

MY SO PRACTICE TEST

DIVISION B - MIDDLE SCHOOL, GRADES 6-9

PRACTICE TEST

Instructions

- You have 50 minutes to complete this test.
- You may write your answers directly in the test.
- You may use any notes or resources you have created or collected.
- You may use a calculator and scratch paper if necessary.
- The scenarios presented here are both hypothetical but based on actual outbreaks and public health problems.
- Good Luck!

Test Questions

The Department of Health received a cell phone call from a student stating that he and his roommate were suffering from nausea, vomiting, and diarrhea. Both had become ill overnight. He had taken an over-the-counter medication that had given some relief to his symptoms. Neither she nor his roommate have sought medical attention.

1. The students believed their illness was due to the food they had eaten at a local restaurant the night before. They asked if they should attend class the next day. Which of the following is best practice for investigating a potential food-borne illness such as the one in this case?
 - a. No food history needs to be collected.
 - b. Take a food history that includes only the last food or meal consumed before the onset of illness.
 - c. Take a 24-hour food history that includes all the foods, beverages, meals consumed 24 hours before the onset of illness.
 - d. Take a 5-day food history because the incubation period for diarrheal diseases tends to be longer.
2. Upon investigation, the health department worker learns some additional information. Which of the following pieces of information would most likely lead to the health department worker concluding no further investigation is warranted?
 - a. A food handler at the dining hall where the caller and her roommate frequently eat has been diagnosed with a confirmed case of Norovirus
 - b. Seven additional complaints have been made the day before by students with similar symptoms who also attend the same university
 - c. The roommate indicates she has a sore throat, fever, and chills along with her continued nausea and vomiting, while the caller describes having had diarrhea overnight but no other signs or symptoms.
 - d. The students' symptoms become much more severe and they need to report to the emergency department

3. What information would be important to collect in investigating this report of potentially food-borne illness?
 - a. Who became ill and their characteristics (e.g., age, sex, and occupation)
 - b. When the affected persons became ill
 - c. Contact information for the affected persons (e.g., address and phone number)
 - d. Vital signs including heart rate, blood pressure, etc.
4. Circle three reasons why it is important for Disease Detectives to confirm that an event is unusual before proceeding with the next step.
 - a. To be sure they are dealing with a real problem
 - b. To be sure their research papers are published after the investigation
 - c. To make the most efficient use of limited resources
 - d. To support the need for additional public health funding and resources
 - e. To respond to public concerns

It is a warm Monday morning in mid-September. You are the chief epidemiologist at a large city health department. As you review reports electronically transmitted to your office over the weekend, the phone rings. The caller is Beth Stover, director of Fun Time Academy—a child care center in your jurisdiction. She says she got a call from the parents of a young boy who was hospitalized over the weekend with severe diarrhea and dehydration. She says her staff noticed a slight increase in children with loose stools over the last few weeks. The staff was not too concerned because the stools were not bloody, and pediatricians were telling parents the diarrhea was due to teething, food allergies, or antibiotic use.

5. Which of the following represents a key component of the definition of an outbreak?
 - a. It happens suddenly.
 - b. It involves a lot of people.
 - c. Some of the people are hospitalized or die.
 - d. There are more cases than expected.
 - e. It is caused by an infectious agent.
 - f. It is widespread.
6. Which of the below pieces of information do you need to determine if this represents an outbreak?
 - a. The causative agent,
 - b. The source of infection,
 - c. The index case,
 - d. The number of children who had diarrhea during the same time period last year,
 - e. The number of secondary cases,
 - f. None of the above.
7. Which of the below modes of transmission is most often involved in transmission of diarrheal diseases?
 - a. Direct
 - b. Vector borne
 - c. Airborne
 - d. Vehicle borne
8. How many seconds, at least, must you wash your hands with warm, soapy water to wash them properly?
 - a. 10 seconds
 - b. 20 seconds
 - c. 45 seconds
 - d. 60 seconds

9. Which of the following temperature ranges represents the “Danger Zone” for food storage?
- 0 degrees F
 - 40 – 140 degrees F
 - 140 – 180 degrees F
 - 180 – 210 degrees F
10. A patient was admitted into the ER complaining about severe abdominal pain. Upon running tests, the patient was discovered to have appendicitis and underwent surgery. Which of the following terms best describes the approach to the problem that the doctors used?
- Clinical approach
 - Observation
 - Public health approach
 - Scientific method
11. Which of the following scientists is known as the “Father of Epidemiology?”
- John Graunt
 - John Snow
 - Robert Hooke
 - William Farr
12. Which of the following are considered public health issues?
- Health disease and stroke
 - Food safety
 - Teen pregnancy
 - Tobacco use
 - All of the above
13. John Snow's investigation of cholera is considered a model for epidemiologic field investigations because it included a: (Select all that apply)
- Biologically plausible hypothesis
 - Comparison of a health outcome among exposed and unexposed groups
 - Multivariate statistical model
 - Recommendation for public health action
 - Spot map
14. The hallmark feature of an analytic epidemiologic study is: (Choose one best answer)
- Laboratory confirmation of the diagnosis
 - Publication in a peer-reviewed journal
 - Statistical analysis using logistic regression
 - Use of an appropriate comparison group
15. A number of passengers on a cruise ship from Puerto Rico to the Panama Canal have recently developed a gastrointestinal illness compatible with norovirus (formerly called Norwalk-like virus). Testing for norovirus is not readily available in any nearby island, and the test takes several days even where available. Assuming you are the epidemiologist called on to board the ship and investigate this possible outbreak, your case definition should include, at a minimum: (Choose one best answer)
- Clinical criteria, plus specification of time, place, and person
 - Clinical features, plus the exposure(s) you most suspect
 - Suspect cases
 - The nationally agreed standard case definition for disease reporting

