Royal College of Anaesthetists

Review of Final FRCA Examination 2016-2017

Dr Richard Telford
Chairman Final Exam

Dr Fiona Donald
Vice Chairman Final Exam

November 2017

Final Fellowship of the Royal College of Anaesthetists (FRCA)
Examination Report

Academic year (Sept 2016 – Aug 2017)

Outline

The aim of this document is to provide a summary of the Final Fellowship of the Royal College of Anaesthetists examinations undertaken during the Academic year September 2016 – August 2017. Different parts of this report may be relevant to different parties but by producing a single report rather than multiple separate ones, we aim to provide a balanced overview. It is hoped that the report will be of interest to the general public, candidates, examiners, examinations and other departments within the College and the General Medical Council (our regulator).

The Final examination is in two parts:

1. The written examination.
2. The structured oral examination.

Each will be considered separately as they are stand-alone examinations.

Three areas will be described for each examination type:

1. Outcome statistics.
2. An assessment of the utility of the examination.
3. A brief overview of areas of poor candidate performance to drive learning.

The Final examination is a national test of knowledge and judgement as laid out in the basic and intermediate level training curricula, agreed with the General Medical Council. Anaesthetists in training may not progress beyond the middle of specialist training year 5 without possession of this qualification (or equivalent).

1. The Final written examination

The Final written examination consists of two parts:

a) 90 question multiple choice paper (MCQ) consisting of 60 five-part true / false questions and 30 single best answer questions.

b) Short answer question paper (SAQ) consisting of 12 questions, all of which must be attempted.

It was held twice in the 2016-17 academic year (September 2016 and March 2017) in several venues across the United Kingdom. The format of the examination has not changed significantly in the last five years. The composition of the MCQ and SAQ papers are mapped against the curriculum to ensure that as full a range as possible of the curriculum is sampled. The examination is passed or failed as a whole entity with marks attained from both parts of the examination being added together.

a) Outcome Statistics:

Academic Year	2012-13		2013-14		2014-15		2015-2016		**2016-2017**	
Examination date	Sept 2012	March 2013	Sept 2013	March 2014	Sept 2014	March 2015	Sept 2015	March 2016	**Sept 2016**	**March 2017**
Number applicants	360	492	348	461	287	471	359	534	**427**	**470**
Withdrawals / non attendees	17	11	13	20	8	9	12	20	**23**	**16**
Attendees	343	481	335	441	279	462	347	514	**404**	**454**
Pass Rate: Number (%)	177 (52%)	285 (59%)	227 (68%)	305 (69%)	114 (41%)	193 (42%)	123 (35%)	271 (53%)	**70.5%**	**62.3%**
MCQ Internal consistency KR-20	0.72	0.79	0.80	0.82	0.79	0.80	0.80	0.77	**0.77**	**0.66**
SAQ Internal consistency Cronbach alpha	0.75	0.74	0.68	0.74	0.79	0.78	0.79	0.77	**0.77**	**0.80**

The improvement in the pass rate for the Final Written Examination seen since March 2016 continued in the 2016 – 2017 academic year. The pass rate of 70.5% in Sept 2016 was amongst the highest seen since the exam moved to its current format is September 2009. The improvement in the pass rate may be due to:

A change in difficulty of the examination

A change in the characteristics of the cohort of candidates

A combination of the two

These are considered further in the next section of the report.

b) Examination Utility:

The utility of any formal assessment such as an examination can be assessed in terms of its reliability, validity, cost, acceptability and educational impact.

Reliability:
The Final Written Examination is a high stakes examination requiring good reliability and validity.

The MCQ is a long examination (3 hours) with a large number of separate questions of varying type. The aim of this format is to provide good examination reliability. The pass mark for the MCQ examination is criterion referenced. The pass mark is set by a core group of examiners (the Angoff group) who use the Angoff technique to assign marks to each question based on what the borderline candidate would know. Questions are reviewed where there is marked variation in the Angoff scores assigned. One standard error of measurement (SEM) is then subtracted from

the total to arrive at the pass mark. In addition, attempts are made to establish aspects of the reliability of the MCQ paper. The Kuder Richardson formula (KR-20) is calculated for each set of MCQ paper results. This is a measure of internal consistency (an aspect of reliability) for dichotomous data. KR-20 results in this academic year for the MCQ papers were 0.77 (September 2016 MCQ) and 0.66 (March 2017 MCQ). These values are satisfactory and in line with values of internal reliability of most recent MCQ papers.

