Note these are key points not model answers.

Research methods

Question 1

Your Primary Care Organisation has employed healthcare support workers to help manage long term conditions (e.g. diabetes mellitus, chronic obstructive pulmonary disease). This is about to be implemented in stages across your area.

a) What **four** outcomes would you wish to measure and why?

(40% of marks)

b) Describe **three** key features of a time series study design used to investigate one of the outcomes measured in (a).

(30% of marks)

c) Describe **three** limitations of a time series study and how you might reduce them.

(30% of marks)

Key Points

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

(a) Outcomes to measure and why (10% of marks for each outcome with explanation up to 40%)- include four of the following across a range of categories, or other reasonable outcome with reason:

Disease progression and quality of care
        Disease specific measure – more specific measure of interventions effectiveness than a generic quality of life measure (e.g. HbA1c, blood cholesterol level, etc)
        Receipt of effective care

Health service resource use
        Hospital Admissions (planned / unplanned) –major cost driver
        GP consultations
        Use of resources; patient, H/C and social services

Mortality / Survival – important measure of effectiveness

Patient reported outcomes
        Quality of Life measure e.g. SF-36, or EQ-5D –good summary of health state

Patient experience/satisfaction
        Patient experience
        Satisfaction –summarises patient view of care received

Staff View – important to gain staff feedback on the intervention so as to refine it for the future

Access and equity –important as can identify potential inequalities.

(b) Key features (10% of marks for each feature up to 30%)

1.Baseline measurement
2. Multiple measurements at different time points (preferably several measurements before change/intervention) and several after change
3.Geographical and temporal controls
4 Many time series studies are ecological/observational studies conducted as repeated cross-sectional studies at population level, they can also be conducted as repeated measures at individual level.

(c) Limitations (10% of marks for each limitation up to 30%) to include how can be reduced – measure, decide timing of measurements to take into account any seasonal variation, noting/ measuring confounders
1. Underlying trend
2. Seasonal variation
3. Concurrent intervention
Good candidates would mention stepped wedge design, difficulty in attributing causation (i.e. hypothesis generating studies), data variability, regression to the mean, and other limitations, and discussed how they could be reduced.

Examiners' Comments.

Answers to this question showed a wide range of different levels of understanding of time series studies, with approximately three quarters of candidates answering the question well. Candidates appeared to have ample time to complete the question.

The first part of the question, on outcome measures, was generally answered well. Better answers discussed a range of outcomes from different categories, rather than, for example, four measures of disease progression.

Lower marks were generally obtained for the final part of the question, about limitations of time series studies. Better answers discussed limitations specific to time series designs, rather than generic limitations that apply to all studies.

Many candidates seemed only to consider that time series were a form of ecological studies. Whilst many time series studies are population-based and ecological, they can be based on individual data.

There was some confusion demonstrated about whether 'time series' is the same as 'ecological'. The question was about time series study design.

.

Question 2

A recent observational study suggests a link between higher traffic density outside schools and low performance of primary school pupils.

    a) What are possible explanations for this finding?

                                                   (40% of marks)

    b) What are the variables you would measure to replicate the study locally?

                                                   (40% of marks)

    c) What are the characteristics of a good outcome measure for a study of this type?

                                                   (20% of marks)

Key Points

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

(a)   Possible explanations

1. True causal link (e.g. due to either noise reducing pupil concentration or pollution increasing asthma and increasing ill health/absenteeism)
2. Chance finding (e.g. small numbers)
3. Confounding. For example social deprivation associated with high traffic density
4. Bias. Information bias in recording of results. For example, stricter marking if school thought extra funding may follow. Selection bias; poorly performing rural schools less likely to participate.

(b)   Variables to measure: 0.5 marks per variable below, and brief explanation (as these could be acting as a confounder), 0.5 marks given for including traffic density and school performance. (Note these are examples, but candidate may give other appropriate variables)

1. Class size/ pupil: teacher ratio
2. Rural/urban setting
3. Ethnic mix
4. Deprivation / free school meals
5. Traffic distribution
6. Pollution level
7. Noise level
8. School size
9. Age and sex

(c)   Characteristics of a good measure *(valid and reliable required with basic explanation of meaning of terms for full marks)*

1. Valid
2. Reliable

Good candidates discussed other characteristics, including routine availability, feasibility, sensitivity, precision, accuracy, relevance (meaningful), timely reporting.

Examiners' comments

This question was generally well answered, particularly the first part of the question explaining the finding. Candidates generally understood the importance of explaining results in terms of true effect, chance effect and bias and confounding. Candidates appear to have had ample time to complete the question.

The first part of the question, on possible explanations, was generally answered well. Better answers discussed the role of chance, bias and confounding with the use of relevant examples. Most answers gave a range of suitable variables in the second part of the question.

Lower marks were generally obtained for the final part of the question: characteristics of a good measure (see below).

Many answers did not clearly describe the characteristics of a good measure, or did not explain what they meant by the different types of validity and reliability.

Some answers used the 'SMART' acronym, which is useful particularly for commissioning, project management and setting personal objectives, **but not always as relevant to research study outcomes.**

Poorer answers discussed possible explanations in the first part of the question without using an epidemiological approach or terminology. An epidemiological approach is expected and was used in at least 75% of responses.

