



## Specimen Paper IIA Questions – August 2020

### Example 1

**Setting:** A local politician with an interest in reducing the number of alcohol sales outlets in your area has read a summary of the paper below and asks your opinion on its content.

Dukes JW, Dewland TA, Vittinghoff E, Olgin JE, Pletcher MJ, Hahn JA, *et al.*

**Access to alcohol and heart disease among patients in hospital: observational cohort study using differences in alcohol sales laws.** BMJ 2016;353:i2714 <https://doi.org/10.1136/bmj.i2714>

*From the pdf version, redact the abstract, the boxes "what is already known on this topic" and "what this study adds" and everything after "strengths and limitations of study".*

- 1) Using a critical appraisal approach, write, in no more than 600 words, a brief summary of the key findings and a summary of the strengths and limitations of the attached journal article. (20 marks)
- 2) Some variables were compared using Kruskal-Wallis tests. Describe what this test is and why it was used? (5 marks)
- 3) Draft a written reply to your local politician. (15 marks)
- 4) The local media are interested in the local politician's campaign and a television presenter asks to interview you about the broader public health implications. Outline your key messages to the public. (10 marks)

## KEY POINTS AND MARK SCHEME

### Question 1. 20 marks

Ecological design which compares alcohol consumption at the population level with indicators of national cardiovascular disease.

Study Findings: up to 3 marks (1 mark for each of the key points below clearly described)

- Residents of wet counties had a greater prevalence and incidence of alcohol misuse and alcoholic liver disease than did those in dry counties.
- Conversion of counties from dry to wet resulted in statistically significantly higher rates of alcohol misuse, alcoholic liver disease, atrial fibrillation, and congestive heart failure, with no detectable difference in myocardial infarction.
- Greater access to alcohol was associated with more atrial fibrillation and less myocardial infarction and congestive heart failure, although an increased risk of congestive heart failure was seen shortly after alcohol sales were liberalised.

Strengths: up to 8 marks (1 for each key point clearly described, either one of the 7 listed below or any other additional valid points)

- Ecological design helps ensure the effect of ex-drinkers is largely mitigated as national level of alcohol consumption unlikely to be much influenced by this group of abstainers.
- Predictor (access to alcohol) did not rely on physicians' coding and differences in alcohol misuse and alcoholic liver disease validated study assumptions.
- Most of the results persisted after both multivariable adjustment and propensity analyses, as well as in the robust change analyses within the same counties.
- Discordant findings between the atrial fibrillation and the myocardial infarction and congestive heart failure results strongly suggest that no systematic difference in referral patterns for hospital admission existed.
- Unlikely that differences in socioeconomic status could explain discordant results on the relation between alcohol and atrial fibrillation compared with the myocardial infarction and congestive heart failure outcomes.
- Unlikely that access to hospitals explained the discordant results (as more access in general would be expected to be associated with more of each diagnosis rather than more of some and less of others).
- The number of hospital beds in a particular county should not influence the within county analyses.

Limitations: up to 9 marks (1 for each key point clearly described, either one of the 9 listed below or any other additional valid points)

- Ecological analyses cannot link individual exposure with outcome therefore not possible to tie individual consumption to any outcome.

- As alcohol laws in the state of Texas limit only the sale of alcohol in a municipality and not its transport or consumption, misclassification of the exposure in the form of alcohol consumption in dry counties is possible.
- Inability to validate assessment of alcohol intake, or prevalence of abuse of other substances.
- Referral patterns for hospital admission between counties may have differed (such as having a lower threshold to admit to hospital for cardiovascular disease).
- Possible difference in access to health care and hospitals with the ability to care for cardiac patients.
- Not able to validate physicians' coding of individual patients as all data was deidentified.
- Failed to capture out of hospital fatal myocardial infarctions and episodes of atrial fibrillation and congestive heart failure treated in emergency departments or outpatient clinics.
- Residual confounding; potentially important covariates such as individual alcohol exposure, county level per capita alcohol use, dietary habits, physical activity, disease severity and differences in socioeconomic status (affecting insurance status) were not available in this dataset.
- Time series analyses are susceptible to concurrent secular trends and were much smaller with limited follow up.

