

FACILITATOR GUIDE



Introduction to NCD Epidemiology

Created: 2013



Introduction to NCD Epidemiology. Atlanta, GA: Centers for Disease Control and Prevention (CDC), 2013.

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Introduction to NCD Epidemiology

LEARNING OBJECTIVES

- To describe how to use epidemiology to address a public health problem by the end of training.

ESTIMATED COMPLETION TIME

- 2 hours, 25 minutes (110 minutes interactive presentation; 35 minutes Skill Assessment).

TRAINING TECHNIQUES

- Present content and examples by using lecture and group discussion. Skill assessment will be in small groups.

MATERIALS AND EQUIPMENT

For the Facilitator:

- PowerPoint file for presentation
- Two flip charts with markers

For the Participant:

- Participant Guide

REFERENCES AND RESOURCES

- Gregg, M.B. (Ed.). 2008. Field Epidemiology (3rd ed.). New York: Oxford University Press.
- Porta, M and Last, J.M. (Ed.). 2008. A Dictionary of Epidemiology (5th ed.). New York: Oxford University Press.
- Office of Workforce and Career Development. 2006. Principles of Epidemiology in Public Health Practice (3rd ed.). Atlanta: CDC.
- McKenna et al. 1998. Current Issues and Challenges in Chronic Disease Control. In: Chronic Disease Epidemiology and Control. Washington: American Public Health Association

PREPARATION CHECKLIST

The following are action items to be completed by the facilitator prior to training:

- Review slides
- Obtain background information about priority NCDs for participants
- Prepare flip chart for Common Risk Factors (see slide 12)

FONT GLOSSARY

The following fonts are used in this guide:

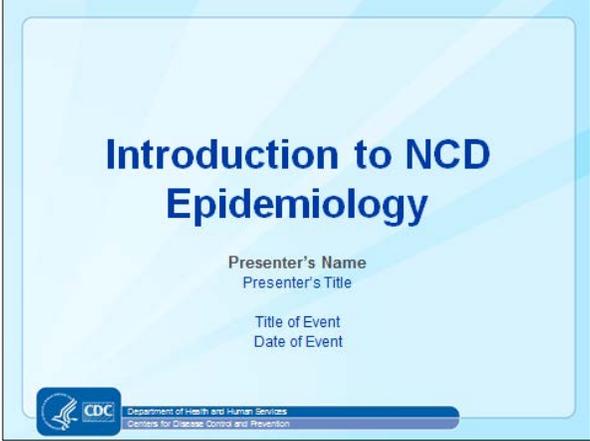
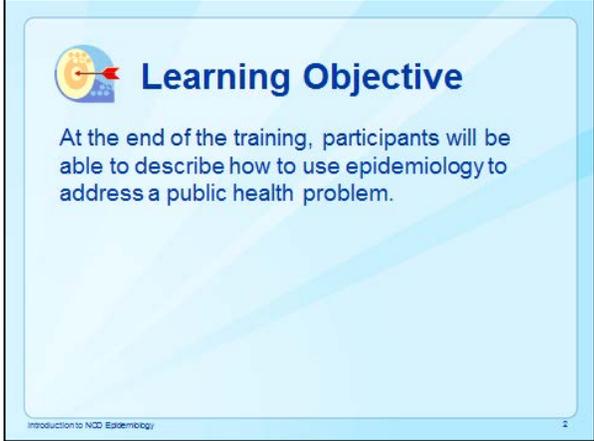
Font Type	Font Meaning
Plain	Script
Bold	Instructions
<i>Italics</i>	<i>Answers</i>

ICON GLOSSARY

The following icons are used in this guide:

Image Type	Image Meaning
 Activity Icon	<i>Small group exercise.</i>
 Flip Chart Icon	Write responses during facilitator-led discussions or debriefs.
 Question Icon	Question for facilitator to ask participants.
 Tip Icon	Supplemental information discussion.
 Stop Icon	Do not start the assignment until your facilitator tells you to begin.

MODULE CONTENT

Duration/ Slide Number	What To Do/What To Say
<p data-bbox="256 342 410 373">2 minutes</p> <p data-bbox="280 415 386 447">Slide 1</p>	<div data-bbox="509 338 1099 779" style="border: 1px solid black; padding: 10px; margin-bottom: 10px;">  </div> <ul data-bbox="516 806 1425 1136" style="list-style-type: none"> • Introduce trainer to participants. • Tell participants that this lesson will take approximately two hours to complete. • Explain that this lesson will provide participants with an overview of epidemiology with an emphasis on non-communicable diseases. • Explain that after learning the lesson content they will complete a skill assessment with a small group.
<p data-bbox="264 1182 402 1213">1 minute</p> <p data-bbox="280 1255 386 1287">Slide 2</p>	<div data-bbox="516 1178 1110 1619" style="border: 1px solid black; padding: 10px; margin-bottom: 10px;">  </div> <ul data-bbox="506 1650 1438 1734" style="list-style-type: none"> • Direct participants to Slide one in their Participant Guides. • Read the learning objective from the slide.

**Duration/
Slide Number****What To Do/What To Say****1 minute****Slide 3**


Lesson Overview

- Basic terminology
- Comparison of non-communicable diseases and communicable diseases
- Definition and approaches of epidemiology
- Public health management cycle
- Core functions of epidemiology

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- **Tell participants what they will learn during this lesson.**

2 minutes**Slide 4**


Non-Communicable Disease (NCD): Definition

Noncommunicable diseases (NCDs), also known as chronic diseases, are not passed from person to person. They are of long duration and generally slow progression.

