Disease Detective – 2017 Holt Invitational

**Part 1: Matching – Match the correct term with the definition by writing the corresponding letter on the line of your answer document.**

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| A. | Outbreak | F. | Vector |
| B. | Epidemic | G. | Fomite |
| C. | Cluster | H. | Zoonosis |
| D. | Pandemic | I. | Surveillance |
| E. | Risk |  |  |

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|  | an aggregation of cases over a particular period |
|  | an epidemic occurring over a very wide areas(several countries or continents) and usually affecting a larger proportion of the population |
|  | a physical object that serves to transmit an infectious agent from person to person |
|  | an infectious diseases that is transmissible from animals to humans |
|  | large numbers of people over a wide geographic area affected |
|  | the systematic, ongoing collection, analysis, interpretation and dissemination of health data |
|  | an animate intermediary in the indirect transmission of an agent that carries the agent from a reservoir to a susceptible host |
|  | the probability that an individual will be affected by, or die from, an illness or injury within a stated time or age span |
|  | more cases of a particular disease than expected in a given area or among a specialized group of people over a particular period of time |

**Part 2: Matching – Match the correct term with the examples below by writing the corresponding letter on your answer document.**

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| A. | Vector |
| B. | Agent |
| C. | Fomite |

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|  | a door knob during flu season |
|  | a mosquito infecting a person with malaria |
|  | a children’s baseball helmet shared by the entire team |
|  | *Clostridium botulinum* bacteria that causes botulisum |

**Part 3: For each scenario below, answer the questions on your answer document.**

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| Patient A is complaining of abdominal cramps, watery diarrhea, and nausea. These symptoms appeared 14 hours after the patient had beef stew for dinner. | 14. What food-borne illness is patient A suffering from? |
| 15. How long can patient A expect the symptoms to last? |
| 16. What bacteria cause this illness? |
| Patient B has arrived in a local ER complaining of Diarrhea and flu-like symptoms. The nurse notices that the urine sample from Patient B is very dark. Patient B explains that about a month ago he visited Mexico and may have drunk from a questionable water supply. | 17. What food-borne illness is patient B suffering from? |
| 18. How long can patient B expect the symptoms to last? |
| 19. What virus causes this illness? |
| Patient C is pregnant and comes into a local ER complaining of flu-like symptoms including fever, muscle aches, and nausea. She tells the nurse that she ate a sub sandwich from a local deli made with turkey and ham. | 20. What food-borne illness is patient c suffering from? |
| 21. How long can patient B expect the symptoms to last? |
| 22. What virus causes this illness? |
| 23. Explain briefly why this illness has an increased risk for patient C. |

**Part 4: Place the steps of an outbreak investigation in the correct order on your answer document by writing the corresponding letters in the correct order.**

24. Place the following steps in the correct order.

1. Verify the diagnosis.
2. Prepare for field work.
3. Describe and orient the data in terms of time, place and person.
4. Evaluate hypotheses.
5. Develop hypotheses.
6. Implement control and prevention measures.
7. Communicate findings.
8. Refine hypotheses and carry out additional studies.
9. Establish existence of an outbreak.
10. Define and Identify cases.

**Part 5: Multiple Choice. Pick the best answer that answers the question of completes the statement by writing the corresponding letter on your answer document.**

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| 25. | A case definition could include all the elements except: |
| a. | clinical information |
| b. | name |
| c. | location |
| d. | sequence of disease development |

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| 26. | Which of the following would be a good sample for a cross-sectional study? |
| a. | mailing a brief health questionnaire to a random sample of houses |
| b. | splitting a sample of volunteers into a test group and control group |
| c. | examining a group that is initially healthy to see changes in their disease status over time |

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| 27. | A hypothesis for the cause of a disease must include |
| a. | an agent, host, and environment |
| b. | a time, place, and person |
| c. | an assumption based on previous knowledge |

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| 28. | Which of the following is true about relative risk?   1. Relative risk estimates the extent of the association between an exposure and a disease. 2. A relative risk = 1.0 indicates there is no association between exposure and disease. 3. A relative risk > 1.0 indicates a positive association or increased risk. |
| a. | II and III |
| b. | I and III |
| c. | I, II, and III |
| d. | I only |

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| 29. | As soon as the causative agent for an outbreak is identified, an epidemiologist should |
| a. | create a report |
| b. | begin to control and prevent the disease |
| c. | b, and then a |
| d. | a and then b |

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| 30. | Food handlers should observe these to minimize occurrence of foodborne illnesses: |
| a. | Wash hands, cutting boards, utensils and countertops |
| b. | Keep raw meat, poultry, and seafood separate from ready-to-eat foods |
| c. | Use a food thermometer to ensure that foods are cooked to a safe internal temperature |
| d. | Keep the refrigerator below 40 F and refrigerate food that will spoil. |
| e. | All of the above |
| f. | A, B and D only |