Each question in the SAQ paper is marked out of a total of 20 marks by a single examiner marking against a model answer. Examiners are divided into six groups and each group is given 2 of the 12 questions to mark for all the candidates. The papers are divided up amongst the group such that each candidate has 6 examiners in total assessing separate parts of their paper. In order to provide a standardized approach all examiners marking a single pair of questions meet together to approve a model answer well in advance of the planned paper. Once candidates have sat the exam the examiners meet again and mark four specimen answer papers to ensure a standardized interpretation of the model answer. The pass mark for each individual question is set by the SAQ group but then refined by the marking group. The pass marks for the 12 questions are summed to give a total mark for the paper and this mark is then reduced by 1 x SEM to give the pass mark. The test of internal consistency used for this paper is the Cronbach alpha calculation (as the data is continuous not dichotomous). Results in the most recent examinations are shown in the table above. The values of Cronbach alpha are 0.77 (September 2016) and 0.80 (March 2017) which are in line with or improved on recent values.

Has the examination changed in difficulty?

There have been no changes in this academic year in the way the examination papers are constructed, no change in the sampling of questions across the curriculum, no change in the way the pass marks are calculated, and no significant change in the make-up of the Angoff reference group setting the pass mark. Also the statistical measures of internal consistency remain acceptable.

Cost, accessibility, feasibility and educational impact:

It is extremely important to ensure this examination is accessible to all. Anaesthesia is the largest hospital specialty so each year there are many candidates needing to take this examination for career progression. Suitable capacity already exists and has allowed all eligible candidates applying to take the written examination in 2016-17 to do so. In addition, the use of multiple examination halls across all four health jurisdictions supports ease of access to the examination. The examination fees reflect the costs incurred and do not provide a source of income over expenditure to the College. The numbers sitting the examination have varied from 350 to 530 per sitting over the last decade. 858 candidates sat the written examination in 2016 – 2017, which is the second highest on record. This increase in candidate numbers may partly be explained by the low pass rates seen in the written examination between September 2014 and September 2015.

c) Areas of poor candidate performance

To date the results of the MCQ examination with multiple discrete assessments have not been analysed to identify areas of candidate weakness. This will occur in the next academic year when the structure of the MCQ examination is changed to be formally mapped against the intermediate level training curriculum. The change will allow this advice to be offered in the future.

The leads of the SAQ group produce a detailed report, freely available on the College website, describing performance at each SAQ paper sitting. Details of the pass rate for each individual question are included and considerable detail is provided on the answers required. Candidates

who failed the examination tended to produce poor answers in multiple different questions, and were not failing the examination because of a poor result in a single question area. Some were let down by not reading the question correctly, not paying attention to the distribution of marks and by illegible handwriting. All of these are recurring problems and probably represent poor time management. It is very important to practise SAQs under exam conditions, which brings in the element of timing as well as knowledge. In previous academic years concern has been expressed about poor candidate performance in questions on mandatory units of training but in the September 2016 exam it was reassuring that five of the six questions on mandatory units had amongst the highest pass rates. The overall pass rate for the SAQ in September 2016 was 705% and in March 2017 50.7%. Both represent a substantial improvement on the very low pass rates seen in 2014-15 with, as mentioned above, particular improvement in the questions on mandatory units of training. An emerging theme is that candidates do poorly in advanced science related to clinical practice. It is important to remember that clinical science is not left behind at Primary FRCA and remains as relevant in the Final FRCA as it is in everyday practice.

2. The structured oral examination

Candidates may only take the Final structured oral examination (SOE) once they have been successful at the Final written examination. The oral examination consists of two parts:

a) SOE 1 (clinical) consisting of a 40 minutes review of one long clinical case and three short clinical cases.

b) SOE 2 (applied science) consisting of a 30 minute review including sciences as applied to patient care (anatomy, physiology, pharmacology, physics and clinical measurement).

