# Epidemiology Midterm, Spring '01

Sections covered on this exam: Preface, 1.1, 1.3, 1.4, 2.1, 2.2, 2.3, 3.1, and the Foodborne Outbreak

For the multiple choice questions, please use the Scranton (provided) to record your answers and select the *best* response in each instance.

1. Public health is the study of the distribution and determinants of health and disease in populations.
   a. True
   b. False **

2. Mortality refers to disability and death.
   a. True
   b. False **

3. If a disease simultaneously affects persons of several countries or continents and effects them in numbers in clear excess of normalcy, the disease is said to be:
   a. endemic
   b. epidemic
   c. pandemic **
   d. zoonotic

4. The *second* leading cause of death in the US is:
   a. cardiovascular disease
   b. cerebrovascular disease
   c. external cause
   d. cancers (malignant neoplasms) **

5. John Snow's most important work occurred around:
   a. 1800
   b. 1850 **
   c. 1900
   d. 1950

6. What was the best explanation for the lack of cholera cases in the brewery near Broad Street?
   a. Beer conferred immunity to cholera
   b. Beer killed the cholera bacteria
   c. The Brewery workers had a hardy constitution
   d. The Brewery workers hardly drank water **

7. The major causes of mortality during the prior century were mostly acute and
   a. chronic
   b. contagious **
   c. non-contagious
   d. violent

8. The gap in life expectancy between whites and blacks:
   a. is no longer evident
   b. is still evident and has widened
   c. is still evident but has narrowed **

9. A disease is:
   a. a definable physiological or psychological dysfunction **
   b. what the patient experiences
   c. the state of dysfunction of the social role of the person
   d. none of the above

10. The word epidemiology is based on the same root as the word democracy.
    a. True **
    b. False

11. The beginning of the subclinical period of disease is marked by:
    a. exposure to the agent **
    b. first pathological changes
    c. onset of symptoms
    d. time of diagnosis

12. Primary prevention is intended to reduce the duration and severity of disease.
    a. True
    b. False **

13. The clinical stage of disease begins with:
    a. exposure to the agent
    b. pathological changes
    c. the patient's first symptoms **
    d. the time of diagnosis

14. The period between exposure and first symptoms is the:
    a. stage of susceptibility
    b. subclinical stage of disease **
    c. stage of clinical disease
    d. stage of disability

15. This stage of prevention is intended to reduce complications and disabilities.
    a. primary prevention
    b. secondary prevention
    c. tertiary prevention **

16. The "natural history of disease" refers to:
    a. the progress of a disease in an individual over time **
    b. the period between exposure and first symptoms
    c. the period from first symptoms to recovery, disability, or death
    d. the broad scope of manifestations of a disease in different individuals

17. A disease that occurs rarely and without regularity is said to be:
    a. sporadic **
    b. endemic
    c. epidemic
    d. pandemic

18. A particular infectious disease can display a broad scope of manifestations and severities. This is known as the:
    a. incubation period
    b. gradient of infection **
    c. endemic level of disease
    d. stage of susceptibility

19. Indirect and direct causes of disease may form a complex network of events that determines the level of disease in a community. The complex inter-relation of events is called the:
    a. necessary cause of disease
    b. iceberg phenomenon
    c. causal web **
    d. *caeteris parabus*

20. The "epidemiologic triad" includes all of the following *except*:
    a. agent
    b. host
    c. environment
    d. behavioral factors **

21. Which of the following is a chemical cause of disease?
    a. bacteria
    b. heat
    c. nutritive excesses **
    d. trauma

22. Increases in the ability of a biologic agent to enter a host is called:
    a. infectivity **
    b. pathogenicity
    c. virulence
    d. toxicity

23. Which of the following is a component of innate immunity?
    a. B cells
    b. T cells
    c. non-specific phagocytic cells **

24. Parasitic lower plants that lack chlorophyll are:
    a. helminths
    b. fungi and yeasts **
    c. protozoans
    d. rickettsia

25. Submicroscopic infectious agents that contain their own genetic material but are incapable of multiplying outside of the host are:
    a. protozoans
    b. bacteria
    c. viruses **
    d. prions

26. Which of the following can act as reservoirs?
    a. animals
    b. carriers
    c. cases
    d. all of the above **

27. Which of the following can act as a portal?
    a. skin **
    b. cardiovascular system
    c. kidneys
    d. animals

28. True or false? Modified live vaccines represent non-virulent strains of the agents that are capable of causing infection.
    a. True **
    b. False

