

Review of Primary FRCA Examination 2022- 2023

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

Academic year Sept 2022-Aug 2023

Introduction

The aim of this document is to provide a summary of the Primary Fellowship of the Royal College of Anaesthetists' examination undertaken during the academic year September 2022-August 2023. Different parts of this report may be relevant to different stakeholders 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.

The purpose of the Primary exam is to test the knowledge, understanding, and application of basic sciences to anaesthetic practice along with an introduction to the clinical aspects of the profession. The science topics covered fall into the realms of physiology, pharmacology and physics.

The Primary examination is a national test of knowledge and judgement, as laid out in stage 1 of the training curriculum agreed with the General Medical Council. Anaesthetists in training may not progress beyond core training without possession of this qualification.

The Primary exam consists of two parts:

- A written paper
- An oral day comprising the Structured Oral Examination (SOE) and the Objective Structured Clinical Examination (OSCE)

This report looks at each section of the exam separately as they are stand-alone examinations, and in terms of the following three areas:

1. outcome statistics
2. an assessment of the utility of the examination
3. a brief overview of areas where candidate performance could be improved.

1. The Primary MCQ examination

In academic year 22-23, the Primary MCQ examination comprised:

- a) 30 Multiple True False (MTF) questions blueprinted to the Primary FRCA Examination and mapped against professionalism of Medical Practice based primarily upon physiology, pharmacology and physics/clinical measurement. These questions are designed to test knowledge. Each MTF question comprises five “leaves”. One mark is awarded for each correct MTF leaf with a total of five marks per question. Care is taken to ensure that the aggregate, historical, mean candidate score in each of the 45 questions lies between 0.75-0.81 (or 0.48-0.52 for questions that ran prior to September 2009 with negative marking), and that no more than 10% of the questions have run within two years of the exam under construction.
- b) 60 Single Best Answer (SBA) questions. These are designed to examine the application of knowledge and are tested over the same curriculum as that examined in the MTF questions. Each SBA comprises five options and four marks are awarded for a correct answer. Candidates have expressed concern that the SBA questions may be detrimental to their chance of passing but since their inception, the pass rate on the SBA questions has been no lower than that in the MTF section and in the last few years has been significantly higher, improving the overall pass rate.

The MCQ Core Group convenes shortly after each written paper to review the performance of the questions. Candidate feedback on specific questions is discussed carefully and taken into consideration where the group determines it is appropriate. The latest three sittings have continued the historical trend of MTF questions performing well and demonstrating consistent psychometric statistics for reliability. The SBA questions continue to include a number of new questions that have been through a rigorous quality assurance process by the MCQ Core Group. The SBAs consistently perform well, with the best answer almost always chosen by the highest performing candidates showing good discrimination.

A maximum total score of 150 is possible for the 30 MTF questions and a further 240 marks for the 60 SBA questions. There is no negative marking. The pass marks of the MTF and SBA sections of the paper are always derived separately using the independent Angoff scores of an extended group of current and previous MCQ Core Group members. Their remit is to score the likelihood that the ‘minimally competent’ candidate will arrive at the correct answer to each question set. It is noteworthy that the averaged Angoff scores used within the MCQ examination have remained remarkably consistent over the years.

The Angoff-derived mark for the MTF and SBA sections are summed and a reduction applied to allow for one standard error of measurement (SEM). The SEM is formed using a method that uses data from every candidate response to every question and derives a statistic that reports the reliability of the test, the Kuder-Richardson 20 (KR-20). Where statistical analysis derives marks that are not whole numbers, these are rounded to favour the candidates.

Statistical information on the three sittings of the Primary MCQ examination in the academic year 2022-23 is shown in **Table 1** with a comparison to the previous four years.

a) Outcome statistics for the Primary MCQ examination

Table 1 - Percentage pass rates for MCQ over last 5 years (15 sittings)

Candidate attendance, outcome overall and for MTF and SBA components for last 5 years of primary examination along with Angoff score and reliability (KR-20)