Although all questions are structured, the face to face nature of the examination allows exploration not only of knowledge but also of the understanding (application) of that knowledge. The examination is held twice per year approximately two months after the written examination to allow smooth progression through both parts of the Final examination.

a) Outcome Statistics:

Academic Year	2012-13		2013-14		2014-15		2015-2016		**2016-2017**	
Examination Date	Dec 2012	June 2013	Dec 2013	June 2014	Dec 2014	June 2015	Dec 2015	June 2016	**Dec 2016**	**June 2017**
Candidates attending	297	360	351	384	243	267	214	319	**374**	**389**
Pass rate Number (%)	187 (63%)	234 (65%)	235 (67%)	261 (68%)	157 (65%)	170 (64%)	142 (66%)	225 (71%)	**253 (67.6%)**	**246 (63.2%)**

A total of 763 candidates sat the Final SOE in 2016-2017. The average pass rate for the academic year was 65.4%, which is in line with other annual means since the new exam format was put in place.

b) Examination Utility:

It is important to ensure that the SOEs are a reliable and valid test of knowledge and understanding of the intermediate level training curriculum. The questions are constructed and reviewed by the SOE group and answer guidance is given. Marks given on the day are a matter of independent professional judgement by the 2 examiners conducting the SOE. However, during the academic year more than 56 individuals observed the SOEs, the majority being consultants in active clinical practice from across the UK. All were asked to provide written feedback on the content and conduct of the examinations they observed. During this year there was a uniformity of view that the clinical cases used were highly reflective of UK practice and were pitched at the correct level to effectively assess trainee anaesthetists at the appropriate level of training. Overall independent observers regarded the assessment as being valid and relevant.

All questions used in the SOEs are held in a computerized bank. Most have been used on a number of occasions with any individual candidate being exposed to at most one new question, without statistics relating to reliability and consistency from previous examinations. The SOE examination matrix is put together to provide a paper of approximately equal difficulty across the different days in an examination week, and also across different sittings of the examination.

11 new examiners joined the board of Final examiners at the start of the academic year, replacing a number of colleagues relinquishing their examining role at the end of their term of office. A total of 71 examiners make up the Final examiner board. All had at least 2 years-experience of examining for the Primary FRCA exam. The pairing of new examiners with experienced colleagues in their first year of SOEs allows rapid assimilation to the professional standard expected. Rigorous audit of examiner performance identified concern regarding only one examiner's performance during the academic year and this is being addressed. It is our view that we therefore have evidence to suggest that the vast majority of examiners function appropriately in their role and that existing quality assurance processes allow us to identify and deal with any problems.

Trends in pass rates for the SOE by registered characteristics are the same as for the written examinations with higher pass rates for females, UK medical graduates, those employed in training posts, Primary FRCA holders and non BME candidates.

Cost, accessibility and educational impact:

Again the administration of the Final SOE examination does not represent a source of income generation for the College. All candidates wishing to take this examination were

accommodated during the two examination weeks. There are sufficient examiners to accommodate up to 400 candidates per SOE examination sitting.

c) Areas of poor candidate performance

Some examiners and visitors have expressed a modicum of concern on the apparent clinical inexperience of some of the weaker candidates taking the Final FRCA examination. Many of the questions which form core elements of the intermediate level training curriculum are met by answers showing theoretical (book) knowledge but no practical knowledge of having seen the clinical situations in either a supervised or unsupervised capacity. This is clearly unsatisfactory and it is partly for this reason that the block on progression in training without possession of the Final FRCA has been put back to halfway through ST5. It is hoped that candidates will feel less pressure to sit the exam too early in training to have gained adequate experience. However, the maintenance of a consistent pass rate in the SOEs suggests that the overall ability of candidates getting through to the SOE is unchanged from previous years.

Summary:

In the 2016 – 2017 academic year, there was a marked improvement in the pass rates for the written component of the Final FRCA examination when compared to the recent past. This resulted in increased candidate numbers for the Structured Oral Examination, approximately two thirds of whom were successful in obtaining the Diploma of Fellow of the Royal College of Anaesthetists.

It is important to remember that one of the prime roles of postgraduate examinations is to maintain standards in healthcare. Possession of the FRCA diploma permits trainees to work with reduced levels of clinical supervision. It is vital therefore that, in order to protect those requiring the services of an anaesthetist in the UK and further afield, the standard of knowledge required to pass the FRCA examination is not reduced.

Finally, we wish to acknowledge the hard work of the staff in the examinations department of the College without whom the Final FRCA examination would not be the smooth and efficient process that it is. It is equally important to recognize the efforts of our fellow examiners many of whom are finding it increasingly difficult to get time away from work to perform their examination duties.

Royal College of Anaesthetists
Churchill House 35 Red Lion Square, London WC1R 4SG
Tel 020 7092 1673 | **Email** exams@rcoa.ac.uk | **Website** www.rcoa.ac.uk/examinations
Twitter @RCoANews | Find us on Facebook