16. A specific case definition is one that (Select all that apply):
 - a. Is likely to include only (or mostly) true cases
 - b. Is considered "loose" or "broad"
 - c. May exclude mild cases
 - d. Will include more cases than a sensitive case definition

17. Comparing numbers and rates of illness in a community, rates are preferred for: (Choose one best answer)
 - a. Conducting surveillance for communicable diseases
 - b. Deciding how many doses of immune globulin are needed
 - c. Estimating subgroups at highest risk
 - d. Telling physicians which strain of influenza is most prevalent

18. For the cruise ship scenario described in Question 15, how would you display the time course of the outbreak? (Choose one best answer)
 - a. Endemic curve
 - b. Epidemic curve
 - c. Seasonal trend
 - d. Secular trend

19. For the cruise ship scenario described in Question 7, if you suspected that the norovirus may have been transmitted by ice made or served aboard ship, how might you display "place"?
 - a. Shaded map of United States by state of residence
 - b. Shaded map by whether passenger consumed ship's ice or not
 - c. Spot map by assigned dinner seating location
 - d. Spot map by cabin

20. Which variables might you include in characterizing the outbreak described in Question 15 by person?
 - a. Age of passenger
 - b. Detailed food history (what person ate) while aboard ship
 - c. Status as passenger or crew
 - d. Symptoms

Botulism is a rare but serious paralytic illness that causes disability and death; foodborne botulism is one of the more serious foodborne illnesses. The following describes one of the largest outbreaks of foodborne botulism reported in the United States in recent times. Although this was an unusual event, foodborne botulism continues to be a problem with approximately 20 cases reported each year. Most cases of foodborne botulism come from home-canned or other home-prepared foods.

On Sunday morning, April 10, 1994, a physician at an El Paso, Texas hospital notified the local health department that two people arrived at the hospital emergency room with blurred or double vision, difficulty breathing, and weakness. The sudden onset and nature of these symptoms suggested botulism.

Botulism is caused by *Clostridium botulinum*, an anaerobic, spore-forming gram-positive bacillus. Spores are dormant forms that are highly resistant to heat, drying and other environmental conditions. They are commonly found in soil and on food items contaminated with soil and can survive improper canning, cooking, or other processing methods used to preserve food. Under low-acid ($\text{pH} > 4.6$), anaerobic conditions, the spores germinate and produce a potent neurotoxin. This botulinum toxin is inactivated by heating to $>80^\circ\text{C}$ for at least ten minutes. When a person ingests toxin-contaminated food, the toxin molecules are absorbed into the bloodstream. They then spread throughout the body and bind to the ends of neurons. This prevents a neurotransmitter, acetylcholine, from carrying messages to muscles. A person who has botulism will become paralyzed, starting with the top of their body (descending paralysis), as more and

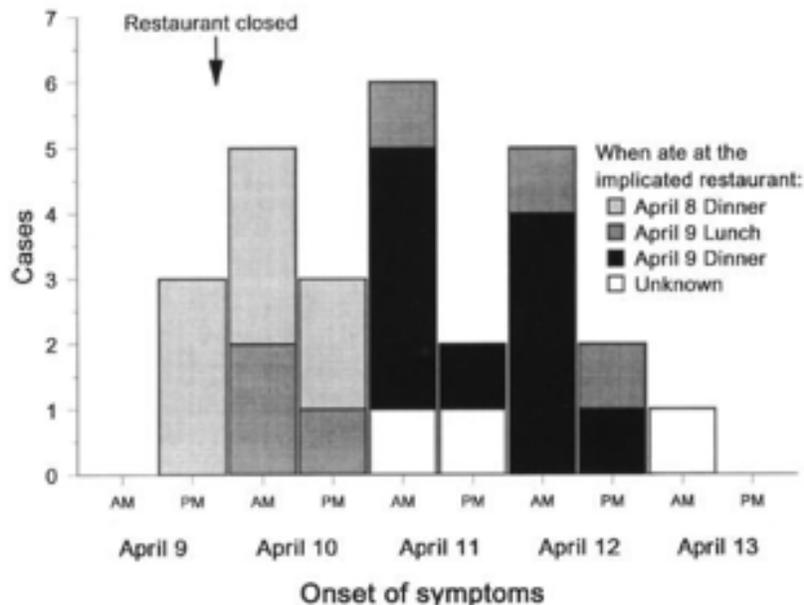
more nerve endings become blocked. The classic symptoms of botulism include double vision, blurred vision, drooping eyelids, slurred speech, difficulty swallowing, dry mouth, and muscle weakness. Although the most frequent source of botulism today is home-canned foods, outbreaks associated with restaurants or with commercially prepared foods do occur. The toxin does not change the taste or smell of the food. Botulism cannot be transmitted from one person to another because the illness results from eating the spores or the toxin.

