



FCPHM(SA)

THE COLLEGES OF MEDICINE OF SOUTH AFRICA

Incorporated Association not for gain
Reg No 1955/000003/08

Final Examination for the Fellowship of the
College of Public Health Medicine of South Africa

24 February 2020



Paper 1

Long Questions

(3 hours)

Each question to be answered in a separate book (or books if more than one is required for the one answer). All the questions carry equal marks. The use of personal hand-held calculators is permitted.

Please answer three of the following four questions.

1. You are asked to prepare a briefing document for the head of your health authority, who has been asked to participate in a joint WHO/PEPFAR (World Health Organisation/ United States President's Emergency Plan for AIDS Relief) meeting on case-based surveillance (disease notification) for HIV, in which this is being promoted as a key strategy for improving the HIV response. Detail the role of and rationale for case-based surveillance in general and for HIV, and the most important strategies and interventions required in order to use person-level health data to improve the HIV prevention and treatment services. [33 ⅓]
2. With the growing burden of cardiovascular disease (CVD), there are renewed calls for applying health promotion as an approach to population health. You are asked to prepare a presentation for an association of public health practitioners on how to use advocacy as a health promotion strategy towards CVD control in South Africa. Discuss the content of your presentation. In your presentation, you should:
 - a) Briefly define advocacy in public health, and explain why advocacy is a useful health promotion strategy in the context of CVD control
 - b) Outline issues you would advise the association to consider in developing their advocacy approach. [33 ⅓]
3. A competent, motivated and skilled health workforce is critical to the performance of the health system. The 2012/13-2016/17 South African Human Resources for Health Strategy identified detailed human resource for health (HRH) planning as crucial to improving health outcomes of South Africans. You have been appointed as a public health medicine specialist to advise the Director-General of the South African's National Department of Health (NDoH) on HRH planning. Critically discuss key considerations influencing HRH planning that you would include in a briefing to senior management at NDoH. [33 ⅓]

4. You have been employed by the World Health Organisation Regional Office for Africa (WHO-Afro) as a consultant to support the implementation of school health services in countries in the region without active school health programmes. This appointment is based on your extensive experience as a public health medicine specialist in this area in South Africa. For a country of your choice in WHO-Afro (other than South Africa), discuss:
- a) The process of developing a school health policy.
 - b) The key elements of the policy (include the rationale for the services you recommend the country provides).
- [33 $\frac{1}{3}$]



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26 February 2020



Paper 3

Short Questions

(3 hours)

This paper consists of 10 questions. Each of the 10 questions to be answered in a separate book (or books if more than one is required for the one answer). The use of personal hand-held calculators is permitted.

1. In communicable diseases, the infectious agents are transmitted through a chain of several events known as the chain of transmission. Using tuberculosis disease as an example, briefly explain the factors involved in the chain of transmission. [10]
2. Using the Health Belief Model (for behaviour change), discuss the concepts (components) or constructs that predict engagement in a health-related behaviour. [10]
3. You are required as the public health medicine specialist employed in a tertiary hospital to explain the recommendations of the "STANDARD TREATMENT GUIDELINES AND ESSENTIAL MEDICINES LIST. HOSPITAL LEVEL ADULTS" (National Department of Health, South Africa) regarding occupational post-exposure prophylaxis for HIV to the staff working in occupational health clinic of your hospital. Write summarised notes for the first part of your briefing which deals with assessing the risk of occupational exposures. [10]
4. The *Haemophilus influenzae type b* (Hib) vaccine was introduced into the South African National Expanded Program on Immunisation (EPI) schedule in 1999. The vaccine is administered to children at the age of 6-, 10- and 14-weeks. You are the public health medicine specialist working at the National Department of Health and are approached to design an observational study to assess the effectiveness of the Hib vaccine in the country's EPI programme. Discuss the most appropriate study design that you would use, and selection of the study population. [10]
5. Briefly discuss the health economics concept of 'moral hazard', using the examples from the proposed National Health Insurance scheme in South Africa. In your discussion, include possible strategies to counteract the risk of 'moral hazard'. [10]
6.
 - a) Discuss the rationale for strengthening non-communicable disease surveillance. (2)
 - b) How can non-communicable disease surveillance be strengthened in South Africa? (8)

[10]