(WHO, 2011)
Introduction to NCD Epidemiology 4

- **Tell participants that you will begin the lesson by defining a non-communicable disease.**
- **Explain that for the purpose of this course, chronic diseases will be referred to as NCDs.**
- **Ask:** Can someone define a non-communicable disease?
- **Read the definition on the slide.**
- **Ask participants if they like this definition.**
- **Ask:** What about HIV? Malaria? Injury? **Say:** They fit the definition but are not NCDs and HIV is spread from person to person.
- **Tell participants that they have brought up good points, but for the purposes of this lesson you will be adding another definition to complete it.**

**Question**

**Duration/
Slide Number**

What To Do/What To Say

2 minutes

Slide 5

Non-Communicable Disease (NCD): Definition (cont.)

- Chronic conditions are characterized by the following:
 - Do not result from an (acute) infectious process
 - Are “not communicable”
 - Cause premature morbidity, dysfunction, and reduced quality of life
 - Usually develop and progress over long periods,
 - Often initially insidious
 - Once manifested there is usually a protracted period of impaired health

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Tip

- **Read the slide.**
- **Highlight that some NCDs have an infectious origin, like ulcers and cervical cancer.**
- **Note that there are a variety of opinions about this definition in the field, and there is not 100% agreement, for example, some would argue that HIV is a chronic condition.**

2 minutes

Slide 6

Non-Communicable Disease (NCD): Extended Definition

In some definitions, NCDs also include:

- Chronic mental illness
- Injuries, which have an acute onset, but may be followed by prolonged convalescence and impaired function

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- **Read the slide and briefly explain how mental illness and injuries fit into “NCDs”.**

Duration/ Slide Number **What To Do/What To Say**

2 minutes

Slide 7

Types of NCDs

- Cardiovascular disease (Coronary heart disease, Stroke)
- Cancer
- Chronic lung disease
- Diabetes
- Chronic neurologic disorders (Alzheimer's, dementias)
- Arthritis/Musculoskeletal diseases

World Health Organization - NCD Mortality and Morbidity Website
Introduction to NCD Epidemiology



- **Ask participants for types or examples of NCDs.**
- **Read the types of NCDs on the slide and explain that this list is not complete.**
- **Explain that the first four on the slide are the most prevalent NCDs and also the focus for WHO. (Point out the reference for this at the bottom of the slide.)**
- **Mention that 80% of NCD deaths occur in low-to-middle income countries.**

2 minutes

Slide 8

Leading Causes of Attributable Global Mortality and Burden of Disease, 2004

Attributable Mortality		Attributable DALYs	
	%		%
1. High blood pressure	12.8	1. Childhood underweight	7.8
2. Tobacco use	8.7	2. High blood pressure	7.5
3. High blood glucose	5.8	3. Unsafe sex	6.6
4. Physical inactivity	5.5	4. Unsafe water, sanitation, hygiene	6.1
5. Overweight and obesity	4.8	5. High blood glucose	4.9
6. High cholesterol	4.5	6. Indoor smoke from solid fuels	4.8
7. Unsafe sex	4.0	7. Tobacco use	3.9
8. Alcohol use	3.8	8. Physical inactivity	3.8
9. Childhood underweight	3.8	9. Suboptimal breastfeeding	3.7
10. Indoor smoke from solid fuels	3.3	10. High cholesterol	3.3

59 million total global deaths in 2004 1.5 billion total global DALYs in 2004

World Health Organization - Global Burden of Disease 2004 Update (Risky Factors)
Introduction to NCD Epidemiology

- **Say:** Most lists of causes of death show the diseases that led to death. This slide takes causes one step back and looks at the causes of the diseases, in particular the preventable risk factors for the diseases that result in death. On the left you see the contribution of each risk factor to overall mortality. On the right, you see the contribution of each risk factor to disability-adjusted life years lost.

**Duration/
Slide Number**

What To Do/What To Say

2 minutes

Slide 9

Characteristics of NCDs

- Complex etiology (causes)
- Multiple risk factors
- Long latency period
- Non-contagious origin (non-communicable)
- Prolonged course of illness
- Functional impairment or disability
- Incurability
- Insidious onset

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Question

- **Ask participants for common characteristics of NCDs.**
- **Read the characteristics of NCDs on the slide.**
- **If needed, clarify what is meant by some of the terminology on the slide, for example:**
 - Latency period: the period between when you get the disease and when you discover it.

Although NCDs may be incurable, public health research professionals can help in learning methods to enhance management of the disease and improve the quality of life in those diseased individuals.

2 minutes

Slide 10

Risk Factor

“An aspect of personal behavior or lifestyle, an environmental exposure, or a hereditary characteristic that is associated with an increase in the occurrence of a particular disease, injury, or other health condition.”

