



# Faculty of Public Health

of the Royal Colleges of Physicians of the United Kingdom

Working to improve the public's health

## PART A EXAMINATION FOR MEMBERSHIP OF THE FACULTY OF PUBLIC HEALTH

*Of the Royal Colleges of Physicians of the United Kingdom*

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**EXAMINATION QUESTIONS WITH KEY POINTS AND  
EXAMINERS' COMMENTS**

**N.B. Please note that these are key points, not model answers**

## Paper IA

### Question 1

- a) What does the term 'complex intervention' mean? Illustrate your answer with an example from public health. (40% of marks)
- b) Cluster randomised controlled trials are often used to evaluate the effectiveness of public health interventions. Describe one advantage and one disadvantage of a cluster randomised trial in the evaluation of public health interventions. (30% of marks)
- c) Briefly describe a non-randomised method of evaluating public health interventions and give one reason why it may be more appropriate to use this method rather than conducting a randomised controlled trial. (30% of marks)

### KEY POINTS

*Most or all of the following would be required for a pass:*

a) Complex interventions may consist of several components. Some or all of the components may contribute to its effect and the components may or may not interact. The components may act at different levels e.g. at the level of the participant and at the organisational level. Examples include multi-factorial school based healthy eating programmes which aim to influence changes at school and child level; weight management programmes which involve a number of components such as nutritional advice, exercise, psychological support and seek to change behaviours.

b) In a cluster randomised controlled trial, individual participants are not allocated to an intervention or control arm but groups of individuals are allocated to an intervention or control arm.

Advantages:

Cluster randomised controlled trials are useful when the intervention, at least in part, is targeted at the level of a group or when the nature of the intervention means that there is a risk of contamination between groups e.g. delivered by same person/team.

Disadvantages:

Individuals in a cluster are more likely to be like each other and have similar outcomes than individuals in another cluster. Taking this into account effectively increases the sample size needed to detect the same magnitude of effect than would be required in an individually randomised controlled trial.

Other credible alternative answers will also receive appropriate credit. For example, one disadvantage may be the increased risk of imbalance in baseline characteristics particularly if a small number of large groups are randomised and/or because a large cluster drops out after randomisation.

c) Credit will be given for examples of population-based cross-sectional designs with geographical controls/comparators or longitudinal designs with historical and/or geographical controls/comparators and which compare data on processes and outcome between study groups.

Qualitative studies may be relevant and any answer that includes qualitative methods will be assessed for its validity in relation to the specific question and given credit appropriately.

One reason from the following:

These methods may be appropriate e.g., when an intervention can only be implemented at the level of the whole population or there would be too much contamination between clusters at a lower level; the implementation of a public health intervention may already have occurred or it is considered unethical to withhold the intervention; it may be too costly to undertake a trial or take too long for the findings and these considerations outweigh the benefits accrued from a randomised trial.

*The following are additional points which might improve the answer to “good” or “excellent”:*

Complex interventions may have many different outcomes. Knowledge that complex interventions are often still amenable to testing via RCT, but because they may be context specific it may prove difficult to standardise the intervention.

Mention of frameworks to develop and evaluate complex interventions such as the MRC framework.

The measure of correlation between individuals in clusters is called the intra-cluster correlation coefficient (ICC).

Non-randomised methods maybe appropriate if the anticipated size of the effect is likely to be greater than the potential impact of confounding and bias.

## **EXAMINER COMMENTS**

### **General observations on the performance of candidates**

Generally, this question was not answered well. The best candidates used a clear structure, with good, relevant public health examples. Some candidates lost time by including irrelevant information in their answers, or not focussing their answers on the specific question posed.

### **Ways in which candidates performed particularly well**

Question 1b was generally well answered with good understanding of advantages and disadvantages of cluster RCTs described.

### **Ways in which candidates performed poorly**

Question 1a was looking for clear Public Health examples of complex interventions. A good example would have been a study intervention such as that used in the ASSIST peer intervention study to decrease smoking in school children. Instead, candidates often described much broader strategy, such as that applied by a government when attempting to reduce smoking prevalence, or describing screening programmes and their evaluation.

Part 1c: Many students did not clearly name a non-randomised method(s) for evaluating PH interventions. Several candidates described cohort studies and their application to assessing risk factors (such as smoking) – and appeared not to realise that they needed a discussion of non-randomised methods of evaluation of an intervention and in particular the application to public health interventions (e.g. stop smoking interventions).

### **Advice from examiners**

Basic knowledge of key definitions of epidemiological terms is needed.

## Question 2

- a) Describe briefly the following scales of measurement giving one example for each scale:
- i. Nominal (15% of marks)
  - ii. Ordinal (15% of marks)
  - iii. Interval (15% of marks)
  - iv. Ratio (15% of marks)
- b) Copy this table into your answer book. For each measurement scale listed in the table, state either 'yes' or 'no' in the appropriate cell to indicate whether the calculation described in column 1 can be carried out.

Column 1: calculation type	Type of measurement scale			
	Nominal	Ordinal	Interval	Ratio
Frequency distribution				
Median and percentiles				
Add or subtract				
Mean, standard deviation, standard error of the mean				
Ratio, or coefficient of variation				

(40 % of marks)

### KEY POINTS

a) Most or all answers would need to be correct to accrue the full 15% for each subsection with a suitable example.

(i) A nominal scale uses numbers purely as a label and there is no intrinsic order to the values, for example, ethnic group. A nominal variable, is used for mutually exclusive, but not ordered, categories. For example, a study might compare five different countries. You can code the five countries with numbers, but the numerical order is arbitrary.

(ii) Ordinal scales are qualitative, and ordered, but without any mathematical relationship between the points, for example, social class. An ordinal variable, is one where the order matters but not the difference between values.

(iii) Interval scales are ordered but the intervals between consecutive points on the scale are equal. That is, interval scales are where the difference between two values is meaningful (e.g. temperature in centigrade or Fahrenheit).