7. You are the manager of a rural South African subdistrict. A 28-year-old man is seen in your district hospital's casualty department with a history of vomiting and abdominal pain after ingestion of ~100 mL of an unknown substance, later identified as the herbicide "Paraquat" (N,N'-dimethyl-4,4'-bipyridinium dichloride), together with an unknown amount of alcohol, in a suicide attempt. He develops respiratory distress associated with lung parenchymal infiltrates that requires ventilatory support, then a spontaneous pneumothorax, and later dies. Answer the following questions:
- a) How are persons exposed to paraquat? Who is likely to be at highest risk? (2)
 - b) What are the potential long-term health effects of paraquat poisoning? (1)
 - c) What are the steps in notification in this instance? What is the purpose of each step? (5)
 - d) How can similar such incidents be prevented? (2)
- [10]
8. Following a number of media reports, there is growing concern regarding the potentially harmful effects of e-cigarettes (electronic cigarettes) in children, adolescents and young adults. Discuss the following:
- a) The clinical and public health risks of e-cigarette use in young people. (5)
 - b) Strategies to reduce e-cigarette use in young people. (5)
- [10]
9. The implementation of National Health Insurance in South Africa will require a reorganisation of the administrative and management structures within the South African health system. It is envisaged that there will be the establishment of organisational units called 'contracting units for primary health care'. Discuss the potential roles and functions of 'contracting units for primary health care'. [10]

10. Read the following modified abstract from the recently published results of the ECHO trial and answer the questions which follow.

Background

Observational and laboratory studies suggest that some hormonal contraceptive methods, particularly intramuscular depot medroxyprogesterone acetate (DMPA-IM), might increase women's susceptibility to HIV acquisition. We aimed to compare DMPA-IM, a copper intrauterine device (IUD), and a levonorgestrel (LNG) implant among African women seeking effective contraception and living in areas of high HIV incidence.

Methods

We did a randomised, multicentre, open-label trial across 12 research sites in eSwatini, Kenya, South Africa, and Zambia. We included HIV-seronegative women aged 16–35 years who were seeking effective contraception, had no medical contraindications to the trial contraceptive methods, agreed to use the assigned method for 18 months, and reported not using injectable, intrauterine, or implantable contraception for the previous 6 months. Participants were randomly assigned (1:1:1) to receive an injection of 150 mg/mL DMPA-IM every 3 months, a copper IUD, or a LNG implant with random block sizes between 15 and 30, stratified by site. Participants were assigned using an online randomisation system, which was accessed for each randomisation by study staff at each site. The primary endpoint was incident HIV infection in the modified intention-to-treat population, including all randomised participants who were HIV negative at enrolment and who contributed at least one HIV test. The trial was designed with 80% power to detect a 50% increase in the hazard of HIV for each contraceptive method compared with each of the others.

Findings

Between Dec 14, 2015, and Sept 12, 2017, 7830 women were enrolled and 7829 were randomly assigned to the DMPA-IM group (n=2609), the copper IUD group (n=2607), or the LNG implant group (n=2613). 7715 (99%) participants were included in the modified intention-to-treat population (2556 in the DMPA-IM group, 2571 in the copper IUD group, and 2588 in the LNG implant group), and women used their assigned method for 9567 (92%) of 10409 woman-years of follow-up time. 397 HIV infections occurred (incidence 3.81 per 100 woman-years [95% CI 3.45–4.21]): 143 (36%; 4.19 per 100 woman-years [3.54–4.94]) in the DMPA-IM group, 138 (35%; 3.94 per 100 woman-years [3.31–4.66]) in the copper IUD group, and 116 (29%; 3.31 per 100 woman-years [2.74–3.98]) in the LNG implant group. In the modified intention-to-treat analysis, the hazard ratios for HIV acquisition were 1.04 (96% CI 0.82–1.33, p=0.72) for DMPA-IM compared with copper IUD, 1.23 (0.95–1.59, p=0.097) for DMPA-IM compared with LNG implant, and 1.18 (0.91–1.53, p=0.19) for copper IUD compared with LNG implant.

(Source: Evidence for Contraceptive Options and HIV Outcomes (ECHO) Trial Consortium. HIV incidence among women using intramuscular depot medroxyprogesterone acetate, a copper intrauterine device, or a levonorgestrel implant for contraception: a randomised, multicentre, open-label trial. Lancet. 2019 Jul 27; 394(10195):303-313.

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In preparation for a briefing for your health authority on these new findings, please detail:

- a) The mechanisms through which hormonal contraceptives might impact HIV transmission (based on the impact on components of the reproductive number). (3)
- b) Why this study was considered necessary in the light of previous studies. (2)

- c) Your interpretation of the main results of the current study (be sure to carefully explain the statistical interpretation of the findings). (3)
 - d) The likely ramifications for services. (2)
- [10]