



MASENO UNIVERSITY

UNIVERSITY EXAMINATIONS 2016/2017

FIRST YEAR SECOND SEMESTER EXAMINATIONS FOR THE DEGREE OF MASTER OF PUBLIC HEALTH IN EPIDEMIOLOGY AND POPULATION HEALTH

CITY CAMPUS

PHE 822: DISEASE SURVEILLANCE AND OUTBREAK INVESTIGATIONS

Date: 2nd July 2017

Time: 2.00 - 5.00pm

INSTRUCTIONS:

- Answer ALL Questions in section A and B.
- Read very carefully the additional instructions preceding each section



SECTION I. Type 2 Multiple Choice Questions (MCQs) – (40 Marks)

Instructions:

1. This section has Twelve (16) questions
2. Answer ALL the Questions
3. Answer either (T) for True or (F) for False against each of the statements
4. A correct answer scores one (1) mark, incorrect answer is penalized minus half a mark (- ½); and an unanswered question gets zero (0) – no mark.

1. The ultimate purpose of characterizing an outbreak by time, place, and person is to:
 - a) Identify errors and miscodes in the data
 - b) Provide a comprehensive description of an outbreak by portraying its time course, geographic extent, and populations most affected by the disease
 - c) Ensure that all true cases are captured by the surveillance system
 - d) Generate hypotheses
 - e) Test hypotheses
2. The most common way(s) that a health department uncovers outbreaks is/are by:
 - a) Receiving calls from affected residents
 - b) Receiving calls from health care providers
 - c) Reviewing all case reports received each week to detect common features
 - d) Performing descriptive analysis of surveillance data each week
 - e) Performing time series analysis to detect deviations from expected values based on the previous few weeks and comparable time periods during the previous few years.
3. Endemic means that a disease:
 - a) Occurs clearly in excess of normal expectancy in a specific region
 - b) Is habitually present in human populations
 - c) Affects a large number of countries simultaneously
 - d) Exhibits a seasonal pattern
 - e) Is prevalent among animals
4. Hepatitis A virus is excreted in the stools from about 1 to 2 weeks before the onset of illness until about 1 week after the onset of jaundice (yellowness of the eyes). This interval of time is known as:
 - a) Incubation period
 - b) Latent period
 - c) Sub-clinical period
 - d) Period of infectivity
 - e) Contact period
5. The following are uses of public health surveillance
 - a) Monitor changes in infectious agents
 - b) Detect epidemics
 - c) Evaluate control measures
 - d) Generate hypothesis
 - e) Determine geographic distribution of illness

6. Sources of data for public health surveillance include:
 - a) Notifiable disease records
 - b) Vaccine administration reporting system
 - c) Laboratory specimens
 - d) Surveys
 - e) Vital statistics

7. The following are functions of surveillance:
 - a) Evaluation of time trends of a disease
 - b) Identification and documentation of outbreaks
 - c) Evaluation of disease interventions
 - d) Determination of effectiveness of epidemic control
 - e) Identification of populations at risk

8. In investigating an outbreak of haemorrhagic fever, you should develop a case definition for the outbreak. A case definition should include the following basic components.
 - a) Clinical information about the disease
 - b) Person, place and time
 - c) Laboratory confirmation of the disease
 - d) List of all diseases with a similar signs and symptoms to the one you are investigating
 - e) Resources required to investigate the outbreak

9. A disease outbreak can be characterized by:
 - a) Time of onset of illness
 - b) Number of persons affected
 - c) Place of exposure
 - d) Incubation period
 - e) Type of diagnostic tests used

10. In the study of an outbreak of an infectious disease, plotting an epidemic curve is useful because:
 - a) It helps determine what type of outbreak has occurred
 - b) It helps determine the median incubation period
 - c) It helps to identify the source of transmission
 - d) It shows whether herd immunity has occurred
 - e) It shows the trend of the outbreak over time

11. The primary purpose for evaluating a surveillance system is to ensure that the system is:
 - a) Addressing an important public health problem
 - b) Cost-effective
 - c) Operating as efficiently as possible
 - d) Serving a useful public health function
 - e) Detecting epidemics