(iv) Ratio scales are interval scales but with a true zero, e.g. weight. That is, ratio scales have all the properties of interval scales, and also have a clear definition of zero (e.g. height or weight).

b)

**Candidates should not be penalised for poorly drawn tables**

Column 1: calculation type	Type of measurement scale			
	Nominal	Ordinal	Interval	Ratio
Frequency distribution	Yes	Yes	Yes	Yes
Median and percentiles	No	Yes	Yes	Yes
Add or subtract	No	No	Yes	Yes
Mean, standard deviation, standard error of the mean	No	No	Yes	Yes
Ratio, or coefficient of variation	No	No	No	Yes

## EXAMINER COMMENTS

### General observations on the performance of candidates

This was a simple question exploring types of data and associated scales. Generally, this question was not answered well.

### Ways in which candidates performed particularly well

Most candidates were able to provide some description of nominal/ordinal scales with an example.

### Ways in which candidates performed poorly

Many candidates appeared to have little knowledge of differences between data types and the scales asked, particularly interval and ratio scales.

### Common pitfalls in answering the question

Question 2c (interval scales) was often misunderstood to refer to bands such as age bands (0-9, 10-19, 20-29...)

Question 2d (ratio scales) was often misunderstood to refer to ratios such as odds ratios.

### Advice from examiners

Basic knowledge of key definitions of epidemiological terms is needed.

### Question 3

A major international sporting event lasting for four weeks is planned in your country. Thousands of competitors and visitors are expected from across the world.

- a) Describe the short- and long-term public health implications of such an event, and the plans required to deal with these implications. (70% of marks)
- b) Which types of health and public health organisations might be involved in reducing the risk of harm and what role would they play? (30% of marks)

### KEY POINTS

a)

#### Short term public health implications

- Risk of communicable diseases transmission ( including respiratory , sexually transmitted and food poisoning ) and outbreaks, risks of importation and spread of infectious diseases
- potential nuclear, biological, chemical and explosive terrorist attack
- accidents and injuries – due to sports, increased traffic , large crowds of visitors, alcohol and drugs
- increased illness in local population and visitors due to pollution from increased traffic ; potential for heat stroke / dehydration; stress among athletes and visitors affecting mental health
- increased demand on primary and secondary care including pharmacies ,dentists, NHS Direct
- increased need for interpreter services
- increased crime and violence.
- opportunity to influence health behaviours of local population, athletes and visitors e.g. physical activity, sexual health, alcohol, obesity, blood borne viruses, drugs, smoking
- opportunity to promote sport among young people living in area where sports centres will be placed but also across the country
- Disruption to day to day life of local community and exposure to air pollution and noise while facilities are being built.
- Increased social cohesion among local community
- Resources diverted to event and away from local needs.

#### Long term public health implications

- legacy to host community with potential health benefits to inhabitants for many years to come
- use games as catalyst to improve health and health care systems
- opportunity to promote health and well being of people of host city and achieve improved lifestyle and health behaviours and reduce health inequalities
- investment in urban planning and architecture including transport e.g. trams, bicycle lanes etc
- marketing of city as tourist destination and the economic benefits which follow
- building sports infrastructure
- increasing wealth of host city through job creation, inward investment better air quality and control
- environmental sustainability
- a strengthened public health system in terms of risk management, disease surveillance and health services response
- improved working partnerships and communications

### **Plans needed to deal with short- and long-term public health implications**

Consider undertaking a health impact assessment  
Development of Multi-agency plans for a range of potential threats  
Extensive training, advance testing of multi-agency plans, procedures and systems  
Standard Operating Procedure development for a range of potential threats  
Strengthen surveillance systems and lab capacity  
Ensure and promote food safety  
Increase health services and public health services surge capacity  
Community engagement plans  
Communications strategy  
Have a plan to pilot and pre-test your plans

### **b) Health and public health organisations involved in reducing the risk of harm**

Acute hospital, mental health and community services  
Primary care organisations  
Out of hours emergency services  
Ambulance services  
Local private suppliers of health care  
Voluntary organisations e.g. In the UK: St Johns ambulance, Red Cross, WRVS. In Hong Kong: Red Cross, Auxiliary Medical Service (AMS) and St John's.  
Local Authority emergency planning and environmental health  
Police, fire and other civil emergency organisations  
Food standards agency  
Environment Agency  
Department of Health  
International Olympics committee  
WHO  
Faculty of Public Health  
Health organisations in countries of athletes  
Hong Kong – no primary health care organisations so would expect Department of Health (DH), Hospital Authority (HA), Centre for Health Protection (CHP), and WHO to have greater involvement.

## **EXAMINER COMMENTS**

### **General observations on the performance of candidates**

Most candidates answered this question well. Well planned structured answers gained high marks.

### **Ways in which candidates performed particularly well**

There were some excellent well structured answers. Many candidates displayed their understanding of the wide-ranging public health implications and opportunities of a large sporting event and the wide range of organisations that need to work together.

### **Ways in which candidates performed poorly**

Not many answers mentioned testing/ exercising plans. Terrorism as a potential issue was not picked up by a lot of candidates. Many candidates failed to mention the voluntary sector as agencies involved.

**Common pitfalls in answering the question**

Having too narrow a focus – only mentioning communicable diseases and health service capacity and forgetting about wider benefits and threats to public health.

**Advice from examiners**

People who use a structured approach generally score better.

