

**UNIVERSITY OF WALES COLLEGE OF MEDICINE  
MASTER OF PUBLIC HEALTH  
WEDNESDAY, 15TH MAY 2002**

**Paper 1A**

**PUBLIC HEALTH POLICY**

You should answer **FOUR** questions: equal marks are given to each question.

**ONE** from Section A : Determinants of Health

**ONE** from Section B: Health Economics

**TWO** from Section C: Health Policy and Management

Credit will be given for evidence of critical thinking and for answers which are illustrated by reference to the literature and, where relevant, to your own experience.

**PLEASE USE A SEPARATE ANSWER BOOK FOR  
EACH QUESTION**

***Section A: Determinants of Health***  
***Answer One Question***

1. The International Classification of Functioning and Disability refers to **impairments, activity limitations and participation restrictions**. Explain what these terms mean. Different interventions are used by non-governmental organisations (NGOs) working with amputees in countries with a legacy of landmines that reflect these distinctions. Show how the choice of intervention may be affected by political realities.
2. “British American Tobacco (BAT) has started an attempt to portray itself as a socially responsible company. The company has been holding a series of "stakeholder" meetings to gather input for its first corporate social responsibility report scheduled for release in April 2002. Health groups, which boycotted the meetings, are sceptical about its aims, however.” (Burton, 2001). What is a “stakeholder meeting”. Why are they held? Why would health groups be sceptical?

***Section B: Health Economics***  
***Answer One Question***

3. Factor VIII is a blood product used in the treatment of haemophilia. Its use now carries a very small – but positive – risk of viral transmission from the donor. “Genetically engineered” factor VIII carries zero risk of viral transmission, but is very expensive.

The parents of a child with haemophilia recently requested that their son be given genetically engineered factor VIII. The local Health Authority refused this request on grounds of cost, despite the fact that the neighbouring Health Authority will pay for genetically engineered factor VIII to patients living within its borders. The parents sued the Health Authority.

Question: How would *an economist* defend the Health Authority’s decision not to provide this child with genetically engineered factor VIII.

4. What are the advantages and disadvantages of cost benefit analysis versus cost effectiveness analysis?

***Section C: Health Policy and Management***  
***Answer Two Questions***

5. "International experience shows that assuring the quality of medical services may be the most complex and difficult issue in health care" (IMF 2000). What factors make assuring quality so difficult? What steps would you recommend to improve the quality of services at either district general hospital or national level, and why?

6. You have been asked to prepare a case supporting greater private sector involvement in the health care sector of a country of your choice. How and why might the private sector have a beneficial impact on health care delivery? What advice would you give the government about its own roles and skills if it was to maximise such benefits?
7. What do you understand by the term 'policy'? What would you recommend a government to do to ensure that a policy was effective in achieving its objectives? You may use examples.
8. Write notes on any four (4) of the following in the context of health sector policy:
  - Capacity building
  - Moral hazard
  - Social marketing
  - Vertical programmes
  - Accessibility
  - Global Health Fund

**UNIVERSITY OF WALES COLLEGE OF MEDICINE**  
**MASTER OF PUBLIC HEALTH**  
**WEDNESDAY, 8 MAY 2002**  
**10-12**

**Paper IB**

**STATISTICS**

You should attempt *all five* questions in this paper for which 2 hours are allowed. If you find you are spending a lot of time on one question you are advised to move on to the next one - to guide you in this the marks available for each question are indicated. We suggest you use 10 minutes to read the paper at the start, and reserve 10 minutes to check at the end. Then for each question or part of a question, the number of marks allocated indicates how many minutes you should expect to spend on it – allow 1 minute per mark. Note that a substantial proportion of marks are awarded for clear interpretation or comments. There is *no* credit for performing calculations other than those explicitly requested; for those that are required, you may use a calculator, but you should include details of your working including relevant intermediate steps. In the exam proper, standard statistical tables are appended, together with some useful formulae and a nomogram, as in the course notes.

1. 369 women resident in an inner-city area were invited to attend for routine breast cancer screening. 187 (50.7%) of them attended.

(a) Calculate a 95% confidence interval for this proportion and explain carefully how it should be interpreted.

[9 marks]

(b) The graph shows proportions of women who attended, with 95% confidence intervals, in six groups defined by the woman's first language. Explain why the confidence interval is narrowest for the "English" group.

