Royal College of Anaesthetists

Report on the Pilot Constructed Response Question Papers

January & July 2018

This report has been compiled by the Chair and Vice Chair of the Final FRCA exam to provide information for candidates and trainers as to why constructed response questions (CRQs) have been introduced, and how these particular questions have performed in the 2 pilot papers. The pilots were undertaken in January and July of this year at the RCoA Final FRCA revision course and our thanks go to the candidates who assisted us by submitting to yet another mock exam. There is a section at the end of this report with comments about the individual questions from the papers which we hope you will find useful.

In line with the recommendations of the 2015 exam review, and as approved by the GMC, CRQs will replace short answer questions (SAQs) as from September 2019. The first paper will be a hybrid with 6 CRQs and 6 SAQs, but papers from March 2020 onwards will consist entirely of CRQs. The paper will continue to examine a candidate's knowledge of the basic and intermediate sections of the training curriculum as specified by the Royal College of Anaesthetists.

As is the case at present, the paper will contain 1 question from each of the 6 mandatory units of training, and 6 from general duties which may include a maximum of 1 question from the optional units of training. Advanced sciences and professionalism in medicine may be included in any of the questions. In the September 2019 hybrid paper there will be no set rule as to which will be SAQs and which CRQs. The CRQs will be graded as easy, moderate or hard as is the case with the current SAQs – this decision being based on the analysis of the questions by the SAQ/CRQ core group. The questions will continue to be marked out of 20 and the paper will have a duration of 3 hours (15 minutes per question).

CRQ Development

CRQs have been introduced following the recommendation in the 2015 FRCA exam review, in order to allow this part of the written exam to evolve into an assessment not only of knowledge and understanding but also of application of knowledge and possibly evaluation and judgement.

CRQs will have more subsections than SAQs and may also include data and other artefacts. All CRQs will be mapped to a specific subsection of the basic or intermediate

curriculum. The answer template for examiners will give a strict indication of what is required for a correct answer, and what to accept or not accept.

The CRQs will eventually be written by the members of the SAQ/CRQ core group, but the three CRQ writing days that have already been held have involved all examiners. This has led to the development of a number of CRQs which are now in the database and include the 6 questions used in this pilot, although these will not be used again. Questions will be continually developed and revised to ensure that they are in line with current national practice, or recommendations from national bodies where appropriate.

The level of difficulty and the pass mark for the questions used in the pilot exams were finalised by the CRQ leads. For future papers, this will be done using a process called Angoff referencing, which will take place during CRQ core group meetings. Angoff referencing uses the experience of the examiners to set a pass mark for each question such that a trainee with adequate preparation, knowledge and experience, will perform satisfactorily and achieve a pass for the whole exam.

Conduct of the Pilot Examination

The first pilot took place in January 2018 under examination conditions at the RCoA. This consisted of 6 questions over 90 minutes. The time taken for each candidate to complete the exam was noted and the scripts were marked by the CRQ leads. Results were posted to candidates shortly afterwards. These 6 questions were further developed as a result of feedback obtained from candidates, the performance of the question and the experience of the CRQ leads. The same 6 questions were used in the July 2018 pilot after they had been revised. Again they were marked by the CRQ leads and the results emailed to candidates.

This report will consider the January and July exams as a whole.

Results

Pass rate – 44.33%
63 candidates sat the pilot exam in January and 43 in July. The paper was marked out of 120 and the pass mark was 73 on both occasions. The overall pass rate for both papers was 44.33% (41.23% in January and 48.83% in July). Whilst this is lower than the normal pass rate of the SAQ (50-60%), candidates taking the pilot exam would not have been as fully prepared as those sitting the real paper and may not be planning to sit the exam for several months. Therefore, we consider this result to be encouraging.

Analysis of Results

There were several general reasons why candidates lost marks:

- Failure to answer the question asked.
- Poor knowledge of clinical sciences – particularly pathophysiology although it is acknowledged that the selected questions did contain a disproportionate amount of pathophysiology.
- Failure to prioritise answers. The CRQs will eliminate the situation where a candidate provides a wide range of answers in the hope of hitting on the correct one, by limiting answers to a specific number. For example, if a question asks for a list of 6 factors that may cause a patient to develop bronchospasm whilst under general

anaesthesia, then only the first 6 statements given by the candidate will be marked and the answer booklet will only have space for 6 answers. There will generally be more possible answers then the number specified and the answer template will allow for this so that candidates can give any 6 correct answers and be awarded full marks.