## Question 4

A greater than expected number of cases of gastro-enteritis have been reported by a residential care home for older people who require nursing support. Describe an appropriate public health department response to:

- a) exclude or verify an outbreak of a communicable disease (30% of marks)
- b) investigate, manage and control such an outbreak if confirmed (70% of marks)

### KEY POINTS

*Most or all of the following will be required for a pass:*

- a) To exclude or verify an outbreak of a communicable disease
- Establish whether the problem is real or apparent. Define an outbreak as two or more related cases or a greater than expected number of cases
    - Consider other causes of diarrhoea e.g. laxatives; medication
    - Establish a case definition
  - Ascertain the facts – by collecting information in the residential care home
    - clinical presentation and duration of illness
    - results of any specimens submitted
    - number affected over time period
    - whether staff and/or residents affected
    - parts of home affected
    - evidence of background gastro-enteritis in community

Establish a working hypothesis based on these facts

- b) To investigate, manage and control such an outbreak if confirmed
- Instigate immediate control measures
    - Isolate affected residents in their room
    - Provide personal protective equipment for staff and increase hand hygiene and cleaning
    - Exclude affected staff until 48 hours symptom free
    - Close home to new admissions and prevent transfer of affected residents to other health care settings
    - Stop or restrict visitors

Outbreak investigation:

- Ask home to keep daily log of number of residents/staff affected
- Ask home to submit faecal specimens from affected residents/staff to microbiology lab
- if large outbreak or suspect bacterial or a food source consider establishing an Outbreak control Team with representatives from the home, Primary care organisation infection control, Environmental health officers from relevant local civil authorities e.g. in the UK Local Authority and Health Protection Unit/public health specialists in England; in Hong Kong the Centre for Health Protection would take on the role of investigating the outbreak and Visiting Medical Officers would also have a role in managing the outbreak
- consider a formal descriptive or analytical study

Management

- if not available in the home provide the home with a copy of guidance of management of outbreaks of gastro-enteritis in care homes which includes responsibilities of individual staff in the home
- Maintain daily contact with the home
- Ask the infection control nurse to visit and provide advice and maintain contact
- GPs to assess affected cases
- Home to inform hospital if any patients have planned admissions or out-patient appointments
- Inform visitors and consider restricting visiting
- ask home to inform relevant quality control agency e.g. Care Quality Commission in England
- Ask home to inform owner of home and commissioner of services
- Cancel any planned social events at the home

## Control

In addition to measures mentioned above:

- Additional cleaning of contaminated surfaces and environment
- laundry of contaminated clothing and sheets on hot washing cycle
- restrict access by care staff to kitchen
- consider deep cleaning of affected residents' rooms and other affected areas of the home on termination of outbreak

*The following are additional points that might improve the answer to "good" or "excellent":*

- Reference to relevant guidance.
- Reference to relevant legislation.
- Clarity of roles and responsibilities of individuals and organisations.

## EXAMINER COMMENTS

### General observations on the performance of candidates

Most candidates answered this question well. Well planned structured answers gained high marks.

### Ways in which candidates performed particularly well

Most candidates set out a systematic structured approach to the outbreak and understood the vulnerability of this group of patients. Familiarity with the Outbreak control team, the epidemiological investigation of an outbreak and the importance of good communication were all included in strong answers.

### Ways in which candidates performed poorly

Not many candidates mentioned non-infectious causes of diarrhoea. A lot of candidates talked about treating the diarrhoea. Many wrote too little on section (a) to accrue a high proportion of the marks available on that section. Many failed to describe in sufficient detail the necessary control measures.

### Common pitfalls in answering the question

Regurgitating the steps in outbreak management without applying that knowledge to the specific outbreak situation.

### Advice from examiners

People who use a structured approach generally score better..

## Question 5

- a) What are the potential uses of linked records of health-related events concerning individuals in information systems used to plan and manage health services? (50% of marks)
- b) Giving examples of schemes which already employ such linkage, write short notes on the advantages and disadvantages of record linkage. (You may assume that linkage is feasible from a computing point of view.) (50% of marks)

## KEY POINTS

- (a) Candidates should state what they understand by the term health related event and give examples, e.g. birth, contact with health service providers (primary care, hospital, entry on disease registry), birth of children and death. A broader view might include registration of marriage, contact with other agencies (e.g. social services) etc. Linkage means that the separate health related events occurring to an individual may be tracked back in time and linked together (generally electronically) to create a linked record of such events relating to that individual.

The potential uses of linkage of health related events stem from the ability to distinguish between episodes of events (e.g. contacts with services) and individuals. Examples of use include:

Distinguishing new contacts with service providers from follow-on contacts, e.g. in the examination of readmission rates as a measure of quality of service;  
Seeking to identify events that predict later events (e.g. heavy use of particular services)  
As an aid to epidemiological research;  
In health need assessment when seeking to obtain predictors of long term health outcome and need for services.

- (b) Candidates should give an example of linkage and show knowledge of their main aims and structures. One example might be the creation of a linked database between hospital episode statistics and cancer registry data.

Advantages:

- Allows data from different databases to be brought together to provide the opportunity for additional analyses
- Updates cancer registration record with treatment episodes more reliably than manual methods
- Facilitates recording of information on disease stage
- Allows outcomes from different treatment options to be compared
- Allows comparison of outcomes across treatment centres (benchmarking)
- Facilitates study of care pathways

Disadvantages:

- Resulting data are more likely to be identifiable and therefore may require additional consent and ethical approvals
- May be difficult to obtain informed consent

- Dependent on accuracy of disease coding
- May be incomplete e.g. may exclude private treatment, and variables such as ethnicity etc
- There may be some bias in the quality of recording e.g. in-patient contacts likely to be better recorded than out-patient contacts
- Problems of identifying genuine duplicate records – being certain of a 'link'

## **EXAMINER COMMENTS**

### **General observations on the performance of candidates**

There were some very good answers but overall the standard was generally poor.

### **Ways in which candidates performed particularly well**

Almost all candidates recognised the concerns about confidentiality and practical difficulties.

### **Ways in which candidates performed poorly**

Many candidates seemed to assume that this was a question solely about Connecting for Health (CfH) in England, rather than a question about health record linkage in general. In a number of cases rather than using CfH to illustrate important points, there was too much discussion about the advantages and disadvantages of record linkage for the clinical management of patients rather than the use to plan and manage health services which was the focus of the question.

