

Report on the Short Answer Question Paper – September 2013

The Short Answer Question Database

Short answer questions (SAQ) with model answers are submitted throughout the year, principally by members of the SAQ core group of Examiners. The aim is to develop a large database of questions for use in future papers and Final FRCA revision resources. The themes of new SAQs are based on areas of the syllabus that thus far, have not been covered as well as recent advances and current trends in anaesthetic practice. Model answers to questions that have featured in the written paper as far back as 1996 are now also being developed. None of the questions will have more than four subsections (a, b, c and d).

Model answers

Examiners who write questions are given a set of basic rules when providing a model answer.

- Question(s) and answer(s) have a maximum length of one A4 sized page in Arial font, size 12.
- Can be answered by candidate in ~12 minutes (plus 2-3 minutes of thinking time).
- Percentages for all sub-sections of *questions* are provided and summate to 100%.
- Corresponding marks in *answer* section summate to a total of 20.
- The question is drawn from the 2010 CCT curriculum.

Key facts or groups of facts are linked to marks. To make the process of marking easier and more objective for examiners, key words and details are bullet pointed.

Timeline for the September 2013 paper Structure of a paper

It was decided by the Examinations Committee that the structure of the SAQ paper should be more rigid. With this in mind it was felt that in future, the questions should reflect the Units of Training outlined in the Intermediate Level Training and where appropriate, use elements of the Basic Training syllabus- Annexes B & C – RCoA website.

The syllabus is wide ranging and whilst attempts at predicting subject areas might focus attention on a particular topic, it is often a fruitless exercise.

All competencies annotated with the letter 'E' can be examined in any of the components of the Final examination identified in the FRCA examination blueprint.

Six questions from mandatory units of training:

- Anaesthesia for neurosurgery, neuroradiology and neurocritical care,
- Cardiothoracic
- Intensive care medicine
- Obstetrics
- Paediatrics
- Pain medicine

Four questions from general duties, which consist of:

- Airway management
- Day surgery
- Critical incidents
- General, urology and gynaecology
- ENT, maxillofacial and dental surgery
- Management of respiratory and cardiac arrest
- Non-theatre

- Orthopaedic surgery
- Regional
- Sedation
- Transfer medicine
- Trauma and stabilization.

Two questions from optional units:

- Ophthalmic
- Plastics and burns
- Vascular surgery
- Advanced sciences (anatomy, applied clinical pharmacology, applied physiology/biochemistry, physics/clinical measurement and statistical basis of clinical trial management). There will however be some overlap.

SAQ papers have groups of 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 is set using a process called Angoff referencing. The purpose of Angoff referencing is to use the knowledge of a group of examiners to set a reasonable pass mark for each question. The group most likely to be affected by the chosen pass mark will be the “just-passing” candidates. Those that do very well always pass and those who do very poorly will always fail. The pass mark is initially set by the author of the question but is usually adjusted at paper setting day and finalized at standard setting day by the examiners who are due to mark the answers.

Late April 2013

Shortlist made of 15 questions suitable for the next paper. Preference was given to questions that were “new”, had not been asked before and were “exam-ready”.

May 22nd 2013: SAQ Core Group Meeting

The SAQ group met to discuss the shortlisted questions and choose the final twelve. All questions and model answers were scrutinised and modified to a point of exam readiness.

June 28th 2013 – Paper Setting Day (PSD)

At the PSD the Board of Examiners convened and were divided into six groups. Each group was led by a member of the SAQ subgroup and was provided with the two questions they would subsequently mark, together with the model answer templates.. The questions and answer templates were checked for grammatical and factual accuracy and appropriate amendments were agreed, as was a provisional pass mark. Ten of the questions used were either new or modified. Two questions featured elements from recent national guidelines.

September 3rd 2013 – SAQ paper

September 11th 2013 – Standard setting day (SSD)

Anonymised sample scripts were marked and compared with the model answers by the same groups of examiners described in the section on PSD. Differences of opinion with regards to the marking schedule were discussed and clarified by the lead SAQ subgroup member of each table to assure uniformity of marking. The final pass mark for each question was confirmed or adjusted after this process. The marking process ensures that six different members of the Board of Final FRCA examiners will examine the scripts of each candidate. At SSD, each examiner is issued with a pack of scripts to mark along with

a given deadline to declare individual marks. The exams department staff checks all marks and any ambiguities are clarified with individual examiners.