Disease causation and prevention. Health promotion

Question 3

Using the examples given and others, describe the utility of genetic testing in cases of:

  a) Single gene disorders (for example cystic fibrosis)

  (50% of marks)

  b) Disorders influenced by multiple genes (for example cancer)

  (50% of marks)

Key Points

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

- Describe single gene disorder (single gene alteration, rate, high penetrance, examples include: cystic fibrosis, fragile X-syndrome, Duchene myodystrophy, Huntington's disease etc.) and polygene disorder (common in the population, low penetrance, examples: cancer, heart disease, diabetes etc.)

- Genetic testing is used for: diagnosis of disease, predicting disease occurrence in the future, disease management (personalised treatment), and disease prevention (primary and secondary prevention)

- Genetic testing for single gene disorder includes carrier identification, prenatal diagnosis, new born screening, identification of late onset disease

- The currently known polygenic susceptibility variants are poor discriminators between individuals who will or will not develop the disease

- Polygenic testing could be used for risk stratification and to target preventative intervention (screening, chemoprevention, behavioural modification) to the high risk group

- *Ethics of genetic testing: testing children, risk of eugenics, impact on wider family*

- *Potential for harm to individuals: psychological, social, economic*

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

- Predictive genetic testing gives probabilities not certainties

- Utility of genetic testing for polygene disorders, i.e. polygenic profiling, is not yet part of routine clinical or public health practice

Examiners' comments

In general, candidates answered the question well. Answers covered most key points and were well structured. Candidates appear to have had sufficient time to complete the question.

Most candidates used titles and sub-titles to frame their answers. In this way, the whole presentation was easy to read and the way of thinking was made more explicit. Use of a life course approach to the utility of 'genetic testing' worked well.

There were some excellent answers that demonstrated good knowledge of the subject and the ability to apply it.

Most answers included the utility of genetic testing to inform reproductive decisions but a number of candidates did not expand their answer to other uses. Some answers explored the ethical, social and economic advantages and disadvantages of genetic testing in great depth but included little about the utility of genetic testing.

One pitfall candidates fell into was providing answers that were not concise enough. Some candidates made the mistake of interpreting 'genetic testing' as 'genetic screening' and used the criteria for a screening programme as the framework for their answer.

Question 4

Write **short notes** on the epidemiology and control of the following:

a) Meningococcal meningitis

(50% of marks)

b) Measles

(50% of marks)

KEY POINTS

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

A) Meningococcal Meningitis

Presentation: Sudden onset with fever, intense headache, nausea, and often vomiting. Examination may reveal stiff neck and frequently a petechial and non- blanching rash. Delirium and coma are common. With early diagnosis, modern therapy and supportive measures, the case fatality rate should be below 10%. Diagnosis is confirmed by the demonstration of typical organisms in a Gram-stained smear of CSF and the recovery of meningococcal from the CSF or blood. PCR Test.

Infectious agent: gram-negative diplococci, Neisseria Meningitidis. There are 9 serotypes. Group B and C are the most prevalent in the UK. Certain serotypes (e.g. 2b and 15) have been associated with outbreaks of group B disease.

Epidemiology:
Time: Historically there have been periodic outbreaks e.g. 1986-88.
The incidence in temperate climates is greatest during winter and spring.
Place: An area of high incidence has existed for many years particularly during the dry season in the sub-Saharan Sahel region of Africa. This is caused by group A organisms
Person: Meningococcal disease, while primarily a disease in very small children, occurs commonly in children and young adults, in males more than females, and among new clustered adults under crowded living conditions, such as barracks and institutions.

Transmission: By direct contact, including nasopharyngeal droplets and secretions. Carrier prevalence of - > 25% may exist with cases meningitis.

Incubation period: Varies from 2 to 10 days commonly 3-4 days.

Period of communicability: Until meningococci are no longer present in discharges from nose and mouth.
If the organisms are sensitive to antimicrobial agents which attain sufficient concentration in oropharyngeal secretions, meningococci usually disappear from nasopharynx within 24 hours of institution of treatment.

Treatment: Antibiotics. If diagnosis is suspected by GP, antibiotics should be given before transfer to hospital.

Prevention:

Routine Meningococcal C vaccine programme has been very successful since introduced in late 1990s. Group B vaccine has been licenced in UK and some other countries but no announcement yet about a routine programme.
The risk to travellers planning to have prolonged contact with populations in countries with epidemic meningococcal A or C diseases will be reduced by immunisation.

Household: Protection of contacts: Close surveillance of household and other intimate (kissing/close enough to share utensils) contacts for early signs of illness, especially fever. Ciprofloxacin is the antibiotic of choice in the UK(but rifampicin may also be used).

Health Care worker: health care workers are rarely at risk even when caring for infected patients; only intimate exposure to nasopharyngeal secretions (e.g. as in mouth to mouth resuscitation) requires prophylaxis.

Schools:
a) One or more cases occurring during term time in children attending a pre-school group (Ref 1)

   Chemoprophylaxis should be offered to all contacts in the group. Vaccine should be given if the causative organism is known to be of a vaccine-preventable strain. Family contacts should be managed as defined by household contacts. Information about the case and about meningococcal disease should be disseminated to carers, parents and local GPs.

b) One or more cases occurring during term time among those during primary or secondary schools, college or university.