The physician contacted the El Paso Public Health Department after learning that the patients, a father and son, had recently shared a meal at a Greek restaurant in El Paso. An epidemiologic investigation was started immediately. Other area hospitals were contacted and an additional 4 suspect cases were identified within 4 hours of the initial report. Each of these persons had eaten at the same Greek restaurant.

On learning of these additional cases, the health department closed the restaurant and issued a press release informing the general public that persons who had symptoms of botulism should seek immediate medical attention. The next day, area physicians were notified of the outbreak and asked if they had seen any patients with symptoms of botulism. Interviews with the initial group of case-patients suggested that exposure most likely took place on April 8 or April 9. Investigators got a list of employees and used meal tickets, credit card receipts, cancelled checks and interviews of staff and patrons to identify persons who might have eaten at the restaurant on those two days. They identified 235 persons who ate food from the restaurant on April 8 or 9, 1994 (230 patrons and 5 employees). All restaurant patrons were interviewed using a standard questionnaire regarding food and beverages consumed, signs and symptoms of illness, and onset and duration of illness.

21. What was the purpose of these interviews? (mark all that apply)
- a. to determine if the restaurant was involved
 - b. to determine the gender of the patients
 - c. to identify the particular food item that was involved
 - d. to determine the ages of the patients
 - e. to find out if the patients were going to sue the restaurant
 - f. to determine if the patients liked their doctors

Figure 2. Symptomatic cases of botulism (N=27) by date of illness onset and date persons ate at implicated restaurant, El Paso, Texas, April 1994.



22. Based on the background and incubation periods of the ill patrons, what type of outbreak is this?
- Continuous common source
 - Propagated common source
 - Progressive source
 - Contiguous point source
 - Point source
 - Propagated source

Public health officials were able to interview 198 of the 235 people that may have been exposed during this outbreak. They learned the following information from Table 5.

Table 5: Food Eaten by Diners

	Ate the Food			Did not Eat the Food		
	Ill	Total	Attack Rate	Ill	Total	Attack Rate
Black Olives	19	92	20.4%	11	105	10.5%
Eggplant Dip	6	9	66.7%	24	189	12.7%
Feta Cheese	22	106	20.8%	8	92	8.7%
Greek Salad	12	94	12.8%	18	104	17.3%
Gyros	12	90	13.3%	18	108	16.7%
Potato Dip	19	22	86.4%	11	176	6.3%
Spanakopita	5	27	18.5%	25	171	14.6%

23. Based on the information in the table above, what two foods are most likely to have been the cause of the outbreak?
- Black olives
 - Eggplant dip
 - Feta cheese
 - Greek salad
 - Gyros
 - Potato dip
 - Spanakopita
24. There are many infectious diseases that can be prevented. These measures can be used to prevent the spread of an outbreak or epidemic EXCEPT:
- Hand washing and hygiene
 - Respiratory precautions
 - Vaccination campaign
 - Institute strict quarantine measures
 - Avoid eating all vegetables because they are hard to clean of germs
25. Measles is a highly contagious disease spread through coughing or sneezing. Symptoms can include rash, high fever, coughing, and runny nose. The disease can also cause more serious problems, such as ear infections, pneumonia, encephalitis (inflammation of the brain)—even death. It remains a leading cause of death among young children globally, despite the availability of a safe and effective vaccine. An estimated 197,000 people died from measles in 2007, mostly children under the age of five. Measles is caused by a:
- Bacterium
 - Virus
 - Fungus
 - Parasite
 - Protozoa

ANSWER KEY

- | | | | |
|-----|-------------------|-----|----------------|
| 1. | D | 15. | A |
| 2. | C | 16. | A, C |
| 3. | D | 17. | C |
| 4. | A, C, E | 18. | B |
| 5. | D | 19. | A, C, D |
| 6. | D | 20. | A, C |
| 7. | D | 21. | C |
| 8. | B | 22. | E |
| 9. | B | 23. | B, F |
| 10. | A | 24. | E |
| 11. | B | 25. | B |
| 12. | E | | |
| 13. | A, B, D, E | | |
| 14. | D | | |