Many candidates were unable to identify the specific benefits of record linkage at the individual level and gave answers that talked in general terms about uses of health information.

### **Common pitfalls in answering the question**

A number of candidates appeared to write down everything the candidate knew about the topic or issues related to the topic rather than answering the specific question set.

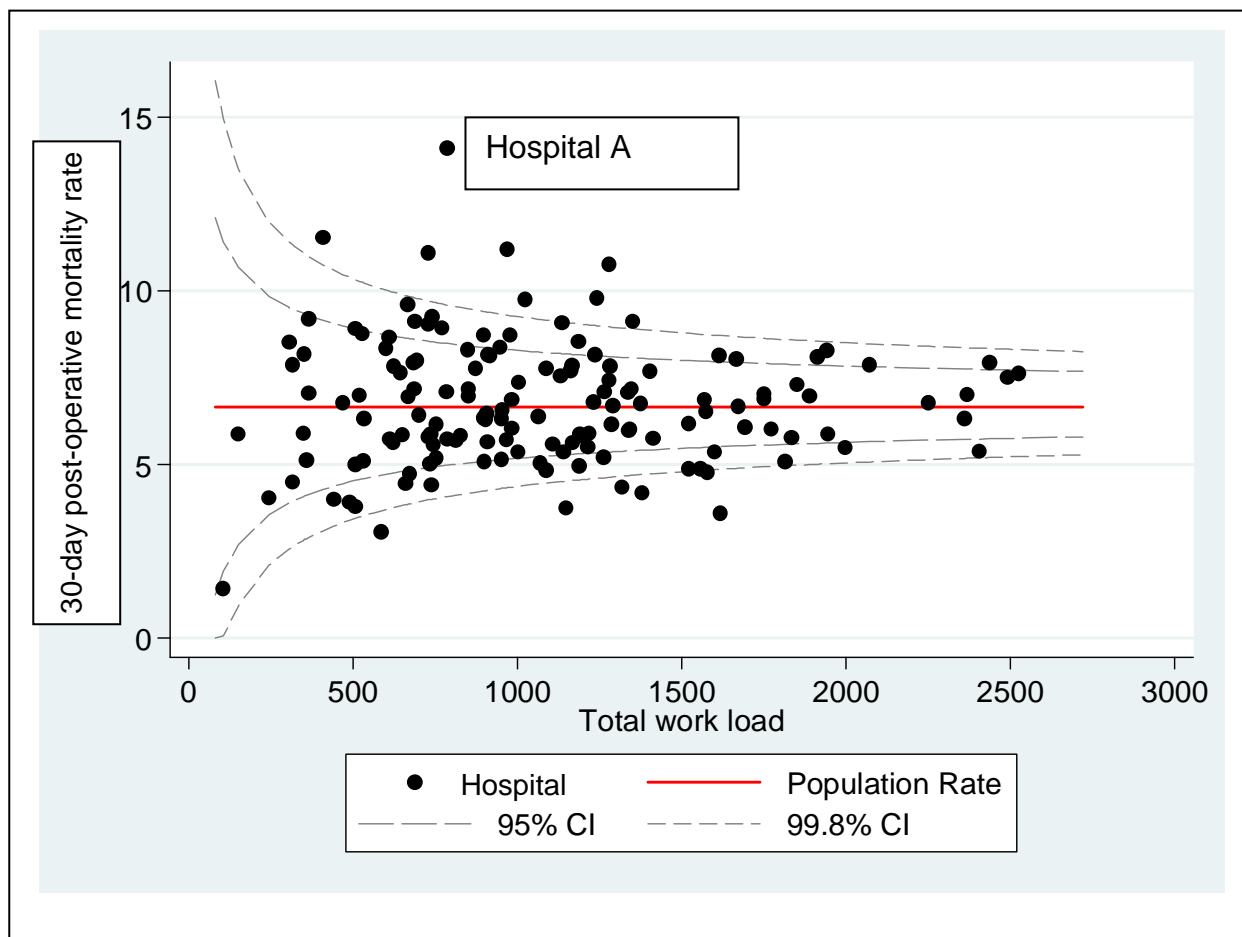
### **Advice from examiners**

A number of candidates failed to answer all parts of the question and or tried to answer a different question from that set. For example, the question specifically asked for an example of data linkage but some candidates failed to give one.

## Question 6

Figure 1 shows 30-day post-operative mortality following major bowel surgery in a large number of hospitals.

Figure 1:



- Define the term '30-day post-operative mortality rate'.  
(10% of marks)
- Describe the strengths and limitations of 30-day post-operative mortality as an indicator of quality of care.  
(30% of marks)
- The results for hospital A are denoted by the marked point on Figure 1. What investigation of hospital A would you recommend and why?  
(30% of marks)
- Describe the limitations of any conclusions you might reach about the performance of hospital A.  
(30% of marks)

## KEY POINTS

(a) Thirty day post operative hospital mortality rate is defined the number of deaths following a particular operation within 30 days of surgery per 100 persons operated on (sometimes expressed as a percentage).

(b) Describe the Strengths and limitations of this indicator:

### Strengths

1. It is a clear unambiguous indicator.
2. It can be clearly understood.
3. It is a good measure of immediate post-surgical care.

### Limitations

1. Unless adjusted it does not take account of case-mix.
2. May discourage surgical teams from taking on more complex cases.
3. May encourage 'gaming'
4. May not be useful for rare operations.
5. May be problems in ascertainment of death in all cases especially those occurring towards the end of 30 day period following hospital discharge

(c) What Investigations of hospital A would you undertake?'

Hospital A lies outside the upper control limit and therefore is a high value which has reached statistical significance during the period of observation

Actions:

### Check the data

1. Number of hospital admissions via hospital statistics. Make sure all the cases are recorded consistently across the hospitals. Are the same ICD codes being used? (Denominator issue)
2. Number of deaths: have all the deaths been recorded consistently? (Numerator issues)  
What processes are in place to check and link death data?  
Additional data – infection/MRSA infant rates. Check SUI (serious untoward incident) registers

Assuming that numerical/case counting and denominators errors have been excluded and this looks like a real excess then look at previous years' data to explore if there has been a trend of say a rising rate.

