

Tackling the single best answer question in the final FRCA examination

Introduction

While preparing to teach and to be taught on a final Fellowship of the Royal College of Anaesthetists (FRCA) course the authors found themselves researching the single best answer multiple choice question-type question. This article aims to de-mystify the single best answer question with some background information and gives some tips to help tackle this paper.

Some background to the single best answer question

The FRCA examination has undergone a number of changes since 2008, in part as a response by the Royal College of Anaesthetists to Postgraduate Medical Education and Training Board and General Medical Council recommendations, and in keeping with the increasing evidence base in medical education and clinical assessment models (Brennan, 2009). In the last sitting of the final FRCA examination the single best answer question was added to the mix, replacing a proportion of the more traditional multiple choice true or false questions. The single best answer has long been a recognized format of assessment by the National Board of Medical Examiners in the United States, the General Medical Council (Professional and Linguistics Assessments Board and undergraduate examinations), and more recently has been also taken up by other Royal col-

leges (Medicine, Radiology, Pathology, General Practice) in their specialist examinations. More specific to anaesthesia, the Australian and New Zealand College of Anaesthetists also uses this question format in its assessment of anaesthetists (Brennan, 2009).

Proponents argue that a well-constructed single best answer question challenges candidates to apply their knowledge to a clinical scenario rather than simply testing factual recall. As such, it is highly appropriate for the clinically orientated final FRCA examination (Tomlinson, 2008).

According to the educationalist Miller's (1990) framework for clinical assessment the single best answer-type question should prompt a 'knows how' rather than 'knows' response, showing that a candidate is capable of using dry knowledge in a clinical – useful – context. This allows testing of 'higher order skills' like interpretation and problem-solving capacity (Case and Swanson, 1998; McCourbie and McKnight, 2008). The questions can be based upon clinically relevant scenarios, guidelines and protocols, enabling the examiner to assess focused areas of clinical and basic science knowledge in greater detail than traditional multiple choice true or false format. Published experience within other clinical specialties in the UK suggests that single best answer questions are more reliable than multiple choice true or false format questions in discriminating between knowledgeable and unknowledgeable candidates (Tan and McAleer, 2008).

The Royal College of Anaesthetists website (www.rcoa.ac.uk) provides a comprehensive and detailed breakdown of the structure of the final FRCA examination. From September 2010, 30 single best answer questions replace 30 of the previously 90 multiple choice true or false questions in the final FRCA written examination. These 30 single best answer questions include 20 within clinical anaesthesia, five in intensive care medicine, and five in pain management.

Structure of a single best answer format question

The very structure of the single best answer question is designed to test various aspects of a candidate's clinical knowledge and judgement relevant to a specific clinical question. The single best answer question consists of three parts: the stem, the lead-in question and the answer options. The stem is usually a clinical scenario or some investigatory results presented within a clinical scenario. This sets the scene. The lead-in question follows and this is best answered by one of the subsequent five options. In contrast to the multiple choice true or false question, inherent to the structure of the single best answer is the explicit instruction of the number of correct options to be selected – one. The options consist of 'one' best answer and four 'distracters'. The distracters are not incorrect in themselves, but are less correct than the one best answer in that particular scenario.

Consider the following example of a single best answer question:

Stem

A previously fit 23-year-old man was admitted to the emergency department with sudden onset headache, neck stiffness and photophobia. On admission he was found to have a Glasgow Coma Scale of 13, equal pupils, blood pressure of 180/95 mmHg, and non-specific ST changes on the electrocardiogram. There was no focal neurology and systemic examination was normal.

Lead-in question

Which one of the following is the most likely diagnosis?

Options

- A. Acute hemiplegic migraine
- B. Acute bacterial meningitis
- C. Subarachnoid haemorrhage
- D. Hypertensive encephalopathy
- E. Vertebral artery dissection.

Correct answer: C

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Clear guidance has been laid out by the Royal College of Anaesthetists for those setting the questions with regard to the structure of the single best answer question for the final FRCA. Each stem has a maximum of 60 words focusing on a single clinical vignette. The College proposes that the lead-in will be short and precise. There will be five possible answer options. Four out of the five would be 'inferior' while only one option would constitute the best option. A maximum of four marks are awarded per question, in contrast to a maximum of five in the multiple choice true or false questions. This can be thought of as scoring points for correctly discounting the four incorrect options to arrive at the fifth correct single best answer. No marks are awarded if the candidate selects more than one best option. There is no negative marking.

