

UNIVERSITY OF ESWATINI
FACULTY OF HEALTH SCIENCE
DEPARTMENT OF COMMUNITY HEALTH NURSING SCIENCE
FINAL EXAMINATION: MAY, 2019

COURSE TITLE: INTRODUCTION TO EPIDEMIOLOGY

COURSE CODE: NUR 521

TIME ALLOCATED: 2 HOURS

TOTAL MARKS: 75

INSTRUCTIONS

1. ANSWER ALL QUESTIONS
2. PLEASE WRITE CLEARLY AND LEGIBLY
3. START A NEW QUESTION ON A NEW PAGE
4. MAKE SURE THAT ALL YOUR ANSWERS ARE NUMBERED CORRECTLY
5. USE PROVIDED ANSWER BOOKLET FOR ALL YOUR ANSWERS

**PLEASE DO NOT OPEN THIS QUESTION PAPER UNTIL PERMISSION
HAS BEEN GRANTED BY THE CHIEF INVESTIGATOR OR HIS/HER
REPRESENTATIVE**

INTRODUCTION TO EPIDEMIOLOGY NUR521

This section has 8 questions, some questions require calculations for such questions kindly show how you derived the answer. For questions where you are required to *describe* or *discuss* please provide details and not just short answers. ***This section is worth 55 marks***

Question 1

An outbreak of Acute Watery Diarrhea (AWD) occurred following a funeral at Sigangeni. Shortly after the outbreak a questionnaire was administered to those who attended the funeral. The information in **Table 1.0** shows the information collected. Design a table and answer the questions below.

What is the Relative Risk of developing AWD from Potato salad consumption? Please interpret the Relative Risk **7 Marks**

Table 1.0: People who attended the funeral and the type of food eaten and not eaten

Food	People who ate the food		People who did not eat	
	Sick	Well	Sick	Well
Lettuce	600	450	450	550
Potato Salad	200	800	100	900
Beef stew	650	350	100	900
Rice stew	300	700	400	600
Chicken stew	200	800	500	500

Question 2

At Kwaluseni, an inkhundla with a population of about 100,000 people, in 2016 there were 1,000 deaths from all causes. Of these, about 300 were tuberculosis deaths (200 were males and 100 were females). In that same year, there were 60 deaths from asthma, 50 of them males and 10 females. What is the crude mortality rate for Kwaluseni inkhundla in 2016? **4 marks**

Question 3

In 1940, there were 6,000 males who worked in an asbestos mine at Mbasheni area in the Hhohho region. The incidence of asbestosis in these males was calculated in 1975 and was compared to that of 1,000 males who worked as cooks in 1945. Twenty (20) of the miners and four (4) of the cooks developed mesothelioma between 1940 and 1970. What study design is this? **3 marks**

Question 4

Researchers set out to demonstrate that a new drug is more effective in lowering systolic blood pressure than beta-blockers. They select two groups from among a number of previously uncontrolled hypertensive patients to receive either the new drug or a beta-blocker using a computer programme to make the allocation purely by chance. What is this method of assignment called? **2 mark**

Question 5

A screening test for breast cancer was administered to 400 women with biopsy-proven breast cancer and to 400 women without breast cancer. The test results were positive for 100 of the proven cases and 50 of the normal women. Construct a 2X2 table and calculate

- a) The sensitivity of this screening test?
- b) The specificity of the screening test?

10 marks

Question 6

A 25 year old male patient presents to you with a purulent urethral discharge for one day. He admits to having had unprotected sex 3 nights ago and has had no other sexual contact in the past year. In order to initiate empirical treatment while awaiting laboratory tests for this sexually transmitted illness in this patient what other period do you need to know? **2 mark**

Question 7

Researchers investigated the relationship between the use of statins and prostate cancer mortality by examining the records of patients who died from prostate cancer as well as records of matched controls. They report an unadjusted odds ratio of 0.49 (95% confidence interval, 0.34-0.70), which decreased to 0.37 ($P < 0.0001$), after adjusting for education, waist size, body mass index, comorbidities and anti-hypertensive medication. What can you conclude from these results using the provided statistics? **5 marks**

