ADMINSTRATIVE MEDICINE

Part I Examination

Monday 6 June 2016

13:30 – 16:00 (2½ hours)

Paper IA

Candidates must answer all parts of this questions

Style, clear grammatical English and legibility will be taken into consideration by the Examiners. Answers should be written in a form appropriate to the audience specified in the question.
Weighting of marks for each part of the question is shown in parenthesis.

DO NOT OPEN PAPER UNTIL THE INVIGILATOR INSTRUCTS YOU TO BEGIN

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1. Suppose you are planning for a screening programme for lung cancer for a community. The prevalence of lung cancer in those aged 40 or above is 1.8%. The screening test has the sensitivity of 90% and specificity of 85%. Please answer the following questions based on the above information.

    i.   How many people would turn out to be test positive in 1,000,000 adults tested? (2 marks)

    ii.   How many would truly have lung cancer in those test positives? (2 marks)

    iii.   What percentage of the test positives would have to go through unnecessary confirmatory examinations so as to rule out the disease? (2 marks)

    iv.   What percentage of true cancer patients would the test miss? (2 marks)

QUESTION CONTINUES

v.   Name three methods that can be taken to reduce the unnecessary costs of the screening programme.   (2 marks)

2. Percutaneous coronary intervention (PCI) is a non-surgical procedure used to restore blood flow to the heart muscle by using a balloon catheter to dilate the coronary artery. A study was done to identify the risk factors for predicting mortality risk following PCI. A risk prediction model is built using a multiple logistic regression model. The Figure below shows the results of the final model, with post-PCI mortality within 72 hours as the outcome variable.

Data Years 2003 - 2006
Final model after backward elimination

No. of PCI cases = 18,393   (Death = 107)

			OR	95 % C.I.
Angina type (X_1)	Unstable Angina no angina or stable angina	Vs	6.35	(3.23 , 12.47)
Heart failure (X_2)	Intercurrent Cardiogenic shock None/Other HF/APO/Past Hx of HF	Vs	12.14	(7.03 , 20.99)
Sustained VT/VF (X_3)	Intercurent VT/VF None or other VT/VF	Vs	4.28	(2.42 , 7.56)
Major native arteries (X_4)	LM involved No LM involved	Vs	2.90	(1.64 , 5.13)
Cerebrovascular disease (X_5)	Yes No	Vs	3.05	(1.78 , 5.22)
Renal failure (X_6)	Yes No	Vs	4.15	(2.42 , 7.14)
Indications (X_7)	Primary or Rescue AMI/Unplanned redo PCI Elective/ACS other than AMI	Vs	2.76	(1.60 , 4.74)
Goodness-of-fit				
p-value of Hosmer & Lemeshow test			0.24	
Area under ROC curve			0.90	

QUESTION CONTINUES

i. State the reasons of fitting a multiple logistic regression model instead of a simple or linear regression model in this study.

(2 marks)

ii. In the univariate analysis, females are shown to have higher post-PCI mortality within 72 hours than males, but gender is not a significant factor in the above model. What does this mean? Please suggest a reason for this.   (3 marks)

iii. What is an odds ratio? Interpret the odds ratio for renal failure(x_6) and draw conclusion from its 95% confidence interval.

(3 marks)

iv. What is a ROC (Receiver operating characteristic) curve? Comment on the above model goodness-of-fit using the area under the ROC curve.   (2 marks)

3. Immigrant populations in developed societies are documented to have a higher incidence of Tuberculosis (TB).

Explain why this may be an illustration of 'the inverse care law'. Suggest ways in which the gap can be narrowed. (10 marks)

4. You are a senior executive responsible for decision making on introduction of new and expensive drugs in a public sector organization. A group of patients requested your organization to provide the drug "aflibercept" as a standard provision to public patients for treatment of diabetic macular oedema.

i. Describe how you will assess scientifically whether the new drug is worthy of adoption as a standard treatment. (5 marks)

ii. Apart from the above scientific considerations, what other factors will you need to address before making decision on introduction of new drugs in a public sector organization.

(5 marks)

5. Please write short notes on the following:

    i.   The <u>Bolam</u> test   (2 marks)

    ii.   The <u>Montgomery</u> test   (2 marks)

    iii.   No fault compensation – Pros and Cons   (3 marks + 3 marks)

6. i.   a. Write short notes on self-regulation of medical professionals using the Medical Council of Hong Kong as an illustrative example.   (2 marks)

          b. What functional roles does it play?   (2 marks)

    ii.   The Hong Kong Special Administrative Region Government is proposing to increase the representation of lay persons from 4 to 8 in the Medical Council of Hong Kong. This is strongly opposed by some members of the medical profession and their associations. Discuss the political perspectives of:

        a. The Government   (2 marks)

        b. The medical professional groups   (2 marks)

        c. The general public   (2 marks)

END OF PAPER