(Principles of Epidemiology, CDC, 2008)
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Duration/ Slide Number	What To Do/What To Say
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Question

- **Ask participants to define risk factor.**
- **Click on slide and read definition.**
- **Ask:** What is environmental exposure?
- **Possible answers:** *exposure to sun, tobacco smoke*
- **Explain that risk factors can be either modifiable or non-modifiable.**
- **Show the next two slides for further explanation.**

2 minutes

Slide 11

Modifiable Risk Factor

- A risk factor that **can** be reduced or controlled by intervention, thereby reducing the probability of disease.
- The WHO has prioritized the following four:
 - Physical inactivity
 - Tobacco use
 - Alcohol use
 - Unhealthy diets

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Question

- **Ask:** Can anyone define modifiable risk factor?
- **Click and read the definition on the slide.**
- **Ask:** Why is it important for us to think about modifiable risk factors?
- **Possible answer:** *Because we can do something about it; we can have an intervention for it.*
- **Ask participants for examples of modifiable risk factors.**
- **Click and read examples on the slide.**
- **Ask participants for examples of modifiable risk factors for type 2 diabetes.**

Duration/
Slide Number

What To Do/What To Say

2 minutes

Slide 12

Non-Modifiable Risk Factor

- A risk factor that **cannot** be reduced or controlled by intervention, for example:
 - Age
 - Gender
 - Race
 - Family history (genetics)

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Question

- **Ask:** What is the definition of non-modifiable risk factor?
- **Click and read definition on slide.**
- **Ask:** What are examples of non-modifiable risk factors?
- **Click and read examples on slide.**
- **Ask:** What are examples of non-modifiable risk factors for type 2 diabetes?

5 minutes

Slide 13

Common Risk Factors

Noncommunicable Diseases 4 Diseases, 4 Modifiable Shared Risk Factors				
	Tobacco Use	Unhealthy diets	Physical Inactivity	Harmful Use of Alcohol
Cardio-vascular	✓	✓	✓	✓
Diabetes	✓	✓	✓	✓
Cancer	✓	✓	✓	✓
Chronic Respiratory	✓			

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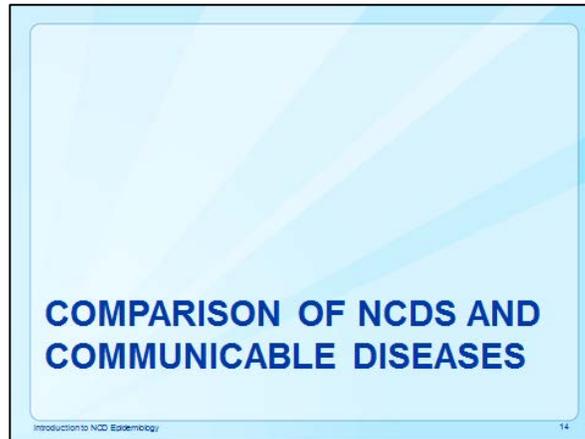
Duration/ Slide Number	What To Do/What To Say
 Flip Chart	<ul style="list-style-type: none"> • Note: Draw the above slide on a flip chart without the checkmarks. Do not show the slide yet. Use the flip chart for the beginning part of the discussion. • Ask: Is tobacco use a risk factor for cardiovascular disease? Type 2 Diabetes? Cancer? Chronic Respiratory Conditions?
 Tip	<ul style="list-style-type: none"> • Continue asking the questions for each risk factor and mark off each column with a checkmark. • Make the point that not all cancers share the risk factors of unhealthy diet, alcohol use, etc.
 Question	<ul style="list-style-type: none"> • After you fill in the checkmarks, show the slide. • Ask: What does this say about tobacco use? Physical inactivity? Unhealthy diet?
 Question	<ul style="list-style-type: none"> • Point out that if you have an intervention for physical inactivity and tobacco use you can make progress on four key NCDs. You do not need to plan separate interventions for each NCD or each risk factor. • Ask: If we <u>adequately</u> addressed these risk factors, how would this affect these diseases? • Answer: <i>These diseases would be affected in the following way:</i> <ul style="list-style-type: none"> ○ 80% reduction in coronary heart disease ○ Up to 90% reduction of type 2 diabetes ○ 1/3 reduction of cancers

**Duration/
Slide Number**

What To Do/What To Say

1 minute

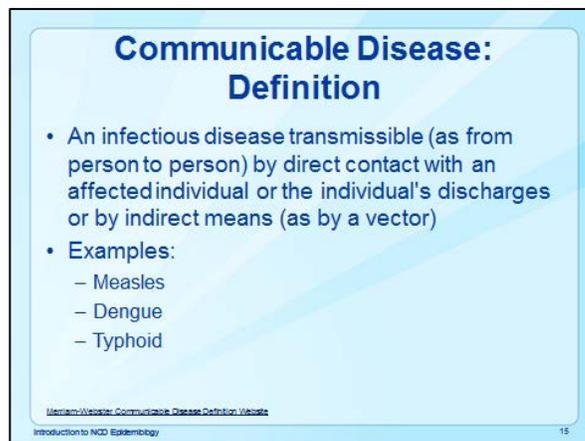
Slide 14



- **Tell participants that you will compare non-communicable diseases with communicable diseases.**

2 minutes

Slide 15



Question

- **Ask:** Can someone define a communicable disease and provide examples?
- **Read the slide.**

Duration/
Slide Number

What To Do/What To Say

4 minutes

Slide 16

Non-Communicable Diseases vs Communicable Diseases

Is there something you're not telling me, Doctor?

No, but you're not telling me, Doctor?

- How do they differ regarding:
 - Infectiousness?
 - Risk of Disease?

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Question

- **Ask:** How do NCDs and communicable diseases differ in infectiousness?
- **Answers should include the following:**
 - *Communicable disease occurrence depends upon the presence/absence of disease already occurring in that population. Meaning, one person getting a disease depends upon whether or not other people in the population have the disease and come in contact with the infected individual (except with zoonoses or environmentally associated diseases). Infectious diseases are caused by single agents whereas communicable diseases have multifactorial causes. Also, communicable diseases typically have a longer duration than infectious diseases.*
 - *For NCDs, all disease events are generally independent of one another.*
- **Say:** There has been a recent trend to look at the importance of social factors that cluster together and are associated with NCDs. For example, if a group of friends tend to eat fattening foods and are therefore overweight, and a new friend joins the group, he/she may start eating fattening foods and consequently gain weight.

