

**UNIVERSITY OF SWAZILAND**  
**FACULTY OF HEALTH SCIENCES**  
**(SECOND SEMESTER)**

**MAIN EXAMINATION PAPER**

**MAY, 2013**

**COURSE CODE** : **NUR 521**  
**COURSE TITLE** : **COMMUNITY HEALTH NURSING IV**  
**TIME ALLOWED** : **2 HOURS**  
**MARKS ALLOCATED** : **75**

**INSTRUCTIONS:**

- 1. THERE ARE TWO SECTIONS IN THIS PAPER.**
- 2. SECTION ONE (1) COMPRISES OF MULTIPLE CHOICE AND OBJECTIVE QUESTIONS.**
- 3. SECTION TWO (2) COMPRISES OF CALCULATION AND SHORT ESSAY QUESTIONS.**
- 4. ANSWER ALL QUESTIONS.**

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## SECTION ONE (1)

### A. MULTIPLE CHOICE AND OBJECTIVE QUESTIONS

For the following multiple choice questions, write one most appropriate answer. Write the question number and the letter representing the answer. E.g.: 3. D

1. It is assumed that diseases can be transmitted directly or indirectly. A vector such as a mosquito is an example of.....
  - A. direct disease transmission
  - B. indirect disease transmission
  - C. single exposure
  - D. common vehicle exposure

(1)
  
2. One of the fundamental premises underlying the study of epidemiology is.....
  - A. disease, illness and ill health are randomly distributed in a population
  - B. disease, illness and ill health are not randomly distributed in a population
  - C. disease, illness and ill health are randomly distributed in large populations
  - D. disease, illness and ill health are rarely distributed in large populations

(1)
  
3. Amongst the levels of disease prevention, which one has the impact on reducing disease transmission?
  - A. Primary level
  - B. Secondary level
  - C. Tertiary level
  - D. All of the above

(1)
  
4. Cases of tuberculosis (TB) were identified by the Swaziland National Tuberculosis Control Programme from the country's TB register. Which one of the following categories of study design best describes this method of case finding?
  - A. Prospective follow-up
  - B. Passive surveillance
  - C. Cross-sectional survey
  - D. Hospital-based surveillance

(1)

5. Although investigators may be careful during the process of selection of cases and controls, selection bias can make interpretation of results difficult. Which of the following is **NOT** a situation that can produce selection bias?
- A. The exposure has some influence on the process by which controls are selected
  - B. The exposure has some influence on the process of case ascertainment
  - C. The disease status has some influence on the recall of exposures
  - D. The exposed cases are reported to registries more than unexposed (1)
6. All of the following are potential benefits of a randomized clinical trial, **EXCEPT**:
- A. The likelihood that the study groups will be comparable is increased
  - B. Self-selection for a particular treatment is eliminated
  - C. External validity of the study is increased
  - D. Assignment of the next subject cannot be predicted (1)
7. The property of a test to identify the proportion of truly ill persons in a population who are identified as ill by a screening test
- A. Sensitivity
  - B. Specificity
  - C. Positive predictive value
  - D. Negative predictive value (1)
8. The probability of a person having the disease when the test is positive
- A. Sensitivity
  - B. Specificity
  - C. Positive predictive value
  - D. Negative predictive value (1)
9. The extent to which a test is measuring what it is intended to measure is the test's
- A. reliability
  - B. validity
  - C. sensitivity
  - D. specificity (1)

10. A study that measures the number of persons with influenza in a calendar year is.....

- A. cohort study
- B. case control
- C. cross sectional
- D. case report

(1)

11. The stage by which the presence of factors favour the occurrence of disease

- A. Stage of susceptibility
- B. Stage of pre-symptomatic disease
- C. Stage of clinical disease
- D. Stage of disability

(1)

12. The following are modes of horizontal transmission of disease, **EXCEPT**:

- A. Contact
- B. Vector
- C. Common Vehicle
- D. Genetic

(1)

**Questions 13 to 15 are based on the information given in the following table:**

In a small pilot study, 12 women with uterine cancer and 12 women with no apparent disease were contacted and asked whether they had ever used oestrogen. Each woman with cancer was matched by age, race, weight, and parity to a woman without disease. The results are shown in the given tables that follow:

Pair No.	Women With Uterine Cancer	Women Without Uterine Cancer
1	Oestrogen user	Oestrogen non-user
2	Oestrogen nonuser	Oestrogen non-user
3	Oestrogen user	Oestrogen user
4	Oestrogen user	Oestrogen user
5	Oestrogen user	Oestrogen non-user
6	Oestrogen non-user	Oestrogen non-user
7	Oestrogen user	Oestrogen non-user
8	Oestrogen user	Oestrogen non-user
9	Oestrogen non-user	Oestrogen user
10	Oestrogen non-user	Oestrogen user
11	Oestrogen user	Oestrogen non-user
12	Oestrogen user	Oestrogen non-user

Table showing pilot study results

13. The study design used here is the.....

- A. case-series
- B. case-control
- C. randomised controlled trial
- D. historical cohort

(1)

14. The purpose of matching the pairs is to reduce the chance for.....

- A. recall bias
- B. selection bias
- C. confounding
- D. information bias

(1)

15. What is the estimated relative risk of cancer when analysing this study as a matched-pairs study?

- A. 0.25
- B. 0.33
- C. 1.00
- D. 3.00

(1)



## **B. OBJECTIVE QUESTIONS**

**For each of the following, indicate whether it is a ratio, proportion or rate.**

- 16. Relative risk (1)
- 17. Period prevalence (1)
- 18. Point prevalence (1)
- 19. Person-time incidence (1)
- 20. Case fatality (1)
- 21. Secondary attack rate (1)

**Name the designs for each of the following studies.**

- 22. How many older adults in Mbabane Government Hospital take anti-coagulated medication? (1)
- 23. What is the rate of falls among older adults in Mbabane Government Hospital? (1)
- 24. What characteristics increase an older adults' risk of falling? (1)
- 25. How effective is a new drug in reversing the effects of anticoagulant medications? (1)

**[Total= 25 marks]**

## SECTION B

### QUESTION 1

A randomized trial studied 242 HIV-seropositive, 2<sup>nd</sup> trimester pregnant women to assess the efficacy of zidovudine (AZT) in preventing perinatal HIV transmission. Results are shown in the table below:

<b>Results from a randomized trial of the efficacy of zidovudine in preventing perinatal HIV transmission</b>			
	Zidovudine	Placebo	All
<b>Births (no.)</b>	121	121	121
<b>Infection status of infant</b>			
Non-infected	112	90	202
HIV-infected	9	31	40

