic model for each independent variables
- Interpret the result from the simple model

- Fit multiple logistic regression model
- Interpret the result

Compare the parameters of the two models and discuss the values

Module 2 Pre and posttest with Answer key

1. Which of the following is major difference between descriptive and analytic epidemiologic study designs?
   a. There is no difference in two of the study designs
   b. Analytic study generates a hypothesis
   c. Analytic study describes data by person place and time
   d. Descriptive study tests a hypothesis
   e. None of the above
   Answer E
2. Analytic study tests a hypothesis by comparing :
   a. occurrence of a diseases with previous studies
   b. occurrence of a disease b/n groups
   c. occurrence of a disease with expectation
   d. There is no comparison
   e. None of the above
   Answer: B
3. Which of the following is **true** about case control study design?
   a. In case control study, cases are selected by their exposure
   b. Case control is descriptive study design
   c. In case control study, risk of exposure is measured directly
   d. In case control study, number of cases and controls is determined before analysis
   e. None of the above
   Answer: D
4. Which of the following is **wrong** about cohort study design?
   a. In Cohort study, subjects are selected by their exposure status
   b. Cohort is an experimental study design
   c. In Cohort study, risk of exposure is measured indirectly
   d. Number of cases and controls is determined before analysis
   e. None of the above
   f. Band d
   Answer : F
5. Major similarity between interventional and cohort study design is?
   a. The study subjects are selected by their caseness and non-caseness
   b. Both are longitudinal studies
   c. They have no similarity at all
   d. They are both descriptive study designs
   e. None of the above
   Answer: B
6. Which of the following are major groups of bias?
   a. Selection and Information bias
   b. Selection bias and recall bias
   c. Recall bias and information bias
   d. Intra-observer and inter-observer bias
   e. None of the above
   Answer: A
7. Bias is totally avoidable by?
   a. Proper selection of study subjects
   b. Proper analysis
   c. Selecting and training good data collectors
   d. all of the above

e. None of the above

Answer: D

8. Which of the following is true about the role of chance?
   a. The role of chance is in finding statistics of significance b. It is related to effect modification
   c. The role of chance is in finding confounding d. Chance is effect modifier
   e. None of the above

   Answer: E

9. Suppose that of 50 people who attended a dinner party, 10 were ill due to food poisoning. What is the probability of illness for a person selected at random
   a. 10/40 b. 10/50 c. 10/60
   d. 50/10 e. None of the above

   Answer B

10. In a symmetrically distributed data, what proportion of the population is between one standard unit?
    a. 95% b. 50% c. 68%
    d. 99% e. None of the above

    Answer: A

11. What is statistical inference?
    a. Generalization of result to source population b. It is the distribution of data in a sample
    c. It is the description of data in a sample d. It a statistics of frequency distribution
    e. None of the above

    Answer: A

12. In analytic study, relationship between exposure and outcome variables is measured using ____.
    a. Measures of impact b. Sensitivity c. Specificity
    d. Measures of association e. None of the above

    Answer: D

13. In analytical studies, which of the following is a measure of impact?
    a. Odds ratio and its 95% CI b. Relative ratio and its 95% CI c. Attribution risk
    d. a and b are correct e. None of the above

    Answer: D

14. Which of the following is **true** about sample size?
    a. In some cases, sample size can be equal or more than the number of the source population
    b. Sample size is the lowest possible number we can use for data collection
    c. Sample size is important to reduce our cost for collecting information from the whole population
    d. b and c are correct
    e. None of the above

    Answer D

15. During discussion on causality of a result of an epidemiological study, what criteria should we include?
    a. Strength of association b. Consistency of the result with others
    c. Type of study design d. all of the above e. None of the above

    Answer: D

16. In analysis of a comparative study between independent and dependent variable, the p-value was 0.001, what did we rule out?
    a. Bias b. confounding
    c. effect modification d. Chance e. all of the above

    Answer: D

17. In analyzing a comparative study design using a two by two table which of the following is the referent
    a. exposed b. non-exposed c. none of the above

Answer: B

Analytic result of a study between sexual violence and HIV/AIDS in women showed that the odds of HIV/ AIDS was 2.3 times higher among sexually violated compared to non-violated: answer questions 18 and 19.

18. Based on the above report, which of the following is true?
    a. Sexual violence is protective factor for HIV
    b. HIV/AIDS is the dependent variable
    c. HIV/AIDS is a risk factor for sexual violence
    d. the study was cohort study
    e. Sexual violence was the independent variable

    Answer: C

19. Odds ratio of 2.3 shows us it is…..
    a. HIV/ AIDS is protective factor for sexual violence
    c. Sexual violence is protective factor for HIV/AIDS
    b. HIV/ AIDS is risk factor for sexual violence
    d. Sexual violence is risk factor for HIV/AIDS

    Answer: B

20. Analysis between two categorical variables is using……
    a. Chi-square test
    b. student's t test
    c. F test
    d. Fishers exact test
    e. none of the above

    Answer: A

MODULE 3 : MONITORING, EVALUATION, SURVEILLANCE AND EPIDEMIC MANAGEMENT)

overview

Program monitoring is the systematic documentation of aspects of program performance that are indicative of whether the program is functioning as intended or according to some appropriate standard. Program evaluation is the application of social research methods to systematically investigate the effectiveness of social intervention programs in ways that are adapted to their political and organizational environments and are designed to inform social action in ways that improve social conditions. The last four decades represent a period of rapid growth in the depth of the monitoring and evaluation body of knowledge hallmarking the professionalization of the field. For monitoring and evaluation purpose, public health managers at different levels need reliable information about the magnitude of different diseases and their risk factors. In this regard knowledge and skill on running the different types of surveillance would help public health managers to effectively prevent and control diseases. Monitoring and evaluation are important at local and international levels. At higher levels, information generated through monitoring, evaluation, and surveillance can inform the management of public health programmers and the direction of public health policy. Surveillance serves as an early warning system which provides timely information needed for action. If there is no good surveillance system in a specific locality or country, disease epidemics can affect a lot of people before actions are taken.

Since communicable diseases are prevalent in developing countries including Ethiopia, this whole module gives emphasis on monitoring and evaluation and, communicable diseases mainly HIV/AIDS.