### Discuss the findings with the relevant clinicians

Get the perspective of the local clinicians on the statistic and possible explanation.  
Undertake some interviews with senior nursing staff.

### Examine relevant paperwork

Are any care pathways in place, have any audits been undertaken of them?

### Seek Advice

Is there a clinical lead/medical director?  
Are any other audits carried out?  
Is there any information available from the Royal Colleges?

### Media

Consider a media handling strategy should it emerge investigations are taking place.

#### (d) Limitations

May be errors in the data/recording systems.  
Clinical practice may have changed.  
May be due to over complex cases and no adjustment for case-mix has been made.

## **EXAMINER COMMENTS**

### **General observations on the performance of candidates**

The standard of answers as mixed.

### **Ways in which candidates performed particularly well**

Most answers addressed the question set.

### **Ways in which candidates performed poorly**

The first part (definition of 30 day mortality) rate should have been an easy question to answer with 'easy' marks accrued, but in many cases candidates stated this was simply a number (rather than a rate) and failed to define the denominator correctly.

### **Common pitfalls in answering the question**

Rushing to elaborate detailed forms of investigation (case control studies, formal investigations, referring to the Care Quality Commission), rather than starting at the beginning by checking the data, discussing the issues with the clinical teams.

A number of candidates did not appear to be familiar with the concept of a funnel plot, in particular that the funnel plot is a method of testing for statistical significance.

### **Advice from examiners**

This question represented a common problem in public health, and candidates need to think about what they would practically do in the situation described.

Very few candidates considered the potential media aspects of handling the problem.

## Question 7

- a) Illustrating your answer with an example from a named country of your choice, what social and psychological factors determine the success of childhood immunisation programmes? (50% of marks)
- b) What steps can be taken to improve uptake of childhood immunisation? (50% of marks)

### KEY POINTS

*Most or all of these points would be required for a pass:*

- 1) The overarching importance of education in achieving successful childhood immunisation programmes.
- 2) **Social and psychological factors**...Lay perspectives regarding immunisations and in particular views that immunisations cause harm.
- 3) Commitment to alternative medicine- not an alternative to immunisation.
- 4) Ethnicity - lack of awareness of immunisations on offer, especially due to language barriers.
- 5) Lack of awareness of the potential for epidemics.
- 6) Indifference to disease prevention where the diseases are seen as a thing of the past.
- 7) Social class - educational differences and influence on positive health behaviours among parents, difficulties faced by single parents in taking children to the GP to be immunised.
- 8) Impact of fraudulent medical research and role of media in creating public scares. The imbalance in media coverage between creation of such scares and publication of evidence in support of immunisation e.g. MMR.

**Steps to improve uptake** Health service reorganisations means that the organisation and finance of services changes over time. This has an effect on continuity in public health and who has responsibility for ensuring the success of childhood immunisation programmes and degree of "joined-upness" between agencies.

Agencies commissioning immunisation services need to:

- gain a better understanding of the local factors limiting uptake and targeting efforts to improve uptake accordingly,
- provide access to publicity and educational materials which are easy to understand and in appropriate languages,
- seek the support of community leaders and alternative medicine practitioners,
- ensure an integrated efforts by community staff (health visitors, practice nurses, etc) to support families with specific needs,
- work with the media,
- work with education providers for all ages including school children to influence healthy choices among the next generation of parents.

*Additional points for an excellent answer:*

Awareness of previous observations of a preponderance of rubella babies born to Asian mothers as evidence of the effects of language barriers in ethnic minority communities which are generally compliant with health advice if offered in languages familiar to them; religious barriers to immunisations in some communities and the need to seek the support of religious leaders; community mothers schemes aimed at improving mothers' self esteem and parenting skills which have observed improvements in immunisation rates; and inaccurate perception by some health care staff of costs/benefits of specific immunisations.

Note for HK: there is likely to be less emphasis on inequalities as the population is more homogeneous in terms of ethnic mix, service commissioning does not exist and vaccination is provided by maternal and child health services, also there is a voucher system for vaccination. Rates of vaccination in HK are high except of new vaccines.

## **EXAMINER COMMENTS**

### **General observations on the performance of candidates**

The overall standard was very disappointing for candidates at this level of their careers.

A better level of comprehension of the importance of immunisation and more depth to proposals for improving the uptake of childhood immunisations was expected. In today's current economic climate providing greater financial incentives to GPs does not suitably demonstrate a candidate's key understanding of the economic challenges facing public health.

### **Ways in which candidates performed particularly well**

A number of candidates used a structured approach which appeared to enable them to think more broadly around the questions resulting in a fuller answer to the question.

### **Ways in which candidates performed poorly**

Many candidates who used the UK as their country of choice used the work of Andrew Wakefield as a cause of poor uptake of childhood vaccinations. Surprisingly, a much smaller percentage of these candidates correctly noted that this research was found to be fraudulent and even fewer candidates mentioned that he has been struck off by the GMC. As public health professionals, this did not demonstrate to the examiners that candidates were (a) aware of more recent developments (Wakefield was struck off in 2010) and (b) in some cases examiners were left wondering whether some candidates continued to believe the research as it had been originally published as there was no indication that the research had no scientific merit.

### **Advice from examiners**

Candidates need to ensure that they are fully versed in the concepts and issues of social and economic impacts on public health.

## Question 8

- a) Define the following terms:
- i) Opportunity cost (10% of marks)
  - ii) the QALY (25% of marks)
  - iii) time horizons in economic analysis of public health interventions, with reference to the importance of discounting (25% of marks)
- b) Taking the above terms into account, what are the additional challenges when undertaking a cost effectiveness analysis of public health interventions as compared to clinical interventions? (40% of marks)

### KEY POINTS

***Most of the following would be required for a pass:***

**a)**

#### **Opportunity Cost:**

The meaning of opportunity cost as the next best use of resources. Illustrate with an example.

