

YUSO 2017

Disease Detectives: Answer Key

1 point each

1. b
2. c
3. e
4. c
5. d
6. b
7. a
8. c
9. e
10. b
11. b
12. c
13. c

3 points each

14. Morbidity refers to the prevalence or incidence of a disease, while mortality refers to the rate of death attributed to a certain condition or population.
15. Poor sewage systems, failure to sanitize surfaces, not washing hands, undercooking food, improper food storage
16. Patients are assembled on the basis of some common experience and are then monitored for a specified amount of time at regular intervals until they develop the outcome of interest or the follow-up period ends
17. Relative risk is the association between the exposure and outcome, attributable risk estimates how many observed cases can be linked to the exposure.
18. [3 pts]
Pregnant women/newborns, elderly populations, immunodeficient adults [1 pt each]
19. [3 pts]
Unpasteurized dairy products, ready-to-eat deli meats, raw fruits and vegetables [1 pt each]
20. [2 pts]
Three to four weeks
21. [3 pts]
Nausea, diarrhea, fever, muscle aches, flu-like symptoms [grader's discretion]

* Tiebreaker: [2 pts]

Listeria monocytogenes [2 pts only if entire name is given correctly], *L. ivanovii* or *L. grayi*
[1 pt]

22. [8 pts]

| | Cases | Controls |
|--------------------------------|-------|----------|
| Ate at Yorkside | 15 | 20 |
| Did not eat at Yorkside | 10 | 20 |
| | 25 | 40 |

| | Cases | Controls |
|------------------------------------|-------|----------|
| Ate at Salsa Fresca | 5 | 12 |
| Did not eat at Salsa Fresca | 20 | 28 |
| | 25 | 40 |

23. [3 pts]

$$\text{Yorkside: } \frac{15 \cdot 20}{20 \cdot 10} = 1.5$$

$$\text{Salsa Fresca: } \frac{5 \cdot 28}{12 \cdot 20} = \frac{7}{12} = 0.58$$

Yorkside has a higher odds ratio, so it is more likely. [1 pt for each statement]

24. [2 pts]

Not all infected patients may have reported, other sources of infection may have been unaccounted for, etc [grader's discretion]

25. [5 pts]

- Identify food items served during the implicated time period.
- Determine whether any kitchen staff or their family members were ill at the time of the outbreak
- Describe handwashing facilities at the cafeteria and routine hygienic practices of foodhandlers
- Collect stool specimens from all foodhandlers
- Watch or reconstruct kitchen procedures in days leading up to the implicated time period, in order to identify any unusual occurrences or departures from routine during the outbreak
- Outline work schedules for foodhandlers during the implicated period and identify who was responsible for what on which days
- Get recipes for food items served during the implicated time period and identify the ingredients and their sources

[1 pt each, up to 5]

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26. [2 pts]

Primary case patient: patient zero, direct exposure to contaminated food or surfaces

Secondary case patient: infected by spread from already affected patients via droplets or contact [1 pt each]

* Tiebreaker [3 pts]

Antibody test: detects presence of viral-specific antibodies in the blood [IgM or IgG]

Viral culture: cells infected with the virus will display changes associated with the viral infection

PCR: relies on thermal cycling to amplify small sections of DNA, using solutions of complimentary bases of DNA, primers, and several key enzymes.

[Full credit given for one process, described in detail]

* Tiebreaker [6 points]

1: c

2: a

3: d

4: f

5: e

6: b