Goal of the Module

This module aims to build capacity of health professionals in order to control communicable diseases in Ethiopia

Objectives of the Module

At the end of this module, the participant will:

- ✓ Plan and implement monitoring and evaluation of health programs
- ✓ Apple to conduct health surveillance on important health problems
- ✓ Describe how outbreaks should be investigate and mange

Contents of the Module

The Module is organized in two parts. The first part deals with monitoring and evaluation and the second part deals with surveillance and epidemic management. The two parts are given for a given period of two weeks, each lasting one week.

Part 1: Monitoring and Evaluation

1. *Basic Concepts and Definitions*
2. *Components of Monitoring and Evaluation Plan*
3. *Program Frameworks*
4. *Indicators for Monitoring and Evaluation*
5. *Monitoring and Evaluation in the Ethiopian Health Sector*

Part 2: Surveillance and Epidemic Management

1. Introduction to Public Health Surveillance
2. Burden of HIV/AIDS
3. HIV/AIDS surveillance
4. Ethical Considerations in HIV/AIDS Surveillance
5. Outbreak investigation and management

Guide for facilitator:

- Ensure the availability of the following training materials before starting the training
  - LCD projector
  - Softcopy of PPT presentations and participant manual
  - Printed copies of pre-test questions
  - Flip chart
  - Colored markers and white board

Methods of teaching

- . Lecture
- Brainstorming
- Experience sharing
- Small group's discussions
- Individual/group discussions

Class presentations

- Introduce yourself,
- Give the trainees overview of the whole module as described in the notes below
- Inform trainees about who will deliver each of the sessions
- Encourage participants to actively participate in all sessions
- Administer pre-test questions

Sample Schedule on Leadership in Strategic information (LSI) training program on the third module, Surveillance, Monitoring and Evaluation of HIV/AIDS

Week 1	Monday	Tuesday	Wednesday	Thursday	Friday
08:30 – 10:15 am	**Introduction to the module** ***Definition of basic monitoring and evaluation terms***	***Information sources Evaluation design***	***Indicators***	***M&E of HIV/AIDS programs***	Preparing an M&E Plan
10:15 – 10:30 am	**Tea/Coffee B r e a k**				
10:30 – 12:30 pm	*Components of Monitoring and Evaluation Plan*	***Information sources Evaluation design***	***Indicators***	***M&E of HIV/AIDS programs***	*Preparing an M&E Plan*
12:30 – 02:00 pm	**L u n c h**				
02:00 – 03:30 pm	***Monitoring & Evaluation frameworks***	***Information sources*** ***Evaluation design***	***Indicators***	***M&E of HIV/AIDS programs***	*Preparing an M&E Plan*
03:30 – 3:15 Pm	**Tea/Coffee B r e a k**				
3:45 – 05:15 pm	***Monitoring & Evaluation frameworks***	**Project analysis** **(Mentor)**	**Project analysis** **(Mentor)**	**Project analysis** **(Mentor)**	**Presentation of research work**

Week 2	Monday	Tuesday	Wednesday	Thursday	Friday
08:30 – 10:15 am	Introduction to Public Health Surveillance	HIV/AIDS Sero-surveillance	Introduction to Surveillance of Populations at High Risk for HIV Transmission: BSS	Universal Case Reporting and Sentinel Surveillance for STIs	Project analysis Presentation
10:15 – 10:30 am	Tea/Coffee B r e a k				
10:30 – 12:30 pm	ANC Sentinel surveillance	Core Elements of HIV Surveillance	Most at Risk Populations (MARPS): Ethical issues in HIV surveillance	Outbreak investigation	Project analysis Presentation
12:30 – 02:00 pm	Lunch				
02:00 – 03:30 pm	Second Generation HIV Surveillance Demographic and Health Surveys Plus and its relevance (Behavioral combined with HIV test	Introduction to Surveillance of populations at High Risk for HIV Transmission: BSS	Introduction to STI Surveillance in and the Relationship between STIs and HIV:	Continued---- Outbreak investigation	Project analysis Presentation
03:30 – 3:15 Pm					
3:45 – 05:15 pm	Project analysis Exercise	Project analysis Exercise	Project analysis Exercise	Project analysis Exercise	Project analysis Presentation

Part 1: Monitoring and Evaluation

Overview

The guides are general instructions on necessary preparations, time management and how to start and manage the sessions. The notes for facilitators, on the other hand, include specific instructions for delivering sections. Slide presentations are prepared from the module contents to aid presentation by facilitator. The facilitators are free to adapt and revise them within the scope of module`s contents. For example, illustrations may be updated or added considering relevance to the training.

Contents

1. *Basic Concepts and Definitions*
2. *Components of Monitoring and Evaluation Plan*
3. *Program Frameworks*
4. *Indicators for Monitoring and Evaluation*
5. *Monitoring and Evaluation in the Ethiopian Health Sector*

Guide for facilitator:

- Ensure the availability of the following training materials before starting the training
  - LCD projector
  - Softcopy of PPT presentations
  - Printed copies of pre-test questions
- Introduce yourself, if not already introduced in the first phase of the training
- Give the trainees overview of the whole module as described in the notes below
- Inform trainees about who will deliver each of the sessions
- Encourage participants to actively participate in all sessions
- Administer pre-test questions

Session 1: Basic Concepts and Definitions

Allocated time: 1: 30 minutes

Learning objectives

At the end of this session, trainees are expected to be able to:

- Define monitoring and evaluation
- Discuss the relationships and differences between monitoring and evaluation
- Differentiate different types of M&E activities

Exercises

1. Differentiating monitoring and evaluation
2. Classifying monitoring and evaluation activities

Monitoring and evaluation definition

- Project the slide with the three discussion questions
- Ask participants to respond to one or more of the discussion questions
- Create two columns on a flip chart and list key words used by participants while defining and differentiating the two concepts.
- Use red markers for key words wrongly used as differentiating the two

Discussion Questions

- What is monitoring?
- What is evaluation?
- How are monitoring and evaluation related and different?