   Prophylaxis with antibiotics or vaccine should not be offered to contacts in the educational setting, unless the proximity and duration of contact have been comparable to that experienced in households. (e.g. dormitory contacts at boarding school). A close contact group should be carefully defined if such measures are instituted. Information about meningococcal disease should be disseminated to teachers, parents and local GPs; in secondary schools, colleges and universities, pupils should also be informed.

c) One or more cases occurring in school holidays among those attending pre-school groups, primary or secondary schools, college and universities:

   Prophylaxis with antibiotics or vaccine would not be offered to contacts in the educational setting. The wide spread dissemination of information may not be practicable during school holidays but should be considered when a case occurs within seven days of the end of term or when rumours abound. Some pre-school groups (e.g. crèches taking children whose parents are working) may function for most of the year, without formal holiday periods.

   Note: The investigation of contacts and source infection; throat or nasopharyngeal cultures are of no value in control since carriage is variable and there is no consistent relationship between that found in normal population and in an epidemic. The information derived cannot be used to decide who should receive prophylaxis.

B) Measles

Notifiable disease.

Presentation: Acute onset of prodromal fever, conjunctivitis, coryza, cough and Koplik's spots on the buccal mucosa. After 2-3 days a red blotchy rash appears beginning on the face and spreading to the body and may last 4-7 days. The disease is more severe in infants and in adults than in children. Complications are common (10%) and include otitis media, pneumonia, diarrhoea and encephalitis. In the developed countries death from uncomplicated measles is rare; deaths occur mainly in children less than 5 years old, from pneumonia and occasionally from encephalitis. Subacute sclerosing panencephaltis (SSPE) develops rarely (about 1/100,000) as a late sequela over 50% of SSPE cases have measles diagnosed in the first two years of life.

Diagnosis is usually made on clinical history(which may include immunisation history/links with known case etc) and clinical examination. It can confirmed by the presence of measles-specific IgM antibodies or s significant rise in antibody concentrations between acute and convalescent sera.

Infectious agent: measles virus, Parmyxoviridae

Epidemiology: Before widespread immunisation, measles was common in childhood, so that over 90% of people had been infected by the age of 20. Measles was endemic in large metropolitan communities and epidemics occurred every second years. In smaller communities and areas, outbreaks tended to be more widely spaced and more severe. In the UK the disease is endemic and epidemic because immunisation rates have been short of the targets (95%). The peak incidence is at school entry. Causes usually peak in early spring in temperate climate changes.

The Wakefield Autism controversy in the UK particularly damaged uptake rates of MMR and young people now in early twenties and younger may be incompletely immunised. Risk of outbreaks in universities,schools etc.

Transmission: droplet spread, direct contact and less commonly, by items freshly soiled with nose and throat secretions. Measles is highly infectious. A herd immunity of 94% or more may be required to stop community transmission.

Incubation period: About ten days with a range from 7-18 days.

Period of communicability: From slightly before the beginning of the prodromal period to 4 days after appearance.

Treatment: uncomplicated cases treated by controlling temperature.

Prevention:

   a) Control of patient, contacts: isolate patient for 4 days after the onset of rash.

Immunisation of contacts: Live vaccine, if given within 72 hours of exposure, may provide protection. IG may be used within 6 days of exposure for susceptible household or other contacts for whom risk of complications is very high (contacts under one year of age), or for whom measles vaccine is contraindicated. Live measles vaccine should be given three months later to those whom vaccine is not contraindicated.

All school and nursery contacts should be offered vaccination unless they have been immunised previously.

b) Immunisation

Vaccination using live attenuated measles vaccine. A single injection of live measles vaccine can be combined with other live vaccines (mumps and rubella) and should induce active immunity in more than 95% of susceptible individuals. Encephalitis and encephalopathy have been reported following measles vaccination.

Examiners' comments

In general, answers carried a range of key points and were well structured.

Only candidates with a good structure, concise text and good knowledge were able to complete their answers at the pace necessary to provide a full answer to both parts

Most candidates used titles and sub-titles to frame their answers. In this way, the whole presentation was easy to read and the way of thinking was made more explicit.

Candidates who knew and could apply a standard framework for the control of infectious disease performed well.

In general candidates described the epidemiology of meningococcal disease and measles better than the control measures. Very few candidates included meningococcal disease control measures for healthcare workers and within preschool and school settings.

Answers were not concise enough. A clear structure and concise text were necessary to complete a full answer to both parts of Question 4.

Candidates should write concise text and use a standard framework for the control of infectious disease to include titles and sub-titles.

Candidates should have knowledge of the control measures as well as the epidemiology of infectious diseases.

Health Information

Question 5

a) What are the main purposes of population based cancer registration?

(30% of marks)

b) What are the main features of a population based cancer registry?

(70% of marks)

Key Points

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

A) Purposes
- Disease surveillance
- Epidemiological monitoring
- Management information, patient flows
- Performance monitoring of clinical teams, hospital trusts, primary care
- Measurement of outcomes
- Monitoring of the screening programmes (bowel, cervix, breast)
- Investigation of alleged clusters
- Research

B) Features

- Covers a defined geographical area
- Has multiple sources of data:
    - Pathology records
    - Hospital records
    - Multi disciplinary team meeting records
    - Screening Data
    - Waiting times data
    - Chemotherapy data
    - Radiotherapy data
    - Imaging data
    - Death certificate data
- May involve accessing individual patient records
- Usually has close involvement with the clinical community it serves
- Produces regular outputs (local reports, website, responds to requests for data)
- Scientific contribution e.g. to the understanding of the epidemiology of disease
- Rigorous information governance (some studies will require ethical approval), named information guardian

Examiners' Comments

The majority of candidates gave well structured and comprehensive answers to this question. Both parts of the question were equally well answered.