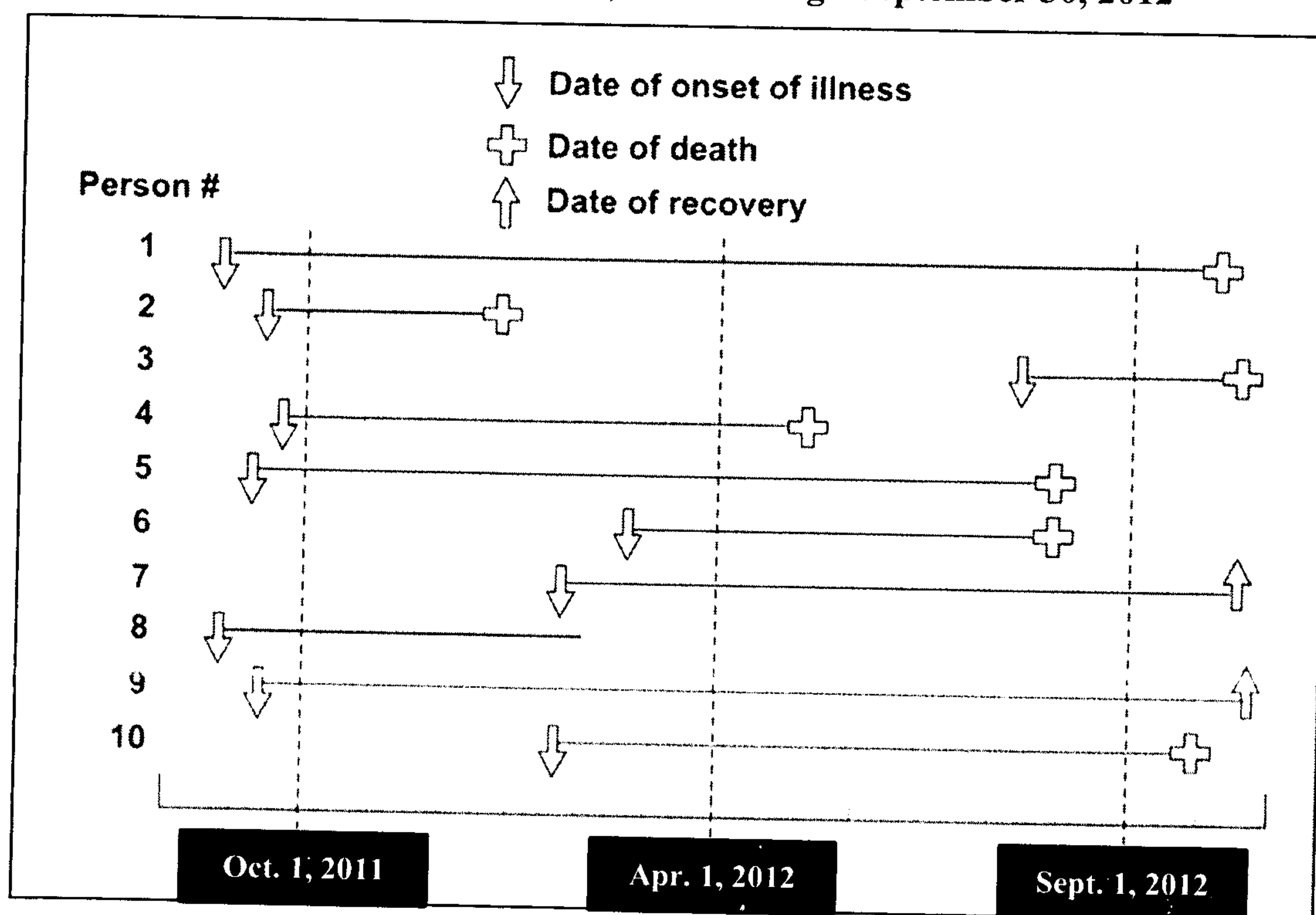
- A. Using an appropriate epidemiologic measure, determine if zidovudine use is beneficial against HIV infection for infants whose mothers took the drug relative to infants whose mothers took the placebo. Write formulas and clearly show your working. (12)
- B. You are called to help investigate a cluster of 17 men who developed leukaemia in a community. Some of them worked as electrical repair men and others as ham radio operators.
- Name the most appropriate study design you would choose to investigate a possible association between exposure to electromagnetic fields and leukaemia. (1)
  - Discuss how you would go about in the design of choice determining the association. (4)
- C. Assume that a test has a sensitivity of 99% and a specificity of 95% in a population of 10,000 people in which the disease prevalence is 1%.
- Construct a 2x2 table to demonstrate the information clearly. (6)
  - Calculate the positive predictive value. (2)

[Total= 25 marks]

## QUESTION 2

The figure below illustrates a cohort of 10 new cases of illness followed over 15 months in a population of 20 persons. Each horizontal line represents one person. The down arrow indicates the date of onset of illness. The solid horizontal line represents the duration of illness. The upward arrow and the cross represents the date of recovery and the date of death, respectively.

**New cases of illness from October 1, 2011 through September 30, 2012**



- Explain the study design shown? (2)
- In your own words describe the cohort for participants 1, 6 and 8. (6)
- What could have happened to participant 8? (2)
- Calculate the incidence rate from October 1, 2011 to September 30, 2012 using the mid-point population (population alive on April 1, 2012) as the denominator. Express the rate per 100 population (3)
- Calculate the point prevalent on April 1, 2012 (3)



- F. Calculate the period prevalence from October 1, 2011 to September 30, 2012. (3)
- G. Calculate the total person-months of follow-up contributed by the participants in the study. (3)
- H. What was the overall incidence rate of the disease during the 15 month period? (3)

**[Total= 25 marks]**