Disease Detectives
1. Which of the following would reduce random error?
   a. Increasing sample size *
   b. Reducing sample size
   c. Increasing variability in the measurement
   d. Reducing variability in the measurement
   e. Both a and c
   f. Both a and d

2. Which of the following describes a “mixing of effects” in a study or survey?
   a. Confounding
   b. Random error
   c. Random selection
   d. Random selection

3. Describe the difference between morbidity and mortality
   Morbidity - likelihood of serious impairment due to a disease
   Mortality - likelihood of death due to a disease

4. Describe the difference between precision and accuracy
   Accuracy is the amount of times you get the same results (consistent)
   Precision is how close your results are to the true measurement

5. The portion of the incidence of a disease in the exposed that is due to the exposure is:
   a. Cohort group
   b. Relative risk
   c. Attributable risk
   d. Benefit group
6. On December 1st, a survey taken at your high school shows that 50 students have the flu. Another survey is taken on December 15th, showing that 75 students have the flu. If there are a total of 2000 students at your high school, what is the prevalence of the flu at the end of the time period? What is the incidence of the flu at the end of the time period?

\[
P = \frac{75}{2000} = 0.0375 \\
I = \frac{75}{2000} \times 15 = 0.0225
\]

7. In a case-control study, which statistic would you use to measure association?

- Odds ratio
- Equate possible agents and vehicles of transmission
- Odds of exposure to agent in cases compared to odds of exposure to agent in controls

8. Which type of prevention involves early detection of existing diseases and includes screening?

- Primary prevention - early intervention before exposure to agent
- Prevent access of disease from begging

9. What are the three components of the epidemiological triad?

- Agent-sensitive population identified through characteristic time
- Disease + vulnerability from immunological causes
- Disease represented through route of transmission causes of disease

10. What is one foodborne bacteria that can grow at refrigerator temperatures?

- Listeria monocytogenes - causes listeriosis
- Can contaminate unpasteurized milk, soft cheese, and ready-to-eat deli meats
11. Which of the following characteristics in food can NOT prevent bacterial growth?
   a. High salt
   b. High sugar
   c. High acid
   d. High fiber

12. According to the CDC, what is the safe minimum internal temperature in Fahrenheit that chicken
    should be cooked to?
    \[140^\circ\text{F}\]

13. Which statistic is determined by taking the incidence in the exposed and dividing it by the
    incidence in the nonexposed?
    \[\text{relative risk}\]

14. What kind of pathogen is Hepatitis caused by?
   \[\text{virus from raw produce, contaminated drinking water, uncooked foods that are not}
    \text{reheated after contact with the infected food handler, shellfish from contaminated waters}\]

15. What kind of pathogen is salmonella?
    \[\text{bacteria (from rogue)}\]

16. The CDC estimates that approximately ________ illnesses occur due to Salmonella every year in
    the US
    a. 1.2 million
    b. 1200
    c. 120,000
    d. 12,000
17. An infection caused by Salmonella is called:

Salmonellosis - causes diarrhea, fever, abdominal cramps, vomiting, stools, eggs, poultry meat, unpasteurized milk, juice, cheese, contaminated raw fruits, and vegetables.

× 5

18. List the 6 components of the chain of transmission

- Agent: microbe or organism with the ability to cause disease
- Host: person who cannot resist the microorganism
- Mode of transmission: method of transfer of the organism
- Reservoir: place where agents can thrive and reproduce
- Portal of exit: орган that allows the organism to leave the reservoir
- Portal of entry: opening allowing the organism to enter a host

× 5

19. On an epicurve, which type of graph has a series of peaks over multiple incubation periods?

- a. Propagated
- b. Continuous common source
- c. Point source
- d. Epidemic

× 5

20. Which type of study is useful for studying a rare disease?

- a. Ecological
- b. Cohort
- c. Case-control
- d. Cross-sectional

× 5
21. A recent study reported that not eating fish increases the risk for stroke. Based on the following table showing the results of this study, calculate the Relative Risk. What does the relative risk mean in regards to the relationship between not eating fish and stroke, as compared to those who eat fish daily?

<table>
<thead>
<tr>
<th>Eating Fish</th>
<th>Cases of Stroke</th>
<th>Noncases of Stroke</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>82 (a)</td>
<td>1,549 (b)</td>
</tr>
<tr>
<td>Almost daily</td>
<td>23 (c)</td>
<td>779 (d)</td>
</tr>
</tbody>
</table>

\[
\frac{0.1 (a/b)}{0.4 (c/d)} = \frac{82/1631}{23/802} = 1.753 = \text{relative risk = 10}
\]

People who never eat fish are 17.53 times more likely to have a stroke than people who eat fish daily. There is a positive association and increased risk between never eating fish and developing stroke.