Make a note on the following points after reading the participant module:

- As a young profession, the concepts of monitoring and evaluation lack standard definitions

- There are different definitions forwarded by different authors
- There are similarities and also differences between these definitions
- Before I provide you some definitions from recognized authors and organizations, you will do a group assignment that requires you to give examples of monitoring and evaluation activities for a hypothetical intervention.

Guide to group work on "Differentiating monitoring and evaluation"

- Group participants into groups of five around their tables
- Distribute the printed copies of the exercise to each participant
- Read the instructions once
- Allow groups to work on the group exercise for 30 minutes

Group Exercise

- Be in a groups of five
- Construct a hypothetical public health intervention implemented by a Woreda Health Office.
- Identify two monitoring activities and two evaluation activities.
- Discuss why each of the activities is classified as monitoring or evaluation.
- Take a note on disagreements for further discussion
- Present your work to the group during general discussion.

Group Presentation and Discussion

- Allow half of the groups to present their work and the rest each group to present their work
- On a flip chart, write what for each group defines and differentiates the two concepts (Monitoring and Evaluation)
- Wrap up by summarizing major misconceptions and correct descriptions revealed during the group presentations.
- Present different definitions forwarded by different recognized authors and organizations.
- After presenting each definition, provide a brief discussion of key concepts included

- Further discussions on how each of the definitions are related to or differ from each other.

Present a working definition that will be used throughout the module

- Based on the different concepts included in the definitions discussed before, a working definition is presented for use throughout this document.

Relationships and Differences between monitoring and evaluation

Overview of sub-session

- Despite the very close relationship that exists between the concepts of monitoring and evaluation, as you have seen in the definitions, the two activities represent distinct sets of procedures serving different categories of information needs for decision makers.
- The relationship between monitoring and evaluation lays in their interdependence, overall purpose and general methods.
- Present slides summarizing the differences between the two concepts
- Present slides summarizing the relationships between the two concepts

Why Monitoring and Evaluation

Ask participants: M&E requires the use of scarce human and material resources to collect and process data. Why do we need to invest on M&E?

- List responses on a flip chart
- Classify the responses into the three categories of evaluation purposes and proceed with the presentation.
- See whether there is any disagreement or not

Types of monitoring and evaluation activities

Make a note linking this subsection to the previous sub-session

- In the previous sub-section, it is mentioned that both monitoring and evaluation can be applied on the different components of a program including inputs, activities, outputs, outcomes and impacts.
- The application of the concepts of monitoring and evaluation into these different components produces the different types of monitoring and evaluation activities to be discussed in this sub-session
- Complete the presentations
- Ask participants to be in their previous group for a continued group work.

Introduce the group work

- Refer back to your previous exercise
- Classify the different monitoring and evaluation activities you formulated in exercise one as routine program monitoring, process evaluation, outcome monitoring, outcome evaluation, and impact monitoring or impact evaluation.

Large group discussion

- Ask participants to report their discussion to the larger group
- Allow one person from each group to write and present the report
- Reflect on the group reports

Make a reminder

- As you have seen in your group work, both monitoring and evaluation can be applied to all the different components of a program: processes and expected results.
- Processes can be evaluated and outcome and impacts can be monitored

Session2 : Components of an Monitoring and Evaluation Plan

Allocated time: 2 hours

Learning Objectives

At the end of this session, trainees are expected to be able to:

- Define monitoring and evaluation plan
- Explain purpose of a monitoring and evaluation plan
- Explain goals of a monitoring and evaluation plan
- Identify who should be involved in monitoring and evaluation planning
- Describe when should the monitoring and evaluation plan be used
- Discuss key elements of a monitoring and evaluation plan

Exercises

1. The benefits of a well-developed monitoring and evaluation plan
2. Who should be involved in monitoring and evaluation planning

3. Opportunities for developing and implementing monitoring and evaluation work plan
4. Barriers to developing and implementing monitoring and evaluation work plan

Project the slide with the three discussion questions and ask participants to respond to the discussion questions

Discussion points : (15 minutes)

- *What is a monitoring and evaluation plan?*
- *What are* monitoring and evaluation *Plans used for? Purpose / function*
- *What are the goals of a monitoring and evaluation plan?*

Make a note on the following points:

- As a guide, the M&E Work Plan explains the goals and objectives of the overall plan as well as the evaluation questions, methodologies, implementation plan, matrix of expected results, proposed timeline, and monitoring and evaluation instruments for gathering data.
- Monitoring and evaluation planning should begin during or immediately after the project design stage.
- Early planning will inform the project design and allow for sufficient time to arrange for resources and personnel prior to project implementation.
- Monitoring and evaluation planning should also involve those using the monitoring and evaluation system.
- Involvement of project staff and key stakeholders ensures feasibility, understanding, and ownership of the M&E system.

Group Exercises (15 minutes)

Divide the participants into sub groups of about five people each to discuss on these two issues and present their points to the larger group

- The benefits of a well-developed monitoring and evaluation plan
- Who should be involved in monitoring and evaluation planning?
- Finally provide power point presentation on the nine key elements of a monitoring and evaluation plan

Session 3: Program Frameworks

Allocated time: **3:30 minutes**

Learning objectives

At the end of this section, trainees are expected to be able to:

- ✓ Design goals and objectives for specific intervention programs.
- ✓ Identify and differentiate between
- ✓ Able to use either of these frameworks such as conceptual frameworks, results and logical
- ✓ frameworks, and logic models

Exercises

- Identify Goals and Objectives
- Rewrite objectives so they are SMART
- Develop your own frameworks for your own program

Goals and Objectives: Definition

- Project the slide with the three discussion questions
- Ask participants to respond to the discussion questions
- Create two columns on a flip chart and list key words used by participants while discussing those two concepts.
- Use red markers for key words wrongly used as differentiating the two points.

Discussion exercise (10 minutes)

- What is Goal?
- What is an objective?
- What is the difference between Goal and objectives?

Make a note on the following points:

- The concepts of Goal and Objectives sometimes overlap and try to make clear definitions to see the differences.
- There are different definitions forwarded by many different authors
- There are similarities and also differences between these definitions
- Before the provision of definitions you will do a group works that requires you to give examples of Goals and Objectives activities for a hypothetical public Health intervention.

