

## Disease Detectives

### Answer Key

1. 6-15 hours (2 points)
2. Contact, vehicle, vector (1 point)
3. a)  $\geq 80$  (1 point)  
b) All ages (1 point)  
c) Accepted answer in range: 47% to 53% (1 point)
4. a) 10/20 (1 point)  
b) 10/17 to 11/21 (1 point)
5. a) 0.8 (2 points)  
b) 0.45 (2 points)  
c) 1.78 (+ or - 0.02) (2 points)  
d) Increasing exposure to salad is associated with increasing risk of developing gastroenteritis. (2 points)  
e) cohort study (1 point)  
f) diarrhea, cramps, nausea, fever, vomiting (2 points)
6. a) 3.52 (+ or - 0.02) (2 points)  
b) This shows that people who ate at Chipotle are 3.52 times more likely to develop the disease than those who did not eat at Chipotle. (2 points)  
c) Case control (1 point)  
d) Retrospective (1 point)  
e) Cochran-Mantel-Haenszel summary odds ratio/ Cochran-Mantel-Haenszel estimate of the risk ratio and of the odds ratio (1 point)
7. Line listing (1 point)
8. 4 (1 point)
9. Discrete onset of symptoms, presence of jaundice, and a positive serological test for IgM antibody to Hepatitis A (1 point)
10. 6 (1 point)
11. Immunoglobulin G (1 point)
12. It is an antibody test that detects the first antibody that the body produces when it is exposed to hepatitis A. It is used to diagnose acute hepatitis A. (2 points)

13. a) The temperature of the fridge was taken to indicate whether it was cool enough to allow any bacteria in the food to grow. (2 points)

b) The temperature of the fat was taken to indicate whether it was hot enough to kill any bacteria present in the food. (2 points)

14-16: (2 points for each correct answer, 1 point given for identifying a correct risk factor but not a correct explanation) Any three of the following are correct:

Cracked work surface- Bacteria can grow in the cracks of the work surface.

Meat grinder has putrefied meat adhering to it- Bacteria from the putrefying meat may spread to other foods.

No convenient hand washing facilities- Hand washing is an important precaution to take to prevent the spread of disease. If there are no convenient hand washing facilities, this cannot be done and disease can spread much more quickly.

Temperature of the fridge- The fridge temperature measured 68 degrees, which is within the range of temperatures that allow bacteria to proliferate (40 degrees to 140 degrees F).

17. A coliform test measures the concentration of total coliform bacteria associated with the possible presence of disease causing organisms. It indicates the suitability for consumption, or potability, of drinking water. (2 points)

18. *E. coli* (1 point)

19. Cohort study (1 point)

20. 0.372 or 37.2% (+ or - 0.002 or 0.2%) (1 point)

Matching Answers: (1 point each)

1. I

2. A

3. J

4. V

5. P

6. Q

7. K

8. D

9. E

- 10. G
- 11. H
- 12. M
- 13. F
- 14. L
- 15. S
- 16. T
- 17. R
- 18. C
- 19. B
- 20. N
- 21. O
- 22. U

Max Total: 70

Tie Breaker Answers:

1. Random error- the divergence of an observed sample value from the true population value due to chance alone (1 point)

Confounding- occurs when an extraneous variable correlates with both the disease and the exposure dependent variable in the health-related event under study (1 point)

2. Selection bias- the selection of individuals, groups or data for analysis that results in a non-random, biased sample that is not representative of the population from which it is taken (1 point)

Information bias- bias that results from systematic error in the measurement of a variable (1 point)

3. (1 point for each correct answer)

Bacterial

Fungal

Bacterial

Bacterial

Fungal