Report on the Short Answer Question Paper

March 2014

The Short Answer Question Paper

The purpose of the Short Answer Question (SAQ) paper is to examine a candidate's knowledge of the Basic and Intermediate sections of the training curriculum as specified by the Royal College of Anaesthetists. To this end new questions are commissioned (principally from members of the SAQ core group of Examiners) to reflect the breadth of knowledge required. Questions currently in the database are updated or modified in light of new knowledge, current national practice or recommendations from relevant governing authorities before inclusion in an SAQ paper. Candidates should not place their faith in "question spotting"; the breadth of the syllabus means that topics are re-visited infrequently.

Model answers

Examiners who write questions must adhere to a set of rules which govern the structure and content of the model answer. All questions have to be mapped to a specific section of the Basic or Intermediate syllabus. Key facts or groups of facts are linked to marks achievable by the candidate. To facilitate an objective and reproducible marking process, key facts in the answer template are bullet pointed and assigned relevant scores. All questions are subjected to an exhaustive editing and peer review process before use in an examination.

Structure of SAQ paper

The structure of the SAQ paper is outlined below; failure to appreciate the importance of mandatory training units will result in a poor performance by a candidate.

- **Six questions from mandatory units:** anaesthetic practice relevant to neurosurgery, neuroradiology and neurocritical care, cardiothoracic surgery, intensive care medicine, obstetrics, paediatrics and pain medicine.

- **Four questions from general duties:** airway management, day surgery, critical incidents, general / urology / gynaecology surgery, ENT / maxillo‐facial / dental surgery, management of respiratory and cardiac arrest, non‐theatre duties, orthopaedic surgery, regional anesthesia, sedation practice, transfer medicine, trauma and stabilization practice.

- **Two questions from optional units:** anaesthetic practice relevant to ophthalmic surgery, plastics & burns surgery, vascular surgery and advanced sciences (anatomy, applied clinical pharmacology, applied physiology/biochemistry, physics/clinical measurement and statistical basis of clinical trial management).

Candidates who prepare detailed revision notes for the mandatory subjects outlined above will place themselves at significant advantage when writing the SAQ paper. The Basic and Intermediate sections of the syllabus give the specific topics that should be addressed.

Candidates should not underestimate the importance of the "advanced sciences" or believe that they have left these topics behind at the Primary Examination. This knowledge may be tested in any of the written or oral sections of the Final FRCA examination. Poor performance in anatomy questions used in the SAQ paper is a recurrent theme.

The SAQ paper has questions with varying levels of difficulty;

- 2 questions adjudged to be hard / difficult (pass mark 10-11 /20)
- 6-8 questions adjudged to be moderately difficult (pass mark 12-13 /20)

- 1-2 questions adjudged to be easy (pass mark 14 /20 or more)

The level of difficulty and pass mark are finalized using a process called Angoff referencing, which takes place during the "Paper Setting" and "Standard Setting" meetings of the Court of Final Examiners. Angoff referencing uses the knowledge of the Examiners to set a reasonable pass mark for each question such that a "typical" trainee with appropriate preparation and adequate knowledge will perform satisfactorily.

Quality Control for the March 2014 SAQ paper

Friday 6th December 2013 – Paper Setting Day (PSD)

- For PSD the Court of Examiners convened and was divided into six groups each led by a member of the SAQ core group. Each group was provided with the two questions and model answers, which they would mark after the SAQ paper had been written by the candidates. The questions and answers were checked for factual accuracy and clarity of language, amended if necessary, and a provisional pass mark assigned.

Wednesday 19th March 2014 – Standard Setting Day (SSD)

- Four anonymous sample scripts were marked by each of the six examiner groups and the answers compared with the marking templates. Subsequent discussion within each group ensured that each of the four candidates scored maximum possible marks for the answer, and that each Examiner applied a consistent standard across candidates. At the end of SSD a final pass mark was confirmed for each question.

