ADMINISTRATIVE MEDICINE

Part I Examination

Monday 10 June 2019

15:30 – 18:00 (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.

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1. In a hypothetical study, the association between smoking and lung cancer investigated by a teaching hospital-based case-control study in City X. Cases were all existing patients diagnosed lung cancer in hospitals within one teaching hospital during the period of Jan 2017 to Dec 2018, with a mix of prevalent and incident cases. The controls were randomly selected patients who were treated for any diseases except respiratory system conditions at the same period and the same hospital where cases had been identified. The response rates were 95% for cases and 40% for controls groups, and no information on the non-respondents was provided. Data on lung cancer diagnosis was obtained from hospital medical records by a trained research assistant. The hospital record contains gold standard diagnostic information for lung cancer. Tobacco consumption was assessed via face to face interviews by the same research assistant in both groups, using a self-developed questionnaire without validation. Relationship between smoking and lung cancer were quantified by adjusting multiple confounders (>5) in a multivariate logistic regression analysis.

a. According to established critical appraisal criteria (e.g. the Newcastle-Ottawa Quality Assessment Scale), how should the methodological quality of a case control study be assessed? Please list at least 6 criteria. (3 marks)
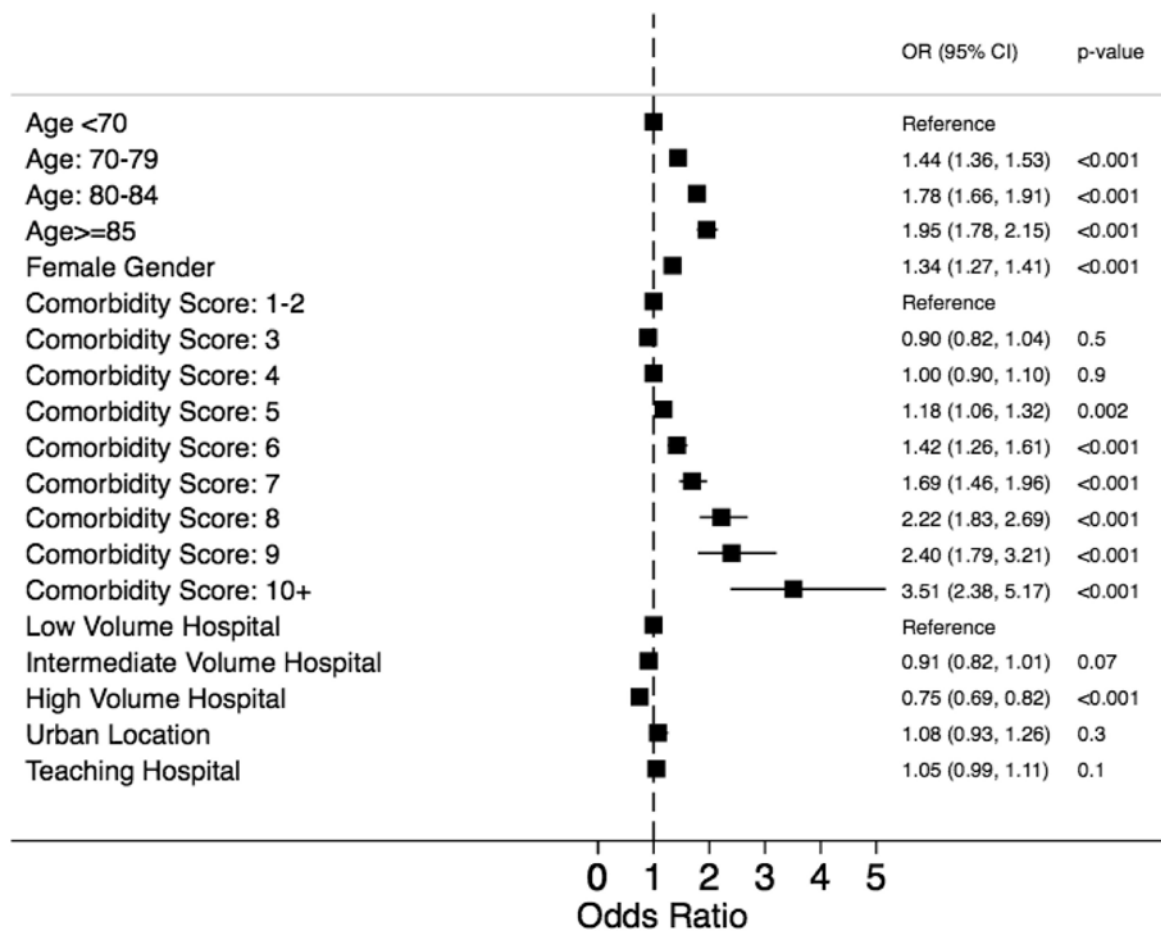
b. Provide your judgments on the methodological quality of this case control study, applying critical appraisal criteria [mentioned in (a)]. (6 marks)

(1 mark for overall understanding of the answers)

QUESTION CONTINUES

2. A retrospective study was carried out to investigate the risk of stroke in patients undergoing surgical aortic valve replacement (AVR), using a large national database. **Figure 1** demonstrates the multivariable logistic regression analysis used to calculate predicted mortality for each patient undergoing AVR. In-hospital mortality was the outcome variable in this stepwise multivariable regression model.

