

Name: \_\_\_\_\_ Date: \_\_\_\_\_

## Answer Key: Pathogen Protection: Prevail and Prevent for 7th Grade

Evaluate how chain of infection disruptions and community interventions like herd immunity effectively control the transmission of communicable diseases.

---

**1. Which transition in the 'Chain of Infection' is disrupted when a person uses a high-efficiency particulate air (HEPA) filter to trap airborne fungal spores?**

**Answer:** C) The Mode of Transmission

Air filtration acts as a barrier during the 'Mode of Transmission' phase by physically removing pathogens from the medium (air) they travel through.

**2. The public health concept of \_\_\_\_\_ occurs when a large percentage of a population becomes immune to a disease, making its spread unlikely even for those who aren't vaccinated.**

**Answer:** B) Herd Immunity

Herd immunity (or community immunity) protects vulnerable individuals because the pathogen cannot find enough susceptible hosts to maintain an outbreak.

**3. A zoonotic disease is one that is specifically defined by its ability to spread from animals to humans.**

**Answer:** A) True

Zoonotic diseases, such as Rabies or Lyme disease, originate in animals and jump to human populations through various vectors or direct contact.

**4. In the 1850s, John Snow mapped cholera cases in London to a specific water pump. This study of how and why diseases distribute in a population is called:**

**Answer:** B) Epidemiology

Epidemiology is the branch of medicine that deals with the incidence, distribution, and possible control of diseases.

**5. To prevent the spread of foodborne pathogens like Listeria, the process of \_\_\_\_\_ involves heating liquids to a specific temperature to kill harmful microbes.**

**Answer:** B) Pasteurization

Pasteurization is a heat-treatment process that destroys pathogenic microorganisms in certain foods and beverages.

**Name:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**6. Antibiotics are an effective treatment for preventing the spread of the Rhinovirus, which causes the common cold.**

**Answer:** B) False

Antibiotics only kill bacteria; they have no effect on viruses like the Rhinovirus or Influenza.

**7. Which of these is considered a 'non-communicable' disease, meaning it cannot be caught through social contact or hygiene failures?**

**Answer:** C) Asthma

Asthma is a chronic respiratory condition caused by genetics and environmental triggers, not by an infectious pathogen.

**8. When a person recovers from a disease and their body produces \_\_\_\_\_ proteins to recognize and fight that specific pathogen in the future, they have developed active immunity.**

**Answer:** A) Antibody

Antibodies are specialized Y-shaped proteins that bind to 'non-self' antigens to flag pathogens for destruction by the immune system.

**9. Properly sanitizing shared equipment in a gym is a preventative measure designed to stop indirect contact transmission.**

**Answer:** A) True

Indirect contact occurs when a person touches a contaminated surface (fomite), such as a gym bench or door handle.

**10. Which biological defense mechanism acts as the first line of 'innate' immunity to prevent pathogens from even entering the bloodstream?**

**Answer:** C) Cilia and mucus membranes

Cilia and mucus membranes are physical and chemical barriers that trap and expel pathogens before they can invade internal tissues.