Subsequently, one Examiner from each of the six groups marked two of the twelve questions written by every candidate thereby eliminating any risk of bias which may be possible with a single assessor. The Examination Department staff scrutinized all submitted marks and clarified any ambiguities within the marked scripts before individual scores were ratified.

Results - Thursday 11th April 2014

The overall pass rate was 60.32%
This compares with recent SAQ papers

- September 2013 – 78.14%
- March 2013 – 67.36%

Analysis of Results

Overall

Candidates continued to disadvantage themselves in a number of familiar ways;

- Failing to answer the question asked – whether this was because of poor knowledge and preparation, or from rushing the answer due to time constraints, only material relevant to the question asked can score.

- Poor weighting of answers – candidates must appreciate that if any section of a question is considered to be worth 50% of the 20 possible marks, it is likely that there are 10 key pieces of information required to maximize their score. Writing extensively on the section worth 10% of the marks will not compensate for a lack of information elsewhere. From September 2014 these

percentages will be replaced with marks out of the total 20 to make it easier for candidates to allocate appropriate weighting and time to each section of the question.

- Illegible handwriting – Examiners take great care to extract answers from a candidate's script, however only the material that can be read will achieve a score. Candidates are encouraged to set out their answers in a "bullet point" or "table" format which will aid legibility and time management, and also serve as an aide memoir to the number of key points required for each section.

Results for Individual Questions

The performance of the candidate cohort in each question is subjected to mathematical analysis before publication of the results, and point biserial correlation coefficients are calculated. Three questions had very strong correlation with candidate performance as judged by their total score, and the remaining nine questions had strong correlation. The reliability and consistency of the March 2014 paper as judged by the Cronbach's alpha statistic of 0.74 is in line with recent SAQ examinations.

Question 1 *Pass Rate 68.9%*

A 68-year-old patient attends the Pain Management Clinic with a history of intractable low back pain.

a) What symptoms and signs would alert you to the need for urgent investigation and referral? (50%)

b) List recommended treatment options that may be considered (with examples) if a magnetic resonance imaging (MRI) scan has excluded significant pathology. (50%)

Generally well answered. Most candidates understood the importance of "red flags" in this clinical scenario. Some candidates ignored the result of the MRI scan and gave treatment options which referred to abnormal imaging (e.g. surgical approaches) and consequently detracted from their score. Reference to psychological and alternate / complementary therapies contributed to a high scoring answer.

Question 2 *Pass Rate 67.1%*

a) What are the indications for insertion of an implantable cardiac defibrillator (ICD)? (20%)
b) How might surgical diathermy affect the ICD? (20%)
c) A patient with an ICD is listed for elective surgery; what preparations are necessary preoperatively, intra-operatively and postoperatively? (45%)
d) How does the management differ if this patient requires emergency surgery? (15%)

Generally well answered. Indications for a pacemaker are part of core knowledge incorporating many conditions which have a bearing on the management of anaesthesia. For section (c), some candidates gave generalized answers and failed to focus on the specifics of how the risk of an ICD working inappropriately, or failing to work when necessary, would influences anaesthetic practice. In an emergency situation, deactivation of the ICD would be a reasonable "balance of risks" action.

Question 3 *Pass Rate 44.7%*

A 45-year-old patient is reviewed in the preoperative assessment clinic prior to surgery for excision of a phaeochromocytoma.

a) What are the characteristic symptoms (15%) and signs (30%) of a phaeochromocytoma?
b) Which specific biochemical (10%) and radiological (5%) investigations might confirm the diagnosis of a phaeochromcytoma?
c) What therapeutic options are available to optimise the cardiovascular system prior to surgery?(40%)

Most candidates knew the radiological / diagnostic tests for this condition. Some candidates confused the signs and symptoms of phaeochromocytoma with carcinoid syndrome and thereby lost marks. Most candidates knew that alpha blockade had to be started before beta blockade but did not mention optimizing circulating volume, nor drugs such as calcium channel blockers and magnesium.

Question 4 *Pass Rate 79.4%*

a) What are the indications for (20%) and possible contraindications to (25%) elective percutaneous tracheostomy (PCT)?
b) List the potential early (40%) and late (15%) patient complications of PCT.