Figure 1

	OR (95% CI)	p-value
Age <70	Reference	
Age: 70-79	1.44 (1.36, 1.53)	<0.001
Age: 80-84	1.78 (1.66, 1.91)	<0.001
Age>=85	1.95 (1.78, 2.15)	<0.001
Female Gender	1.34 (1.27, 1.41)	<0.001
Comorbidity Score: 1-2	Reference	
Comorbidity Score: 3	0.90 (0.82, 1.04)	0.5
Comorbidity Score: 4	1.00 (0.90, 1.10)	0.9
Comorbidity Score: 5	1.18 (1.06, 1.32)	0.002
Comorbidity Score: 6	1.42 (1.26, 1.61)	<0.001
Comorbidity Score: 7	1.69 (1.46, 1.96)	<0.001
Comorbidity Score: 8	2.22 (1.83, 2.69)	<0.001
Comorbidity Score: 9	2.40 (1.79, 3.21)	<0.001
Comorbidity Score: 10+	3.51 (2.38, 5.17)	<0.001
Low Volume Hospital	Reference	
Intermediate Volume Hospital	0.91 (0.82, 1.01)	0.07
High Volume Hospital	0.75 (0.69, 0.82)	<0.001
Urban Location	1.08 (0.93, 1.26)	0.3
Teaching Hospital	1.05 (0.99, 1.11)	0.1

(Source: Shikhar Agarwal et al. (2015). In-hospital mortality and stroke after surgical aortic valve replacement: A nationwide perspective. The Journal of Thoracic and Cardiovascular Surgery: Volume 150, Issue 3, September 2015, Pages 571-578.e8)

QUESTION CONTINUES

a. Briefly describe what a retrospective study is. (2 marks)

b. Suggest one reason of using logistic regression model instead of simple linear regression model in this study. (1 mark)

c. Describe step-by-step how stepwise selection works. (3 marks)

d. What is odds ratio? Interpret the odds ratio of comorbidity scores and make a conclusion for the observation. (4 marks)

3. Hong Kong has an ageing population, with one of the best life expectancies in the world for both female and male residents. 'Ageing in place' is a stated Hong Kong Government objective.

a. List and briefly describe four underlying principles for social policy for older people, which includes 'ageing in place'.
(2 marks)

b. Describe four of the main socio-medical challenges to be faced to achieve this objective. (4 marks)

c. Provide practical examples of how attempts to meet each of these four challenges have or are being implemented in the Hong Kong setting. (4 marks)

4. You plan to introduce Fecal Microbiota Transplantation (FMT) as a standard treatment for certain specific gastrointestinal diseases such as clostridium difficile infection (CDI) in a public hospital. FMT is to import fecal microbiota of healthy subject to patients with CDI to upper or lower gastrointestinal tract by nasogastric tube or colonoscopy. The treatment is to restore the microbial diversity of the normal colonic condition. You know an expert who knows a manufacturer good at producing the transplant material.

   a. Identify at least four major considerations for introducing FMT treatment in your public hospital. (4 marks)

   b. Describe the management procedure you would adopt for introducing the treatment in the hospital. (4 marks)

   c. Give two pieces of key patient information in informed consent specific for this treatment. (2 marks)

5. a. Name and describe four characteristics that are specific to big data. (2 marks)

   b. Describe big data analytics. (2 marks)

   c. Discuss three ethical issues in the use of big data in healthcare and suggest potential measures to manage these controversies. (6 marks)

6. a. Describe the key features of the Limited Registration Scheme for non-locally trained doctors with reference to public hospitals in Hong Kong. (3 marks)

   b. You are the Hospital Chief Executive of a regional hospital. The Chief of Service of the Orthopedics Department approached you for making a request to fill some doctors' vacancies including Associate Consultant posts with non-locally trained doctors. Due to a recent manpower crisis, your hospital is facing long waiting time of elective surgeries and first consultation for specialist outpatient clinic. How would you assess the request from different perspectives and describe your approach to the request. (7 marks)

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