**Duration/
Slide Number**

What To Do/What To Say

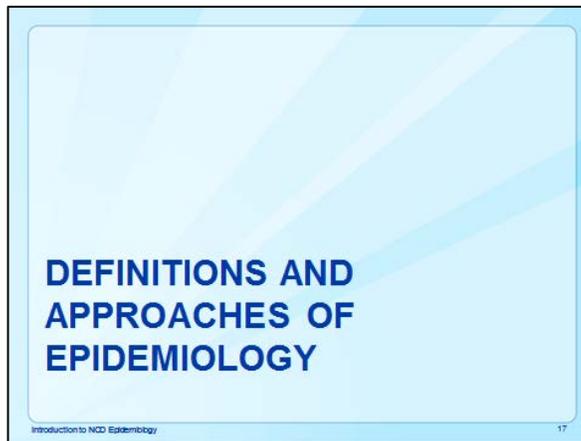


Question

- **Ask:** How do NCDs and communicable diseases differ in risk of disease?
- **Answers should include the following:**
 - *For NCDs, the risk of disease largely depends on population characteristics such as genetics, diet, and exercise, and other health behaviors.*
 - *Communicable disease can also be influenced by these characteristics, but they have properties that contribute to whether an exposed individual will become infected, e.g., agent's pathogenicity, the minimum infective dose, the duration of infectiousness and type of exposure.*

1 minute

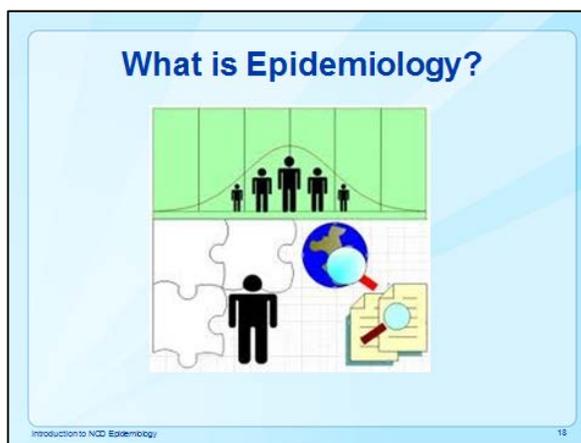
Slide 17



- **Tell participants you will now define epidemiology and discuss approaches.**

3 minutes

Slide 18



**Duration/
Slide Number****What To Do/What To Say****Question**

- **Ask:** Can anyone describe epidemiology?
- **Encourage participants to write responses in their Participant Guide as you review the correct answers.**
- **Answers should include the following:**
 - *Basic science of public health*
 - *Study of health and disease on the population level*
 - *Answers the who, what, when, where, why, and how regarding health and disease*
 - *Applies data and research to improve public health.*

2 minutes**Slide 19**

Epidemiology: CDC Definition

“The study of the distribution and determinants of health-related states in specified populations, and the application of this study to control health problems.”

- Distribution
- Determinants
- Health-related states
- Specified population
- Application

(Last, 2001)

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- **Read the CDC definition of epidemiology. Then click until the words appear below the definition. Say that you will now discuss in detail the meaning of these words.**

**Duration/
Slide Number**

What To Do/What To Say

2 minutes

Slide 20

**Epidemiology: CDC Definition
Distribution**

Distribution: Occurrence of cases by **time, place, and person**

Example: According to a study of deaths in **Country X** in **2008**, **1,034 cervical cancer deaths** occurred among **women between the ages of 45-54**.

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- **Read the slide.**
- **Explain that the example provides a time period of 2008, the place of Country X, and the persons affected – women ages 45-54.**

2 minutes

Slide 21

**Epidemiology: CDC Definition
Determinants**

Determinants: All the causes and risk factors for the occurrence of a disease, including physical, biological, social, cultural, and behavioral factors

Example: **Smoking** was a risk factor or determinant for the greater number of cancer deaths among women ages 45-54 in Country X.

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- **Read the definition on the slide.**
- **Explain that determinants are the “how” and the “why”, for example, poor nutrition or tobacco use.**
- **Read the example.**

**Duration/
Slide Number****What To Do/What To Say****2 minutes****Slide 22**

**Epidemiology: CDC Definition
Health-Related States**

Health-related states

- Diagnosis of a specific disease or cause of death
- Health-related behavior (e.g., smoking, taking prenatal vitamins)
- Example: According to the 2008 study in Country X, 1,034 cervical cancer deaths occurred among women between the ages of 45-54.

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- **Read the slide.**

2 minutes**Slide 23**

**Epidemiology: CDC Definition
Specified Population**

Specified Population: A measurable group, defined by location, time, demographics, and other characteristics

Example: Women aged 45-54 living in a rural village in Country X from 2001 through 2009.

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- **Read the slide.**

2 minutes**Slide 24**

**Epidemiology: CDC Definition
Application**

Application

- Analysis, conclusion, distribution, and timely use of epidemiologic information to protect the health of the population
- Example: As a result of the Country X Study, free cervical cancer screening programs were implemented. They targeted women living in remote areas in hopes of finding women with cervical cancer at an earlier stage of cancer in order to prevent death.