12. The ability of a surveillance system to detect the cases it is intended to detect is referred to as:
 - a) Predictive value positive
 - b) Sensitivity
 - c) Specificity

- d) Simplicity
- e) Representativeness

13. Regarding malaria surveillance:

- a) Malaria surveillance refers to the maintenance of an on-going vigil over the status of malaria in a group or community.
- b) The main purpose of surveillance is to detect changes in trends or distribution in malaria
- c) It does not include laboratory confirmation of presumptive diagnosis
- d) Finding out the source of infection is not a function of surveillance
- e) The ultimate objective of malaria surveillance is prevention and control of malaria in the community

14. Which of the following is characteristic of a single-exposure, common-source outbreak?

- a) Frequent secondary cases
- b) Increasing severity with increasing age
- c) Increasing severity with time of onset
- d) Explosive
- e) Cases include both people who have been exposed and those who were not exposed

15. In an ongoing outbreak of a disease with *no* known source and mode of transmission, the primary reason for an investigation relates to:

- a) Prevention and control
- b) Training of staff
- c) Learning more about the disease
- d) Being responsive to the concerns of the community
- e) Legal responsibility

16. The resistance of a population to an attack by a disease to which a large population of members of the group is immune is referred to as:

- a) Group resistance
- b) Group interventions
- c) Population resistance
- d) Herd immunity
- e) Health workers' effect

SECTION II: SHORT ANSWER QUESTIONS (SAQs) – (60 Marks)

Instructions

1. This section has Six (6) Questions
2. Answer ALL the Questions

SAQ1. Distinguish between the following terms:

- a) Immunogenicity and Herd Immunity
- b) Virulence and Pathogenicity
- c) Epidemic and Pandemic
- d) Active Surveillance and Passive Surveillance

(10 marks)

SAQ2. The Ministry of Health has established an integrated disease surveillance and response system to collect data on specific diseases in all counties.

- State the categories of diseases prioritized for surveillance by this system? For each category, list the diseases for mandatory weekly reporting. **(5 marks)**
- Outline the criteria you would use to evaluate the performance/attributes of a surveillance system **(5 marks)**

SAQ3. Your County Government has received funding for a childhood injury prevention programme. To gather baseline data on childhood injuries, the staff is discussing whether to conduct a survey or establish a surveillance system.

Discuss the advantages and disadvantages of these two approaches. **(10 marks)**

SAQ 4. After attending a cocktail party for the out-going Chief Officer of Health, many of the health department staff developed gastroenteritis. All attendees were interviewed by a public health officer who had recently completed a course on outbreak investigations. The data is presented in the Table below.

Food item	Ate specified Food				Did not eat specified			
	Ill	Well	Total	Attack rate	Ill	Well	Total	Attack rate
Macaroni salad	25	15	40		20	39	59	
Potato salad	17	38	55		28	16	44	
Bean salad	43	47	90		2	7	9	
Punch	40	52	92		5	4	9	
Ice cream	20	1	21		25	53	78	

- Calculate attack rate of gastroenteritis for each food item.
- What measure of association that can be used to identify the food items that caused outbreak?
- Calculate this measure for each of the food items.
- For which food is the measure of association largest?
- Which of the food items do you think is most likely to have caused this outbreak? Explain your answer? **(10 marks)**

SAQ 5. Malaria epidemics frequently occur in the highlands of Nandi County.

- What factors can contribute to malaria epidemics in the region? **(2.5 marks)**
- State the measures you would take to control malaria epidemics. **(2.5 marks)**
- Discuss the steps you would use to establish and maintain a surveillance system for the disease. **(5 marks)**

SAQ 6.

On a Friday afternoon, the County Director of Health telephones you. He has just become aware that his sister who attended a marriage party 2 days ago had been vomiting and having diarrhoea since early morning and has been admitted to the sub-county hospital under your jurisdiction. Several family members who attended the party also have similar signs.

- a) Discuss the logical steps you would take to investigate the outbreak. (5 marks)
- b) State and discuss the measures you would put in place to control and prevent the disease. (5 marks)

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