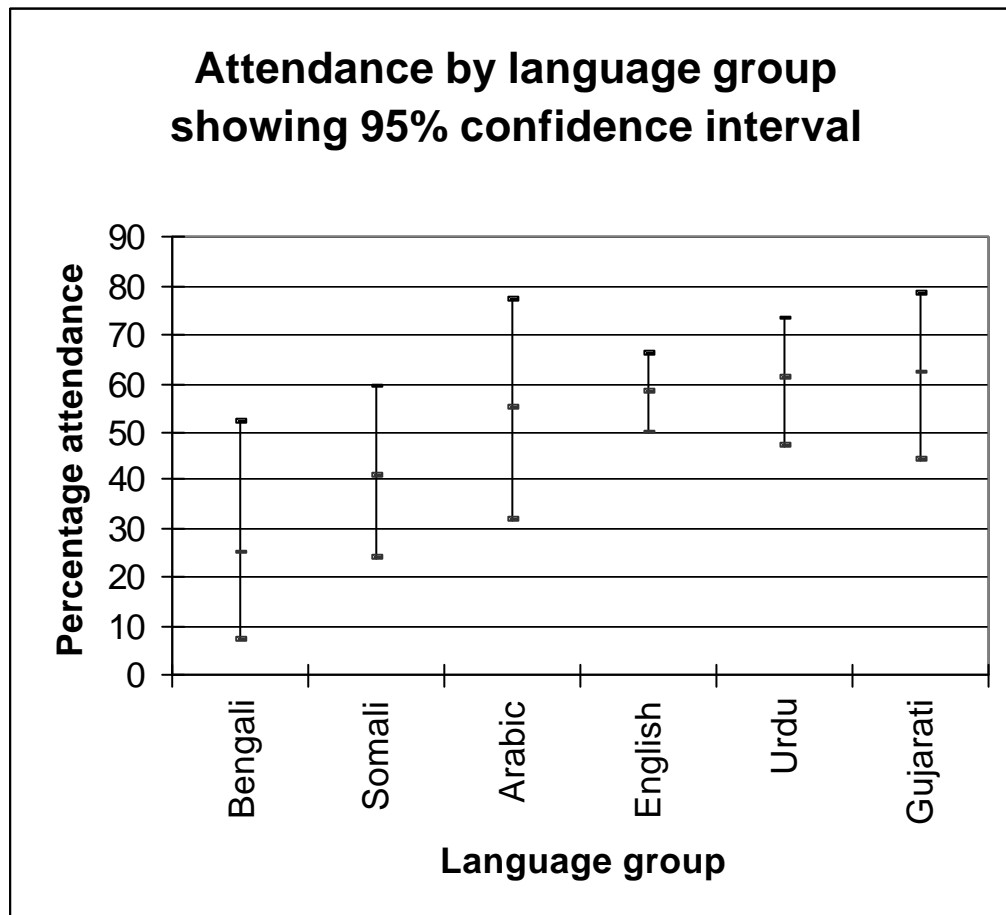
[3 marks]

(c) What statistical test would be used to compare the uptake of screening in these six groups? What would be the critical value of the statistic for 5% significance?

[5 marks]

[17 marks

total]



2. A study of antenatal care sought to evaluate the effectiveness of routine antenatal visits by asking whether choice improves well-being. Women were randomised to either a traditional or a flexible schedule of antenatal care. As one of the outcomes, 277 women who developed a problem were asked whether their problem could have been recognised earlier than it was. 35 out of 137 women who were allocated to traditional care answered yes, as against 33 out of 140 women who were allocated to flexible care.

(a) Explain what is meant by

- (i) randomisation
- (ii) intention to treat analysis

and explain why each is important here.

[10 marks]

(b) Perform a suitable hypothesis test to compare the proportions answering yes in the two groups, and interpret the findings.

[19 marks]

**[29 marks]**

**total]**

3. Explain what is meant by the power of a hypothesis test. What four factors influence the power? For each factor you identify, state whether increasing the factor would increase or decrease the power of the study, and explain why.

**[16 marks total]**

4. Fifty children resident in South Glamorgan during 1988-95 with hearing loss were identified. The table compares the distribution of age at identification of the hearing problem (in months) between white and ethnic minority children.

	Number of children	Age at identification	
		Mean	SD
White	40	22.8	21.6
Minority	10	23.9	18.7

(a) Perform an unpaired t-test to assess the difference in mean age at identification between the two groups. Interpret your findings.

[17 marks]

(b) The above results were criticised because of the small sample size. Assuming a standard deviation of 20 months, how many subjects would you need to study in order to have an 80% chance of detecting a 6 month mean difference? Assume that equal numbers of white and ethnic minority children will be studied.