This question is highly relevant to modern critical care practice, and the involvement of trainees in PCT procedures is reflected by the very high pass rate. Most marks were lost in the section on complications but in general this question was well answered. It was obvious which candidates had observed or performed a significant numbers of PCTs and which had not.

Question 5 *Pass Rate 32.9%*

A 64-year-old man is scheduled for a stereotactic brain biopsy. He is taking dual antiplatelet therapy following the insertion of a drug-eluting coronary artery stent six months earlier.

a) Explain the issues that may arise from antiplatelet therapy in this patient. (30%)
b) Summarise the perioperative strategies to minimise the above issues. (40%)
c) What are the specific contraindications (15%) and complications (15%) of a stereotactic brain biopsy under sedation?

There was a low pass rate because candidates misread or misinterpreted the question. Most did not appreciate that the management of anti-platelet therapy requires a balance of risks in a patient for whom intra-operative bleeding could be a critical event. Many candidates mentioned stent thrombosis and intracranial / extracranial haemorrhage but did not explain why these events would be important even though the question specifically asks for these details. In part (b) the question asks for strategies to avoid the risk issues, but many candidates only described administration of neuroanaesthesia. Contraindications and complications were answered marginally better than the other two sections.

Question 6 *Pass Rate 44.7%*

A 5-year-old patient presents for a myringotomy and grommet insertion as a day case. During your pre-operative assessment you notice that the patient has a nasal discharge.

a) Why would it be inappropriate to cancel the operation on the basis of this information alone? (25%)
b) List the features in the history (35%) & examination (25%) that might cause you to postpone the operation due to an increased risk of airway complications in this patient.
c) What social factors would preclude this child's treatment as a day case? (15%)

This question was answered poorly considering the issue is "meat and drink" to paediatric day case practice. The majority of candidates did not mention; emotional aspects, financial losses, parental work absence, school absence and inefficient use of hospital resources in the answer. The history section was poorly answered although examination features were more typically known. Surprisingly, social factors were infrequently given although these have a major impact on suitability as a daycase. Overall, there seem to be few candidates thinking about the organisational and logistical aspects of bringing a child in for daycase surgery.

Question 7 *Pass Rate 60.8%*

A 71-year-old patient requires a rigid bronchoscopy for biopsy and possible laser resection of an endobronchial tumour.

a) Outline the options available to maintain anaesthesia (20%) and manage gas exchange. (30%)
b) How will use of the laser change the management of anaesthesia? (15%)
c) What are the possible complications of rigid bronchoscopy? (35%)

This question proved discriminatory between candidates who gave a mature and thoughtful answer and those that did not understand the implications of "tubeless" ENT / thoracic surgery. Weaker candidates proposed the use of laser-proof endotracheal tubes, and even double lumen endobronchial tubes and cardiac bypass to facilitate gas exchange. Part (a) tended to score scored badly whilst parts (b) and (c) were better known. Focus in part (c) was dominated by traumatic complications with candidates forgetting "anaesthetic" issues such as; laryngospasm and bronchospasm, pneumothorax / barotrauma / volutrauma from jet ventilation, cardiovascular disturbances, pulmonary infection, hypoxaemia, hypercarbia and awareness.

Question 8 *Pass Rate 17.5%*

An adult patient is to receive a target controlled infusion (TCI) of propofol.

a) Detail how TCI devices ensure a steady state blood concentration. (50%)
b) What additional pharmacokinetic data is required to allow effect-site targeting? (20%)
c) What are the advantages of a TCI device compared to a manual propofol infusion regime? (30%)

This was the most poorly answered question of the paper. The written answers reflected a "black-box" mentality from the majority of candidates, with little real understanding of how infusion devices work or of the underlying pharmacokinetics. In particular, effect site targeting was poorly understood. This question failed to discriminate between generally strong and generally weak candidates due to widely distributed ignorance of the subject matter within the cohort. It is of some consolation that a few candidates could reproduce the recommendations of the Safe Anaesthesia Liaison Group regarding total intravenous anaesthesia even though such details were not asked for. Given that the administration of TCI propofol is used nationwide, the poor performance observed must reflect a paucity of formal teaching of the subject within Schools of Anaesthesia.