**Question 2. 5 marks**

It is a non-parametric test (1 mark). It is a rank-based test (1 mark). It is used to test whether two or more (1 mark) independent (1 mark) groups differ. It is the nonparametric version of one-way independent ANOVA (1 mark).

**Question 3. 15 marks**

One or two marks up to the maximum marks are allocated for each of the following key points or other additional valid points

- Use of appropriate language to informed layperson avoiding patronising style. (1 mark)
- Thank them for their interest in the public health aspects of this issue. (1 mark)
- Acknowledge the extent of the problem of excessive alcohol intake in the UK (1 mark), and specifically in your local population (1 mark) (additional mark for giving relevant local information).
- Demonstrate an understanding of the increasing importance of the problems arising from excessive alcohol intake and the need to tackle this issue, in adolescents as well as in adults. (2 marks)
- Give brief summary of findings, highlighting the key points, results and any key limitations from the paper. (2 marks)
- Give an outline of how findings could be used to help prevent further increase in the number of outlets, support a reduction in those already in existence and used to lobby central government to introduce a policy of minimal pricing per unit. (2 marks)

- Point out the health benefits to the wider (non/light drinking) population through a reduction of violent behaviour, including RTAs, as well as creating a generally safer environment and, a reduction in the health care opportunity costs arising from the treatment of disease due to excess consumption of alcohol. (2 marks)
- Next steps- meet and/or offer to convene a short life working group. (1 mark)

Consider extra mark for one of following points in addition to above:

- Be pragmatic about how this might be implemented – do not raise unrealistic expectations. Recognise what can practically be delivered in a local setting.
- Possible research to evaluate local implementation

#### **Question 4. 10 marks**

- Style: three (maximum four) succinct, brief and distinct points. (1 mark)

Further marks (up to the maximum marks) allocated for each of the following key points or other additional valid points

- Easy availability of alcohol is likely to promote excessive intake. Particularly important in young people as it establishes the habit early in life. (2 marks)
- Although moderate (define) intake has been associated with reduced coronary heart disease, excess can result in liver/cardiovascular/carcinoma (of pancreas/alimentary tract) disease, problems of addiction, antisocial behaviour and trauma and, their effects on the local community. (4 marks)
- Abstinence/light intake associated with better mental health and sleep patterns and tremendous cost savings to both health and social services. (2 marks)
- Minimum unit pricing of alcohol has been recommended by various bodies advocating for its introduction but there has been considerable push back from the industry. (1 mark)

Those who need more information on how to cut down on alcohol or its ill effects, support can be found at, for example, XXXXX (tel number)...www (weblink)...leaflet? (1 mark)



## Example 2

**Setting:** A local politician in your health district asks if more use could be made of genetic testing to tailor life style interventions towards improving people's health. You read the following paper as part of your review of the subject:

Hollands GJ, French DP, Griffin SJ, Prevost AT, Sutton, S, King S, Marteau TM.  
**The impact of communicating genetic risks of disease on risk-reducing health behaviour: systematic review with meta-analysis.** *BMJ* 2016;352:i1102 <https://doi.org/10.1136/bmj.i1102>

*From the pdf version, redact the abstract, the boxes "what is already known on this topic" and "what this study adds" and all text after "strengths and weaknesses of this review".*

- 1) Using a critical appraisal approach, write, in no more than 600 words, a summary of the key findings and interpretation of the attached journal article, focusing on its strengths and limitations. (20 marks)
- 2)
  - a) The paper makes use of forest plots. What are these? (3 marks)
  - b) What does the  $I^2$  statistic measure and in what way does it quantify the degree of heterogeneity? (2 marks)
- 3) Draft a letter of response about this issue to the local politician. (15 marks)
- 4) The politician's interest in this topic has resulted in local media interest and a reporter asks for your opinion on the value of genetic testing. What key messages would you wish to impart to the general public? (10 marks)

## KEY POINTS AND MARK SCHEME

### Question 1. 20 marks

Findings: up to 7 marks (allocation of marks as described below. Marks will also be awarded for additional relevant and valid points)

- Meta-analysis revealed no significant effects of communicating DNA based risk estimates on smoking cessation (1/2), diet (1/2), or physical activity (1/2).
- There were also no effects on any other behaviours {alcohol use (1/2), medication use (1/2), sun protection behaviours (1/2), and attendance at screening or behavioural support programmes (1)} or on motivation to change behaviour (1), and no adverse effects, such as depression and anxiety (1)
- Subgroup analyses provided no clear evidence that communication of a risk-conferring genotype affected behaviour more than communication of the absence of such a genotype (1).