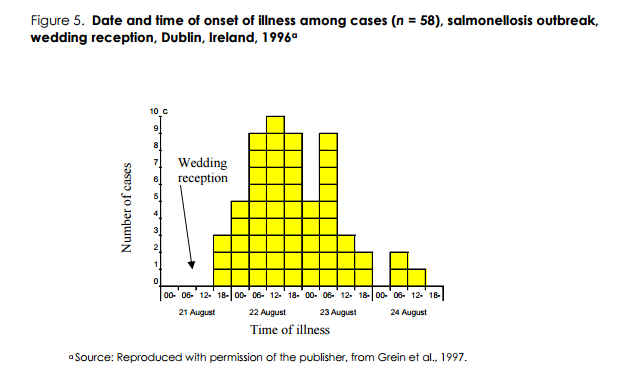
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| 31. | Consumers can minimize the risk of catching foodborne illnesses by the following: |
| a. | Avoiding raw or undercooked foods of animal origin such as eggs and ground meat |
| b. | Avoiding unpasteurized milk |
| c. | Avoid raw or undercooked oysters |
| d. | Becoming a s strict vegetarian |
| e. | all of the above |
| f. | A, B, and C only |

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| 32. | Which of the following are true about these organisms*: Campylobacter, Cryptosporidium, Listeria, Clostridium, Shigella, Cyclospora* |
| a. | all of them are bacteria |
| b. | all of them are agents of food-borne illnesses |
| c. | both a and b |
| d. | none of the above |

**Part 6: Matching – Match the correct term with the examples below by writing the corresponding letter on your answer document.**

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| A. | Cross-sectional |
| B. | Case Control |
| C. | Experimental |
| D. | Cohort |
| 33. | Investigator determines through a controlled process the exposure for each individual (clinical trial) or community (community trial), and then track the individual or communities over time to detect the effects of the exposure |
| 34. | Can use a prospective (forward in time ) or retrospective (backward in time) approach |
| 35. | Uses odds ration to quantify the relationship between exposure and disease |
| 36. | Investigators measure the exposures and health outcomes of a sample of persons in a population simultaneously |
| 37. | Selection of the appropriate comparison group is key to the strength of this design |
| 38. | Investigator records whether each study participant is exposed or not, and then tracks the participants to see if they develop the disease of interest |
| 39. | Investigators identify a group of people with a disease and a group of persons without the disease |
| 40. | Use relative risk to quantify the relationship between exposure and disease. |

**Part 7: True/False – Using the data below decided if each statement is true or false. Write the word true or false for each statement on your answer document.**

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|  | 41. The majority of person affected by this outbreak had signs and symptoms of the disease around the time period 8/22/1996 to 8/23/1996.  42. According to the chart, the food or beverage item that was contaminated and caused the illness was first consumed on 8/22/1996.  43. This kind of chart is referred to as an epi curve or epidemic curve.  44. This outbreak pattern is consistent with a common source outbreak with continuous exposure.  45. The data presented allows us to conclude that the total number of persons exposed to the disease agent at the wedding reception was 60. |
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**Part 8: Short Answer – Use the data below to answer the following questions. Write your answers on you answer document.**

An outbreak of severe stomach illness occurred following a student party. Disease detectives took u p the challenge to investigate and obtained the following data of association of specific food eaten at the party and having the illness.

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|  | **Cases** | | | | **Controls** | | | |
| **Food** | **Ate** | **Did Not Eat** | **Total** | **% Ate** | **Ate** | **Did Not Eat** | **Total** | **% Ate** |
| Baked Ham | 29 | 17 | 46 | 63.04 | 17 | 12 | 29 | 58.62 |
| Spinach | 26 | 20 | 46 | 59.52 | 17 | 12 | 29 | 58.62 |
| Mashed Potatoes | 26 | 23 | 46 | 50.00 | 14 | 14 | 29 | 50.00 |
| Jello | 16 | 30 | 46 | 34.78 | 7 | 22 | 29 | 24.14 |
| Rolls | 21 | 25 | 46 | 45.65 | 16 | 13 | 29 | 55.17 |
| Cake | 27 | 19 | 46 | 58.70 | 13 | 16 | 29 | 44.83 |
| Ice Cream | 43 | 3 | 46 | 93.46 | 11 | 18 | 29 | 37.93 |
| Milk | 2 | 44 | 46 | 4.35 | 2 | 27 | 29 | 6.90 |
| Water | 13 | 33 | 46 | 28.26 | 11 | 18 | 29 | 37.93 |

46. Which food had the highest risk associated with it?

47. Calculate the relative risk for the food with highest risk.

48. Calculate the percentage of those who ate food at the party who developed illness.

49. Calculate the attack rate for persons who ate mashed potatoes.

50. Calculate the odds ratio for those who ate ice cream.