All candidates managed to complete both parts of the question. The majority of responses to both parts of the question were comprehensive and identified most of the key points.

A few good answers provided examples of additional uses of registry information such as raising awareness of particular types of cancer; others mentioned linkage of cancer registration information to other sources of information including general practice systems.

Poorer candidates' answers gave very little detail about the clinical features of cancer registration – including sources of information, different methods of diagnosis (histological, clinical), staging, treatment (and other forms of management), and survival.

Several answers discussed consent in too much detail, and some indicated (incorrectly) that cancer registration always required informed consent from patients.

Several candidates discussed using cancer registers to monitor mortality rates but seemed unaware of the concept of measuring survival rates.

A few answers focused on the use of disease registers rather than cancer registers.

Good answers made more use of simple examples that illustrated an understanding of how cancer registers are maintained and used. Good answers demonstrated greater awareness of the roles that clinicians now have in assuring data quality, for example validation of staging information at multidisciplinary team (MDT) meetings.

Health Information

Question 6

You are working with commissioners to review falls prevention services across a local government administrative area. In a named country:

a) Outline the main types of information sources that you would use to assess the need for falls prevention services in your area and comment on their strengths and weaknesses.

(60% of marks)

b) What considerations would you take into account in recommending indicators for monitoring the impact of a new falls prevention service? Use examples to illustrate your answer.

(40% of marks)

KEY POINTS

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

(a) Information Sources

Local demographic data (e.g. census returns);
*   Essential for understanding population at risk
*   Usual caveats relating to population estimates all apply

Hospital data including A&E attendances, hospital admissions data;
*   Measures 'tip of iceberg'
*   Accuracy of coding may be an issue – especially for A&E data
*   May not help identify causes of falls

Ambulance service data on attendances at falls;
*   May provide information on fallers that are not taken to hospital
*   Allows falls to be mapped and hotspots identified
*   Won't cover all falls

Information about care and residential homes and other potential falls hotspots
Primary care data – may be of variable quality but could provide information about prevalence of osteoporosis and other risk factors;
>   *   Coding often an issue
>   *   Primary care staff may not hear about all falls
>   *   May be able to obtain data about risk factors

Mortality linked to falls or falls related outcomes.
>   *   Fall may not be mentioned on death certificate so coding may be an issue
>   *   Majority of fallers don't die as direct result of falling

(b) Considerations

*   Indicators should measure relevant parts of the falls pathway;
*   Indicators need to be timely;
*   Indicators need to be based on reliable data;

- Indicators should not create perverse incentives or gaming behaviour;
- Indicators must have been shown to be valid;
- Chosen indicators are clinically/practically meaningful;
- Indicators are able to detect issues that can be investigated and addressed;
- Selected indicators can be readily communicated to others.

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

a) Candidates give a logical and coherent approach to the question, with good use of examples. Candidates demonstrate a clear understanding of the information needed to support a commissioning decision.

b) Candidates demonstrate a clear understanding of how indicators can be used to monitor a service.

Examiners' comments

The majority of candidates answered this question without difficulty. Those who did not seemed either not to have read the question properly, or did not understand what was being asked for in the second part of the question. Candidates appear to have had sufficient time to complete the question.

Most were able to give comprehensive and well structured answers to the first part of the question and were able to comment on the strengths and weaknesses of the different sources. Some candidates gave examples of falls registries and their uses.

Some candidates wrote about the epidemiology of falls and the provision of falls services, which was not being asked for. A few candidates wrote about how to carry out a needs assessment, which again was not asked for.

The second part of the question was poorly answered by several candidates.

In the first part of the question, a few candidates did not seem to have read the question, and just provided a list of information sources without commenting on their strengths and weaknesses.

The major pitfall occurred in some responses to the second half of the question, where several candidates just listed a series of falls indicators without attempting to discuss how indicators can differ in what they measure and in their characteristics

To improve answers, it would be good if candidates to give as wide a range of information sources as possible.

Medical sociology , social policy, Health Economics

Question 7

Your health care organisation wishes to increase patient involvement in policy development. You have been asked to set up a group to take this forward.

  a) From a sociological perspective discuss patient and public involvement in the process of policy development.

(70% of marks)

  b) How would you as the chair of this group ensure that patients are enabled to participate fully?

(30% of marks)

Key Points

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

A) Discussion would consider the following including challenges and barriers

1. Ensuring patient participation whilst addressing inequalities, i.e. ensuring that all socioeconomic groups are able to participate, not just the articulate, well-educated middle classes
2. Recruitment, selection and training of patient participants
3. Differing levels of knowledge
4. Concepts of power, interests and ideology
5. User and carer involvement in service planning
6. Role of medical professionals in society

'Good' and 'excellent' answers will accurately and appropriately identify or employ a sociological approach or theory in answering the question.

B) Enabling patient participation

1. Selection
2. Reimbursement of out of pocket expenses
3. Training
4. Mentorship
5. Concepts of power
6. Empowering
7. Views
8. Terms of Reference of Group

'Good' and 'excellent' answers will appropriately consider the practical and interactional difficulties and challenges posed by implementing PPI.