Question 9 *Pass rate 65.5%*

A 27-year-old woman is 13 weeks pregnant. In the antenatal clinic she is found to have an asymptomatic heart murmur. A subsequent echocardiogram shows moderate to severe mitral stenosis.

a) List the causes of mitral stenosis. (15%)
b) How do the cardiovascular changes in pregnancy exacerbate the pathophysiology of mitral stenosis? (45%)
c) Outline the specific management issues when she presents in established labour. (40%)

Overall, there was a disappointing lack of knowledge of the pathology of mitral stenosis and some candidates had no understanding at all. The physiological and clinical aspects were more soundly addressed, and the question proved a very strong discriminator between strong and weak candidates.

Question 10 *Pass Rate 39.2%*

a) Which human factors contribute to intravenous drug administration errors in theatre-based anaesthetic practice? (30%)
b) Outline the organisational strategies that might minimise intravenous drug administration errors. (70%)

Relatively few candidates had good insight into the factors associated with drug errors and were able to suggest strategies to reduce the incidence. The Safe Anaesthesia Liaison Group has generated a number of publications specifically aimed at this subject matter and strong candidates had taken advantage of these.

Question 11 *Pass Rate 44.4%*

a) List the nuclei of the vagus nerve. (10%)
b) Describe the immediate relations of the right vagus nerve in the neck at C6 (15%) and thorax at T4.(15%)
c) List the branches of the vagus nerve. (30%)
d) Which clinical situations commonly produce vagal reflex bradycardia? (30%)

As in past years, knowledge of anatomy proved generally very poor. Candidates performed better in sections (c) and (d) which were most clinically orientated. Anatomical knowledge is clearly relevant to the invasive procedures undertaken in anaesthetic practice, and possibly vital to the interpretation of images generated by ultrasound devices. Candidates must understand that relevant anatomy will be tested throughout all parts of the Final FRCA examination and should not write the subject off. This question failed to discriminate between generally strong and generally weak candidates due to widely distributed ignorance of the subject matter within the cohort, as was seen with question 8.

Question 12 *Pass Rate 53.1%*

An elderly patient has sustained a fractured neck of femur following a fall and is scheduled for surgery.

a) Which aspects of this patient's care have a significant impact on outcome? (45%)
b) Outline the recommendations of best practice for the management of pain in this patient. (30%)
c) What causes of a fall in this patient might impact on the anaesthetic management? (25%)

Management of a patient with a hip fracture is fundamental to anaesthetic practice and very topical. This question was straightforward for candidates who had read one of the recent guidelines published by NICE or the AAGBI, and a number of individuals gained maximum marks. The question proved highly discriminatory between generally strong and generally weak candidates.

Summary

It is disheartening that the pass rate for the March 2014 SAQ has declined when referenced to the most recent past papers. The Court of Examiners take particular effort to consider the level of difficulty of each question and to give the benefit of the doubt to candidates who may have misinterpreted some of the questions asked.

It is clear from the overall results of the cohort for this paper that many candidates continue to give insufficient weight to the six mandatory subject areas in their preparation for the examination; there is simply no substitute for knowing the material. It has been recommended previously that candidates should arrange 1-2 day "taster" sessions in the mandatory units of practice if they have not experienced these as part of the usual training carousel; this advice remains pertinent.

As with previous papers, some areas of knowledge deficit have been highlighted which are spread evenly throughout the candidate cohort. Where this ignorance encompasses fundamental basics of practice, it is the responsibility of Schools of Anaesthesia to fill these gaps.

Conduct of the SAQ paper would be impossible without the work of the Court of Final FRCA Examiners and of the Examinations Department staff, and I am extremely grateful for their continued and enduring support.

Dr David Mulvey
Chair, Short Answer Question Group