# ADMINSTRATIVE MEDICINE

## Part I Examination

## Monday 8 June 2015

## 13:30 – 16:00 (2½ hours)

## Paper IA

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## Candidates must answer all parts of this questions

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*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

1. A cohort study was conducted to evaluate the relationship between cigarette smoking and lung cancer. The study population was a relatively representative sample of the Hong Kong total population. After 10 years of follow-up, 500 lung cancer cases were diagnosed in 100,000 smokers and 100 in 200,000 non-smokers. Please answer the following questions based on these data.

   i. Build a 4-cell table for the data of the study and then estimate the strength of the association between cigarette smoking and lung cancer and interpret and comment on your result.    (2.5 marks)

  ii. Assume the 95% confidence interval for the estimate of the association to be $9 \sim 11$. Please interpret and comment on these results.    (1 mark)

 iii. Estimate the percentage of lung cancer patients in smokers that is attributable to their smoking habit (or attributable risk percent in the exposed) and explain your result.    (2.5 marks)
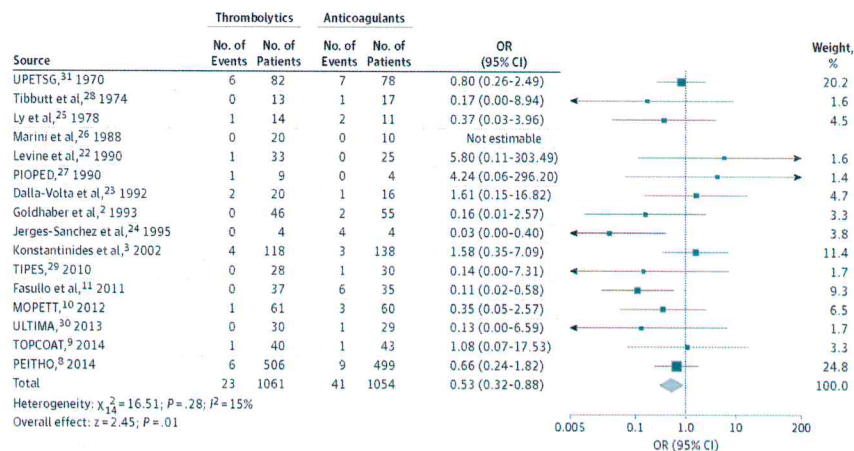
iv. Estimate the percentage of lung cancer patients that is attributable to their smoking habit in Hong Kong population assuming 20% of people smoke cigarettes (or attributable risk percent in the population) and explain your result.    (2 marks)

v. What assumptions have to be made in the estimation in question iv and can we use a randomized controlled trial to confirm the relationship and why?    (2 marks)

2. Thrombolytic therapy may be beneficial in the treatment of some patients with pulmonary embolism. A meta-analysis was conducted to determine whether thrombolytic therapy is associated with improved survival, compared with conventional anticoagulation.

The Figure below shows the odds of mortality in patients with pulmonary embolism treated with thrombolytic therapy vs anticoagulation in a mean duration of a follow-up period of 82 days.