Examiners' comments

Overall, the answers were disappointing.
Few candidates used an essay plan – those who did tended to score better. It is hard to write a good sociology essay without an essay plan.

The question asked for a "sociological perspective". Many candidates did not use a named sociological theory, and most of those who did name a theory did not relate it well to the specifics of the question.

There was sufficient time to enable candidates to present good answers to the questions within the time limits. While many candidates ran out of time, it was generally because of repetition rather than not being able to prepare a thorough answer.

Few candidates performed well but those who did, used named sociological theories, correctly explained, and linked the theory or theories to the specifics of the question.

It was essential to relate public involvement specifically to policy development.

Candidates must take the time to organise their thoughts and ensure that their answers address the questions being posed to them.

Candidates should be familiar with a wide range of sociological theories, and be able to relate those theories to the subjects that are specifically mentioned in the syllabus.

Question 8

a) Define opportunity cost.

(20% of marks)

b) Define cost per QALY.

(20% of marks)

c) Evaluate how the concepts of opportunity cost and cost per QALY could be used in the rationalisation of services in a healthcare delivery system of your choice.

(60% of marks)

Keypoints

a) Economics is about choice. Resources (money, trained/qualified staff, equipment) are scarce, and will never be sufficient to meet all needs/demands. Opportunity cost is the value foregone by not using resources to meet the next best alternative.

An example from healthcare should be used to illustrate the answer e.g. if we fund hip replacements (which use scarce resources such as money, the time of highly qualified staff, and operating theatre capacity) we could instead have spent scarce resources (money, the time of highly qualified staff, and equipment) on community rehabilitation for people with limited mobility due to joint pain.

b) All healthcare interventions have costs and benefits. Outcomes differ e.g. increased life expectancy, reduced pain, greater mobility etc. Cost per QALY is one measure (and there are others) to convert the value of different interventions to the same currency and thus allow us to compare them.

Healthcare interventions increase the length of life and/or the quality of life. For each healthcare intervention a quality adjusted life year (QALY) can be calculated. QALYs are calculated from the product of quantity of life x quality of life. One extra year of life, in perfect health, is given a weighting of 1, and death is scored as 0. Very poor quality of life may be given a negative weighting.

An example from healthcare should be used to illustrate the answer. For example, we wish to compare a treatment for cancer (which increases life expectancy) with hip replacement (which has no impact on life expectancy but improves quality of life by increasing mobility and reducing pain). If the cancer treatment costs £20,000 and increases life expectancy by one year of perfect health then the cost per QALY is £20,000. If a hip replacement costs £10,000 and increases quality of life from 0.7 to 0.8 for 10 years then the cost per QALY is £10,000.

c) All healthcare systems, however they are funded, have insufficient resources to meet all patient demands. Regardless of the method of funding, all healthcare systems will wish to maximise the efficiency of the interventions that they do fund, and will have to decide which interventions to fund and which they cannot afford to fund. The concepts of opportunity cost and cost per QALY are key to these decisions.

Most or all of the following points would be expected for a pass mark:
- Brief summary of the healthcare delivery system they have chosen to answer this question
- Definition of rationalisation of services

- Statement that choices have to be made in any healthcare system, regardless of the method of funding
- Understanding that economic concepts can be used to maximise the technical efficiency of each intervention, as well as choosing between different interventions (allocative efficiency)
- Explanation that data is limited, especially on outcomes, and thus any calculations must be subject to sensitivity analysis, and consequently to wide margins
- Health economics can aid the decision making process but other considerations are required e.g. equity, fairness, political judgments
- An example of how health economics information has been used to rationalise services e.g. Oregon.
- Any reasonable process that is described that uses these concepts will be acceptable.

Examiners' comments

The health economics question included a question on opportunity cost which has been asked on a number of occasions in Part A, and thus candidates should have been familiar with the answers.

A lot of candidates failed to use examples to illustrate their answers on opportunity cost and cost per QALY. Very few candidates used an essay plan. Poor candidates often repeated in (c) what they had already said in (a) and (b).

There was sufficient time to enable candidates to present good answers to the questions within the time limits. While many candidates ran out of time, it was generally because of repetition rather than not being able to prepare a thorough answer.

Only a few candidates excelled. Very few seemed to understand the process of prioritisation.

Candidates must take the time to organise their thoughts and ensure that their answers address the questions being posed to them.

The health economics syllabus is quite narrow so the questions asked in Part A are perhaps more limited in scope that in other sections of the examination. Candidates should be very familiar with previous questions and examiners' key points. Some practical experience of healthcare public health (e.g. named patient funding requests, or providing advice to commissioners) is beneficial in helping candidates to understand the role of health economics in public health practice.

Management and organisation of healthcare

Question 9

a) Define clinical governance.

<div align="right">(30% of marks)</div>

b) In a named setting, how would you use the theoretical principles of good clinical governance to improve the quality of health care?