29. Which of the following is an *active* form of immunization?
    a. Maternally-derived antibodies
    b. Anti-venoms
    c. Immune-serum
    d. Vaccination **

30. Hosts that harbor a specific infectious agent while manifesting no discernable signs or symptoms are called:
    a. portals
    b. vectors
    c. vehicles
    d. carriers **

31. Diseases with animal reservoirs are:
    a. outbreaks
    b. portals
    c. nosocomial infections
    d. zoonoses **

32. A convalescent carrier is:
    a. a person who transmits the agent prior to the onset of disease
    b. an animal carrier
    c. an infected person who has recovered from disease but still harbors and transmits the agent **
    d. none of the above

33. An animal (usually an insect) that serves to transmit an agent is called a:
    a. vehicle
    b. vector **
    c. carrier

34. A disease with a urogenital portal is a:
    a. zoonotic disease
    b. sexually transmitted disease **

35. A disease that is spread from human to human or from humans to animal in sequence demonstrates:
    a. common vehicle spread
    b. serial transfer **
    c. droplet nuclei transmission

36. The water borne transmission of cholera via the Broad Street pump is an example of:
    a. common vehicle spread **
    b. serial transfer
    c. droplet nuclei transmission

37. Soluble proteins produced by B cells that neutralize invading pathogens are:
    a. vaccines
    b. lymphokines
    c. macrophages
    d. antibodies **

38. Which cell *regulates* the immune response?
    a. T lymphocytes **
    b. B lymphocytes
    c. macrophages
    d. NK (natural killer) cells

39. Acquired immunity is resistance that is developed by the host as a result of a previous exposure to a natural or artificial pathogen or foreign substance.
    a. True **
    b. False

40. Which of the following is a chemical barrier to infection.
    a. Intact skin
    b. Respiratory cilia
    c. Natural killer cells
    d. Gastric acidity **

41. The intact skin often provides an effective physical barrier to infection.
    a. True **
    b. False

42. Infectious disease outbreak investigations include both an epidemiologic and laboratory component.
    a. True **
    b. False

**SHORT ANSWER:** Please respond directly on the page.

43. Define "epidemiology." [3 pts]

Study of / health or disease / in populations.

44. List the four stages in the natural history of a disease [4 pts]

    a.    _____ susceptibility

    b.    _____ pre-clinical

    c.    _____ clinical

    d.    _____ resolution, disability, or death

45. In plain terms, explain the meaning of the iceberg phenomenon. [2 pts]

There's often a broad spectrum of disease manifestations / much of which can be inapparent, undiagnosed, or unreported.

46. One of the first steps in investigating an outbreak is to confirm the diagnosis of cases. Why is this important? [1 pt]

Purported outbreaks may actually represent sporadic occurrences of unrelated diseases (or even a psychological event related to "hysteria."

47. Why did John Snow remove the handle from the Broad Street Pump? [1 pt]

To prevent further occurrences of cholera.

48. What is a reservoir? [3 pts]

Normal habitat or environment / in which the agent live and multiplies.

**Data** from a food borne outbreak are shown below. Use these data to complete the exam. *Show work*

| ID | ILL | Bloody diarrhea | Incubation (hrs) | Chicken Salad | Ice Cream |
|----|-----|-----------------|------------------|---------------|-----------|
| 1 | Y | Y | 0.5 | Y | Y |
| 2 | Y | Y | 1 | Y | Y |
| 3 | Y | Y | 2 | N | Y |
| 4 | Y | Y | 4 | N | Y |
| 5 | Y | . | 6 | N | N |
| 6 | N | | | Y | N |
| 7 | N | | | Y | N |
| 8 | N | | | N | Y |
| 9 | N | | | N | Y |
| 10 | N | | | N | N |

49. What percentage of cases experienced bloody diarrhea?

4 /4 = 100%

50. What is the median incubation period of this disease?

2 hours

51. Calculate the attack rate in those who ate chicken salad.

2 /4 = .5

52. Calculate the attack rate for those who did not eat chicken salad. (Show all work)

3 / 6 = .5

53. Calculate the relative risk of illness associated with chicken salad.

.5 / .5 = 1

54. Calculate the attack rate in those who ate ice cream.

4 / 6 = .67

55. Calculate the attack rate in those who did not eat ice cream.

1 / 4 = .25

56. Calculate the relative risk of illness associated with ice cream.

.67 / .25 = 2.67

57. Which food is the more likely source of contagion? The chicken salad or the ice cream? Ice cream