**QUESTION CONTINUES**

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| Source | Thrombolytics No. of Events | No. of Patients | Anticoagulants No. of Events | No. of Patients | OR (95% CI) | Weight, % |
|---|---|---|---|---|---|---|
| UPETSG,[31] 1970 | 6 | 82 | 7 | 78 | 0.80 (0.26-2.49) | 20.2 |
| Tibbutt et al,[28] 1974 | 0 | 13 | 1 | 17 | 0.17 (0.00-8.94) | 1.6 |
| Ly et al,[25] 1978 | 1 | 14 | 2 | 11 | 0.37 (0.03-3.96) | 4.5 |
| Marini et al,[26] 1988 | 0 | 20 | 0 | 10 | Not estimable | |
| Levine et al,[22] 1990 | 1 | 33 | 0 | 25 | 5.80 (0.11-303.49) | 1.6 |
| PIOPED,[27] 1990 | 1 | 9 | 0 | 4 | 4.24 (0.06-296.20) | 1.4 |
| Dalla-Volta et al,[23] 1992 | 2 | 20 | 1 | 16 | 1.61 (0.15-16.82) | 4.7 |
| Goldhaber et al,[2] 1993 | 0 | 46 | 2 | 55 | 0.16 (0.01-2.57) | 3.3 |
| Jerges-Sanchez et al,[24] 1995 | 0 | 4 | 4 | 4 | 0.03 (0.00-0.40) | 3.8 |
| Konstantinides et al,[3] 2002 | 4 | 118 | 3 | 138 | 1.58 (0.35-7.09) | 11.4 |
| TIPES,[29] 2010 | 0 | 28 | 1 | 30 | 0.14 (0.00-7.31) | 1.7 |
| Fasullo et al,[11] 2011 | 0 | 37 | 6 | 35 | 0.11 (0.02-0.58) | 9.3 |
| MOPETT,[10] 2012 | 1 | 61 | 3 | 60 | 0.35 (0.05-2.57) | 6.5 |
| ULTIMA,[30] 2013 | 0 | 30 | 1 | 29 | 0.13 (0.00-6.59) | 1.7 |
| TOPCOAT,[9] 2014 | 1 | 40 | 1 | 43 | 1.08 (0.07-17.53) | 3.3 |
| PEITHO,[8] 2014 | 6 | 506 | 9 | 499 | 0.66 (0.24-1.82) | 24.8 |
| Total | 23 | 1061 | 41 | 1054 | 0.53 (0.32-0.88) | 100.0 |

Heterogeneity: $\chi^2_{14} = 16.51$; $P = .28$; $I^2 = 15\%$
Overall effect: $z = 2.45$; $P = .01$

0.005   0.1   1.0   10   200
OR (95% CI)

Adapted from *JAMA 2014;311(23):2414-2421*

i. What is a meta-analysis and what are its two principal uses?

(3 marks)

ii. From the above Figure, what does a 95% confidence interval of 0.66 (0.24-1.82) tell you of the PEITHO, 2014 study? (1 mark)

iii. What do the results of the meta-analysis show? (2 marks)

iv. Calculate the mortality risks of the thrombolytic group vs. the anticoagulants group. Interpret your results. (2 marks)

v. The rate of death prevented in a year is calculated to be 0.077. What is the number needed to treat (NNT) in a year to prevent one death from pulmonary embolism using thrombolytics? Explain your results. (2 marks)

3. i. Describe the social determinants of health. (5 marks)

ii. Discuss 2 examples of evidence based approaches, either local or international, which are effective in reducing related inequity in health outcomes. (5 marks)

4. You are the Hospital Chief Executive of an acute general hospital in the public sector. The Head of Department of Surgery would like to introduce a robotic surgical system to the hospital. He had solicited support from the Head of O&G Department of the hospital.

i. Write short notes on Health Technology Assessment (HTA) in the context of robotic surgery. (4 marks)

**QUESTION CONTINUES**

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ii. From the perspective of HTA, discuss the factors that will impact on your decision making, and

(3 marks)

their implications to service planning     (3 marks)

5. You are a Hospital Chief Executive in Hong Kong SAR. A complaint has been received by your hospital from lawyers representing a famous film star who had previously been treated as an emergency traffic accident case in your hospital. Please identify the medico-legal and/or ethical issues regarding each of her allegations as listed below:

i. The poor surgery carried out had scarred her face for life

(4 marks)

ii. Her wish to be transferred to another hospital had been ignored, and she had treatment forced on her; and     (3 marks)

iii. Information on her clinical condition was leaked out to newspapers (with photographs), which also reported interviews with your hospital's staff on this case     (3 marks)

6. The HKSAR Government issued a consultation paper on Voluntary Health Insurance Scheme (VHIS) in 2014.

i. Write short notes on the objectives of VHIS as intended by the HKSAR Government     (4 marks)

ii. Describe and explain the advantages (3 marks) and disadvantages (3 marks) of introducing VHIS in terms of its impact on the healthcare system in Hong Kong.

**QUESTION CONTINUES**

**END OF PAPER**