Question 8

Describe the three levels of disease prevention using HIV as an example

- Primary Prevention – **10 marks**
- Secondary Prevention – **7 marks**
- Tertiary – **5 marks**

Total = 55 marks

Part B

Select the best answer for the multiple choice questions. There are 15 questions in total (1-15). Circle the correct answer completely. *Each question carries 1 mark*

1. Epidemiologists define disease occurrence in terms of:

- a. Agent
- b. Host
- c. Environment
- d. All of the above
- e. a. and b. above

2. Which of the following factors play a key role in likelihood of infectious disease acquisition?

- a. Genetic profile
- b. Human behavior
- c. Environmental conditions
- d. All of the above
- e. a. and b. above

3. The portal of entry and exit for most infectious diseases, including HIV, is the same:

- a. True
- b. False

4. Virulence is the:

- a. Ability to cause clinical disease
- b. Ability to cause severe disease
- c. The ability to evoke an immune response
- d. All of the above
- e. a. and b. above

5. An infectious disease agent may cause:

- a. No infection
- b. Subclinical infection
- c. Clinical infection
- d. All of the above
- e. b. and c. above

6. Septicemia is:

- a. Acute illness caused by agents circulating in the blood
- b. Infection in a previously healthy person
- c. Caused by secondary infection
- d. An example of the carrier state
- e. b. and d. above

7. The incubation period is the interval between:

- a. The time of infection and death
- b. Appearance of clinical symptoms and death
- c. The time of infection and appearance of clinical symptoms
- d. Time of infection and appearance of antibodies
- e. Time of infection and the appearance of IgM agent specific immunoglobulins

8. A "fomite" is:

- a. An agent conducting aerosol
- b. A blanket, door handle or other inanimate article on the surface of which the agent resides
- c. A vector between an arthropod and the susceptible host
- d. An agent bearing substance that is eaten or drunk
- e. b. and d. above

9. The important characteristics of the immune system include:

- a. Ability to distinguish self from non-self
- b. Memory of previously encountered antigens
- c. Specificity to a single antigen or epitope
- d. All of the above
- e. a. and b. above

10. Which occurs first after infection with HIV?

- a. Positive viral load test
- b. Positive antibody test
- c. Positive Western blot test
- d. Development of antigen-specific IgG
- e. CD8, CD28

11. The biggest single barrier to prevention of HIV and AIDS is:

- a. The cost of treatment
- b. Reluctance of some individuals to be treated
- c. The high proportion of individuals globally who do not know that they are infected
- d. The lack of a cure for HIV
- e. The concentration of the epidemic in sub-Saharan Africa

12. Effective prevention strategies to reduce HIV transmission include:

- a. Condoms
- b. Successful treatment of HIV-infected individuals
- c. Incarceration of sexually promiscuous individuals
- d. All of the above
- e. a. and b.

13. An effective surveillance system includes:

- a. Ongoing collection of data
- b. Timely analysis
- c. Rapid dissemination of results
- d. All of the above
- e. a. and c. above

14. An epidemic will die out when the reproductive number is:

- a. 1
- b. >1
- c. >2
- d. < 1
- e. <2

15. The majority of TB is transmitted:

- a. By respiratory droplet
- b. Transplacentally
- c. Direct skin-to-skin contact
- d. mosquitoes
- e. By blood

Select the best answer for the True and False question. There are **five** questions in total (16-20). Circle the correct question completely. **Each question carries 1 mark**

16. Bacteria differ from other disease agents because they have a cell wall:

- a. True
- b. False

17. The major role of the immune system is to distinguish self from non-self:

- a. True
- b. False

18. All laboratory tests must have a control to indicate that the test is functioning properly:

- a. True
- b. False

19. Successful treatment of HIV results in partial restoration of the host immune response:

- a. True
- b. False

20. In the developing world, Directly Observed Treatment Short course (DOTS) is recommended for treatment of TB:

- a. True
- b. False

Total= 20 marks