Strengths and Limitations allocated up to 13 marks. The suggested balance between the two is indicated below, however this can be amended where additional relevant and valid points are raised.

Strengths (additional relevant and valid points will also be awarded marks)

- Review used rigorous Cochrane methods to minimise the risk of bias (1), including quantitative synthesis using meta-analysis (1/2) and systematic assessment of risk of bias of included studies (1/2) and of quality of the evidence by outcome (1).
- Study identified a substantive body of randomised studies able to inform its specified aims (1).

Limitations/weaknesses (additional relevant and valid points will also be awarded marks)

- Several studies were limited in their ability to address the review objective with relative imprecision of the effect estimates, often being underpowered to detect plausible small effects of risk information on behaviour (1).
- Many of the studies had control groups of low relevance because their content differed from the intervention group in more than only the absence of DNA based information on disease risk (1).
- Few included studies were determined to be at low risk of bias (1) in that the failure or inability to use valid measures of behaviour may have introduced error and bias (1).
- Some studies typically used self-report measures even when viable objective measures were available (for example, in relation to smoking cessation) (1).
- Participants and providers are not blinded to the intervention (1) and while it is important that outcome assessors are blinded, this was rarely the case (at least as reported) (1), and, where self-report measures are used, this is not possible.

- The potential for selective outcome reporting was also notable (1), with few instances of trial registration or published protocols (1).

### Question 2. 5 marks

A forest plot is a graphical display of estimated results (1/2) from a number of studies (1/2) addressing the same question (1/2), along with the overall results (1/2). It is a means of graphically representing a meta-analysis of the results of randomised control trials (1/2) or data from observational studies (1/2).

The  $I^2$  statistic measures the heterogeneity of variance (1/2) by indicating the extent to which the difference of one variable varies across different levels of another variable (1/2).

An  $I^2$  value of 50% indicates moderate heterogeneity, and values less than 50% indicate less heterogeneity (1/2). Values over 50% may suggest that meta-analysis is not appropriate, and/or reasons for that statistical heterogeneity should be explored (1/2).

### Question 3. 15 marks

Marks allocated for each of the following key points, or other additional valid points, up to the maximum mark

- Use of appropriate language to an informed layperson avoiding patronising style (1/2).
- Thank them for their interest in the public health aspects of this issue (1/2).
- Give brief summary of findings, highlighting the key points, results and any key limitations from the paper (1).
- Point out that genetic testing for a gene associated with susceptibility to develop a disease is, in effect, a form of screening (1). It is important that the result of any screening test, whether to detect pre-symptomatic disease or susceptibility to develop that disease, is reliable, valid and measures what it is supposed to measure (1). Traditional screening has always aimed to achieve such a result and this is one of the big problems associated with genetic testing (1).
- Even if the genetic test has perfect sensitivity and specificity in terms of detection of the gene of interest, to what extent that gene will be responsible for subsequent illness may vary tremendously on the aetiology of the illness in question (1). Also, other genes may interact with and modify the effect of the allele and subsequent phenotype expression (1).
- Most diseases have a multi-factorial aetiology and any genetic component may only play a small part in its development (1/2), e.g. type 2 diabetes (or other relevant example, 1/2).
- A positive test need not mean that the disease will subsequently develop (1). Nor should counselling on its prevention only be required by those testing positive as a large part of the population is also at risk of type 2 diabetes, irrespective of the outcome of any genetic testing (1). Testing negative may result in complacency regarding lifestyle factors and an

increased likelihood of the disease developing (1). All should be offered appropriate advice on diet and exercise (1).

- Example of benefit of genetic testing (the following example is illustrative, other appropriate examples will gain marks) – In view of the potential poor outcomes from breast cancer, there may be merit in determining genetic susceptibility. For example, should a woman have a family history of breast cancer, genetic testing for the presence of the BRCA alleles would enable that woman, should either allele be present, to discuss prophylactic measures, including possible mastectomy, to avoid the disease (1). However, even if she was to test negative, she may still be at increased risk (1).
- Perhaps in the first instance education of the public is needed regarding the limitations of genetic testing (1/2) and education is particularly needed for their health care providers, these being the professionals the public are likely to approach for what they assume will be informed advice (1/2).