October 4th 2013-Results

The overall pass rate was higher than is usual at 78.14%

This compares with recent SAQ papers

- March 2013 - 67.36%
- September 2012 - 51.9%
- March 2012 - 66.51%

Question 1:

You are asked to anaesthetise a 75-year-old man for an urgent DC cardioversion on the Coronary Care Unit (CCU). He has a broad complex tachycardia of 150 beats/minute, but is maintaining a systolic blood pressure of 70 mmHg and has a Glasgow Coma Score of 13/15.

a) List the advantages and disadvantages of providing anaesthesia in the CCU. (30%)

b) What factors must be taken into consideration when choosing an anaesthetic technique for this patient? (30%)

c) What complications may occur as a consequence of the procedure? (40%)

45.7% pass rate.

This question proved difficult for many candidates.

a) The advantages of providing anaesthesia in a Coronary Care Unit for a maximum of three marks included:

- Avoiding the transfer an unstable patient to theatre
- Cardiology Department skills readily available
- Specialist equipment and drugs are immediately accessible
- Allows earlier treatment

The most important disadvantage was anaesthetizing a patient in a remote and unfamiliar environment. This statement needed to be expanded to include the potential lack of monitoring (capnography), anaesthetic drugs, recovery and skilled assistance. Few candidates mentioned the difficulty in complying with the filling in of a WHO checklist.

b) Some of the factors that should have been considered before commencing anaesthesia included valid consent, recent investigations, starvation status and a potential need for intra- or inter-hospital transfer.

c) Required both anaesthetic and cardiological complications, the latter included arterial embolism, myocardial ischaemia, pulmonary oedema, burns to the patient and electrical injury to staff.

Question 2:

A primiparous patient with a booking BMI of 55 kg/m² presents in the high-risk obstetric anaesthetic assessment clinic at 32-weeks gestation. She is hoping for a vaginal delivery.

a) Which specific points do you need to elicit from the history and examination? (30%)

b) What do you need to communicate to the patient? (35%)

c) Document your plan for her management on the delivery suite. (35%)

72.8% pass rate.

This question was a modified version from the May 2006 paper. The implications of morbid obesity on a parturient and the importance of forward planning were well appreciated by most candidates.

Question 3:

A 45-year-old man is scheduled for a laparoscopic Nissen fundoplication under general anaesthesia. He is graded ASA 1.

- a) Describe how laparoscopy can cause adverse effects in this patient. (70%)
- b) How may these effects be minimised? (30%)

72.5% pass rate.

This was a modification of a question on the adverse effects of abdominal laparoscopy previously used in the May 2006 paper. The effect of steep **head-up** position and not Trendelenberg tilt was not appreciated by a number of candidates. A significant number of answers incorrectly referred to the effects of a Trendelenberg position raising intracranial and intraocular pressure. The question was otherwise answered with a good systematic approach to the physiological effects of a pneumoperitoneum and the adverse effects of performing a laparoscopy.

Question 4:

- a) What factors predispose to inadvertent intra-arterial (IA) drug injection that could lead to severe extremity injury? (35%)
- b) Outline the possible intravascular mechanisms of injury. (15%)
- c) What are the acute clinical features of inadvertent IA injection? (20%)
- d) What is the early management of an acute IA injection injury? (30%)

71.9% pass rate.

This question was answered well and proved to be a good discriminator. The factors that predispose to intra-arterial injection were broken down to patient factors, anatomical anomalies and the appreciation that some drugs are particularly harmful when injected intra-arterially. One candidate sadly misread the question and wrote about local anaesthetic toxicity confusing the abbreviation (IA) with (LA). All abbreviations are explained before using them later in the question. This resulted in a “poor fail” for that particular question but an overall pass for the paper. It should be pointed out that a poor fail in four or more questions is likely to result in an overall fail for the paper.

Question 5:

A 74-year-old patient is scheduled for a primary total hip replacement.

- a) What are the potential benefits of an enhanced recovery (“fast-track”) programme for this type of surgery? (20%)
- b) List the preoperative (30%), intra-operative (35%) and postoperative (15%) factors necessary for a “fast track” programme in this patient.