#### **QALY:**

**Define the QALY** as an index of length of additional life gained weighted to reflect health related quality of life. Discussion of the advantages of using QALYs as an outcome measure i.e. comparability with other uses of health service resources e.g. by NICE. Discussion of the disadvantages of using QALYs, as a health outcome measure which may not capture benefits of a public health intervention i.e. intermediate outcomes such as behavior change, and spill-over effects to other individuals (positive or negative externalities e.g. Promoting herd immunity through vaccination).

Points which move an answer from a good to an excellent answer include:

Referring to the fact that public health has been concerned with reducing inequalities in health. This means that there may be more interest in distributional issues of improving the health of the worst off in society than perhaps there has traditionally been in the economic evaluation of clinical interventions which focus on efficiency e.g. cost per QALY, rather than equity issues of who receives an additional QALY.

#### **Time Horizons in Economic Analysis & Discounting:**

Time horizon refers to the period of future time taken into account in making economic decisions such as investment or evaluating interventions.

Discounting refers to the process of adjusting the value of costs or benefits that occur at different points of time in the future so that they may all be compared as if they had occurred at the same time.

Discussion of the need for a longer time horizon in the economic evaluation of public health interventions than is often needed in the economic evaluation of clinical interventions. Make reference to issue of discounting future costs and benefits that may relatively disadvantage the case for the cost-effectiveness of public health interventions when compared with clinical interventions that may yield more immediate health benefits.

**b)**

### **Additional Challenges in Public Health**

Refer to the general lack of RCT evidence in public health, spill-over effects (externalities) to other individuals and sectors, long time horizon of returns to public health interventions, importance of setting, uptake, role of education and cost of achieving behaviour change in hard to reach groups in the population.

Acknowledge that real changes in population behaviour for example, relating to health harming substances are often achievable through legislation rather than public health interventions through the health service e.g. smoking bans in public places and minimum alcohol pricing.

*The following are additional points which might improve answers to “good” or “excellent”:*

### **Further discussion of the following:**

Discussion of the importance of pragmatic randomized controlled trials set in the “real world”, with integrated economic evaluation to look at the effectiveness rather than efficacy, and cost-effectiveness of public health interventions

Discussion of the need to consider interactive or synergistic effects of setting, target population and the public health intervention itself when undertaking an economic evaluation of a public health intervention.

Discussion of the potential advantages of cost-consequences analysis as a way of setting out in a systematic manner the full range of costs and outcomes of a public health intervention, rather than trying to role them up into a cost-effectiveness ratio.

## **EXAMINER COMMENTS**

### **General observations on the performance of candidates**

The overall standard was generally disappointing.

### **Ways in which candidates performed particularly well**

A number of candidates provided explanations which demonstrated understanding.

### **Ways in which candidates performed poorly**

Many candidates did not provide a thorough discussion of the challenges and did not compare public health interventions with clinical interventions.

### **Advice from examiners**

Candidates need to ensure that they are fully versed in the concepts and issues of social and economic impacts on public health.

## Question 9

- a) Describe how members of the public can be involved in health service planning and monitoring in a named country of your choice. (50% of marks)
- b) Comment on potential constraints to public involvement. (50% of marks)

### KEY POINTS

**To avoid a bad fail** - two of the subsections from the 'Understanding of how the public can help plan and monitor health services' section (1.1 to 1.3) and 'Potential constraints' (2.1 to 2.6) with discussion

**Borderline pass** – four of the subsections from the 'Understanding of how the public can help plan and monitor health services' section (1.1 to 1.3), and 'Potential constraints' section (2.1 to 2.6) with discussion

**Good pass** – six of the subsections from the 'Understanding of how the public can help plan and monitor health services' section (1.1 to 1.3), and 'Potential constraints (2.1 to 2.6) with discussion and brief mention of a seventh

### 1. Understanding of how the public can help plan and monitor health services

#### 1.1 Groups

As members of governing Boards of accountable NHS agencies

As individuals seeking care and as members of communities, define the difference illustrated from the candidates own health care system. Consumerism or participation?

Patient and Public Forums

Through organisations and service user groups (such as the Patient Advice and Liaison Services (PALS) in the NHS)

As complainants, expect a description of a complaint system

As pressure groups, patient advocate groups, community groups and political parties

As members of health care management structures, e.g. Implementation Groups/Boards

As participants in quality appraisal systems

As members of focus groups

As GP/ hospital/service patient participation groups

#### 1.2 Processes

In defining good and poor clinical practice and malpractice

In participating in the registration of and supervision of professionals

By responding to consultations determining what care is and what is not provided

Plus those implied in the roles of groups in 1.1 above

#### 1.3 Engagement

Role of 'empowerment' in health care management

Discussion of different methods available for obtaining a patient view point as a means of overcoming the difficulties

Use of the evidence base showing differences in perceptions of what is important between patient groups, the population and professionals

## **2. Potential constraints**

### **2.1 Financial/Time availability**

A substantial minority of the public (including the most able) will be working in normal working hours and therefore not be able to engage during these times. There may be an associated cost to the public of engagement either through lost earnings and/or incurred costs.

### **2.2 Lack of knowledge**

Variable access to information for the public

Variable ability to interpret information

Misinformation - the impact of the Internet, both negative and positive

### **2.3 Organisational**

Lack of commitment of health care organisations to a patient-centred approach and therefore effective and routine methods of consultation with patients with the concomitant willingness to engage and respond to the public

### **2.4 Complexity**

Problems with incorporating all the differing attitudes, values and opinions of population groups

Different opinions on prioritisation of what is important in healthcare and the evidence base for this

### **2.5 Political**

The impact of pressure and patient (condition-specific) advocate groups - their importance as a source of information and misinformation, and the potential for distortion of priorities that can arise. The 'political imperative' of what is important – the impact of the press, other media, politicians and the concept of 'moral panic'.