	**Group Exercise (15 minutes)** ✓ Be in group of five, ✓ Construct a hypothetical public health intervention implemented by a Woreda ✓ Health Office which you have mentioned in the related to pervious examples. ✓ Ask participants to write about Goals and objectives. ✓ Take a note on disagreements for further discussion. ✓ Ask them to write their responses on the flip charts and to hang them on the wall. ✓ Present your work to the group during general discussion.

Learning Activity: Write SMART Objectives for Your Program

Directions:

- Work individually or as a small group
- Review your program logic model you developed earlier
- If you already have program process and outcome objectives, write them in the flip chart, then use this flip chart to present general group and ensure that they are SMART.

– If your existing objectives are not SMART, revise them again and then write them in another flip chart.

Types of frameworks

- Project the slide with the three discussion questions
- Ask participants to respond to the discussion questions
- Create two columns on a flip chart and list key words used by participants while discussing those different concepts.
- Use red markers for key words wrongly used as differentiating the different points.

Discussion questions (15 minutes)

- What are frameworks?
- Write the different types of frameworks?
- What is the difference between the different frameworks?
- When do you apply either of these frameworks?

Why Are Frameworks Useful?

Group Exercise (20 minutes)

- In groups, ask participants to identify who should be a member of the monitoring and evaluation team and what skills the members need.
- Ask them to write their responses on the cards and to hang them on the wall.
- Remind participants that at the planning stage of a program, it is necessary to include plans for monitoring and evaluation. This can be done by developing a conceptual framework of the program, a tool which is simple and readily applicable in the monitoring and evaluation of any integrated development program.

- Explain that developing a conceptual framework for a program allows staff to articulate how they anticipate program inputs and activities will achieve the desired effects, reach consensus on the details of the program, and clarify the terminology that will be used.
- Remind participants that the process in the conceptual framework starts by understanding the problem/need the program is addressing. What is the problem, how big; who does it affect, what are the cause(s) of the problem? If the program defines the problem wrongly, everything thereafter is all wrong.
- Provide handout after discussing slides, explain to participants that the framework indicates what elements need to be monitored and/or evaluated. These elements can later be translated into indicators. Inform the participants that they will learn more about indicators in session 5. Also point out that the framework makes it easier to identify specific constraints to program effectiveness as the program evolves.
- Dividing a program into various components makes it easier to create the necessary indicators to assess the program and identify the specific constraints to program effectiveness as the program is being implemented. The program conceptual framework is a dynamic instrument.
- Further point out that in this particular framework there are four principal elements: inputs, outputs, outcomes, and impacts that can be translated into indicators and are particularly useful in monitoring and evaluating different programs.
- Distribute the handout at the end of the exercise because they will complete the same log frame as part of group work) explain that the elements of the conceptual framework can be rearranged into a logical framework to organize the elements of the conceptual framework in tabular form.

Group presentation and discussion (10 minutes)

- Allow all the groups to present their work one after the other and share their experiences to learn each other
- On a flip chart, write what for each group defines and differentiates each different frameworks
- Wrap up by summarizing major misconceptions and correct descriptions revealed during the group presentations.
- Present different definitions forwarded by different scholars
- After presenting each definition, provide a brief discussion of key concepts included
- Further discussions on how each of the frameworks is related to or differs from each other, and used in our daily life.

Give short presentation of your slides that will be used across the different activities of your daily life.

Session 4: Monitoring and Evaluation Indicators

Allocated time: 5:15 minutes

Learning Objectives

By the end of this unit, participants will be able to:

- Describe the characteristics of indicators;
- Identify indicators that can be used to monitor a program;
- Identify indicators that can be used to evaluate a program.

Exercises

1. What are indicators?
2. List indicators you were used in your daily activities?
3. List criteria for good quality indicators

Indicators definition

- Project the slide with the discussion questions
- Ask participants to respond to the discussion questions
- Create five columns on a flip chart and list key words used by participants while discussing those five concepts.
- Use red markers for key words wrongly used as differentiating the five points.

Discussion Questions (10 minutes)

- What are indictors?
- Why indictors?
- Which of these meet the criteria of good indicators?
- Which can be used as proxy indicators?
- How and why can they be used as proxy indicators?

Make a note on the following Issues:

- The concepts of Goal and Objectives overlaps their definitions
- There are different definitions forwarded by different authors
- There are differences between these definitions

Selecting Indicators

Before the provision of definitions you will do a group works that requires participants to give examples of Goals and Objectives activities for a hypothetical public Health intervention.

	**Group Exercises (20 minutes)** It seems there is a preparation with the above discussion questions and the first question below ✓ Ask participants to brainstorm on what an indicator is. List their responses on the flipchart. ✓ Ask participants if they know the characteristics of a good indicator. ✓ Ask participants to explain why it is necessary to identify or develop appropriate ✓ Indicators for monitoring and evaluation. ✓ Distribute Handout on the characteristics of good indicators.

Finally Conclude this session by answering any questions participants might have about indicators.

Step 1: Explain to participants that it is not always possible to regularly monitor all elements of the program conceptual framework. It is necessary to prioritize information needs and decide which indicators will be monitored regularly, which will be checked periodically (less often), and which will be assessed through special studies or a pre-planned evaluation.

Discussion points
Ask participants to brainstorm on the criteria for deciding when and what to monitor and evaluate. Allow 15 minutes for this activity.

Step 2: Explain to participants that the process followed to select indicators is a critical part of designing and putting into place a monitoring and evaluation system. Using the criteria for a good indicator, those responsible for designing a monitoring and evaluation system often find it helpful to involve stakeholders in selection of appropriate measures for at least outcome and impact indicators. Such efforts at the design stage may well reduce confusion and second guessing later on. The selection of indicators may be critical in subsequent perceptions of whether a program has been successful.

Step 3: Point out that stakeholders should participate in identifying and selecting indicators to ensure that their expectations and information needs are addressed. Discuss with participants the different ways they involve stakeholders in the selection of indicators.