#### **Question 4. 10 marks**

Marks allocated for each of the following key points, or other additional valid points, up to the maximum mark

- Recent research (1/2) suggests that having personal genetic knowledge (1) of susceptibility to particular disease does not necessarily result in risk reducing behaviour change (1).
- A few diseases (1/2) (e.g. cystic fibrosis) may depend on a single mutation in a particular gene (1/2), but most disease states (1/2) are multi factorial in their aetiology (1/2) i.e. are dependent on the presence, or otherwise (1/2), of several factors (1/2), including complex genetic interactions (1/2).
- The absence of any adverse genetic factors does not necessarily result in subsequent absence of disease (1) as environmental factors may play an important role (1) requiring behavioural modification to reduce risk (1).
- A fundamental public health message still applies and may be briefly summarised in the words "Move more, eat less!"(1) – other appropriate examples will also receive marks.



## Example 3

**Setting:** You are a senior member of the public health team and are responsible for the delivery of screening programmes in your local area; questions have been raised about the long term effectiveness of the bowel cancer screening programme.

In your area men and women over 60 are offered a guaiac Faecal occult blood test every other year, but you are aware that in other areas a one-off flexible sigmoidoscopy is also offered at age 55. Questions are now being asked as to whether a single flexible sigmoidoscopy test should be introduced in your area.

Atkin W, Wooldrage K, Parkin DM, Kralj-Hans I, MacRae E, Shah U, Cross, AJ. **Long term effects of once-only flexible sigmoidoscopy screening after 17 years of follow-up: the UK Flexible Sigmoidoscopy Screening randomised controlled trial.** *Lancet* 2017; 389: 1299–311  
[http://dx.doi.org/10.1016/S0140-6736\(17\)30396-3](http://dx.doi.org/10.1016/S0140-6736(17)30396-3)

*From the pdf version, redact the abstract, the box "Research in Context" and everything from the beginning of the "Discussion" section.*

- 1) Critically appraise this paper and summarise, in no more than 600 words,
  - a) the strengths and limitations of the study, including of the intervention tested. (14 marks)
  - b) the key findings and implications for public health practice (6 marks)
- 2) What are survival curves? Explain how they are relevant and how they have been used in this study? (10 marks)
- 3) A lay member of your screening programme's steering group expresses concerns about the study results, where they show an increase in diagnosed cancer cases at the beginning of the screening programme; what accounts for this finding and how would you explain this to them? (5 marks)
- 4) How would you ensure that the roll out of a similar screening programme does not increase inequalities in your local population? (15 marks)

## KEY POINTS AND MARK SCHEME

### Question 1. 20 marks

Strengths: up to 10 marks available (allocated as described for the key points below. Additional marks for any other valid points raised)

- The UKFSST is the largest trial examining the effect of a single flexible sigmoidoscopy in reducing colorectal cancer incidence and mortality rates (n=170 432) [1 mark]
- The trial has a sufficient sample size to examine the effect of flexible sigmoidoscopy screening in men and women separately. [1 mark]
- Long follow-up period of an average of 17 years and provides an opportunity to look at efficacy of the test into participants' older age. [1 mark]
- Use of national datasets for ascertainment of cancers, mortality, and participation in the BCSP resulted in very little loss to follow-up. [1 mark]
- The provision of BCSP data allowed investigation of contamination with gFOBT screening and to examine the effect of participation in the gFOBT programme on outcomes in the trial. [2 marks]
- Flexible sigmoidoscopy is highly sensitive for small lesions and so neoplasia is detectable at a very early stage. [1 marks]
- Most lesions can be removed at the time of screening, so the screening in most cases is both diagnostic and therapeutic. [2 marks]
- Provides crucial data to help inform health economic models commissioned by the UK National Screening Committee [1 mark]

Limitations: up to 4 marks available (allocated as described for the key points below. Additional marks for any other valid points raised)

- Flexible sigmoidoscopy is an expensive and invasive test. [1 mark]
- The cohort was selected based on their interest in attending screening therefore the uptake rate was higher than would be expected in a population-based programme. [1 mark]
- The extended findings of the UKFSST do not provide a definitive answer as to how (and whether) to combine flexible sigmoidoscopy with stool testing, starting and stopping ages, and testing intervals. [2 marks]