49.9% pass rate.

A question on enhanced recovery after colorectal surgery featured in the May 2011 paper. Many of the principles of “fast-track” status are now being applied to hip and knee replacement surgery. Some candidates misread the question and focused on anaesthesia for surgery on fractured neck of femur.

To pass the question a very generic answer would have sufficed. Excluding the specific details specific to hip replacement surgery, the following basic principles of enhanced recovery formed part of the model answer.

a) Potential benefits:

- Early mobilisation (operative day if possible)
- Decreased postoperative complications esp. cardiopulmonary
- Decreased length of hospital stay
- Cost reduction / theatre efficiency

b) Preoperative factors

- Appropriate patient selection
- Patient education and motivation delivered by multi-disciplinary team
- Preoperative optimisation

- Admit on the day of surgery (staggered admissions if possible)
- Use of carbohydrate loading (clear complex carbohydrate drinks) NB care with diabetics

Intraoperative factors

- Surgical technique: minimise operative time, avoidance of drains
- Fluid management: targeted fluid replacement
- Tranexamic acid intra-operatively
- Prevention of PONV e.g. avoidance of nitrous oxide, use of TIVA, routine anti-emetics
- Use long acting opioids sparingly
- Maintenance of normothermia
- Use of quick offset anaesthetic agents to allow rapid recovery

Postoperative factors

- Use of multimodal analgesia/oral opioids (avoid PCA)
- Encourage oral fluids early and early nutrition (energy drinks)
- Planned mobilisation and physiotherapy

The board of examiners felt that the pass mark should be high, a designated “easy question”. The question was a strong discriminator.

Question 6:

- List the normal anatomical features of young children (< 3 years old) which may adversely affect upper airway management. (35%)
- Which airway problems may occur due to these anatomical features? (30%)
- Outline how these problems are overcome in clinical practice. (35%)

65.4% pass rate.

This question was a repeat from the May 2007 paper. Each anatomical feature was linked to an airway problem and how they might be overcome in clinical practice. It is quite acceptable to answer a question like this in the form of a table.

Anatomical feature	Problem	Overcome by
Pliant sub-mental tissue	Easy obstruction by digital pressure	Ensure fingers applied to bony surfaces
Short trachea	High incidence of endobronchial intubation	High level of awareness, auscultate chest to check
Etc.		

Similarly an “advantages and disadvantages” question can be answered in this way and can avoid repetition of words and therefore save time.

Question 7:

You are asked to review a 65-year-old man on the Cardiac Intensive Care Unit who underwent coronary artery bypass surgery earlier in the day.

- Which clinical signs suggest the development of acute cardiac tamponade? (40%)
- List the investigations and their associated derangements that could confirm the diagnosis of acute cardiac tamponade. (15%)
- What is the management of acute cardiac tamponade in this patient? (45%)

57.6% pass rate.

This question was designated an “easy” question by the exam board and was a good discriminator. The investigations and associated derangements were linked and one mark was awarded for both correct answers. The management of acute pericardial tamponade was generally answered in a generic way (ABC, call for help etc.) but a number of candidates wasted time and effort on managing an anaesthetic in this situation.

Many failed to monitor the clotting and administer blood products or reversing agents if indicated.

Question 8:

- a) What are the indications for arterial cannulation? (35%)
- b) How may an invasive arterial pressure measuring system be calibrated? (20%)
- c) Outline the sources of error when measuring invasive arterial pressure. (45%)

35.8% pass rate.

This question was poorly answered and therefore had a high failure rate despite a low pass mark being set. Many candidates wrongly interpreted the question as “indications for intra-aortic balloon pump”. The indications for arterial cannulation were for measurement (continuous blood pressure; cardiac output; blood gases), diagnostic (angiography) and therapeutic purposes (thrombolysis, vasodilators chemotherapy, EVAR, ECMO, stenting, renal replacement therapy). Many candidates focused on aspects of measurement only.

