

## BACTERIA, ANTIBIOTICS AND BACTERIAL RESISTANCE TO ANTIBIOTICS

### Pre and Post Test Questions

1. List 3 habitats of bacteria:
  
2. In humans, bacteria can be beneficial by: \_\_\_\_\_
  - a. Living in or colonizing sites that might otherwise be invaded by harmful bacteria.
  - b. Aiding in digestion.
  - c. Neutralizing flesh-eating viruses
  - d. A and B only
  - e. All of the Above
  
3. What is an antibiotic?
  - a. A chemical that kills viruses or stops them from replicating
  - b. A chemical that kills bacteria or stops them from growing
  - c. A chemical that is toxic to bacteria and not to humans
  - d. A and B only
  - e. B and C only
  
4. If you are “colonized” with bacteria, does that mean you have an infection?
  
  
5. List 3 defense mechanisms used by the body to prevent bacteria from entering the body:
  
  
  
6. Which of the following describe how antibiotics use selective toxicity to kill bacteria or slow their growth
  - a. Disrupt cell wall synthesis
  - b. Disrupt ribosome function and protein synthesis
  - c. Disrupt cell membrane structure
  - d. All of the above
  
7. List 3 possible modes of transmission (means of acquiring the infection) for infections.

8. Which of the following statements about the development of new antibiotics is true?
- The pharmaceutical industry brings to market several new antibiotics each year because antibiotics are more profitable than most other types of medications.
  - Once a new antibiotic begins to be used, it usually takes 20-30 years for resistance to develop.
  - It is unlikely that bacteria will ever develop that cannot be treated by any known antibiotics.
  - None of the above
9. Which of the following statements about spectrum of activity is true?
- Broad spectrum antibiotics should be used all of the time.
  - Narrow spectrum drugs are best because they can be used to treat a wide range of serious infections.
  - Narrow spectrum drugs are preferable because they are less likely to harm beneficial bacteria
10. Which of the following scenarios describes how antibiotics select for resistant bacteria?
- Once a given bacteria is exposed to an antibiotic for long enough (someone takes antibiotics for too long, or many patients take antibiotics), the bacteria always becomes resistant just from coming into contact with the antibiotic.
  - Some bacteria have a gene that gives them the ability to survive antibiotic treatment. Bacteria that have such a gene will survive and multiply, while bacteria without the gene will be killed by the antibiotic
11. How do bacteria acquire mutations that make them resistant to antibiotics?
- Novel mutations in the DNA of a bacterial cell that lead to mechanism that counteracts effects of drug,  
OR
  - Acquisition of new genes via sharing of DNA from other bacteria
  - Both A and B
  - None of the above
12. List 2 reasons to be concerned about antibiotic resistance
13. Which of the following are effects of mutations in the bacteria that allow the bacteria to develop resistance to antibiotics?
- Pump the drug into the bacterial cell
  - Alter the target site where the drug usually binds to the bacteria, so it can't bind anymore
  - Produce enzymes that inactivate the antibiotic
  - A and B only
  - B and C only

14. Name two ways to prevent bacterial and viral infections.

15. Which strategies below can be effective in preventing antibiotic resistance?

- A. When prescribed antibiotics, only take it until you feel better, so that you limit the number of doses you take
- B. Only take 1 pill a day instead of two or three times a day, so that your body is exposed to fewer doses of antibiotics
- C. If you get a prescription for antibiotics and your friends or family members develop similar symptoms, share your medication with them right away so that they can be treated early
- D. None of the above