**Epidemiology script**

**Slide 1**

We are going to define epidemiology, name the key uses of epidemiology, identify the core functions, explain the epidemiologic approach, describe the chain of infection, and list the investigation steps for an outbreak.

Epidemiology is the study of distribution and determinants of health-related states or events in specified populations, and the application of this study to the control of health problems.

Let’s break this down. Epidemiology is the study (scientific, systematic, data-driven) of the distribution (frequency, pattern) and determinants (causes, risk factors) of health-related states and events (not just diseases) in specified populations (patient is community, individuals viewed collectively), and the application of (since epidemiology is a discipline within public health) this study to the control of health problems.

**Slide 2**

So epidemiology

1. Relies on a working knowledge of probability, statistics, and sound research methods.

2. Test hypotheses using other scientific fields such as biology, behavioral sciences, and ergonomics to explain health-related behaviors, and events.

3.Epidemiology is not just a research activity but an integral component of public health, providing the foundation for directing practical and appropriate public health action based on this science and causal reasoning

**Slide 3**

1. Assess the community’s health

To assess the health of a population or community, relevant sources of data must be identified and analyzed by person, place, and time (which is known as descriptive epidemiology).

1. Make decisions about individual patients

3. Document the clinical picture of the illness

1. Search for causes to prevent future outbreaks

**Slide 4**

In the mid-1980s, five major tasks of epidemiology in public health practice were identified: **public health surveillance, field investigation, analytic studies, evaluation, linkages, and policy development**.

The purpose of public health surveillance, which is sometimes called “information for action,” is to portray the ongoing patterns of disease occurrence and disease potential so that investigation, control, and prevention measures can be applied efficiently and effectively.

Field investigation is a way to identify the source of infection.

Surveillance and field investigations are usually sufficient to identify causes, modes of transmission, and appropriate control and prevention measures. But sometimes analytic studies employing more rigorous methods are needed. Often the methods are used in combination — with surveillance and field investigations providing clues or hypotheses about causes and modes of transmission, and analytic studies evaluating the credibility of those hypotheses.

Evaluation is the process of determining, as systematically and objectively as possible, the relevance, effectiveness, efficiency, and impact of activities with respect to established goals.

Epidemiologists working in public health regularly provide input, testimony, and recommendations regarding disease control strategies, reportable disease regulations, and health-care policy.

**Slide 5**

The epidemiologic approach relies on a systematic approach such as counts, divides, and compares.

An epidemiologist Counts cases or health events, and describes them in terms of time, place, and person;

Divides the number of cases by an appropriate denominator to calculate rates; and

Compares these rates over time or for different groups of people.

**Slide 6**

The traditional epidemiologic triad model holds that infectious diseases result from the interaction of agent, host, and environment. More specifically, transmission occurs when the agent leaves its **reservoir** or host through a **portal of exit**, is conveyed by some **mode of transmission**, and enters through an appropriate **portal of entry** to infect a **susceptible host**. This sequence is sometimes called the chain of infection.

Then read slide

**Slide 7**

The approach that ensures an investigation proceeds without missing important steps are as follows

1. Prepare for field work
2. Establish the existence of an outbreak
3. Verify the diagnosis
4. [Construct a working case definition](https://www.cdc.gov/csels/dsepd/ss1978/lesson6/section2.html#step4)
5. [Find cases systematically and record information](https://www.cdc.gov/csels/dsepd/ss1978/lesson6/section2.html#step5)
6. [Perform descriptive epidemiology](https://www.cdc.gov/csels/dsepd/ss1978/lesson6/section2.html#step6)
7. [Develop hypotheses](https://www.cdc.gov/csels/dsepd/ss1978/lesson6/section2.html#step7)
8. [Evaluate hypotheses epidemiologically](https://www.cdc.gov/csels/dsepd/ss1978/lesson6/section2.html#step8)
9. [As necessary, reconsider, refine, and re-evaluate hypotheses](https://www.cdc.gov/csels/dsepd/ss1978/lesson6/section2.html#step9)
10. [Compare and reconcile with laboratory and/or environmental studies](https://www.cdc.gov/csels/dsepd/ss1978/lesson6/section2.html#step10)
11. [Implement control and prevention measures](https://www.cdc.gov/csels/dsepd/ss1978/lesson6/section2.html#step11)
12. [Initiate or maintain surveillance](https://www.cdc.gov/csels/dsepd/ss1978/lesson6/section2.html#step12)
13. [Communicate findings](https://www.cdc.gov/csels/dsepd/ss1978/lesson6/section2.html#step13)

**Slide 8**

A case definition consists of clinical criteria and, sometimes, limitations on time, place, and person. The clinical criteria usually include confirmatory laboratory tests or combinations of symptoms and signs. Case definitions used during outbreak investigations are more likely to specify limits on time, place, and/or person than those used for surveillance. This is a case definition used during an investigation of a listeriosis outbreak in North Carolina in 2000.

Read slide

**Slide 9**

The Centers for Disease Control and Prevention is the leading national public health institute of the United States. You have probably heard a lot about the CDC recently with the coronavirus aka covid 19 outbreak.

The CDC is the place you want to go to get all your information about symptoms, what to do if you’re sick, or basically get any and most of your factual information regarding health issues.

**Slide 10**

If you are interested in doing more research, I encourage you to explore the CDC website for yourself which is provided if you click the link on this slide.

Thank you

Stay safe and healthy!