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- **Read the slide.**

Duration/
Slide Number

What To Do/What To Say

2 minutes

Slide 25

Purpose of Epidemiology

- To measure frequency of disease
 - Quantify disease
- To assess distribution of disease
 - Who is getting disease?
 - Where is disease occurring?
 - When is disease occurring?
- To form hypotheses about causes and preventive factors
- To identify determinants of disease
 - Hypotheses are tested using epidemiologic studies

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25



Question

- **Say:** Epidemiology is applied to both chronic and communicable diseases and injury. The principles are the same, but the methods differ.
- **Ask:** What is the purpose of epidemiology? How can it help us?
- **Read the slide.**
- **Ask:** Why do we sometimes say “risk factor” and other times “determinants”? What is the difference?
- **Possible answer:** *A risk factor is something that increases a person's chances of developing a disease; such as age, gender, tobacco use, unhealthy diet. A determinant is a personal, social, economic or environmental factor which determines the health status of a person.*

4 minutes

Slide 26

Epidemiologic Assumptions

- Diseases and other health-related events do not occur at random.
- Diseases and other health-related events usually have causal and preventive factors that can be found.

Introduction to NCD Epidemiology

26

- **Briefly discuss the slide by asking for volunteers to explain each principle.**
- **Answers may include the following:**
 - *Diseases do not occur randomly throughout a population.*

Duration/ Slide Number	What To Do/What To Say
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A disease is more likely to occur in a person who has a genetic disposition, exposure, a behavior, or some other characteristic that increases that person’s risk of disease.

- *Disease is more likely to occur in a person who has “risk factors” for the disease than in a person who does not have those risk factors.*
- *We do not know all of the causes or risk factors for NCDs, but we do know some. Fortunately, some of these factors, such as tobacco smoking (a risk factor for lung cancer) or elevated cholesterol (a risk factor for heart disease) can be avoided or modified or treated to lower the risk of disease.*

5 minutes
Slides 27-33

Approaches in Medicine vs. Epidemiology		
Approach/ Consideration	Clinical Medicine	Epidemiology
Focus	Individuals	Populations
Main Goal	Diagnosis and treatment	Prevention and control
Questions	What is wrong with this patient?	What are the leading causes of death or disability in this population? Risk factors?
Treatment	What treatment is appropriate?	What can be done to reduce or prevent disease or risk factors?
Who is involved?	Physician, laboratorian, nurse, and others	Epidemiologists, statisticians, and others from diverse disciplines

- **Explain that coordination between clinical practitioners and epidemiologists is critical.**
- **Note:** When you first show this slide, the “Epidemiology” column will be blank. As you continue from slide 25 – 30, each box under “Epidemiology” will fill in, one row at a time.
- **Ask:** If the focus of clinical medicine is individuals, what is the focus of epidemiology?
- **Continue asking questions about each row of the slide.**
- **When you discuss these slides, make sure to include these points:**
 - Coordination between clinical practitioners and epidemiologists is critical, since for an epidemiologist to compile population data or epidemiological data, individual data or clinical data from the individuals needs to first be obtained from the clinical practitioners.
 - In some cases, clinical medicine and epidemiology can be



Tip



Question

**Duration/
Slide Number**

What To Do/What To Say

seen as a *continuum*.

- In epidemiologic studies where data is self reported by the participant or ill individual, as in large population surveys, a clinical practitioner may not be involved.

2 minutes

Slide 33

Approaches to Epidemiology

1. **Descriptive Epidemiology**
2. **Analytic Epidemiology**

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- **Tell participants that you will now discuss two approaches to epidemiology.**
- **Ask:** Can anyone name the approach to epidemiology that deals with the distribution of disease? What about the approach that deals with the determinants of disease?
- **Click one at a time and read each approach.**
- **Briefly mention that typically descriptive studies are done first and then analytic. However, some studies may stop at descriptive and do not go on to analytic.**
- **Tell participants that you will now briefly discuss each one.**



Question

2 minutes

Slide 34

Descriptive Epidemiology

- Studies the *pattern* of health events and their *frequency* in populations in terms of:
 - Person
 - Place
 - Time
- Purpose:
 - To identify problems for further study
 - To plan, provide, and evaluate health services

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**Duration/
Slide Number****What To Do/What To Say****Question**

- Read the slide.
- Ask for an example of how descriptive epidemiology can be used in their country/region/district.
 - *Possible answers: Study the number of new cases of diabetes in the country by race and sex in order to assess groups to target.*
- Tell participants that they will learn about types of descriptive studies in another lesson.

2 minutes**Slide 35**

Analytic Epidemiology

- Studies the association between *risk factors* and disease
- Purpose:
 - To determine *why* disease rates are high (or low) in a particular group

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**Question**

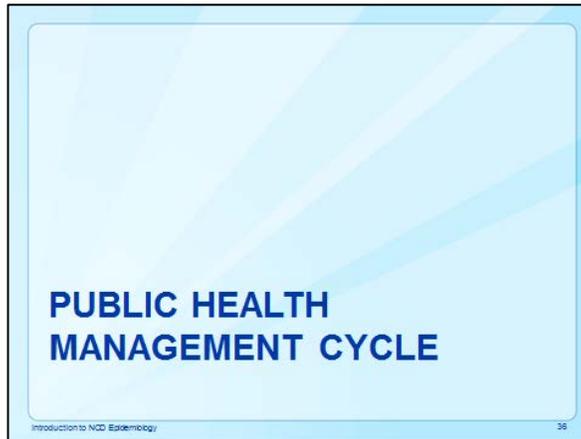
- Read the slide.
- Ask for an example of how analytic epidemiology can be used in participants' country/region/ district.
 - *Possible answer: Study of whether smoking 20 or more cigarettes per day increases the relative risk of type 2 diabetes in adults.*
- Tell participants that they will learn about types of analytic studies in another lesson.

