



**UNIVERSITY OF RUHUNA – FACULTY OF ALLIED HEALTH SCIENCES**

**DEPARTMENT OF PHARMACY**

**SECOND BPHARM PART II EXAMINATION – AUGUST 2022**

**PH 2214 PHARMACEUTICS III -SEQ**

**TIME: THREE HOURS**

**INSTRUCTIONS**

- There are six questions in part A, B, and C of this SEQ paper.
- Answer all questions.
- No paper should be removed from the examination hall.
- Do not use any correction fluid.

**PART A**

1.

1.1. Read the abstract given below and answer the questions.

**Randomized Controlled Trial of a Pictogram-Based Intervention to Reduce Liquid Medication Dosing Errors and Improve Adherence among Caregivers of Young Children**

H. Shonna Yin, MD, MS; Benard P. Dreyer, MD; Linda van Schaick, MS Ed; George L. Foltin, MD; Cheryl Dinglas, BA; Alan L. Mendelsohn, MD

The study aims to evaluate the efficacy of a pictogram based health literacy intervention to decrease liquid medication administration errors by caregivers of young children. A randomized controlled trial was conducted in urban public hospital pediatric emergency department. Parents and caregivers (N=245) of children aged 30 days to 8 years who were prescribed liquid medications (daily dose or “as needed”) were included in the study. Medication counseling using plain language, pictogram-based medication instruction sheets were given for the intervention group while control subjects received standard medication counseling. Medication knowledge and practice, dosing accuracy, and adherence were determined. Of 245 randomized caregivers, 227 underwent follow-up assessments (intervention group, 113; control group, 114). Of these, 99 were prescribed a daily dose medication, and 158 were prescribed medication taken as needed. Intervention caregivers had fewer errors in observed dosing accuracy (20% deviation from prescribed dose) compared with caregivers who received routine counseling (daily dose: 5.4% vs 47.8%; absolute risk reduction [ARR], 42.4% [95% confidence interval, 24.0%- 57.0%]; number needed to treat [NNT], 2 [2-4]; as needed: 15.6% vs 40.0%; ARR, 24.4% (8.7%-38.8%); NNT, 4 [3-12]). Of intervention caregivers, 9.3% were non-adherent (ie, did not give within 20% of the total prescribed doses) compared with 38.0% of controls (ARR, 28.7% [11.4%-43.7%]; NNT, 3 [2-9]). Improvements were also seen for knowledge of appropriate preparation for both medication types, as well as knowledge of frequency for those prescribed daily dose medications. A plain language, pictogram-based intervention used as part of medication counseling resulted in decreased medication dosing errors and improved adherence among multiethnic, low socioeconomic status caregivers whose children were treated at an urban pediatric emergency department.

- 1.1.1. Write the aim of the study. (05 marks)
- 1.1.2. Mention the study design used for this study. (06 marks)
- 1.1.3. List three inclusion criteria, the investigators used to select sample for the study. (10 marks)



- 1.1.4. What is the intervention, the investigators used in this study? (10 marks)
- 1.1.5. State three outcome measures of the study. (09 marks)
- 1.1.6. Write the conclusion of the study. (10 marks)

1.2. The following scenario describes an incident at a research laboratory.

The research protocol for a study of a drug on hypertension required the administration of the drug at different doses to 50 laboratory mice, with chemical and behavioral tests to determine the toxic effects of the drug. The scientist who involved in this experiment had almost finished with the experiment and he had only five mice left to test. However, he wanted to finish his work in time to go on a holiday with his friends, who were leaving that night. He had injected the drug in all 50 mice but had not completed all the tests. He, therefore, decides to extrapolate from the 45 completed results to produce the five additional results.

- 1.2.1. List two ethical aspect that has been broken by the scientist in the above event. (10 marks)
- 1.2.2. Justify your answers provided in the 1.2.1. (40 marks)

2.

2.1.

- 2.1.1. Define the term "prevalence". (10 marks)
- 2.1.2. Suppose you are interested in the problem of diabetes in a nursing home with 800 residents. You would begin by doing blood tests on all residents to determine who have diabetes. If 40 of the residents are diabetic initially, what is the prevalence of diabetes at this point in time? (15 marks)

2.2.

- 2.2.1. Define the term "cumulative incidence". (10 marks)
- 2.2.2. There were 523 new AIDS cases reported in a country in 2004, and the mid-year population was 5.7 million during 2004. Calculate the cumulative incidence of AIDS per 100,000 people. (15 marks)

2.3. A study looking at breast cancer in older women, compared cases with non-cases. The results showed that 20/100 women with cancers did not use calcium supplements prior to diagnosis of cancers compared with 25/100 of the non-cases.