Examination Year Sitting	Per Exam	Pass Rate	MTF Nominal Pass Rate	SBA Nominal Pass Rate	Angoff Mean Score	Total possible Score	Exam KR-20 Reliability	Yearly No. of candidates
2018-2019								
Sep-18	447	75.80%	64.20%	88.60%	298	416	0.91	1184
Nov-18	328	55.80%	36.00%	76.50%	297	417	0.90	
Mar-19	409	60.60%	49.50%	71.20%	291	408	0.93	
2019-2020								
Sep-19	472	72.25%	58.69%	82.84%	294	409	0.92	1182
Nov-19	292	48.63%	30.14%	76.37%	300	414	0.90	
Mar-20	418	56.22%	56.22%	66.03%	291	407	0.92	
2020-2021								
Sep-20	422	69.67%	43.84%	84.36%	269	401	0.89	1263
Nov-20	426	45.31%	29.34%	58.69%	264	390	0.92	
Feb-21	415	51.57%	44.10%	59.52%	265	394	0.91	
2021-2022								
Sep-21	389	59.13%	41.65%	73.26%	268	394	0.93	1175
Nov-21	380	63.68%	41.84%	78.68%	264	395	0.92	
Feb-22	406	56.65%	45.57%	67.73%	267	401	0.91	
2022-2023								
Sep-22	289	73.36%	68.86%	71.97%	232	379	0.90	1286
Nov-22	432	62.27%	54.86%	67.82%	249	390	0.93	
Feb-23	565	52.74%	53.27%	52.39%	240	380	0.92	
Overall	Mean	60.25%	47.87%	71.73%				
	Median	59.13%	45.57%	71.97%				
	SD	8.95%	11.21%	9.73%				

b) Examination utility

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

Reliability

The KR-20 is a measure of internal reliability of the examination and is influenced by the quality and the number of test items, the candidate performance on every test item, and the variance thereof. The combined KR-20 of the last three papers has been between 0.90-0.93 reflecting a reassuringly high reliability of testing. At the last three sittings, the KR-20 for the MTF section was between 0.84-0.89 and the SBA section between 0.84-0.89, the former reflecting the higher number of questions in the MTF section (each MTF comprises 5 sub-questions (leaves)).

Candidate numbers across the current examination year at 1,286 is slightly up from the previous year. The overall mean pass rate of 62.79% for the three sittings has shown a slight increase in the mean pass rate of the previous four years at 59.61%.

The nominal pass rates in the SBA section continue to be significantly higher (mean 71.73%) than the MTF section (Mean 47.87%). The higher performance of candidates in the SBA section offsets what would otherwise be a lower overall pass rate. However, in February 2023 the pass rates for both the MTF and SBA sections were broadly similar at 53.27% and 52.39% respectively.

Accessibility

Anaesthesia is the largest hospital specialty which means that each year there are a large number of candidates who need to take this examination in order to ensure their career progression. Sufficient capacity exists in the Primary MCQ therefore all eligible candidates applying to take this exam in 2022-2023 were able to do so. A range of reasonable adjustments are available to candidates such as increased time and rest breaks. Our supplier, *TestReach*, delivers the exam and on a request basis, can provide a canvas that enables candidates to highlight, annotate and zoom. Requests for reasonable adjustments must be made on booking the exam and further information on this process is available on the [College website](#).

2. The Primary Oral Examination (SOE/OSCE)

The oral examination consists of two components sat at the Royal College of Anaesthetists on the same day. The Structured Oral Examination (SOE) comprises two 30-minute oral components and the Objective Structured Clinical Examination (OSCE) is one 108-114 minute examination as described in more detail below.

On a first attempt, candidates must sit the SOE and OSCE at the same sitting. If a candidate is unsuccessful in one part, they only retake the failed component in a subsequent diet i.e. to take the SOE alone they must have previously passed the OSCE and vice versa.

The oral exam is held three times per year and is scheduled to enable candidates to enter after passing the preceding MCQ examination should they wish to do so.

Structured Oral Examination (SOE)

The SOE section of the oral examination enables examiners to explore a candidate's understanding as well as their knowledge of clinical and basic science concepts. To be eligible to sit the SOE, a candidate must have passed the MCQ exam.

The SOE section consists of two parts.

- SOE 1: 2 sections, testing pharmacology (15 minutes) and physiology (15 minutes).
- SOE 2: 2 sections, testing clinical (15 minutes) and physics, equipment, safety, and measurement (15 minutes)

Each examination lasts 30 minutes. In each section, candidates are examined on three questions of five minutes each, and their answers are evaluated independently by two examiners. Thus, a total of four examiners are involved in independent scoring for each candidate.