Key finding and implications for public health practice: up to 6 marks available (allocated as described for the key points below. Additional marks for any other valid points raised)

- In intention-to-treat analyses, colorectal cancer incidence was reduced by 26% (HR 0.74 [95% CI 0.70–0.80];  $p < 0.0001$ ) in the intervention group versus the control group. [1 mark]
- Colorectal cancer mortality was reduced by 30% (0.70 [0.62–0.79];  $p < 0.0001$ ) in the intervention group versus the control group. [1 mark]
- However, note absence of a significant effect on proximal colorectal cancer in the UKFSST. [1 mark]
- As a result of the continuing effectiveness of the test into older age, estimates of the number of people who need to be screened to prevent

one colorectal cancer diagnosis have halved, from almost 200 (after 11 years of follow-up), to less than 100 (after 17 years of follow-up). [2 marks]

- Introduction of a single flexible sigmoidoscopy as a form of bowel cancer screening can provide substantial protection from colorectal cancer diagnosis and death, with protection lasting at least 17 years. [1 mark]

However, there is no clear answer as to whether this should be added to the current gFOBT programme, or replace it entirely. [1 mark] [note do not allocate second mark if already given marks for mentioning this as a limitation]

### **Question 2. (10 marks)**

Marks allocated to the following key points up to a maximum 10 marks (marks also given for additional valid points not listed).

- Survival curves plot the time to an event (such as dying) in a group of participants over the course of a defined period of time (e.g. one year). Survival curves therefore show the proportion of the group surviving to any point in time. [2 marks]
- Survival curves may be generated by Kaplan Meier methods. These plots allow for censoring. [1 mark]
- Censoring occurs where participants are removed from follow-up at the time that they withdraw from a study and therefore they no longer contribute to the population 'surviving'. These participants nevertheless do contribute survival information for the period that they are followed up. [1 mark]
- Steps in the survival curves included in this study either indicate deaths (where mortality is being plotted) or incident cancers occurring (where cancer is being plotted). In the figures shown, these steps appear smooth due to the large numbers of participants, in smaller studies, visible 'steps' can be seen in survival curves where deaths (or whatever event is being measured) occur. [1 mark]
- Survival curves may be plotted for one or more groups (typically two or more). In this study two lines are shown in some graphs (intervention vs control), or three lines are shown in certain figures – control, screened, not screened). [1 mark]
- Curves that overlap demonstrate no survival advantage for either group, curves that diverge may suggest a survival advantage/disadvantage for one or other group. [1 mark]
- The statistical significance of any observed differences can be assessed by a logrank test, the Mantel-Haenszel  $\chi^2$  test of differences between corresponding points on the survival curves, or most commonly by assessing the Hazard ratio (used in this study), which is interpretable as a

risk ratio with confidence intervals that do not cross 1, representing a statistically significantly raised or lowered risk. [2 marks]

- The Cox proportional hazard calculation does involve certain assumptions including that the hazard ratio is proportional between groups over the course of follow-up. [1 mark]
- Hazard is essentially calculated as the risk of death (or an event) occurring in an infinitesimally short period of time, the ratio of hazards is comparing this risk between two groups. [1 mark]
- The statistical analysis of Hazard ratios is a form of regression which allows confounding variables, or stratification variables etc. to be included in the statistical model. In this case models were adjusted for 'non-compliance'. [1 mark]
- Kaplan-Meier methods are non-parametric methods, whilst Hazard ratios are sometimes referred to a semi-parametric methods [1 mark]

### **Question 3. (5 marks)**

The rise in cases at the beginning of the screening programme included prevalent screen-detected cancers [1 mark]

These cancers were already present and could not be prevented by screening [1 mark]

In the absence of screening programme, these cancers may have remained undetected until giving rise to symptoms of disease. By detecting these cancers early, these patients may have prolonged survival through earlier (and more effective) treatment. [2 marks]

The protective effect of flexible sigmoidoscopy screening on cumulative incidence rates in this study only became apparent after 5 years. [1 mark]

### **Question 4. (15 marks)**

Consider the following aspects of the screening programme. Marks should be broadly allocated according to the following scheme, however additional valid points should also receive credit.