Duration/
Slide Number

What To Do/What To Say

3 minutes

Slide 36



Question

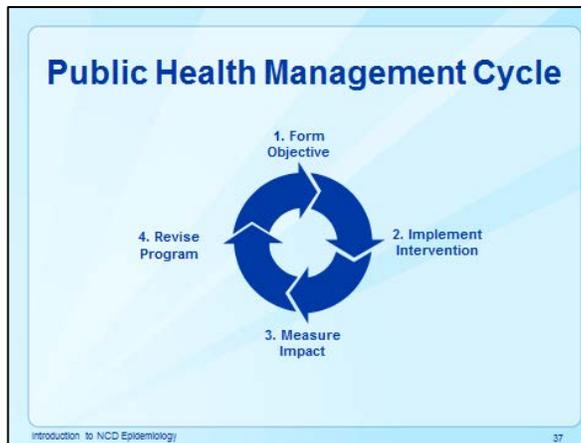


Flip Chart

- Explain that you will now discuss how epidemiology fits into the public health management cycle.
- **Ask:** What do you think are the components of the public health management cycle?
- Draw answers on flip chart.

3 minutes

Slide 37



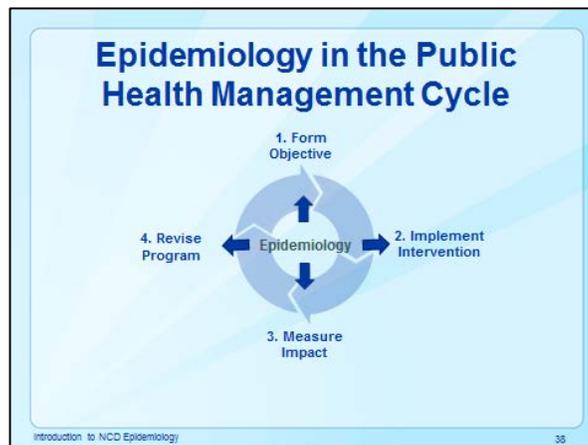
- Explain that the management of public health occurs in a cycle.
- Point out that even though this slide shows four main roles or responsibilities, there are many tasks leading up to each one, for example, *testing* interventions prior to implementing them.
- Ask participants to define each role. Add examples, as needed.
- *Answers and examples may include:*
 - Objectives are determined based on the goal for your



Duration/ Slide Number	What To Do/What To Say
<p>Question</p>	<p><i>public health problem. For example, an objective may be to increase the percentage of individuals who engage in physical activity by 30% over the next two years.</i></p> <ul style="list-style-type: none"> ○ <i>Interventions are designed and implemented with this objective in mind. For example, an intervention might be to offer nutritional and physical activity counseling to women. Note that interventions should not be implemented without testing them and knowing efficacy and effectiveness. (Efficacy is how well an intervention works under ideal circumstances, such as in a lab or strict clinical trial; effectiveness is how well an intervention works under normal field conditions.)</i> ○ <i>The intervention is measured in terms of whether it was successful, and if so, by how much? If not, why didn't it work? In this example, you may measure if the nutritional and physical activity counseling reduced the prevalence of obesity.</i> ○ <i>Programs may need to be revised after they are implemented for a variety of reasons, for example, there may have been insufficient resources to complete a program activity.</i> ○ <i>The cycle begins again with new objectives, interventions, etc.</i>

5 minutes

Slide 38



- **Say:** Epidemiology influences each part of the public health management cycle.
- **Ask:** How is epidemiology used to formulate objectives?
- **Possible answer:** *Epidemiologists assess the public's health by collecting or using existing data and analyzing it. This epidemiologic information is then used to formulate objectives.*

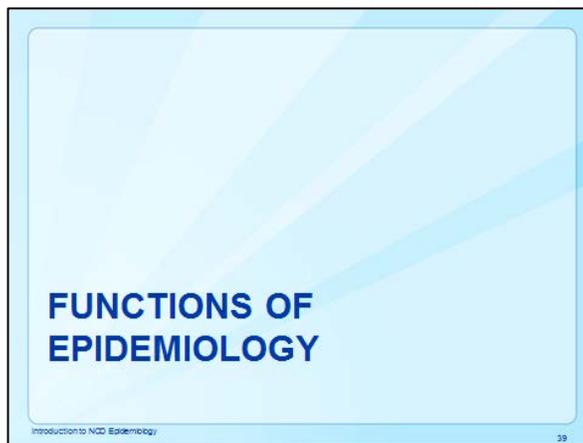
Duration/ Slide Number	What To Do/What To Say
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Question

- **Ask:** How is epidemiology used to implement interventions?
- **Possible answer:** *Epidemiology helps distinguish the target population for an intervention. It helps identify who is more likely to benefit from an intervention.*
- **Ask:** How is epidemiology used to measure impact?
- **Possible answer:** *This can be done through established surveillance systems or through specific studies designed to evaluate the intervention.*
- **Ask:** How is epidemiology used to revise programs?
- **Possible answer:** *Epidemiologists will interpret the evaluation data and improve the intervention by revising objectives or formulating new objectives, and starting the cycle once again.*
- **Explain that during this training they will learn how to use epidemiology for each of these roles just described.**

1 minute

Slide 39



- **Explain that you will now discuss some functions of epidemiology and how they influence public health.**

