Study Guide for Week 5

Microbiology

Reading this week:

Chapters 13 & 14

Key concepts for Ch. 13: Viruses, Virioids, Prions

1. Why are viruses referred to as obligatory intracellular parasites?
2. How do viruses multiply?
3. What is unique about the nucleic acid arrangement for viruses?
4. What is unique about viral metabolism?
5. What is a bacteriophage? What is phage therapy?
6. What is the relative size of viruses vs. bacteria vs. prions?
7. How can viruses be visualized?
8. Understand viral structure: capsid, capsomere, nucleic acid organization
9. How are viruses classified based on structure? (ex: capsomere arrangement (3 subtypes), nucleic acid composition, envelope vs, naked etc…)
10. What is a viral envelope? Spikes? How do spikes assist the function of the virus?
11. What is the difference between a latent viral infection vs. a persistent viral infection?
12. Know the order of viral replication-5 steps. What is happening at each stage?
13. What is the difference between a lytic and lysogenic cycle in bacteriophage replication?
14. How are viruses studied in the lab?
15. When bacteriophages multiply in a bacterial cell culture, what evidence does one find of this occurrence in the Petri dish?
16. How are viral infections in humans diagnosed?
17. What role do viruses play in the development of some cancers?
18. Define: viriod
19. What are prions?
20. Where are prions found?
21. What methods are effective for deactivation of prions?
22. How do prions cause disease?

Key Concepts for Ch. 14: Infection, Infectious Dz, and Epidemiology

1 )Define:

1. Symbiosis
2. Mutualism
3. Commensalism
4. Parasitism
5. Infection
6. Disease
7. Subclinical infection
8. Infective dose (ID)

2) How can relationships which would normally be classified as mutualism or commensalism become parasitic or pathogenic relationships? What factors could lead to this type of status change?

3) What are Koch’s Postulates? How are they utilized today? Are they always applicable?

4) Which 3 factors are considered when determining the chance of acquiring a particular infection and estimating the severity of the symptoms that it may cause? (see p. 159)

5) What is the 50% lethal dose (LD­50)?

6) Describe the various defensive strategies that are key bacterial mechanisms of virulence (ex. Adhesins, capsules—what do they enable bacteria to do/accomplish?)

7) Describe the various offensive strategies that are key bacterial mechanisms of virulence “(ex. enzymes, exotoxins, endotoxins)

8) What is antigenic variation? Why is this important to bacterial virulence?

9) What is the difference between an endotoxin and an exotoxin? Define both of these?

10) What is the AB Model for exotoxins and what role does each fragment play in exotoxin function?

11) What is phage conversion? Why does this contribute to virulence for bacteria?

12) What are some of the key strategies for viral virulence? (see p. 168)

13) What are the 5 Stages of Microbial Disease? Describe what is happening in each stage?

14) Define the following:

a) epidemiology

b) epidemic

c) sporadic

d) endemic

e) pandemic

f) morbidity

g) mortality

h) incidence

i) prevalence

15) What is herd immunity?

16) What is the basic reproduction rate (R-nought or R0)?

17) What is a reservoir in the context of microbial disease?

18) What are the distinctions between the following carrier states: active carrier, healthy carrier, chronic carrier?

19) What is zoonotic infection?

20) Identify some nonliving reservoirs of microbial illness.

21) What is the difference between Direct and Indirect Transmission in disease spread?

22) What is the difference between horizontal and vertical transmission?

23) What are fomites?

24) What is aerosol transmission?

25) Define—vector

27) What is the difference between a mechanical vector and a biological vector?

28) What are human portals of entry?

29) What are human portals of exit?

30) What is a nosocomial infection? What is endogenous nosocomial infection vs. exogenous nosocomial infection?

31) What is iatrogenic infection?