<div align="right">(70% of marks)</div>

KEY POINTS

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

a) awareness that this is difficult to define, is complex and contextual
Clinical governance: (max 2 marks: 1 for basic grasp of definition, 2 for fuller version)

- a **systematic** approach to **maintaining and improving the quality** of patient care within a health system
- a system through which healthcare organisations are **accountable** for **continuously improving the quality** of their services and **safeguarding high standards of care** by creating an **environment in which excellence** in clinical care will flourish." (Scally and Donaldson 1998, p.61)
- **The importance of culture, quality improvement, accountability, open communication and the use of appraisals and training**
  7 pillars
  Audit, Clinical effectiveness and Research, Risk Management, Education and Training, Patient and Public Involvement, Using Information and IT and Staffing and Staff Management.
  3 themes
- Patient safety
- Clinical effectiveness
- Patient experience

b) Use either the 7 pillars or the 3 themes to answer this part of the question (or another appropriate framework).
 i. Audit
- Assess standards of care against accepted, evidence-based standards for good clinical outcomes
- Engagement of all stakeholders throughout audit cycle
- Feedback results and ensure the audit loop is closed to improve outcomes
- Re-audit
ii. Clinical effectiveness / research
- Evidence-based approach (e.g. published quality standards, evidence reviews
- Identify gaps in knowledge
- Commission research where necessary
iii. Risk management
- Programme-based approach
- Accountability clear
- Identify and assess risks
- Develop risk framework

- Delegate responsibility
- Hold to account

iv. Education / training

- Ensure all staff are adequately qualified to deliver relevant care
- Culture of ongoing learning
- Link CPD to personal development, identified through annual appraisals process
- Culture of reflective learning
- Training logs
- Mandatory training programmes where necessary

v. Patient / public involvement

- Actively seek user feedback- e.g. hand held devices, routine post-care surveys, annual staff survey, annual patient survey
- Patient and public representation
- Listen to patient and public views
- Consider how to capture views of hard-to-reach groups (BME, disabled, homeless, mental health patients)
- Demonstrate that feedback has led to positive change

vi. IT and information

- Use of data to feedback on performance
- Identify variability and outliers in performance
- Annual reports
- Social media
- Texting pre and post appointments

vii. Staffing and staff management

- Appropriately trained and qualified staff
- Management appraisal system
- Professional appraisal and revalidation
- Policy for management of poor performance
- Health promotion initiatives for staff: e.g. walking and cycling, flu immunisations

OR 3 key themes:

Patient safety [maps to i), iii), vii)]
Clinical effectiveness [maps to ii), iv), vi), vii)]
Patient and public involvement [maps to v)]

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

- All 7 pillars of clinical governance listed in definition
- Cite authorship (Scally & Donaldson)
- Thorough approach to b) with a well organised, structured answer encompassing all aspects of framework.

Examiners' comments

This question was relatively well answered though few candidates produced excellent answers.

Several candidates used the approach set out in Nicholls et al. 2000. Clinical governance: its origins and its foundations. (And doubtless described elsewhere, too), that refers to five foundations and seven pillars.

Good answers:

- set out the model or theory clearly and related this explicitly to practical actions (in the second part of the question),
- considered various aspects of governance (usually in relation to a particular model), and
- considered the importance of systems and of organisation-wide approaches.

Most candidates provided an adequate definition of clinical governance. Very few mentioned patient safety explicitly but some used serious untoward incidents as a way to highlight this.

The importance of culture, quality improvement, accountability, open communication and the use of appraisals and training were generally discussed well .

Weaker answers involved no clear model, even implicitly, or focused on only one aspect of clinical governance such as audit, dealing with clinical errors, or the activities of individual clinicians or teams without considering the rest of the organisation.

Many candidates focussed on information governance rather than clinical governance.

Many correctly identified that there were 7 pillars but then proceeded to list them incorrectly

The choice of example to use in the second part of the question is important. Clinical governance in a large acute hospital is clearly different, in certain ways, from clinical governance in a GP practice and may give more scope to provide a full answer. Candidates should ensure that they choose an example that (a) they are sufficiently familiar with and that (b) allows them fully to discuss the different aspects of the model they are considering. Other settings used included commissioning organisations and mental health trusts. The setting is not important per se but it is important that candidates can answer the question well using whichever example they select.

Question 10

a) Using named examples, compare and contrast two different models of organising and funding health services at a population level.

(40% of marks)

b) For each model chosen, analyse the advantages and disadvantages to the health and wellbeing of the population.

(60% of marks)

KEY POINTS

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

A)
In high resource settings there are four main options for funding healthcare: central taxation, social insurance, local taxation and private medical insurance. Candidates would be expected to outline 2 of these.

*   **Central taxation**: (Beveridge model) providing a comprehensive range of healthcare services free at the point of use with universal access and no co-payments or user fees
*   **Social Insurance:** (Bismarck model) requiring employers and workers to contribute a fixed percentage of their salary into a hypothecated fund which would then be used exclusively to provide healthcare services for employees and their families
*   **Local taxation**: (Scandinavian model) a system much like our rates or council tax and gives much greater local accountability and responsiveness. Countries like Denmark still retain a significant amount of local funding and accountability.
*   **Private medical insurance**: (US Model) individuals buying insurance cover from commercial or not-for-profit companies with the level of premiums dependent on the health risk of the individual and the range of cover required. The United States is the best-known example of a system which relies heavily on individual private medical insurance cover with the inevitable adverse consequences for the indigent and those at greatest risk.

