




35.3 Fighting Infectious Disease

Lesson Objectives

-  Distinguish between active immunity and passive immunity.
-  Describe how public health measures and medications fight disease.
-  Describe why patterns of infectious disease have changed.

Lesson Summary

Acquired Immunity You can acquire immunity without having a disease.

- ▶ **Vaccination** is the injection of a weakened or mild form of a pathogen to cause immunity.
- ▶ **Active immunity** results from vaccines or natural exposure to an antigen.
- ▶ **Passive immunity** forms when antibodies are introduced into the body. It lasts only until the immune system destroys the foreign antibodies.

Public Health and Medications In 2005, less than 5 percent of human deaths were caused by infectious diseases. This statistic is the result of two major factors.

- ▶ The field of public health provides services that help monitor food and water supplies and promote vaccinations and healthy behavior.
- ▶ The development and use of many new medications, particularly antibiotics and antiviral drugs, has saved many lives by helping to cure infectious diseases.

New and Re-Emerging Diseases Since 1980, many new diseases have appeared and several diseases once thought to have been eradicated have recurred. There are two main reasons for these changes.

- ▶ Interactions with exotic animals have increased.
- ▶ The misuse of medications has caused diseases that were once under control, such as tuberculosis and malaria, to evolve resistance to many antibiotics.

Acquired Immunity

1. What was the origin of the term *vaccination*? Explain why this name was given.

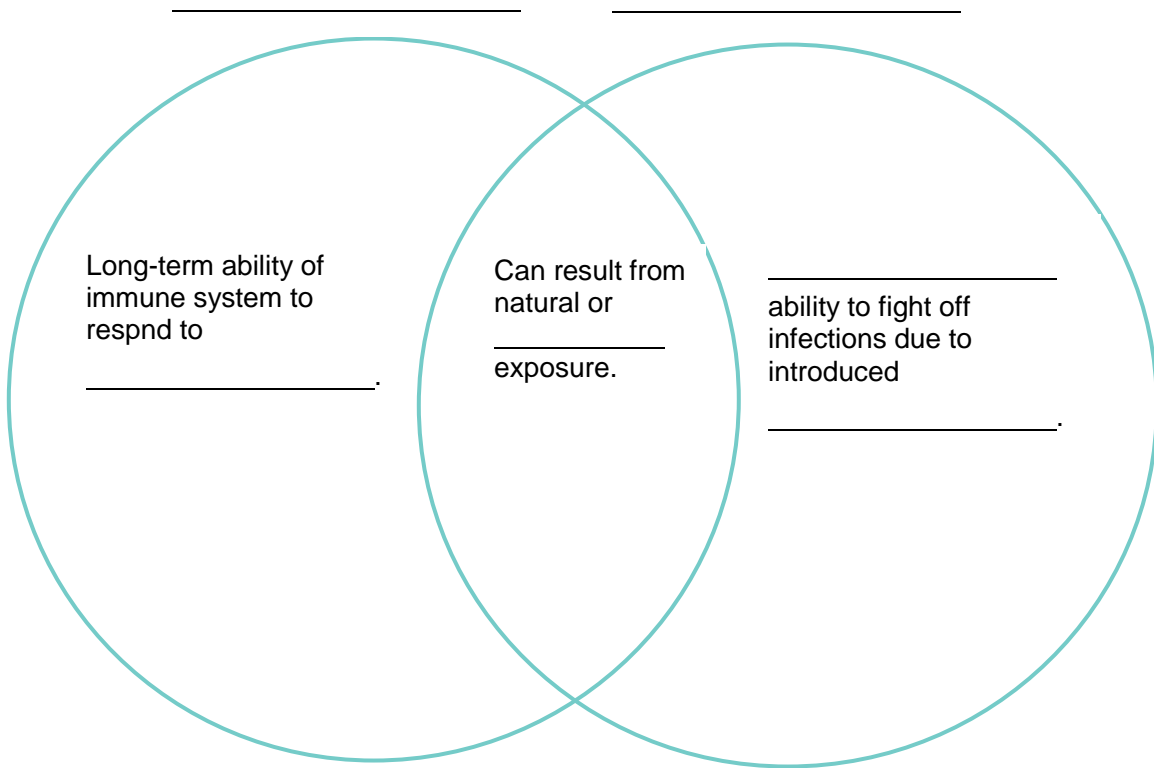
2. How does a vaccine work?

3. What type of immunity do vaccinations produce?

4. What type of immunity does a mother pass on to her infant while breastfeeding?

5. Why is passive immunity only temporary?

6. Complete the Venn diagram comparing the two types of immunity and writing the correct word or words on the lines provided.



Public Health and Medications

For Questions 7–11, complete each statement by writing the correct word or words.

7. Promoting childhood _____ and providing clean drinking water are two _____ activities that have greatly reduced the spread of many infectious diseases.

8. Compounds that kill bacteria without harming the host cells are called _____.

9. The first antibiotic to be discovered was _____.

10. _____ drugs inhibit the ability of viruses to invade cells or multiply within cells.

11. How did Alexander Fleming discover the first antibiotic?

New and Re-Emerging Diseases

For Questions 12–16, write the letter of the correct answer on the line at the left.

- _____ 12. Which of the following is NOT considered to be a major cause of new or re-emerging diseases?
- A. misuse of medications
 - B. merging of human and animal habitats
 - C. vaccination
 - D. trade in exotic animals
- _____ 13. Which is an example of an infectious disease that was eliminated by public health measures?
- A. avian influenza
 - B. hantavirus
 - C. smallpox
 - D. West Nile virus
- _____ 14. How are monkeypox and SARS thought to have started in humans?
- A. by animal trade for pets and food
 - B. antibiotic resistance
 - C. the clearing of new areas of land in the tropics
 - D. by the merging of human and animal habitats
- _____ 15. Malaria and tuberculosis are two examples of diseases that have
- A. been totally eliminated from the human population.
 - B. evolved resistance to many antibiotics.
 - C. increased because of a lack of understanding of how vaccines work.
 - D. recently been discovered in the United States.
- _____ 16. Failing to follow vaccination recommendations are thought to be responsible for the comeback of
- A. Ebola.
 - B. influenza.
 - C. Lyme disease.
 - D. measles.

Apply the Big idea

17. After being vaccinated, many children are treated for fever. This is not considered a danger or problem. Why might this happen?