Professional resistance to patient involvement – relates to concepts of professional power and autonomy.

### **2.6 Psychosocial**

The reluctance to complain of people receiving healthcare to complain

Perceptions that 'complaints' are negative

Patients may have adopted the 'Sick Role' and therefore display associated passivity

## **EXAMINER COMMENTS**

### **General observations on the performance of candidates**

The majority of candidates answered this question this well.

Those who answered the question poorly reflected an inadequacy in understanding public health from a broader sense. Some candidates also showed a lack of understanding on how policies were formed and service developed.

### **Ways in which candidates performed particularly well**

The majority of candidates answered the first part of the question better and were aware of the latest development in patient and public engagement.

### **Ways in which candidates performed poorly**

Some candidates did not answer the second part of the question well, and were not able to show a systematic framework of discussion (e.g. using a general framework by looking at issue from the

system point of view, political point of view, organisation, professional, social, psychological aspects)

### **Advice from examiners**

Be more aware of service provision at different settings and how the public and patients are engaged. Always use 'frameworks' for thinking about problems from different perspectives and at different levels. Try reading the newspaper and interpret news from a public health perspective.

Management is a challenging task, and healthcare is a complex activity. Recognise this in your answer – do not over-simplify.

## Question 10

- a) Describe 'functional', 'project' and 'matrix' organisational structures. (10% of marks)
- b) Outline the advantages and disadvantages of each structure giving examples. (90% of marks)

### KEY POINTS

**Functional Structure** - grouping of professionals according to functions they perform e.g. Commissioning, Human Resources, Finance, Information, Public Health

#### Advantages

Depth of competence achieved by grouping specialists in a given function together.

Teams of professionals can fill in for each other during absences.

Clear lines of accountability and responsibility

A shared professional identity among the organizational members within the varied functional offices,

Comfortable working with peers from same discipline

Career progression opportunities

#### Disadvantages

Tendency to inhibit horizontal communication and coordination

Decision-making tends to rise above most effective level, and slow down

Potential for conflict between disciplines

Problem solving potential reduced.

Many problems are complex, and not easily bounded in a single function.

**Project Structure** - In the Project structure, different specialists work together in project teams towards a common aim

#### Advantages

Clear lines of accountability and responsibility

Multi-disciplinary - a broader generalist perspective

Good training for future leaders of whole organisations

Working with peers from different disciplines, with different work experiences and approaches increases personal development.

Conflicts among specialists can be resolved by a (common) project manager.

Easier to monitor the performance of projects

Especially suited to time-bound tasks requiring cross-departmental contributions

Can accommodate team members from different organisations

### **Disadvantages**

Project managers may have to compete with established functions, as well as other projects, to gain resources from the organisational management.

Good potential projects may not receive due support through being seen as a threat to the existing structure.

Less in-depth specialized technical competence than with a Functional Structure.

Projects are time limited, and there is a risk of loss of expertise as the end-date approaches

### **Matrix Structure - Superimposes project and functional structures creating a dual line of authority**

#### **Advantages**

Effective use of specialists

Flexible team resources

Attractive environment for specialists

Can improve partnership working

Particularly suitable for complex organisations where communication across disciplines is vital

Can be used to run partnerships across different organisations

#### **Disadvantages**

Role & authority ambiguity and confusion

Potential conflict in reporting to two or more managers

Can result in accountability being avoided because work accomplishment is interdependent.

Making it work – through communication, role clarification and relationship building, is costly and time consuming

The major players, e.g. Project Managers, and Functional Directors lack a (shared) sense of urgency.

## **EXAMINER COMMENTS**

### **General observations on the performance of candidates**

Candidates generally answered this question quite well; a number answered this question very well. Most candidates could demonstrate their understanding about the different organisation structures and the pros and cons.

### **Ways in which candidates performed particularly well**

Many candidates could tell about the basic differences and the pros and cons of each organisational structure.

The best candidates really thought about the question from several angles, providing good insight and an instinct for how organisations succeed or fail.

### **Ways in which candidates performed poorly**

A few candidates were confused about the different structures and got mixed up. Some did not appear to grasp the key features.

### **Common pitfalls in answering the question**

Mixing up the different organisational structures and their key features, or the use of wrong real life examples.

### **Advice from examiners**

To understand more about the differences between different structures, to think about how they are reflected in different organisations, and to discuss with their seniors or other candidates.

## Paper IIA

You are working in a public health organisation. As a result of local concerns regarding the number of injuries due to falls in older people and their increasing impact on health care resources, the content of the following paper is brought to your attention:

Tinetti ME, Baker DI, King M, Gottschalk M, Murphy TE, Acampora D, Carlin BP, Leo-Summers L, Allore HG. Effect of dissemination of evidence in reducing injuries from falls. *N Engl J Med* 2008; 359:252-61.

1. Write a critical appraisal of the paper. (40% of marks)
2. The Director of Accident & Emergency services at your local general hospital wishes to know if similar interventions could be carried out in your health area. Write a letter of response. (30% of marks)
3. A decision is made to develop a programme based on this paper with the aim of reducing injuries due to falls in older people in the population your organisation is responsible for. Who would you invite to attend a working group to discuss this and what issues would you discuss? (30% of marks)

### KEY POINTS

1. Critically appraise the paper

Was there a clearly focussed question?

Paper described the health impact of falls and the population/demographic impact  
Paper describes the challenges of translating research into clinical practice and the importance of evaluating this.

Was the type of study appropriate?

Non-randomised study  
Justifies the use of non-randomised approach due to intensive/visible intervention and its impact on clinicians.

Were the sources of information used appropriate?

Used existing sources of information e.g. coding departments  
Used routine data (use of these codes was well-validated within the state – both intervention and usual care areas) and used recognised codes for illness  
Described the intervention using “qualitative” measures of time spent etc

Was the analysis appropriate?

