

HOSA Mini Lesson: NERD ACADEMY

Objectives:

Upon completion of the <u>NERD ACADEMY lessons</u>, students will have sufficient knowledge of, and be able to:

Lesson 1:

- Describe the purpose of public health and provide examples of public health actions
- Compare and contrast the roles of a healthcare provider and epidemiologist in improving health
- Evaluate patterns of disease occurrence to differentiate among endemic, outbreak, epidemic, and pandemic levels of disease occurrence
- Describe the circumstances when a virus would be considered a novel virus and describe its role in emerging pandemics

• Track events over time and location to determine when NERD becomes a pandemic Lesson 2:

- Define chain of infection Distinguish between direct and indirect transmission
- Discuss how prevention strategies can focus on different links along the chain of infection to reduce the spread of disease
- Use a model to illustrate a possible chain of infection for NERD Create evidencebased prevention strategies to reduce the spread of NERD
 Lesson 3:
- Explain how biological, behavioral, and environmental factors can affect health outcomes
- Explain how a risk ratio quantifies the strength of an association between an exposure and a disease
- Describe the difference between biological, behavioral, and environmental risk factors
- Recognize the five key areas of the social determinants of health Identify risk factors for NERD

Lesson 4:

- Describe the purpose of public health surveillance
- Compare active, passive, and syndromic surveillance
- Explain a case definition and how it is used to determine what information is collected
- Identify key information to be collected in the surveillance of NERD
- Visually display surveillance data using a bar graph and an area map Identify patterns in data to draw conclusions about the distribution of NERD by age and geographic location over time

Lesson 5:

- Explain how data visualizations can be used to effective communicate public health data
- Create an epi curve using appropriate labels and scales f the x- and y-axes
- Describe the role of epi curves in identifying patterns in disease spread during an outbreak

• Identify four types of epi curve patterns: point source; continuous common source; intermittent common source and propagated

• Make inferences about outbreak scenarios by interpreting epi curve patterns Lesson 6:

- Explain the different purposes of diagnostic and screening testing
- Describe the differences among polymerase chain reaction (PCR), antigen, and antibody tests
- Calculate incidence and explain how it can be used to identify public health problems
- Simulate antigen testing and interpret results to calculate NERD incidence
- Analyze results of simulated laboratory testing to make public health decisions Lesson 7:
- Explain the role of case investigations and contact tracing in investigating outbreaks
- Distinguish among presymptomatic, symptomatic, and asymptomatic disease
- Explain the association among exposure, incubation period, and infectious period
- Use patterns in case and contact data to summarize the spread of NERD on a trace map
- Make evidence-based recommendations for self-isolation for a person with a case of NERD and self-quarantine for close contacts to help reduce the spread of NERD Lesson 7:
 - Explain the multistep process used to investigate an outbreak
 - Describe how a case definition can be used during an outbreak investigation
 - Discuss how different public health experts contribute to an outbreak
 - investigation Explain how a line list can be used to organize outbreak
 - investigation data Apply a NERD case definition to determine confirmed cases during a NERD outbreak
 - Design a communication strategy and materials for different audiences during a NERD outbreak investigation

<u>Time:</u>

• The suggested time for each of the seven lessons is 75 minutes.

Materials:

- internet access to play video for each lesson
- Materials are provided for each lesson

Instruction:

1. Detailed instructions and videos for instructors are provided for each lesson

Assessment:

1. Knowledge checks are provided for each lesson.

<u>Standards:</u>

NCHSE

Infection Control

7.1.1 Explain principles of infection transmission.

- a. Identify classifications of pathogens
 - Bacteria

- Fungi
- Parasites
- Protozoa
- Viruses
- b. Describe characteristics of microorganisms
 - Aerobic
 - Anaerobic
 - Non-pathogenic
 - Pathogenic
- c. Recognize chain of infection
- d. Describe mode of transmission
 - Common vehicle (air, food, water)
 - Direct
 - Healthcare-associated infections (nosocomial)
 - Indirect
 - Opportunistic
 - Vectors
 - Technology

In addition each lesson includes STEM connections & standards, Problem-based skills, Epidemiology & Public Health Core Competencies, National Health Education Standards, and Next Generation Science Standards

For additional Curriculum Crosswalks see <u>CE Useful Tools</u>