Step 4: Explain to participants that regardless of the technique used, the indicators generated for program monitoring and evaluation should be reviewed to make certain that they conform to the above-mentioned criteria before being incorporated into a data collection system. Monitoring and evaluation staff need to select a set of indicators which, when taken as a whole, provide enough information to assess implementation or the effect of the program. This generally requires finding a balance between the ideal and the practical and collecting only what is needed rather than what is possible or interesting.

Step 5: Also point out that the process of selecting practical indicators also implies that the frequency of collection is manageable.

Step 6: Mention that the choice of indicators, particularly for evaluation, may influence perceptions about the success or failure of a program.

Group Exercise – we have to use similar terminologies

- Ask participants to get into the same groups and ask them to identify and select appropriate
- input, output, outcome, and impact indicators for this program by answering the following
- Questions: Allow 30 minutes for this activity. In plenary, ask each group to present their
- Indicators and the answers to these questions.
- what information is needed to monitor the program to evaluate the program
- Who will collect this information?
- Where is this information to be found?
- Who will use the information?
- For what purposes will it be used?
- Ask participants to work on their own program indicators and be prepared to have two or three volunteers share their indicators in plenary the following day. Allow each group 15 minutes for their presentation

Finally distribute Handout for them to complete their answers and conclude this session by asking participants if they have any questions about selecting indicators.

Session5. Monitoring and Evaluation in the Ethiopian Health Sector

Allocated time: **5:15 minutes**

Learning Objectives

At the end of this section, trainees are expected to be able to:

- Explain status of Monitoring and Evaluation in Ethiopian health system
- Identify the objectives of FMoH's Monitoring and Evaluation activities
- Explain types of evaluations used by FMoH
- Understand performance monitoring and quality improvement process
- Understand the terms: routine administrative report ,integrated supportive supervision, and
- inspection
- Describe the Monitoring and Evaluation principles : Standardization, integration and
- simplification
- Identify the key Monitoring and Evaluation indicators at national level

Exercises

1. Principles of standardization, integration and simplification.
2. Key M and E Indicators for Result Framework at National Level

Group work (25 minutes)

Divide the participants into groups of about five people each to discuss on these two issues and present their points to the class.

1. Principles of standardization, integration and simplification.
2. Challenges of utilizing the key M and E indicators for result framework at national level

Make sure to note the following

Standardization - Common definitions of indicators, data collection instruments, and data processing and analysis procedures form the foundation for effective HMIS/M&E. Without consistent principles and definitions performance cannot be systematically measured and improved across locations or over time.

Integration - A single HMIS/M&E plan, shared by all partners, is a cornerstone of HSDP Implementation of this principle requires integrating data from different programs into a shared channel from which all derive their information.

Simplification - Collecting, analyzing, and interpreting only the information that is immediately relevant to performance improvement makes best use of scarce resources, especially human resources.

After power point presentation discuss with participants on selected Key monitoring and evaluation Indicators for result framework at national level. Select only two from each of the following broad categories:

- Maternal Neonatal and Child Health, Disease Prevention and Control ,Nutrition,
- Hygiene and Environmental Health
- Health Infrastructure
- Human Resources
- Pharmaceutical supply and services
- Community Ownership
- Quality Health services
- Public Health Emergency preparedness and Response
- Evidence based Decision Making
- Resource Mobilization and Utilization

Part 2: Surveillance and outbreak management

Overview of the facilitator

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Contents

Part 2: Surveillance and Epidemic Management

1. Introduction to Public Health Surveillance
2. Burden of HIV/AIDS
3. HIV/AIDS surveillance
4. Ethical Considerations in HIV/AIDS Surveillance
5. Outbreak investigation and management

Guide for facilitator:

- Ensure the availability of the following training materials before starting the training
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- Encourage participants to actively participate in all sessions
- Administer pre-test questions

Session 1: Introduction to Public Health Surveillance

Allocated time: 3: 45 minutes

Guide for facilitator:

Get prepared by reading the module notes including the exercises and the reference materials

- Start the session by introducing the session as described below and then let one of the trainees read the objectives
- Inform the trainees about presence of exercises which involve calculations and interpretation of measures of association

Learning objectives

	At the end of this session, the participant will be able to: • Define public health surveillance • List some of the uses of surveillance • Describe different types of surveillance • Describe the features/attributes of good surveillance

Purposes of Public Health Surveillance

Notes to facilitator: In order to inspire the participants and enable to list and define the purpose of public health surveillance.

Notes to facilitator: To make sure the participants understand the concept of public health surveillance

	**Activities:** • Ask where the participants their understanding about the process of public health surveillance and interconnected activities. • List the participant responses on the flipchart and wrap up the discussion by using the following question. • List the process or steps of public health surveillance activities?

Data Sources for surveillance

Notes to facilitator: To make sure the participants understand the concept data surveillance, ask them the question below. Then, elaborate by discussing its data sources

	Activities; List the participant responses on the flipchart and wrap up the discussion by using the following question. What is the sources of surveillance data

Read and discuss using Participants' module and take a note on the following issues:

- Selection of diseases for surveillance
- Integrated Disease Surveillance and Response (IDSR)
- Features of Integrated Disease Surveillance and Response
- Goal of Integrated Disease Surveillance and Response Programme

	Activities: List the participant responses on the flipchart and elaborate by discussing using the module following question. List the priority disease in Ethiopia; See the response from participant

Discussion Questions

- What is case definition?
- How to classify case?

Read the correct answer from the Participant module

Group discussion (25 minutes)

	Note to the facilitator • Start with the general concepts of surveillance • Types of surveillance and their difference • Advantage of surveillance • Discus the difference between each surveillance type

Take notes from the participant module

- ✓ Types of surveillance
- ✓ Sentinel, active and passive surveillance and their advantages and disadvantage

Discussion point (10 minutes)

- How to analysis surveillance data
- Which types of statistic and epidemiology applicable for analyzing surveillance data?
- When to plan for disseminate surveillance information?
- When to decide to whom and how to disseminate surveillance result
- Make notes form the module and elaborate the exact response of surveillance data analysis

Activities It seems there is a preparation with the above cases

Ask participants to brainstorm on what attribute of surveillance include. List their responses on the flipchart and elaborate the response

Discussion points (20 minutes)

1) Which diseases do you recommend to include in the surveillance system? Why? Discuss from the perspective of attributes of surveillance

2) What are the possible problems when the diseases you suggested are included in the surveillance?