Results for Individual Questions

Question 1: Asthma
Pass rate 66.2%
This question was judged to be easy and is relevant to everyday practice. A sound knowledge of asthma and the treatment of bronchospasm are essential to all anaesthetists. Overall candidates performed poorly in part a – showing little knowledge of the pathophysiogical changes seen in asthma. Many candidates simply stated bronchospasm, which is a consequence of the pathophysiology. Interpretation of pulmonary function tests was excellent. In part d which asked for drugs, including dosages, to treat bronchospasm, many candidates did not give a dose or gave the incorrect dose. It is important for anaesthetists to know the dosages of the common drugs used to treat bronchospasm particularly in the emergency situation. Quite a few candidates also wrote 100% oxygen in this section which, whilst it does form part of the management of the patient in this situation, will not treat the bronchospasm.

Question 2: Dementia
Pass rate 82.3%
It is reassuring that the pass rate for this question, which was judged to be hard, was high. Patients with dementia are presenting for surgery more commonly than was previously the case, and post-operative delirium is a serious complication. Most marks were lost in section d as very few candidates knew any of the adverse perioperative effects of the drugs listed.

Question 3: Head injury management
Pass rate 80.7%
This was a good pass rate for a question about a common clinical scenario. However, it was disappointing that many candidates could not calculate the patient's GCS or cerebral perfusion pressure and so lost easy marks. It was reassuring that candidates knew the reasons for intubation and ventilation and how to achieve this; and could describe the significance for the abnormal arterial blood gases. However, section f, asking for treatment options to improve cerebral perfusion, was poorly answered. Many candidates did not mention adequate sedation or optimization of CO_2.

Question 4: Pancreatitis and ARDS
Pass rate 37.8%
It was a surprise that the pass rate for this question was low. Pancreatitis is a common condition that is frequently seen in ITU and understanding of the diagnosis and management of ARDS is fundamental to ITU practice. Part d about why enteral nutrition is preferred was particularly poorly answered. Most marks were lost in listing the diagnostic criteria for ARDS which were poorly known. This was perhaps because some candidates did not realise that the question was asking about the Berlin definition of ARDS.

Question 5: Complex regional pain syndrome
Pass rate 20.0%
Our experience with the SAQ exam is that candidates have limited knowledge about chronic pain conditions and this would appear to still be the case, as shown by a very low pass rate for this question on what is a common chronic pain presentation. A lot of

candidates seemed to have confused chronic regional pain syndrome with chronic post-surgical pain – particularly when answering part a. In part c very few candidates knew the further drug treatments that should be offered – e.g. corticosteroids and bisphosphonate.

Question 6: Pre-eclampsia
Pass rate 35.7%
As is surprisingly often the case in the Final FRCA, the pass rate for this obstetric question was low. Pre-eclampsia is a common condition of pregnancy and anaesthetists should have a good working knowledge of the condition and of its management. Many candidates did not know that the main reason for urgent blood pressure control is to prevent intracerebral haemorrhage. The regimen for the administration of magnesium sulphate for seizure prohylaxis in severe pre-eclampsia was also poorly recalled. Whilst it is acknowledged that most units have a crib sheet available to ensure correct dosing, candidates sitting this exam would have been expected to give at least approximately correct dosages and timings. Very few people were able to give the correct answer as to why women with pre-eclampsia would be susceptible to pulmonary oedema. This mandatory area of the syllabus should not be neglected during exam preparation.

Summary

The purpose of these pilot examinations was to assess how the CRQs perform under examination conditions. The feedback gained from candidates and examiners has been invaluable in helping us to evolve these questions as well as the other CRQs in the database.

We would urge candidates not to take their mark too seriously as this was a trial and the questions used were not representative of a paper as a whole. Having said that, the overall pass rate is in line with that of some of the recent SAQ papers, particularly considering that the paper was taken some weeks before the actual exam.

Candidates were asked to complete a survey following completion of the pilot exam the results of which will help us to refine the process further. It seems that in general candidates thought the format made the intent of the questions more obvious than in SAQs. They also found the formal structure of the paper to be preferable to the more open style of the SAQs.

May we take this opportunity to thank those candidates who took part in this pilot, the exam staff, and the organisers of the FRCA revision course who supported us in running it.

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