B)
Advantages and disadvantages - should include aspects considered below (note advantages and disadvantages could also be considered in terms of: price consciousness (value for money), social solidarity (cover for poorer members of society), consumer satisfaction, quality of care, clinical autonomy, conflicts of interest with the third party payer, responsiveness (matching supply with consumer expectation), affordability (based on Options for Health care funding, Civitas)

Central taxation:
Risk-pooling - Could be expected that even people with rare or expensive disease would receive treatment leading potentially to higher overall health
Accessibility -> Low barriers to accessing care -> likely that all with treatable need are seen possibly this could lead to higher overall health (depending on whether sufficient resource available to meet need).

Social insurance:
Risk-pooling (see above)

22

Often some barrier to access -> candidate may hypothecate impact or lack of

Local taxation:
Often some barrier to access -> candidate may hypothecate impact of this.who are
Low risk-pooling -> often fully local systems are unable to effectively treat people with expensive or very rare conditions – potential impact - lower overall health
Horizontal inequity -> local area choosing what and how to treat -> patients with same diseases get different or no care in different regions – possibly leads to lower overall health

Private medical insurance:
Information asymmetry -> tendency for overtreatment for financial gain for those with insurance or who are able to pay. This leads potentially to greater harm or level of treatment without incremental benefits
Low comprehensiveness -> those with low means unlikely to receive even cheap effective treatments for modifiable conditions. This leads potentially to lower overall health

(note advantages and disadvantages could also be considered in terms of:
price consciousness (value for money),
social solidarity (cover for poorer members of society),
consumer satisfaction,
quality of care,
clinical autonomy,
 conflicts of interest with the third party payer,
responsiveness (matching supply with consumer expectation),
affordability
(based on Options for Health care funding, Civitas)

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

- The inescapable truth is that, whichever system of healthcare funding is used, it will involve a trade off of basic principles. A good answer will cover some of these with how the systems try (succeeds or fails) to manage them or ignores them; an excellent answer will cover most. Answers should relate the effects of these factor to the impact on health and wellbeing
- Some discussion of health as a commodity verses its uniqueness
- concepts of **information asymmetry** prevalent in healthcare, whereby the doctor/supplier usually knows better than the patient/consumer what the consumer needs. Pricing and funding of healthcare therefore can't be left to basic market principles
- Healthcare is unique in the way it is likely to be needed most by those least able to pay and why the concept of **risk-pooling** must be a fundamental element of any government-sponsored system.
- **Equity** should encompass vertical equity whereby unequals are treated unequally and where contributions are related directly to the ability to pay. It should also encompass horizontal equity whereby equals are treated equally and those with equal means make an equal contribution.
- **moral hazard** applies whereby free services are more likely to be abused than those for which people have to pay something.
- Comprehensiveness, Efficiency, Transparency, Choice, Macro-efficiency, Political Acceptability, Stability of Funding
- No single system can hope to satisfy all these criteria and naturally the question of affordability overrides almost all other considerations

Examiners' key points

This question was relatively well answered though few candidates produced excellent answers.

The most common approach was to compare UK/England/Hong Kong model with USA, though other comparisons were made. (For example, comparing developing countries with no centrally organised system ie. non high resource settings; within Hong Kong taxation versus user payment; private health insurance versus NHS funded care)

Handwriting was poor for some candidates on question 10 suggesting candidates may not have left sufficient time to complete the question.

Good answers considered different consequences of the different systems (e.g. equity, moral hazard, justice, choice) and then related these abstract concepts clearly to concrete examples from the health care systems being compared. This would be in terms of advantages and disadvantages. They also dealt with examples of which the candidate had sufficient knowledge to provide an appropriate answer.

It was easy to identify key points in answers that set out two columns comparing the models and appeared to produce clear answers.

Weak answers missed out important elements (for example, did not discuss equity), did not answer the question fully, or misread the question. Some candidates referred to concepts such as moral hazard or equity but did not give any detail to indicate that they understood why these were relevant or did not relate them well to the operation of the systems being discussed. Most candidates failed to answer part b with reference to **health and well being**.

Not everyone showed a good understanding of the US system, in particular, with some candidates stating that it offered good value because it has lower administration costs than e.g. the NHS (this is not the case). It is worth noting that, in the US, public and private expenditure on healthcare are almost equal (candidates were not penalised if they focused on the private aspect of the US system).

Many candidates mentioned that rationing was part of the NHS system, which is true, but rationing is present in all healthcare systems, implicitly or explicitly - no system has access to the unlimited funds that a total absence of rationing would imply.

A minority of candidates compared three models when only two were asked for

Risk pooling was poorly covered by candidates

Some candidates misinterpreted the question as relating to financial allocation of commissioning budgets, comparing tariff based allocations to providers with historical allocations and some discussed deprivation weighting with respect to allocations. Where candidates had misinterpreted the question, they were still able to obtain some marks for section b if answered appropriately.

Paper IIA

You are working in a public health organisation. As a result of national concerns regarding increasing evidence of antibiotic resistance in primary care, the content of the following paper is brought to your attention:

Butler CC, Simpson SA, Dunstan F, Rollnick S, Cohen D, Gillespie D et al. Effectiveness of multifaceted educational programme to reduce antibiotic dispensing in primary care: practice based randomised controlled trial. BMJ 2012;344:d8173 doi: 10.1136/bmj.d8173 (Published 2 February 2012)

1.   Write a critical appraisal of the paper.

(40% of marks)

2.   In the context of the paper in the section headed 'Main analyses', what is meant by the term 'analysis of covariance'? What would be the effect on this analysis of not weighting the data using the logarithm of the list sizes?

