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Feedback on performance on the critical appraisal paper
Autumn 2010
This feedback is meant to support candidates in preparing for the next exam, the College reserve the right to make comments on the performance of candidates in general and will not accept appeals against the result of the exam or content of this paper.

In general the main issues were ones of attention to detail, words chosen and used. Candidates who might have got away with inaccurate answers in a viva as the examiner could follow up with further questions – were not able to clarify what they meant. Candidates must pay attention to what they are writing and be accurate about the statements they make- reading the question carefully

Paper:
Prospective validation of the paediatric appendicitis score in a Canadian pediatric emergency department

Question 1
Provide no more than 200 word summary of this paper in the box. Only the first 200 words will be considered and short bullet points are acceptable. Maximum 7 marks

- Many candidates did not appear to read the title – ie validation , and therefore to use it in the summary
- Many candidates did not use all 200 words
- Candidates spent time counting their words – this is not useful, at standard size writing – the 200 words will fit on one side of paper
- Candidates did not state obvious aspects – ie prospective diagnostic observational study
- Candidates commonly did not appear to realise it was a diagnostic study – and many tried to apply a therapeutic appraisal framework including outcomes and intention to treat.

- Candidates did not appear to realise that any validation of a diagnostic test will need a gold or reference standard – and most commonly referred to this as an "primary outcome" . simply mentioning the word standard or reference would have gained marks
- A summary needs to summarise so that the summary stands alone – candidates failed to say what the cut off was – just referring to another paper (Samuel) so that the summary did not stand alone
- There is no need, in the summary of the paper, to summarise the background to the paper
- There needs to be, in the summary, actual results – numbers with some headline statistics
- Don't have to put headings into the summary but if you do – don't put results into the conclusion.
- Use the conclusions the authors use –they will have stated them somewhere – this is an easy mark to pick up – don't make up your own conclusions
- The summary should not include your opinion of the paper – the authors will not have written their own critique in the abstract!
- The easiest way to get marks is to learn the headings for the appraisal of a diagnostic and therapeutic paper – then write them down first in the exam and fill in the blanks. (see College website for detail)

Question 2
The primary objective of this study was to determine the diagnostic properties of the pediatric appendicitis score cut-point of 6 for diagnosing appendicitis

List four strengths of the study DESIGN in this paper

- Candidates did not list strengths of the design but of the paper in general
- Many candidates wrote a series of "buzz words" but in no relevant order or failed to explain what they meant. eg "pragmatic so generalisable" does not demonstrate understanding of the fact that the study was done with normal staff, using normal processes and nothing unusual required.
- In a study such as this, it is a given that there will be ethics and consent as well as data analysis such as a ROC curve. Don't state routine aspects as strengths.
- Many candidates wrote correct statements – but they were not relevant to the answers.
- Some candidates did not pay attention to detail – some stated thar measuring intra-observer reliability does not decrease the error –this is incorrect, it just describes /quantifies it.
- Candidates put results in as strengths of design – ie no loss to follow up. A more suitable answer would be –" it was designed that all patients who were not operated on would have a telephone follow up to ensure no missed diagnoses"
- Candidates simply stated the stats used (sensitivity and specificity) rather than indicating how the authors set out to analyse the data in a particular way (ie designed the study) so that they could identify the reliability of the score in diagnosing appendicitis. Explanation of why

elements of the design including choice of stats enhances the study is needed for this question
- The fact that the issue being investigated by the study is clinically relevant is not a strength of the design of the study

Question 3
The paper does not mention whether those ascertaining the outcome diagnosis ('appendicitis' or 'no appendicitis') were blinded to the Pediatric Appendicitis Score.

(a) **Explain why a lack of such blinding may introduce possible bias into the results. (2 marks).**

- Blinding is an essential part of all research and you must be able to discuss who might be blinded (all assessors, reviewers and those doing follow up)
- You should also be able to articulate the impact of lack of blinding – both in a subjective assessment and where the measurement is more objective eg automated outcome, alive/dead.
- Some candidates believed that pathology reports could not be influenced by prior case knowledge and/or the knowledge of the PAS components.
- Candidates often failed to recognise that bias may work in both directions. It was common to read answers suggesting that bias could only over-diagnose appendicitis.
- Candidates failed to recognise all components of the gold standard in this study.
- There were specific types of bias appropriate to this paper that candidates should be aware of. Ie selection, sampling or attrition bias

Questions 4, 5,6 and 7
These questions dealt with the following statistics:
- Specificity and Sensitivity in ruling in and ruling out (SPIN and SNOUT). Candidates should understand the difference between sensitivity and specificity and be able to relate this to the performance of a test in clinical practice.
- Positive predictive value as a way of expressing probability. Candidates should understand what a PPV or NPV means for a given population and for the result from an individual patient.
- ROC curves – Candidates should be able to articulate their understanding of ROC curves. They should be able to differentiate test performance using a ROC curve. They should be familiar with the concept of area under the curve analysis using ROC curves.
- Interpreting confidence intervals. Candidates should be able to give a concise explanation of the meaning and usefulness of confidence intervals. Candidates should be able to demonstrate how confidence intervals may influence their thinking about the precision of a result.

- Candidates should understand the principles of the Kappa statistic and its magnitude, and general features of the analysis of inter-observer reliability

This list, _whilst not an exclusive list_, represent typical stats that FCEM candidates might expect for a diagnostics paper.

Question 8
Give four reasons why you would not adopt this test in your emergency department
- Candidates stated that the test used different practice to current – that is not an acceptable reason for not adopting the test
- Candidates stated it was too expensive – there was no evidence of cost assessment so could not be stated
- Have to fully explain the statements made – cannot just say – not specific enough – you have to explain why that matters
- This question effectively asks the candidate to list the weaknesses/limitations of the study and its validity, applicability and importance to EM in UK.
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