All transducers are calibrated in the factory but calibration is carried out in the clinical environment using static and dynamic testing methods, a short description was all that was required. Sources of error included transducer drift, the causes of damping/resonance and incorrect transducer height. There appeared to be a lack of understanding of the physical principles of transducers and confusion between damping and resonance. The ODP might well calibrate the transducer for you but this fact was not included in the model answer as it is important that anaesthetists understand the methods and principles of calibration even if they do not carry them out themselves.

Question 9:

- a) What are the indications for renal replacement therapy (RRT) in the Intensive Care setting? (40%)
- b) List the types of RRT available on Intensive Care. (30%)
- c) Outline the principle mechanisms of solute and water removal by RRT. (30%)

59.1% pass rate.

This was a relatively straightforward question that proved to be a very good discriminator. Sections a) and b) were answered well but c), description of the physical principles of filtration and dialysis were poor.

Question 10:

76-year-old man is scheduled for elective cataract surgery under local anaesthesia.

- a) Summarise the goals of local anaesthesia (LA) for this procedure. (15%)
- b) Which LA techniques may be used for cataract surgery? (20%)
- c) List the contraindications to the use of LA as the sole technique for the procedure. (25%)
- d) Which details specific to an LA block should be documented in the anaesthetic record? (40%)

81.5% pass rate.

This question was answered well and was also a good discriminator. The question was based on the document entitled Local anaesthesia for Ophthalmic Surgery (February 2012), Joint guidelines from the Royal College of Anaesthetists and the Royal College of Ophthalmologists.

Question 11:

A 34-year-old man is scheduled for a posterior fossa tumour excision.

- a) List patient positions that might be employed for this operation. (10%)
- b) What potential intraoperative problems are associated with posterior fossa craniotomy? (25%)
- c) What monitoring techniques can specifically detect the presence of venous air embolism during surgery and for each method used, give the features that would indicate the diagnosis? (40%)
- d) How would you manage a significant venous air embolism in this patient? (25%)

48.4% pass rate.

Section b) was poorly answered. Clearly, inexperience in anaesthesia for this type of surgery was apparent.

The model answer to b) included:

Problems associated with positioning: including hypotension from pooling of blood, spinal cord injury and peripheral nerve damage.

Brain stem damage: including the respiratory /cardiovascular centre and cranial nerve nuclei.

Knowledge of the diagnosis and management of an intraoperative air embolism was satisfactory.

Question 12:

- a) What are the complications of continuous epidural analgesia (CEA) in the ward setting? (40%)
- b) How should patients be monitored throughout the period of CEA? (25%)
- c) Outline the safety features that relate to equipment used for CEA. (35%)

70.4% Pass rate.

The question was based on the Best Practice in the management of epidural analgesia in the hospital setting. (November 2010), published by the Faculty of Pain Medicine of the Royal College of Anaesthetists. Section a) was divided into: complications of local anaesthetic, complications of opioids, human and organization factors (inadequate analgesia; drug administration errors; post dural puncture headache) and siting issues (infection). The safety features relating to equipment included both the pump and giving set. Some candidates focused on the giving set only. The pump should be configured specifically for epidural infusion and should be standardised as per MRHA, have alarms and be tamperproof.

Each question is subjected to mathematical analysis and point biserial correlation coefficients calculated. Ten questions had strong correlation and the remaining two questions had moderate correlation to the total score. The coefficient of reliability (Chronbach's Alpha) for this paper was 0.68, slightly lower than recent examinations.

It is heartening that the pass rate for the September 2013 SAQ was higher than recent sittings. The Board of Examiners have made particular effort to take into consideration the level of difficulty of each question and give the benefit of the doubt in the way candidates may have interpreted several of the questions asked.

Each paper exposes areas of knowledge deficit and apparent inexperience in some areas, some very basic. In preparation for this exam it might be prudent to arrange 1-2 day "taster" sessions in some of the mandatory units of training, particularly anaesthesia for neuroanaesthesia and cardiothoracic surgery covered in the SAQ.

One area of concern in a small minority of candidates was the standard of handwriting. If a script cannot be read, it is difficult to award marks. If you think your handwriting is

“bad” please make an attempt to improve the legibility. I have to reiterate that candidates should read the question carefully and only answer the question that is asked!

Finally, I would like to thank the Board of Final FRCA Examiners and members of the Examinations Department for their continued support throughout this process.

Dr. Gary Thomas

Chair of Short Answer Question Group