Session 2: **Burden of HIV/AIDS**

Allocated time: 1:30 minutes

Learning Objectives

	At the end of this session, participants will be able to: ✓ Describe the stages of HIV/AIDS epidemic ✓ Understand the global burden of HIV/AIDS ✓ Discuss on the burden, trend and impact of HIV/AIDS in Sub-Saharan Africa and Ethiopia ✓ Discuss key Programmatic areas of HIV/AIDS interventions

	**Activities:** List the participant responses on the flipchart and elaborate by discussing using the following question. List stages of HIV/AIDS Epidemic?, Read and make notes from the participant module

<u>Group discussion</u> (20 minutes)

- Discus about the magnitude of people living with HIV
- Discus the magnitude of HIV related death in the world, Africa and Ethiopia
- Effect of ART among HIV positive patients in Africa and Ethiopia
- Magnitude of TB/HIV co-infection in Ethiopia
  - Allow all the groups to present their work one after the other and share their experiences to learn each other
  - On a flip chart, write what for each group defines and differentiates each different presentation
  - Wrap up by summarizing major misconceptions and correct descriptions revealed during the group presentations.
  - Present different definitions forwarded by different scholars
  - After presenting each definition, provide a brief discussion of key concepts included
  - Further discussions on how each of the frameworks is related to or differs from each other, and used in our daily life.

Give short presentation of your slides that will be used across the different activities of your daily life.

Activities: List the participant responses on the flipchart and elaborate by discussing using the following question. What are the key HIV/ADIS programmatic areas?

Read and make notes from the participant module for the following point

- Prevention
- Care and treatment
- Impact Mitigation

	**Small group work** (15 minutes) In some Sub-Saharan African countries the prevalence of HIV/AIDS remained high. What are the possible reasons?

Session 3: HIV/AIDS surveillance

Allocated time: 5:15 minutes

Learning Objectives

	At the end of this session, participants will be able to: • Describe the purposes of HIV/AIDS surveillance • Describe core elements of HIV/AIDS surveillance • describe the different surveillance systems • Understand the components of Second-Generation HIV Surveillance • Describe basic data collection methods • Discuss the surveillance sampling methods • Describe the indicators used in surveillance

Discussion point (3 minutes)

Discus the purpose of HIV and AIDS surveillance stratify in two group allow all the groups to present their work one after the other and share their experiences to learn each other

- Ask participants the core elements of HIV/AIDS surveillance; List the participant responses on the flipchart.
- Ask participant the concept of ANC and STI HIV surveillance.

Discussion Questions

- What are **Indicators of Second-Generation HIV/AIDS Surveillance**
- Why indictors?

Make a note on the following Issues:

- The concepts of Goal second generation HIV/AIDS surveillance
- Basic methods of surveillance data collection

Discussion point

✓ Population at High risk for HIV Transmission surveillance

✓ Methods of HIV transmission at High risk population surveillance.

Activity: Group exercise (refer to Participant's module)
(25 minutes)

- ✓ Let the participants break into small groups of 3 to 4 and choose a chair person and a speaker who will report back their work to the whole group.
- ✓ Tell them to discuss on the individual experiences High risk of HIV transmission surveillance
- ✓ Ask the spokesperson for each group to briefly report back to the whole group using flipchart on the common experiences from their exercise
- ✓ Allow a few minutes for large group discussion.
- ✓ Wrap up the discussion by relating the common characteristics of High risk population from the participants' experience, with the concepts and practices of effective method of data collection that you have discussed.

Read and discuss about behavioral surveillance from the Participants' Manual and make a notes for facilitate the above group activities

- Project the slide with the discussion questions
- Ask participants to respond to the discussion questions
- Create five columns on a flip chart and list key words used by participants while discussing those five concepts.

- Use red markers for key words wrongly used as differentiating the five points.

Discussion Questions (15 minutes)

- What is behavioral surveillance?
- When designing a behavioral surveillance system which types of questions answered?
- Which can be used as Essential Indicators for behavioral Surveillance

Read the specific topic from the participant module and make a note on the following Issues:

- Why Sampling? How to do surveillance sampling?
- Steps in sampling
- Two methods of sampling; probability and non-probability
- Techniques of probability sampling
- Techniques of non-probability sampling

Group work (20 minutes)

Divide the participants into sub groups

- ✓ Ask participants to brainstorm on what sampling is and the different techniques. List their responses on the flipchart.
- ✓ Ask participants to choose appropriate sampling method for their proposed surveillance.

- Project the slide with the discussion questions
- Ask participants to respond to the discussion questions
- Use red markers for key words wrongly used as differentiating the five points.

Discussion Questions

- What are behavioral surveillance indictors?

	**Small group work (25 minutes)** ✓ Discuss the HIV/AIDS surveillance systems being applied in Ethiopia. ✓ Suppose polygamy is acceptable in one of the districts of Ethiopia. It is also acceptable for a man to have extramarital sex. There are many commercial sex workers in the capital city of the district ✓ Which group of people should be targeted for surveillance? Commercial sex workers or pregnant women attending ANC clinics? Why?

Session 4: Ethical Considerations in HIV/AIDS Surveillance

Allocated time: 1: 45 minutes

Learning Objectives

	By the end of this unit, the participant will be able to: • Describe the basic ethical principles • Describe the major ethical issues in HIV/AIDS surveillance Discuss the mechanisms of respecting the ethical principles when conducting HIV/AIDS surveillance • Describe how to deal with vulnerable group of people when conducting HIV/AIDS surveillance

After reading the main topic "ethical issues I HIV/AIDS surveillance" from the participant module and other reference and make a notes the following point:

- List Major ethical issues in HIV-AIDS related surveillance
- Basic ethical principles
- Informed consent
- Potential benefits of HIV surveillance

Ask participants to respond to the common terminologies related to the principle of beneficence

To make sure the participants understand the concept of Ethical issues

Small group work

(20 minutes)

These days many adolescents in high schools are engaged in risky sexual behavior. You want to establish a surveillance system in high schools so that you can follow the HIV infection rate and behavior of adolescents in the high schools

1) Describe how you will be maintaining the ethical principles when you are establishing the surveillance

2) What are the challenges of such surveillance?