- Invitation to attend screening [3 marks]
  - Personalised letter of invitation to the person due to be screened stating why, where, when and brief but understandable description of the process.
  - Consider issues re literacy, population for whom English is not first language.
- Accessibility of screening [2 marks]
  - Ensure screening venue is accessible in time (including outside of "normal" working hours) and place (e.g. at local GP surgery, clinic/mobile clinic, community hospital).
- Awareness raising across the whole population. [5 marks]
  - Advertise the health gains from the screening procedure and both where and when this can take place

- Use wide range of methods to share information / raise awareness including advertising (in local 'freebies', on the back of buses, on bus shelters, street advertising) information available in range of settings (libraries, GP/dental surgeries, public toilets)
  - Use local intelligence to ensure good coverage, particularly in socially disadvantaged areas
- Provide detailed information about purpose and impact of screening. [3 marks]
    - Ask local TV if they will run a news feature on the impact on health of the condition to be screened and how screening can enable resulting ill health to be avoided.
    - Consider tie in with a 'human interest' story of how some local celebrity / public figure avoided illness through being screened and its pre-symptomatic stage being discovered 'just in time'
  - Monitor screening uptake by sex, ethnicity and social class to identify if your new screening programme is differentially accessed by different groups of your population. If you are able to monitor by specific geography/GP surgery, that may also indicate areas where information campaigns should be focussed. [2 marks]



## Example 4

**Setting:** You are the lead for mental health services in a public health team. Your local mental health provider is reviewing the way in which psychological services are delivered and ask for your advice about evaluation and service development.

Clark DM, Canvin L, Green J, Layard R, Pilling S, Janecka M. **Transparency about the outcomes of mental health services (IATP approach): an analysis of public data.** *Lancet* 2018;391:679–86  
[http://dx.doi.org/10.1016/S0140-6736\(17\)32133-5](http://dx.doi.org/10.1016/S0140-6736(17)32133-5)

*From the pdf version, redact the Summary section, the box "Research in context" and the Discussion section*

- 1) Critically appraise this paper and summarise, in no more than 600 words:
  - a) the strengths and limitations of the paper (8 marks)
  - b) its key findings and implications for public health practice (12 marks)
  
- 2) Beta regression, which is used in the study, is a variant of logistic regression. What is logistic regression and when should it be used? (5 marks)
  
- 3) You are asked to establish a working group to evaluate the current services that provide psychological therapies in your local area.
  - a) Who would you invite to be on the group? (3 marks)
  - b) What specific tasks would the group undertake? (4 marks)
  - c) What would be the outputs from the group? (3 marks)
  - d) What would be the challenges of undertaking this work? (5 marks)
  
- 4) Following the publication of this paper, your organisation receives a media enquiry about access to services providing psychological therapies in your local area. Write a press release outlining your response (including messages you would like to give the public) (10 marks)

## KEY POINTS AND MARK SCHEME

### Question 1. 20 marks

Strengths and limitations: up to 8 marks. Allocation of 1 or 2 marks for the suggested key points described below, however marks will also be awarded for additional relevant and valid points up to the maximum.

- IAPT service delivers psychological therapies recommended by NICE for depression and anxiety disorders to more than 537,000 patients in the UK each year providing a large source of data.
- Novel methodology enables determination of measures of clinical outcome.
- Session-by-session outcome monitoring system ensures that IAPT obtains symptom scores before and after treatment for 98% of patients.
- As patient-level data were not available, not able to simultaneously estimate the effects on outcome of both patient-level variables and service organisation factors.
- Outcome assessment restricted to patient self-report.
- The analyses illustrating the potential gains achievable in the worst-performing CCGs by bringing their organisational characteristics to the level shown by the best-performing ones are based on assumption.

Key findings and implications for public health practice: up to 12 marks. Allocation of 1 or 2 marks for the suggested key points described below, however marks will also be awarded for additional relevant and valid points up to the maximum.