(10% of marks)

3.   The Director of Microbiology at your local laboratory wishes to know if similar interventions could be carried out with primary care physicians working in your health area. Write a letter of response.

(30% of marks)

4.   A decision is made to develop a programme based on this paper with the aim of reducing the number of unnecessary antibiotic prescriptions being issued by primary care physicians in your health area. Whom would you invite to attend a working group to discuss this and what terms of reference would you suggest for discussion at the first meeting? Draft an agenda.

(20% of marks)

Key points

Q1 – Critically appraise the paper

Was there a clearly focused question?
The paper described an evaluation of the effectiveness and costs of a multifaceted flexible educational programme aimed at reducing antibiotic dispensing in primary care.

Was the type of study appropriate?
Randomised controlled trial with general practices as the unit of randomisation and analysis. Clinicians and researchers were blinded to group allocation until after randomisation.

Were the sources of information used appropriate?
Used existing sources of information and routine data e.g. Prescribing audit reports, hospital admission rates for primary and secondary outcomes. Costs for STAR training were established and based on unit costs. Antibiotic costs based on BNF.

Was the analysis appropriate?

Compared rates between the groups including pre and post intervention measures for primary outcomes and compared post intervention rates for secondary outcomes. Included confidence intervals.
Possible extra marks for explaining the reasons for statistical methods used.

Number of clinicians involved
Matched the number of practices and clinicians involved.
Participant flow diagram illustrates even distribution of both between intervention and control groups.

Presentation of results
Comparison of groups of practices by demographic characteristics
Description of the intervention – gives a measure of the resource-intensive nature of the intervention.
Reported rates of reduction in antibiotic dispensing and re-consultation rates with confidence intervals and probability values.
Show significant reduction in antibiotic dispensing in intervention group with no significant difference in re-consultation rates between groups.

Precision of results
Reported confidence intervals
Comment on how wide/overlap or not.

Were all outcomes considered? How applicable to candidate's area are the findings?
Not able to determine which clinicians responded most to the intervention. Not able to determine for which patients and diagnoses the greatest reductions were achieved. Only able to consider reductions in total oral antibiotics and not effect on inappropriate antibiotic prescribing. Do not know if hospital admissions increased in those who otherwise might have been prescribed antibiotics

Q2.   In the section of the paper headed Main analyses, what is meant by the term 'analysis of covariance'? What would be the effect of not weighting the data using the log of the list sizes?
Covariance is a measure of how much two variables change together and how strong the relationship is between them (between prescribing rates of practices in both groups before the intervention and after). An analysis of covariance evaluates whether population means of a dependant variable (the intervention practices prescribing rates following intervention) are equal across levels of an independent variable (the control practices prescribing rates following intervention) while statistically controlling for the effect of other variables that are not of primary interest (the practices prescribing rates prior to intervention), known as covariates. In this paper the authors were controlling for the effect of the covariates on the dependant variable and investigating whether there was a significant difference between the two groups in this relationship, which there was.
It would mean that the differences in size of the practice lists (unequal homogeneity of variance) would give rise to unequal standard deviations for those populations (within groups) and lead to an invalid result. Logarithmic transformation of list sizes will reduce the within group error variance.

Q3. Write a letter to local Director of Microbiology about findings/local application
Use of appropriate language for professional to professional correspondence. Thank them for their interest and acknowledge the extent of the problem of antibiotic resistance locally (extra marks for being able to give local 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 increasing importance of the problems arising from antibiotic resistance and the need to tackle this issue (although not necessarily in the same way as in the paper).
Give outline of how findings could be applied locally.
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 a local setting.
Suggest a pilot – to be considered at a working group.

Q4. Set up a working group to consider local implementation
Identify key players - Chair of group – DPH or PH consultant, local Director of Microbiology or deputy, primary care representative(s), community pharmacists' representative, information manager (others?)
Draft the agenda for the meeting outlining the issues for discussion.
Agenda:
Apologies for absence
Summary of paper
Terms of reference for the group:
> Statement of the problem
> What are the boundaries for discussion
> What issues need to be addressed
> What are the desired outcomes
> Who needs to be involved
> What is the time scale
> How often does the group need to meet

Information requirements – who will collect
Date of next meeting

Examiners' comments

Generally candidates performed well in this paper.

Candidates often wrote too much for Q1 (critical appraisal) and thus many seemed to run out of time for Q4 and rush the answers to this.

There was plenty of time if paced properly.

Candidates performed well if they used a structured approach- especially for critical appraisal.

Q2 (analysis of covariance): was uniformly poorly answered. It was expected that (for 10% of marks) candidates could comment on this although detailed knowledge was not expected.

Q3 (Letter to Microbiologist) Repetition of study without a critical approach did not score highly when marking the letter.

Q 4 (working group) was generally well answered, indicating that candidates had had sufficient practical experience of public health prior to sitting the exam.

When commenting on 'generalisability' candidates should think beyond their immediate borders.

The following would improve performance: Use of subheadings and structure, appraisal rather than summarising.

Paper IIB

Examiners' comments

The overall standard of responses was good but there were some areas of concern.

Candidates in general wrote far more than was necessary, often ignoring instructions such as "in three sentences…" This not only adds work for the examiner but also means the candidate is not allocating their time efficiently – answers to later questions were often too brief.

Candidates should read the questions carefully e.g "comment on" is not the same as "describe".