Finally Conclude this session by answering any questions participants might have about HIV surveillance and elaborating the above discussion point.

Session 5: outbreak investigation and management

Allocated time: 3: 30 minutes

Learning objectives

At the end of this session, participants will be able to:

- Understand the definition of outbreak/epidemic
- Describe the levels of disease occurrence
- Describe the types of outbreak/epidemics
- Describe the steps to be following during outbreak investigation
- Describe the different approaches /strategies of outbreak management

Notes to facilitator: Ask trainees to discuss in pairs on what major functions outbreak investigation are related with disease level?. Allow about 5 minutes for discussion and then elaborate the concept.

Conclude this session by stating that:

- ✓ Most people find themselves involved with level of disease occurrence through the use they make of the results of studies or sometimes as participants in investigations.

All professionals involved in health care should have an understanding of the subject so that they can use steps of outbreak investigation in the study of health and disease.

After reading the main topic "outbreak investigation" from the participant module and other reference and make a notes the following point:

- Define the level of disease occurrence
- What does it mean by investigation
- What is the reason for investigating?
- List Steps in an outbreak investigation

Ask participants to respond to the steps of outbreak investigation, create five columns on a flip chart and list key words used by participants while discussing those five concepts.

	**Group work exercise (15 minutes)** • Suppose you are head of the district health office in one of the districts • One of the health extension workers reported that there is outbreak of malaria in the kebele where she is assigned to work. This kebele is under your jurisdiction • What will you do in such circumstance?

Group work exercise 1(20 minutes)

1. During the previous six years, 1-3 cases per year of *E. coli* O157:H7 had been reported to a state health department. During the past three months, 17 cases have been reported. All but two of these cases have been reported from one county. The local newspaper carried an article about one of the first reported cases, a young girl. Describe the possible causes of the increase in reported cases.

Answer

- ✓ Change in surveillance system or policy on reporting
- ✓ Change in case definition
- ✓ Improved diagnosis
- ✓ New laboratory test
- ✓ Increase in physician awareness of the disease
- ✓ Increase in publicity/public awareness may have prompted individuals or parents to seek medical attention for compatible illnesses
- ✓ Increase in reporting, e.g. improved awareness of reporting requirement
- ✓ True increase in incidence, which might reflect a common source outbreak or bioterrorist attack, or secondary spread of the disease within a population group

Group Exercise 2 (20 minutes)

For the month of August, 12 new cases of tuberculosis and 12 new cases of West Nile virus infection were reported to a county health department. You are not sure if either group of cases is a cluster or an outbreak. What additional information might be helpful in making this determination?

Answer

First, you should check the dates of onset rather than dates of report. The 12 reports could represent 12 recent cases, but could represent 12 cases scattered in time that were sent in as a batch.

However, assuming that all 12 reports of tuberculosis and the 12 of West Nile virus infection represent recent cases in a single county, both situations could be called clusters (several new cases seen in a particular area during a relatively brief period of time). Classifying the cases as an outbreak depends on whether the 12 cases exceed the usual number of cases reported in August in that county.

Tuberculosis does not have a striking seasonal distribution. The number of cases during August could be compared with: a) the numbers reported during the preceding several months; and b) the numbers reported during August of the preceding few years.

West Nile virus infection is a highly seasonal disease that peaks during August-September-October. As a result, the number of cases in August is expected to be higher than the numbers reported during the preceding several months. To determine whether the number of cases reported in August is greater than expected, the number must be compared with the numbers reported during August of the preceding few years.

Make sure the participants understand the concept of outbreak investigation, finally Conclude this session by answering any questions participants might have about HIV surveillance and elaborating the above discussion point.

Module 3: Pre and post -test answer key

1. M&E Plan is an optional step in the DM&E process. True/False. **Answer False**
2. M& E Plan should be developed before monitoring and evaluation of a project begins. True /false. **Answer True**
3. Strategic Partners should be included in the development of a M&E Plan. True/False. **Answer true**
4. It is important for a M&E plan to include all M&E activities. True/False. **Answer True**
5. M&E Plan cannot be altered throughout the course of the project. True/False . **Answer False**
6. An outbreak is an increase in the number of cases of a particular disease greater than is expected for a given time and place.
   A. True
   B. False
   Answer B
7. Investigation of a restaurant named in a food-borne illness complaint is most likely to identify a food safety problem for which of the following?
   A. One person reported becoming ill after eating at the restaurant.
   B. Family members ate at the restaurant and developed diarrhea 6 hours later.
   C. Three friends became ill with vomiting within 4 hours of eating fried rice at the restaurant.
   D. Two people became ill (one with a migraine headache and one with diarrhea) after eating at the restaurant.
   Answer C
8. Why is it important to identify as many cases associated with an outbreak as possible?
   A. Determine true magnitude of outbreak
   B. Characterize outbreak accurately
   C. Increase the ability of epidemiologic studies to link illness with true cause of outbreak
   D. All of the above
   Answer D
9. Development of a hypothesis early in an outbreak helps direct subsequent steps of an outbreak investigation and should involve all investigation team members.
   A. True
   B. False
   Answer A
10. Public health surveillance not includes which activities?
    A. Data collection.
    B. Data analysis.
    C. Data interpretation.
    D. Data dissemination.
    E. Disease control.
    Answer E
11. Current public health surveillance targets which of the following?
    A. Chronic diseases.
    B. Communicable diseases.
    C. Health related behaviors.
    D. Occupational hazards.
    E. Presence of viruses in mosquitoes.
    F. All. **Answer F**