[6 marks]

**[23 marks]**

**total]**

5. Rugby players may reduce their risk of head injury by wearing scrum caps. Fifty players presenting for treatment of head lacerations were studied. For each injured player, the corresponding member of the opposing team was identified as a control. Cases and controls were asked if they were wearing a scrum cap for the game in which the injury occurred. The following results were obtained.

Case	Control	No. of pairs	
Cap	Cap	1	OR = 0.44
Cap	No cap	4	
No cap	Cap	9	95% CI for OR 0.10 to 1.59
No cap	No cap	36	
<hr/>			
Total		50	

(a) What statistical hypothesis test would be used to derive a p-value for this data, and why?  
[4 marks]

(b) Explain why the odds ratio is used here and not the relative risk.  
[3 marks]

(c) Another study performed elsewhere reported OR = 0.73, 95% CI for OR 0.54 to 0.98. An odds ratio below 0.5 or above 2.0 is considered to indicate an importantly strong relationship.

Interpret the results of each study in relation to the importance of the effect size and statistical significance, and comment.

[8 marks]

**[15 marks]**

**total]**

**UNIVERSITY OF WALES COLLEGE OF MEDICINE  
MASTER OF PUBLIC HEALTH  
WEDNESDAY, 22 MAY 2002**

**Paper 1C**

**EPIDEMIOLOGY**

**(including demography and social research methods)**

You should answer **FOUR** questions: equal marks are given to each question.

**TWO** from Section A: Epidemiology

**ONE** from Section B: Social Research Methods

**ONE** from Section C: Demography

Credit will be given for evidence of critical thinking and for answers which are illustrated by reference to the literature and, where relevant, to your own experience.

**PLEASE USE A SEPARATE ANSWER BOOK FOR  
EACH QUESTION**



## SECTION A (Epidemiology)

### Answer TWO questions

1. A case control study of 400 patients with leukaemia, individually matched (age, sex and locality) matched with 400 controls, showed the following relationship with significant lifetime exposure to benzene.

		Case	
		Not exposed	Exposed
Control	Not exposed	332	40
	Exposed	20	8

- a) What proportion (%) of controls were exposed?  
b) How many leukaemia patients were not exposed?  
c) How does this design differ from a group comparison case control study?  
d) How do these data suggest that there might be a significant association?  
e) What additional information or further analysis might strengthen the inference of a causal explanation?
2. As part of a cohort study set up 20 years ago blood samples were taken and stored. Recently a new marker for chronic infection has been discovered. You wish to test the hypothesis that this marker is associated with the development of heart disease. Samples were available for 60% of the cohort. A statistically significant association was found.
- Discuss the design and conduct of such a 'retrospective' cohort study and any possible biases.
3. Write short notes on the following three pairs:-
- incidence  
prevalence
  - primary prevention  
secondary prevention
  - relative risk  
odds ratio
4. Describe how you would recognise a suspected waterborne outbreak of cryptosporidiosis (a parasite infection from drinking contaminated water, leading to an acute diarrhoeal disease). How would you investigate and control this?

**SECTION B (Social Research Methods)**

**Answer ONE question**

5. A small qualitative study at a local school suggested that children who were often bullied developed emotional problems. Some children found it upsetting to be teased, thought people were spreading rumours about them or complained about being left out. Others actually experienced physical threats or violence. Many of these children found themselves getting angry or upset, often getting into fights or arguments with people close to them. "It makes me feel so depressed – I can't trust anybody" .

Design a short (one page) confidential questionnaire for a survey of schoolchildren to establish the prevalence of bullying in schools. (10 marks)  
Explain the advantages and disadvantages of administering a questionnaire compared with a semi-structured interview. (15 marks)

6. Ethical principles underpin research. What issues may arise in undertaking research in respect of: conflicts of interest, confidentiality, informed consent. Use examples where appropriate.

**SECTION C (Demography)**

**Answer ONE question**

7. Population projections indicate there will be 1200 million women aged 50 years or more in 2030 compared with 467 million in 1990 (World Bank 1993). Discuss the implications for public health.

8. *"Lifetime risk of maternal death:*
- *1 in 16 in Africa*
  - *1 in 65 in Asia*
  - *1 in 130 in Latin America*
  - *1 in 1,800 in all developed countries*

*Causes - 80% of maternal death are due to one of 5 complications: hemorrhage 25% - sepsis 15% - toxemia 12% - unsafe abortion 13% - obstructed labor 8% - 20% are due to associated conditions: malaria - anemia - increasingly AIDS.*

*40-50 million abortions per year – 50% in unsafe conditions - 75,000 deaths from unsafe abortion – probably underestimated*

*50% of all pregnancies are unplanned" (UNFPA 1999)*

Comment on these statistics.