- 2.3.1. Tabulate data in to the following table. (16 marks)

Exposure	Disease group (number)	
	Case	Control
Did not receive calcium supplements	A. ....	B. ....
Received calcium supplements	C. ....	D. ....



- 2.3.2. Calculate the odds of exposure in cases and non-cases. (24 marks)
- 2.3.3. Calculate the odds ratio of developing breast cancers with reference to calcium supplement intake among older women. (10 marks)

3.

- 3.1. A researcher wants to test the effect of different combinations of maternal and child health services (MCH) and nutritional supplements (NS) on the infant mortality rate.
- 3.1.1. Suggest a suitable study design that the researcher can use to test the effect of above different combinations on the infant mortality rate. (05 marks)
- 3.1.2. Briefly describe how the researcher should conduct the above experiment according to the research design you mentioned in 3.1.1. (25 marks)
- 3.2. Classify methods of data collection used in qualitative and quantitative research. (30 marks)
- 3.3. Assume that a study is planned to test the association between parity (mother's number of pregnancy) and the risk of giving birth to babies with Down syndrome.
- 3.3.1. Suggest one confounding factor that has to be controlled in order to find the actual relationship between parity and the giving birth to babies with Down syndrome. (05 marks)
- 3.3.2. Suggest two approaches which you can use to control the confounding factor you mentioned in 3.3.1. (15 marks)
- 3.4. Categorize the following tests into parametric tests and nonparametric tests. (20 marks)

Wilcoxon's signed rank test, One sample t-test, Mann-Whitney U-test, Unpaired t-test, ANOVA, Kruskal-Wallis test, Friedman test, Spearman rank order, Pearson correlation test

## PART B

4.

- 4.1. List three objectives of National Drug Policy of Sri Lanka. (15 marks)
- 4.2. Briefly explain how tertiary health care services differ from primary health care services. (20 marks)
- 4.3. List three strategic directions of the National Health Policy. (15 marks)
- 4.4. State four functions of the Ministry of Health in Sri Lanka. (20 marks)
- 4.5. Define the term "essential medicines". (10 marks)
- 4.6. Briefly explain how you can involve in updating the Essential Medicines List as a pharmacist. (20 marks)

## PART C

5.

5.1.

- 5.1.1. What is "Dispensing"? (10 marks)
- 5.1.2. Describe the process a community pharmacist should follow when dispensing medications according to a prescription. (30 marks)



- 5.2.
- 5.2.1. What is extemporaneous compounding? (10 marks)
- 5.2.2. Briefly explain five situations where a pharmacist has to perform extemporaneous compounding. (25 marks)
- 5.3. Discuss how the course of therapy packaging can be used to improve the efficiency of dispensing process. (25 marks)

6.

6.1.

- 6.1.1. What is a prescription? (10 marks)
- 6.1.2. Identify the labeled parts of the below prescription. (20 marks)

1	<p><b>Juan Dela Cruz, MD</b>          Tower A Bldg., Boni Ave., Mandaluyong City          Tel No.: 531-4534</p> <p>Clinic Schedule:          Monday: 1:00PM - 5:00PM      Friday: 9:00AM - 12:00PM          Tue - Thur: 10:00AM - 3:00PM      Saturday: 12:00PM - 3:00PM</p>	
2	<p>Name: <u>Lucas Ramos</u></p> <p>Address: <u>Boni Avenue, Mandaluyong City</u></p> <p>Age: <u>27</u> Sex: <u>M</u> Date: <u>9/18/2012</u> → 3</p>	
4	<p>R<sub>x</sub></p>	
5	<p>Mefenamic Acid 500mg          (Ponstan 57)          # 12 capsules → 6</p>	
7	<p>Sig. Take 1 cap q 4h for 3 days or as needed for pain</p>	
8	<p>Refill: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>Physician's Sig. <u>Juan Dela Cruz MD</u>          Lic. No. <u>12345</u>          PTR No. <u>123-4567</u>          S2 No. _____ } 1</p>	

- 6.1.3. Briefly discuss about the contents of part 4 – 7 in a prescription. (20 marks)
- 6.2.
- 6.2.1. List and briefly describe three types of costs of healthcare. (15 marks)
- 6.2.2. What are the four key types of full economic evaluations? (10 marks)
- 6.2.3. Briefly discuss the differences between these four types mentioned in 6.2.2. (25 marks)

aaaaaaaaaaaaaaaa