12. Public health surveillance can be described primarily as which of the following?
    A. A method to monitor occurrences of public health problems.
    B. A program to control disease outbreaks.
    C. A system for collecting health related information.
    D. A system for monitoring persons who have been exposed to a communicable disease.
    Answer A
13. Public health surveillance is only conducted by public health agencies.
    A. True.
    B. False.
    Answer B
14. Common uses and applications of public health surveillance include which of the following?
    A. Detecting individual persons with malaria so that they can receive prompt and appropriate treatment.
    B. Helping public health officials decide how to allocate their disease control resources.
    C. Identifying changes over time in the proportion of children with elevated blood lead levels in a community.
    D. Documenting changes in the incidence of varicella (chickenpox), if any, after a law requiring varicella vaccination took effect.
    E. all
    Answer E
15. Data collected through which of the following methods is not used for surveillance?
    A. Vital registration.
    B. Randomized clinical trials.
    C. Disease notifications.
    D. Population surveys.
    Answer B
16. Care providers might be important sources of surveillance data used by public health officials, and they should receive feedback to close the surveillance loop as a courtesy; however, the results almost never have any relevance to patient care provided by those health care providers.
    A. True.
    B. False.
    Answer B
17. Vital statistics are important sources of data on which of the following?
    A. Morbidity.
    B. Mortality.
    C. Health related behaviors.
    D. Injury and disability.
    E. Outpatient health care usage.
    Answer B
18. Vital statistics provide an archive of certain health data. These data do not become surveillance data until they are analyzed, interpreted, and disseminated with the intent of influencing public health decision making or action.
    A. True.
    B. False.
    Answer A
19. Notifiable disease surveillance usually focuses on morbidity from the diseases on the list and does not cover mortality from those diseases.
    A. True.

B. False.

Answer B

20. Evaluating and improving surveillance should not address which of the following?
    A. Purpose and objectives of surveillance.
    B. Resources needed to conduct surveillance.
    C. Effectiveness of measures for controlling the disease under surveillance.
    D. Presence of characteristics of well conducted surveillance.

    Answer C

21. Criteria for prioritizing health problems for surveillance not include which of the following?
    A. Incidence of the problem.
    B. Public concern about the problem.
    C. Number of previous studies of the problem.
    D. Social and economic impact of the problem.

    Answer C

22. Underreporting is not a problem for detecting outbreaks of notifiable diseases because the proportion of cases reported tends to remain relatively stable over time.
    A. True.
    B. False.

    Answer B

23. The case definition used for surveillance of a health problem should be the same as the case definition used for clinical (treatment) purposes.
    A. True.
    B. False.

    Answer B

24. **What is Monitoring?**

    Answer:

    Monitoring is the systematic collection of information on all aspects of the project while it is being implemented.

25. **Why do we do Monitoring?**

    Answer: We do monitoring to analyze the current situation, identify problems and find solutions, discover trends and patterns, keep project activities on schedule, monitoring means checking how things are going on and comparing actual progress to what is planned.

26. **Who does Monitoring?**

    Answer: Monitoring is concerned both with project staff, implementation organization and donors

27. **When do we do Monitoring?**

    Answer: According to the desired schedule of implementation of the projects.... e.g. monthly, bi

28. **What is evaluation?**

    Answer:

    Evaluation is a systematic and objective assessment of ongoing or completed project. It makes comparison of the outcomes of the project with planned ones.

29. List three merits of a passive surveillance system:

    Answer:

    - Easy for the public health agency
    - Inexpensive
    - Easier to institionalize and continue

30. List three merits of an active surveillance system:

Answer:

- More complete discovery of cases (more sensitive)
- Higher quality data (more complete and timely)
- More flexible
- More opportunity for feedback and provider education
- Builds relationships between public health agency staff and disease reporters, which may have other benefits such as improved reporting of other conditions and more support for public health

Annex 1

Daily LSI training Evaluation format

How do you rate today's session (_____) with regard to the following points?

For (_____)

1. What do you enjoy most about today?
2. What did you learn during today's session that you anticipated using in your work?
3. Was there anything you did not understand during today's session? please provide
4. What is the most valuable thing you learned today (knowledge or skills)?
5. What other specific comments do you have?
6. **Please respond by tallying in the boxes (√)**

Points	Excellent 5	Very good4	Good 3	Poor 2	Very poor1
Clarity of presentation					
Presentation method					
Use and relevance of teaching aid					
Practicability of the presentation					
Relevance of examples given					
Content of the subject matter/topic					
Others/specify					

if your response to Question number 6 is poor/very poor ,please give your genuine explanation for the response and briefly describe your recommendations._____

7. How do you rat the administrative arrangements?

Points	Excellent5	Very good4	Good3	Poor2	Very poor1
Provision of tea/coffee					
Training center facility					
Others /specify					

If your response to Question number 7 is poor/very poor, please give your genuine explanation for the response and briefly describe your commendations_____

Thank you

Annex 2:

Course Evaluation

Name of the course_____

Date of the course _____

Sr. No	Evaluation questioners	Please circle your answer	Comment and suggestion
1	Did the course meet your objective	Yes No	Explain your answer:
2	Coverage of the topic	5,4, 3,2,1 Excellent to poor	Comment
3	Organization of the course material	5,4, 3,2,1 Excellent to poor	Comment
4	Relevance of the course material used	5,4, 3,2,1 Excellent to poor	Comment
5	Use of practical Example	5,4, 3,2,1 Excellent to poor	Comment
6	Level of difficulty	5,4, 3,2,1 To difficult too easy	Comment
7	Length of course		

Modules	Type of Courses	Too short	Just right	Too long
Module I	Leadership & Management	☐	☐	☐
	Organizational Process Improvement	☐	☐	☐
	HIV interventions	☐	☐	☐
	Descriptive epidemiology & Biostatistics	☐	☐	☐
Module II	Analytic epidemiology	☐	☐	☐
Module III	HIV surveillance	☐	☐	☐
	Monitoring and evaluation	☐	☐	☐

Please explain your answers

8	Facilities	5,4, 3,2,1 Excellent to poor	Comment
9	Suitability of trainers	5,4, 3,2,1 Excellent to poor	Comment
10	Quality of the material	5,4, 3,2,1 Excellent to poor	Comment
11	Quality of overhead	5,4, 3,2,1 Excellent to poor	Comment
12	Quality of exercise	5,4, 3,2,1 Excellent to poor	
13	Will you be recommending this course to your colleagues	Yes No	
14	What area of the course could be improved	You point:	