



Infectious Disease - Unit 1 - Outbreak!

Unit Focus

This introductory unit will expose students to the triad by which all infectious diseases operate. This will serve as a foundation for students to research one disease through the lens of the triad by which epidemiologists analyze diseases. Topics to be explored include: types of pathogens, factors that cause the spread of disease, mechanisms of infection, vaccines, treatments, evolution of pathogens and the development of resistance to treatment.

Stage 1: Desired Results - Key Understandings

Standard(s)	Transfer	
<p>Common Core <i>Science & Technical Subjects: 11-12</i></p> <ul style="list-style-type: none"> Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms. <i>CCSS.ELA-LITERACY.RST.11-12.2</i> Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11– 12 texts and topics. <i>CCSS.ELA-LITERACY.RST.11-12.4</i> Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. <i>CCSS.ELA-LITERACY.RST.11-12.7</i> Draw evidence from informational texts to support analysis, reflection, and research. <i>CCSS.ELA-LITERACY.WHST.11-12.9</i> <p>Next Generation Science Standards (DCI) <i>Science: 11</i></p> <ul style="list-style-type: none"> All cells contain genetic information in the form of DNA molecules. Genes are regions in the DNA that contain the instructions that code for the formation of proteins. <i>LS1.9.A2</i> Natural selection leads to adaptation, that is, to a population dominated by organisms that are anatomically, behaviorally, and physiologically well suited to survive and reproduce in a specific environment. That is, the differential survival and reproduction of organisms in a population that have an 	<p>T1 Communicate effectively based on purpose, task, and audience to promote collective understanding and/or recommend actions.</p> <p>T2 Create models to explore complex systems, show mastery of key science concepts, and/or develop solutions through creation of a product open to testing and redesign.</p>	
	Meaning	
	Understanding(s)	Essential Question(s)
	<p>U1 There are certain characteristics of pathogens that make them highly transmissible.</p> <p>U2 There are specific differences between bacteria and viruses that affect their ability to be treated and prevented.</p> <p>U3 Different regions of the world, cultures, governments, and socioeconomic status impact the ability of diseases to spread.</p> <p>U4 Various groups of people work together to continuously monitor and prevent pandemics through a series of protocols and policies.</p> <p>U5 Understanding the Epidemiological Triad can help scientists, governments, researchers, doctors, and first responders predict, prevent, and treat outbreaks of infectious diseases.</p>	<p>Q1 How do diseases spread?</p> <p>Q2 What do stakeholders need to understand in the event of a disease outbreak?</p> <p>Q3 How does the epidemiological triangle help us understand infectious disease?</p>
	Acquisition of Knowledge and Skill	
Knowledge	Skill(s)	
<p>K1 Viruses cannot be treated by antibiotics.</p>	<p>S1 Use the epidemiological triangle to assess an infectious disease.</p>	

Stage 1: Desired Results - Key Understandings

advantageous heritable trait leads to an increase in the proportion of individuals in future generations that have the trait and to a decrease in the proportion of individuals that do not. *LS4.9.C2*

Madison Public Schools Profile of a Graduate

Critical Thinking

- Analyzing: Examining information/data/evidence from multiple sources to identify possible underlying assumptions, patterns, and relationships in order to make inferences. (POG.1.2)

Collaboration/Communication

- Product Creation: Effectively use a medium to communicate important information. (POG.3.2)

K2 Zoonotic viruses can spread between animals and humans.

K3 Vaccines can be used to prevent some bacterial and viral infections.

K4 The Epidemiological Triad consists of: Agent, Host, and Environment.

K5 Pathogen, transmission, causative agent, epidemiological triangle, zoonotic, communicable, virulence, host, Emerging Infectious Disease (EID), vector, outbreak, pandemic, epidemic, vaccine, antibiotic.

S2 Explain the factors that influence the spread of infectious diseases.