Compared rates between the groups  
Included pre- and post- intervention measures  
Included confidence intervals

Number of clinicians involved

Matched the numbers of facilities and clinicians involved  
>60% of all groups received intervention (varied between the different types of facilities – reflects issues about rolling-out the initiative to different groups such as access, priority given, getting time in diary etc)

## Presentation of results

Comparison of groups by demographic characteristics  
Description of the intervention including timescale of rolling out the intervention to different groups – gives a measure of the resource- intensive nature of the intervention e.g. took almost three years for 50% of primary care physicians to receive the intervention  
Reported rates of fall-related serious injury and fall-related healthcare service use –graphs with confidence intervals, trends including post-intervention ongoing effect  
Show rising rates in whole population but difference between intervention and “usual care” groups

## Precision of results

Reported confidence intervals (or approximation of confidence intervals)  
Comment on how wide/overlap or not

## Were all outcomes considered? How applicable to local situation are the findings?

Have considered serious injuries and less serious use of healthcare facilities  
Consider any difference in arrangements of health care services in local area/home country compared with USA  
Paper comments on the difficulty of identifying which part of the multi-strand intervention had most impact – there is some comment reflecting “qualitative” work but no real detail of how this was carried out/was it just “free text” type comments or a more systematic questioning?

## 2. Write a letter to local A&E consultant about findings/local application

Use of appropriate language for professional-to-professional correspondence  
Thank them for their interest and acknowledge the local problem (extra points for being able to give local context/figures to inform)  
Give brief summary of findings highlighting the key points (not just re-doing the critical appraisal) – results, any key limitations, any practical issues re implementation  
Demonstrate an understanding of the interface between primary and secondary care – could mention things like discharge teams, intermediary care, links with occupational therapy, physiotherapy.  
Give outline of how findings could be applied locally – candidates should realise that as the next question is about setting up a working group that this would be a good thing to suggest!  
Be pragmatic about how this might be implemented – do not raise unrealistic expectations/recognise how resource intensive the intervention was and what can practically be delivered in local setting  
Suggest a pilot – to be considered at working group. Suggest reviewing the different strands of intervention and what might work best/be most effectively implemented

## 3. Set up a working group to consider local implementation

### Identify key players and the importance of engaging appropriate professionals/how to engage them

Chair of group - DPH or PH consultant

A&E

Other secondary care services – falls clinic, care of the elderly

Primary care – may be many different interested parties/get appropriate but not overwhelming representation

Other outreach services

Commissioner

Recognise the challenge of having a manageable size group to take work forward/versus engaging all interested parties. One suggestion might be to have a “workshop” to start the work/gather ideas about local services/issues then identify a smaller working group to develop protocol etc

## Preparing for the meeting

- Briefing paper outlining the context, the key findings from the meeting
- Terms of reference for the group
- Suggested timescale for the work of the group
- Draft the agenda for the meeting outlining the issues for discussion

## EXAMINER COMMENTS

### General observations on the performance of candidates

The NEJM paper used for question 2A was on a straight forward public health topic (prevention of falls in the elderly) yet a significant number of candidates failed to comment on many of the key points it raised. Many candidates did little more than rephrase information given in the paper. Others adopted a format which, presumably, they had been advised to follow when critically appraising a paper, without giving due consideration as to how the format might apply to this particular paper. Both of these faults led to large amounts of script being produced which contained very little to award marks for, and consequently resulted in a waste of valuable examination time. Some answers demonstrated a lack of care in reading through the paper, resulting in incorrect statements being made. Few candidates achieved a good pass on the first section.

The letter of response to the A & E consultant was particularly poorly written by many candidates; it was often written in a patronising tone and containing little helpful information. The examiners were given the impression that quite a number of candidates had not written a letter to a fellow professional before and this demonstrates the need to become more involved in departmental work in order to gain professional experience. The ability to communicate in writing is a very important requirement in any public health work.

Attempts to answer the third section indicated that many candidates were running short of time, which is likely to have cost them marks. Some answers again demonstrated a lack of practical experience in dealing with departmental issues, such as setting the agenda for a meeting to enable decisions to be made on progressing an item of work.

### Ways in which candidates performed particularly well

Good candidates:

- Thoughtfully applied their critical appraisal framework and adapted it to suit the subject of the paper and recognised that the paper was describing a study that was about the application of previous evidence in a real-life situation
- Wrote a letter which was professional in tone, gave a clear summary of the paper and recognised the opportunity for collaboration with clinical colleagues. Marks were given for simple points of courtesy, which many candidates missed.
- Demonstrated a practical understanding of setting up a group and starting to develop a project

### Ways in which candidates performed poorly

As above, candidates who scored low marks

- Adopted a critical appraisal framework without thinking about how it should be applied to the paper in question.
- Wrote poorly structured, patronising and over-critical letters
- Showed a lack of thought about practical issues in establishing a working group and project management.

### **Advice from examiners**

Candidates need to understand that critical appraisal is not just about applying a framework and rephrasing sections of the journal article – it requires critical thought about the aim of the study, the strengths and limitations of the work and the generalisability of the findings and conclusions.

Candidates need to gain experience of writing professional letters and of understanding practical arrangements for setting up and managing a project; these are basic tools in public health practice.

## **Paper IIB**

In its new format Paper IIB questions, key points and detailed examiner comments on each section are not released. The below are general remarks on candidate performance received from the examiners.

### **General observations on the performance of candidates**

Overall the performance of candidates was about average compared to previous sittings of the new format Paper IIB. While most candidates gave reasonable answers to data interpretation, a number struggled with carrying out simple analysis (even to the extent of adding numbers correctly) and describing some of the key concepts in epidemiology.

### **Advice from examiners**

- A brush-up on which statistical tests are appropriate for differing types of data.
- A brush-up on basic epidemiological definitions and terms.
- Better time management between questions.
- Precision and brevity rather than details.