- The way psychological therapy services are implemented could be as important as treatment methods in improving mental health care. (1)
- The large amount of variation between services (table 1) identifies the scope for improvement across services (2)
- Service outcomes can be reported, along with contextual information, on public websites and data used to identify predictors of variability in clinical performance. (2)
- Percentage of cases with a problem descriptor, number of treatment sessions, and percentage of referrals treated were positively associated with outcome. (1)
- The time waited to start treatment and percentage of appointments missed were negatively associated with outcome. (1)
- Social disadvantage was negatively associated with some outcomes, but the effect was partly mitigated by organisational factors and demonstrates the areas for greatest improvement. (2)
- Mental health services elsewhere in the UK and in other countries might benefit from adopting IAPT's approach to recording and publicly reporting clinical outcomes. (1)

- Effects of social deprivation on outcome may be mitigated by ensuring that IAPT services in socially deprived areas are of high quality and adequately funded. (2)

### **Question 2. 5 marks**

What is logistic regression and when should it be used:

Logistic regression is used to model the likelihood of an event occurring – it describes the probabilistic relationship between a binary outcome/dependent variable and one or more independent/predictor variables, which may be nominal, ordinal or continuous (interval or ratio). Logistic regression estimates the natural log of the odds of an event (logit) (3 marks)

The dependent variable should be dichotomous in nature. There should be no outliers in the data and the predictors should be independent of each other (i.e. no multicollinearity). (2 marks)

### **Question 3. 15 marks**

Section a) 3 marks – ½ mark each for up to 6 suggested members from the list below and any other suggestions with an appropriate and sensible rationale:

- DPH or Mental Health lead in public health team (chair)
- Commissioner of service
- Representative(s) of service provider(s)
- Clinician involved in service provision
- Service user(s)
- Information analyst
- Communications lead
- Local Healthwatch (or equivalent organisation) representative

Note: in devolved UK administrations, there is no commissioner/provider split

Note 2: in Hong Kong and many other settings there may be mix of public/private service providers and there will be no service commissioner. Public service providers may include Department of Health, Hospital Authority or Social Services Department. Non-governmental/charitable organisations are also likely to play a role in service provision. Stakeholders from outside the health sector are likely to include academics, lay community reps, NGOs and other Government Departments, e.g. Education or Social Services Dept.

Section b) 4 marks – 1 mark each for up to 4 from list suggested tasks from the list below and any other suggestions with an appropriate and sensible rationale:

- Establish aim, objectives, time frame
- Ensure distribution of Lancet paper to working group prior to meeting
- Obtain outcome data for local area from NHS Digital and PH England (other countries consider other sources of such data) for a particular year

- Obtain local social deprivation score to help plan level of service provision
- Look to see if predictors (service organisation features) change in the course of a year and if any changes are associated with a change in outcomes
- Use this information to inform future service agreements

(Other countries could use the paper to plan similar data collection within their own locality).

Section c) 3 marks – 1 mark each for up to 3 outputs from the list below and any other suggestions with an appropriate and sensible rationale:

Short term outputs

- Provision of relevant data in an understandable format for the locality.
- Briefings – professional and public

Long term outputs

- Improvement in service outcomes – or evaluation of service outcomes
- Reduction in days patients attending IAPTs absent from employment following treatment

Section d) 5 marks – 1 or 2 marks each for up to 5 challenges from the list below and any other suggestions with an appropriate and sensible rationale:

- Constraints on time available to staff in all areas to undertake a new item of work
- Availability of analytical skills required
- Availability of information sources in other countries (such candidates to describe what is and what is not available)
- The contracts of service providers may still have some time to run before any change can take place

#### **Question 4. 10 marks**

Marks allocated for each of the following key points in the following broad sections, but other additional valid points should also receive marks while maintaining the balance between the structure of the press release, addressing the key issues, and providing messages for the public.

Structure of the press release (2 marks)

- Well-structured with overview of service
- Includes messages for public
- Appropriate language

- IAPT services, or other relevant services providing psychological therapies locally, (brief description of what they are) offer alternative treatment model to pharmacology
- Could mention how austerity / social deprivation may contribute to increase in demand for psychiatric care

Addresses issues of access to service and use of key findings from paper in response and what the team are doing (6 marks)

- Publicly available information would indicate their effectiveness when implemented as indicated in recent Lancet paper.
- Local team has been set up to examine local service provision and outcomes, with a view to improving access/modifying provision should this be necessary

Well-being messages for public (2 marks)

- Appropriate general mental health promotion messages
- Information on self-help and range of services
- Signposting and details of local services