**Duration/
Slide Number**

What To Do/What To Say

2 minutes

Slide 40

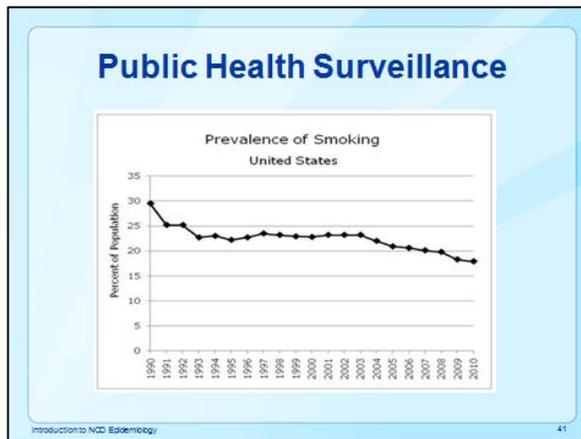


Question

- **Ask:** What are some functions of epidemiology? **If participants have difficulty answering the question, you may rephrase, for example by asking what is the role of an epidemiologist?**
- **Click and read the answers one at a time.**
- **Explain that although these functions are listed in some type of order, some of them occur simultaneously and/or continuously, such as management and teamwork. It also depends upon the stage of the program.**
- **Tell participants that you will next briefly discuss each function and during the rest of the training course you will explain some of these functions in greater detail.**

2 minutes

Slide 41



Question

- **Ask:** Looking at this slide, who can define surveillance?
- **Solicit responses. The MMWR definition of surveillance is on the following slide.**

**Duration/
Slide Number**

What To Do/What To Say

2 minutes

Slide 42

**Public Health Surveillance:
CDC Definition**

Ongoing, systematic collection, analysis, and interpretation of health-related data essential to the planning, implementation, and evaluation of public health practice, closely integrated with the timely dissemination of these data to those responsible for prevention and control.

CDC's National Notifiable Diseases Surveillance System (NNDSS) Website
Introduction to NCD Epidemiology

- **Read the slide.**

2 minutes

Slide 43

Investigation



Introduction to NCD Epidemiology

- **Explain that the next core function of epidemiology is conducting investigations, which are often called “field investigations”.**
- **Ask:** How can we use investigations in epidemiology?
- **Ask:** What is an example of an NCD investigation?
- **Possible answers:** *Survey of adults to ask about physical activity during the week and barriers to physical activity; prospective cohort study (e.g., Framingham Study) to document development of or effects of interventions on NCDs and their sequelae; case-control study of risk factors for brain cancer.*



Question

**Duration/
Slide Number****What To Do/What To Say****2 minutes****Slide 44**

Data Analysis

- Describe the distribution of a health condition or event in a community
- Create a hypothesis about what causes or protects against disease or injury
- Learn about factors thought to be associated with disease
- Assess associations between risk factors and disease, using statistical methods
- Interpret results and disseminate information

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**Question**

- **Explain that data analysis is also important in epidemiology.**
- **Ask:** When would you use data analysis?
- **Discuss bullets on the slide.**

2 minutes**Slide 45**

Intervention




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**Question**

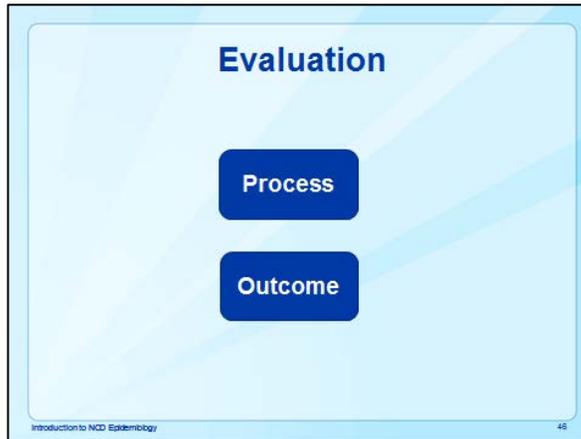
- **Explain that epidemiology is important for planning and evaluating interventions.**
- **Remind participants that epidemiology is used in the design and implementation of interventions by describing patterns of disease. This provides information on who, where, and when to focus interventions.**
- **Ask participants for examples of interventions for NCDs in their country/region/district.**

Duration/
Slide Number

What To Do/What To Say

2 minutes

Slide 46



Tip



Question

- **Note:** When you first click on the slide there is no graphic.
- **Tell participants that evaluation is another important function of epidemiology.**
- **Ask:** What are some questions that an evaluation might answer?
- **Read the two types of evaluations and ask participants to define each one. Include these points:**
 - *A process evaluation assesses the operation of the project. It answers questions such as: Are the supplies delivered on time? Do people have access to the intervention? Were you able to hire and train workers?*
 - *An outcome evaluation assesses changes in health. It answers questions such as: Are fewer people getting the disease? Are there changes in behavior?*

2 minutes

Slide 47



Question

- **Ask:** How would you use communication in epidemiology? To whom would you communicate?

Duration/ Slide Number	What To Do/What To Say
---------------------------	------------------------

- **Answer:** *to communicate findings and policy recommendations to key stakeholders.*

2 minutes

Slide 48



- **Explain that epidemiologists do not work in a vacuum; they are part of a public health team that includes the community.**
- **Read the slide and discuss how epidemiologists need to work with many different people or stakeholders to ensure that data are accurately collected and analyzed and that recommendations are implemented.**
- **Ask:** Are there other groups who work with epidemiologists that are missing on this slide?
- **Possible answers:** *lay health workers, community health workers*
- **Ask:** What is an example of a collaboration/partnership that helped you succeed in your work?