The structure of a well thought-out single best answer question focuses on a 'single' concept. The stem and lead-in question should prompt to a clear and definite answer. When writing a question the distracters are designed to be homogenous and plausible, representing a continuum from the 'least plausible' to the 'best possible' option as seen in *Figure 1*.

Preparation and approach to single best answer

Pre-examination

As with any multiple choice question, prior preparation is the key. There is no substitute for a thorough reading of the entire syllabus well in advance (the full curriculum can be found on the Royal College of Anaesthetists website www.rcoa.ac.uk). While single best answer use in the final FRCA examination is a relatively new addition there are questions available for practice on the Royal College of Anaesthetists website. This question format has been used in other international anaesthetic exams, in particular the Australian and New Zealand College of Anaesthetists and US board exams, and these sources may be useful for further familiarization with the format in the form of past and practice

Figure 1. Spectrum of correctness of answers.

A	E	D	B	C
Least correct option			Most correct option	

papers. There are also practice books and question banks already available.

Making a list of core clinical topics and basic anaesthetic, intensive care and pain management scenarios will certainly help direct knowledge acquisition and consideration of responses to clinical scenarios. Pay particular attention to recent guidelines issued by the Royal College of Anaesthetists or Association of Anaesthetists of Great Britain and Ireland, since these commonly feature in subsequent examinations.

In the examination

Read the stem first, carefully

Every word has a meaning and can offer a clue. The examiners try to set questions so that details are provided in a logical sequence. Single best answer questions are designed to be precise and unambiguous with only one correct answer. The guidelines for construction for single best answer questions recommend that absolute terms such as 'always' and 'never', and vague terms including 'usually' and 'frequently' are avoided. Examiners are also instructed to keep negatively phrased items to a minimum, which in contrast to some multiple choice true or false question should mean they are straightforward (and non-discriminatory against those for whom English is a second language).

Next read the lead-in question very carefully

After reading the stem and lead-in question, try and formulate the best possible answer in your mind even before reading the options (this is also one of the recommendations made to the examiners before they set the questions).

Read the lead-in question with each option

Once at this stage the authors' approach would be to read the lead-in question together with the first option and repeat the process with process with all five stems and confirm the answer. If this process does not identify the best single answer, it will help to eliminate the possible wrong answers and narrow down the options for the most correct answer and perhaps aid an educated guess. Avoid getting bogged down by overcomplicating matters; the single best answer questions are designed to be fair and simple.

Timing

The exam has 90 multiple choice questions (60 multiple choice true or false plus 30 single best answer), so remember that there are 2 minutes per question. It is vital to keep track of time. If a particular stem is complicated, it is common sense to leave it and come back to it at a later stage.

Transfer the answers to the answer sheet

Needless to say, it is necessary to correctly mark the appropriate box on the answer sheet or else everything said here is futile! Do this carefully as you go along, in case you run out of time at the end.

Conclusions

This article has attempted to demystify the process behind the single best answer question and provided an approach to solving them. For keen readers (and potential examiners) the authors recommend 'Constructing written test questions for the basic and clinical sciences' (Case and Swanson, 1998). This provides detailed guidance for writing questions in the single best answer format. **BJHM**

Conflict of interest: none.

Brennan L (2009) Single best answer MCQs. *RCOA Bull* 57: 39–41

Case SM, Swanson DB (1998) *Constructing written test questions for the basic and clinical sciences*. 3rd edn. National Board of Medical Examiners, Philadelphia (www.nbme.org/PDF/ItemWriting_2003/2003IWGwhole.pdf accessed 20 October 2010)

McCoubrie P, McKnight L (2008) Single Best Answer MCQs. A new format for FRCR part2a exam. *Clin Radiol* 63(5): 506–10

Miller GE (1990) The assessment of clinical skills/competence/performance. *Acad Med* 65: 563–7

Tan LT, McAleer JJ (2008) The introduction of single best answer questions as a test of knowledge in the final examination for the fellowship of the Royal College of Radiologists in Clinical Oncology. *Clin Oncol* 20(8): 571–6

Tomlinson A (2008) Changes to the FRCA examinations. *RCOA Bull* 52: 2690–2

KEY POINTS

- This article provides some background to the introduction of single best answer questions as part of the final FRCA examination.
- The authors also provide a technique for approaching these questions in the examination.