Microbiology

Week 3 Study Guide

**Reading:** Chapters 9-10

Chapter 9:

1. How are sterilization, disinfection and antisepsis related? How are they different from one another? Ex: How does sterilization differ from antisepsis or disinfection?
2. Define: degerming
3. Define: sanitizing
4. What is the difference between an antiseptic and a disinfectant?
5. What is pasteurization?
6. If an agent is labeled as bacteriostatic, what does this imply about it’s function?
7. Define: microbial death and microbial death rate?
8. What are the key mechanisms of action for antimicrobial agents? (How do they kill or inhibit microbial growth?)
9. What key factors must be considered when choosing an antimicrobial method?
10. Which three microbes are most resistant to antimicrobials and why is this?
11. Which environmental factors/conditions influence the effectiveness of an antimicrobial agent?
12. What are the biosafety levels established by the CDC. How are these utilized?
13. What are the heat-related methods of microbial control?
14. What is thermal death point? Thermal death time?
15. How do refrigeration and freezing inhibit microbial growth?
16. Define: dessication
17. Define: lyophilization
18. Describe how filtration works as an agent for microbial control.
19. Describe how osmotic pressure is utilized to control microbe growth? What are two common agents utilized for this function?
20. Contrast ionizing vs. nonionizing radiation.
21. Why isn’t pure alcohol an effective antimicrobial?
22. What are oxidizing agents?
23. How do surfactants help decrease microbes on the skin?
24. Which anti-microbial agents might be promising against prions?
25. Define in its strictest sense: antibiotic (hint—see p. 280)
26. How have we contributed to the problem of antimicrobial resistance?

Chapter 10:

1. Define: chemotherapeutic agents
2. Understand the contribution of Ehrlich, Fleming, Domagk, and Waksman in the development of antimicrobials.
3. What are semisynthetic antimicrobials?
4. What is selective toxicity?
5. Per Figure 10.2 in your text, describe the mechanisms of action of microbial drugs?
6. How do attachment antagonists work?
7. Describe the key clinical considerations that determine antimicrobial drug selection.
8. Why is it best to use antimicrobials with a narrow spectrum of action when possible?
9. How is antimicrobial effectiveness assessed?
10. Discuss the advantages and disadvantages of the different administration routes for antimicrobial drugs. (ex. oral, IM, IV)
11. Identify 3 main categories of side effects of antimicrobial treatment.
12. Define: therapeutic index
13. Define: therapeutic rage
14. How do populations of resistant microbes arise?
15. How do R plasmids contribute to antimicrobial resistance?
16. List seven ways microorganisms can be resistant to antimicrobial drugs?
17. How are genes for drug resistance spread between bacteria?
18. What are superbugs?
19. What is cross-resistance?
20. Describe 4 ways to combat the development of resistance.
21. What is synergism in the context of antimicrobial drugs?
22. What are probiotics?