

DISEASE DETECTIVES FAIRFAX INVITATIONAL

ANSWER KEY

1. a. no
- b. no
- c. YES
- d. no
- e. no

***if the student ONLY gives letter C as being a yes, then give full 2 points. If the student gives C as a yes along with other letters being yes, give 1 point. If C is not given as a yes, give 0 points.

2. 3 elements that must be in answer:
 - a. an external agent
 - b. a vector/formite to transmit the disease
 - c. a susceptible host

If all 3 are mentioned, give full 5/5.

If only 2 are mentioned, give 3/5.

If only one is mentioned, give 2/5.

If none are stated correctly, give 0/5.

3. No

4. a. If student says definitively that the tomato salad CANNOT be pinpointed as source of outbreak, AND gives a reasonable explanation relating to the fact that there is not strong enough evidence to prove that the tomato salad is the source, give 3/3 for part A. Give 2/3 and 1/3 based on your own judgment of the student's clarity in explaining this.

b. Student MUST mention in some way that this odds ratio means that there is no significant correlation between the tomato salad and the salmonella outbreak. Full 4/4 if this is said. If this is said but anything in the explanation contradicts this or suggests a TRUE POSSIBILITY of the tomato salad being the source, give 2/4. Otherwise, give 0/4. Partial credit may be given at your own discretion.

5. Give 3/3 if ANY of the following are mentioned up to 3, if only 2 of the following are mentioned, give 2/3, etc.

Respiratory, breathing/taken in through the air
Ingestion, through food, through eating, through water, through drinking
Dermal, skin-to-skin contact, skin absorption

6. Only TWO from each list are needed for full credit:
- Bacteria, parasite, or virus (specific species name is acceptable)
 - Drugs, skin irritants, food additives, food contaminants, hazardous waste, toxic waste, pollution

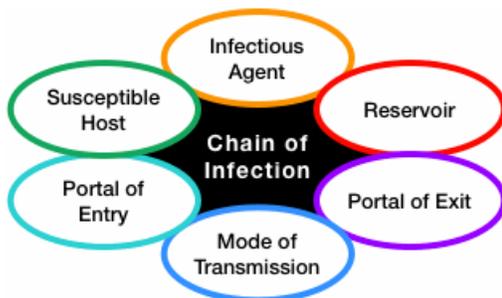
c. Noise, climate, weather, light

7. Any of the following 5 or relatively similar answers may be accepted for full credit:

Wash hands/knives/cutting boards thoroughly,
Keep produce refrigerated until served,
Keep uncooked meats/raw meats separated from cooked meats and produce,
Cook raw meat thoroughly,
Cook leftovers/refrigerated/frozen foods until steaming hot,
Store uneaten foods in refrigerator/freezer,
Do not allow food workers to work while ill,
etc.

8. 4.15, accept answers within the range 4.10 – 4.19 for full credit. Anything else should be given 0 points.

9.



Give 5/5 if fully correct, 3/5 if only 2 are written correctly, 1/5 if only 1, 0/5 if 0.

TIEBREAKERS:

DO NOT include these in final score of exam. A separate section on the title page of the exam is reserved for tiebreaker points. These points should **ONLY** be used in the event of a tie.

10. Tiebreaker 1: **MUST** have answers similar to the following 10 steps **IN THIS ORDER ONLY**. A STEP WRITTEN OUT OF ORDER SHOULD NOT BE GIVEN ANY POINTS.

1. Prepare for Field Work (prepare tests, workers, etc.)
2. Establish the Existence of an Outbreak - Consider Severity, Potential for Spread, Public Concern, and Availability of Resources
3. Verify the Diagnosis
4. Define and Identify Cases - Case Definition and Line Listing
5. Describe and Orient the Data in Terms of **Person, Place, and Time** - Descriptive Epidemiology
6. Develop Hypotheses (Agent/Host/Environment Triad) = Chain of Transmission
7. Evaluate Hypotheses - Analytical Studies (MUST Have a Control Group)
8. Refine Hypotheses and Carry Out Additional Studies
9. Implement Control and Prevention Measures (ASAP!)
10. Communicate Findings

Tiebreaker 2:

All or nothing points, if the right definition is given, give full points for the concept. If wrong definition is given, 0 points for the word. If definition is partially right but lacking in substance or missing a crucial detail, give 0 points for the word.

Random error- error due to chance, no reason can be pinpointed and occurs only due to random error

Systematic error- an error that consistently affects the data to the same degree each time (ex. A scale that measures 0.15 grams too high each time, a ruler with markings that are too wide, etc.)

(continued on next page)

Selection bias- bias occurring when selection of data or participants may have an external reason to be linked or external connections that hinder the quality of the data obtained

Confounding bias- bias occurring when multiple simultaneous or conflicting elements cause a change in data