Question

5 minutes

Slide 49



- **Tell participants that you will next review the functions of**

Duration/
Slide Number

What To Do/What To Say



Question

epidemiology using an example of a health problem.

- Ask participants for a local example of a health problem.
- Through questioning, briefly discuss how they would use the core functions of epidemiology to address the problem, for example, obesity:
 - Conduct surveillance to collect data about the prevalence of obesity.
 - Perform data analysis to analyze data collected during surveillance.
 - Develop an intervention to address the problem of obesity, for example, one that addresses physical activity.
 - Evaluate the intervention to determine if the target population is more physically active or if fewer people are obese.
 - Communicate the results of the evaluation to stakeholders.
 - Management and Teamwork: collaborate with public officials, stakeholders, etc. throughout the process to ensure that data are accurately collected and analyzed and that evaluation recommendations are implemented.

10 minutes

Slide 50



- Tell participants that they will now have a fun, review game of what they learned in the lesson.
- **Note:** Adjust number of questions depending on number of tables and teams. If participants are already at small tables, you may keep them together as a team. Otherwise, divide the class into teams of four or five participants.
- After participants are in their teams, ask each team to



Tip

**Duration/
Slide Number****What To Do/What To Say**

(quickly) give you a team name. Record team names on a flip chart.

- Tell participants to discuss answers in their teams before providing them out loud. Correct answers will receive two points. You may give one point for partially correct answers.
- Begin by clicking on the following slides, one question at a time.
- To reveal the answers, click on the slide after the question appears (and participants answer the question).
- Record points on flip chart.
- (Optional) Provide a prize to winning team.



Question

Review: Questions 1-2

1. Name at least four types of NCDs
2. Name at least four characteristics of NCDs

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Question

Review: Questions 3-4

3. What are at least three examples of modifiable risk factors?
4. What are at least three examples of non-modifiable risk factors?

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**Duration/
Slide Number**

What To Do/What To Say



Question

Review: Question 5

5. How do NCDs and communicable diseases differ?

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Question

Review: Questions 6-8

6. What questions does the field of epidemiology answer?
7. What are two approaches of epidemiology?
8. What are the four main roles of epidemiology in the Public Health Management Cycle?

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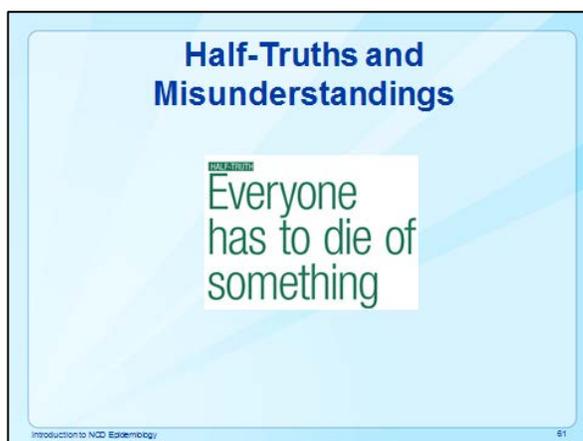
Question

Review: Question 9

9. What are the functions of epidemiology?

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**Duration/
Slide Number****What To Do/What To Say****2 minutes****Slide 61****2 minutes****Slide 62**

- **Say:** Most chronic diseases do not result in sudden death. Rather, they are likely to cause people to become progressively ill and debilitated, especially if their illness is not managed correctly.
- **Say:** Jonas Justo Kassa suffered from the symptoms of diabetes for many years before seeking help. After he was finally diagnosed with diabetes, the next few years were an immense relief as Jonas underwent medical treatment and changed his dietary and drinking habits. But Jonas didn't stick to his healthier ways for long, eventually resulting in the amputation of both his legs – complications that could have been avoided. Feeling doomed and lonely, Jonas died in his home at the age of 65.
- **Say:** Death is inevitable, but it does not need to be slow, painful or premature. Chronic disease prevention and control helps people to live longer and healthier lives.

35 minutes

(20 minutes skills
assessment)

(15 minutes
review)

Slide 63

Skill Assessment

1. Work in small groups to complete the assessment.
2. Discuss a local health problem and describe which **functions of epidemiology** to use to address the problem.
3. Assign a member of your group to record your responses.
4. Spend 20 minutes completing the assessment.
5. Be prepared to share your work with the class.

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Activity

- Tell participants that they will complete an assessment of what they learned during the lesson.
- Tell participants to turn to Slide 15 in their Participant Guide.
- Read the slide.
- Divide participants into small groups or let them remain in the same groups from the Review.
- Provide them with a relevant, local health problem. Tell them to recall how they described the functions of epidemiology in the previous (obesity) example and to do the same with this local health problem.
- Tell participants to think in general terms and not to be too detailed. For example, they do not have to describe a specific intervention they would use to address the health problem.
- Walk around the room and assist groups, if needed.
- After 20 minutes, reconvene the class and ask each group to provide you with their responses.
- Provide constructive feedback to the groups.



Activity

1. You will work in small groups to complete the assessment.
2. Identify a local health problem and describe in general terms the functions of epidemiology you would use to address the problem. Record your responses in the space below.
3. Assign a member of your group to record your responses.
4. Spend no more than 20 minutes completing the assessment.
5. Be prepared to share your work with the class.



Stop

Do not start the assignment until your facilitator tells you to begin.