The four sections of the SOE exam have their own working party, which is chaired by a senior examiner. The working parties (WPs) are tasked with reviewing questions and topics, introducing new questions, and setting exams.

Objective Structured Clinical Examination (OSCE)

The OSCE comprises 16-19 consecutive stations (16 live plus 1-3 rest stations) of five minutes duration each, with one minute between to read the instructions for the next station.

A candidate may score a maximum of 20 marks on each station, with the sum of the mark at every station providing the final, total score. The cut score (pass mark) is calculated by the sum of the Angoff score of each of the individual stations.

a) Outcome statistics for the Primary oral examination

Table 2: Percentage pass, partial pass and fail for each of the 3 sittings of the oral examination with total number of candidates attending (excludes candidates who withdrew or failed to attend)

		PASS	Partial pass (SOE)	Partial pass (OSCE)	FAIL	n
NOV 2022	Sat both - First Attempt	59.01%	11.80%	7.45%	21.74%	161
	Sat both - resitting	25.00%	19.23%	11.54%	44.23%	52
	Sat SOE only	76.92%			23.08%	26
	Sat OSCE only	85.54%			14.46%	83
JAN 2023	Sat both - First Attempt	64.60%	11.50%	9.29%	14.60%	226
	Sat both - resitting	33.33%	14.58%	25.00%	27.08%	48
	Sat SOE only	64.00%			36.00%	25
	Sat OSCE only	76.32%			23.68%	38
MAY 2023	Sat both - First Attempt	74.72%	7%	11.15%	7.43%	269
	Sat both - resitting	38.64%	20.45%	22.73%	18.18%	44
	Sat SOE only	64.29%			35.71%	42
	Sat OSCE only	79.17%			20.83%	48

Figure 1: Attendance at SOE and OSCE over last 5 years

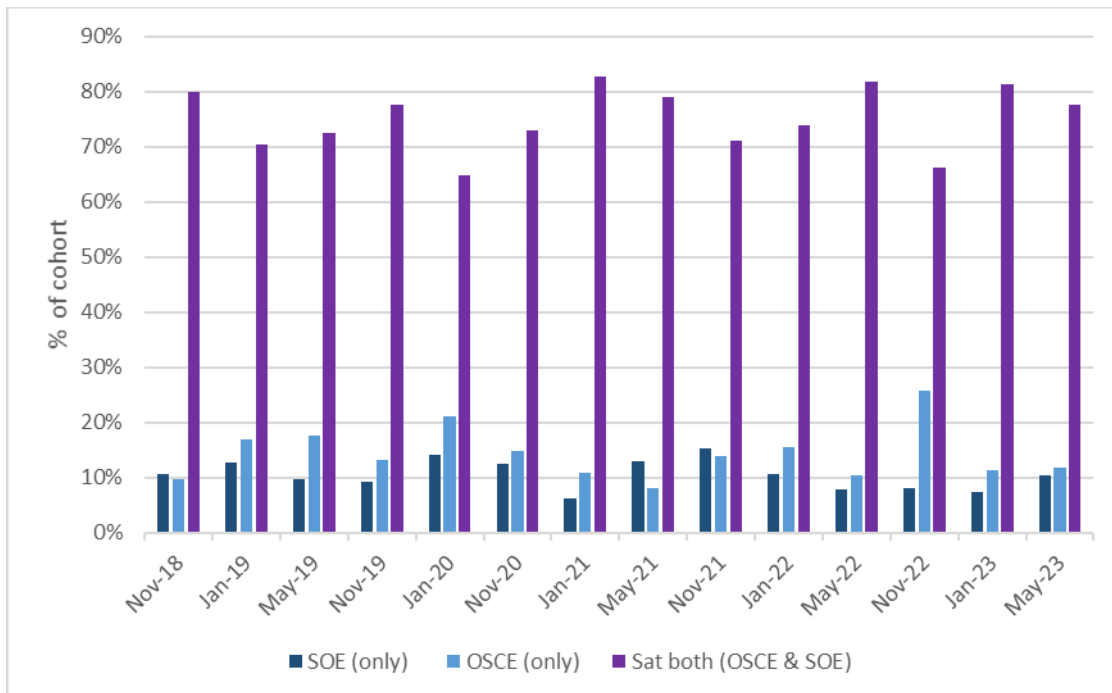
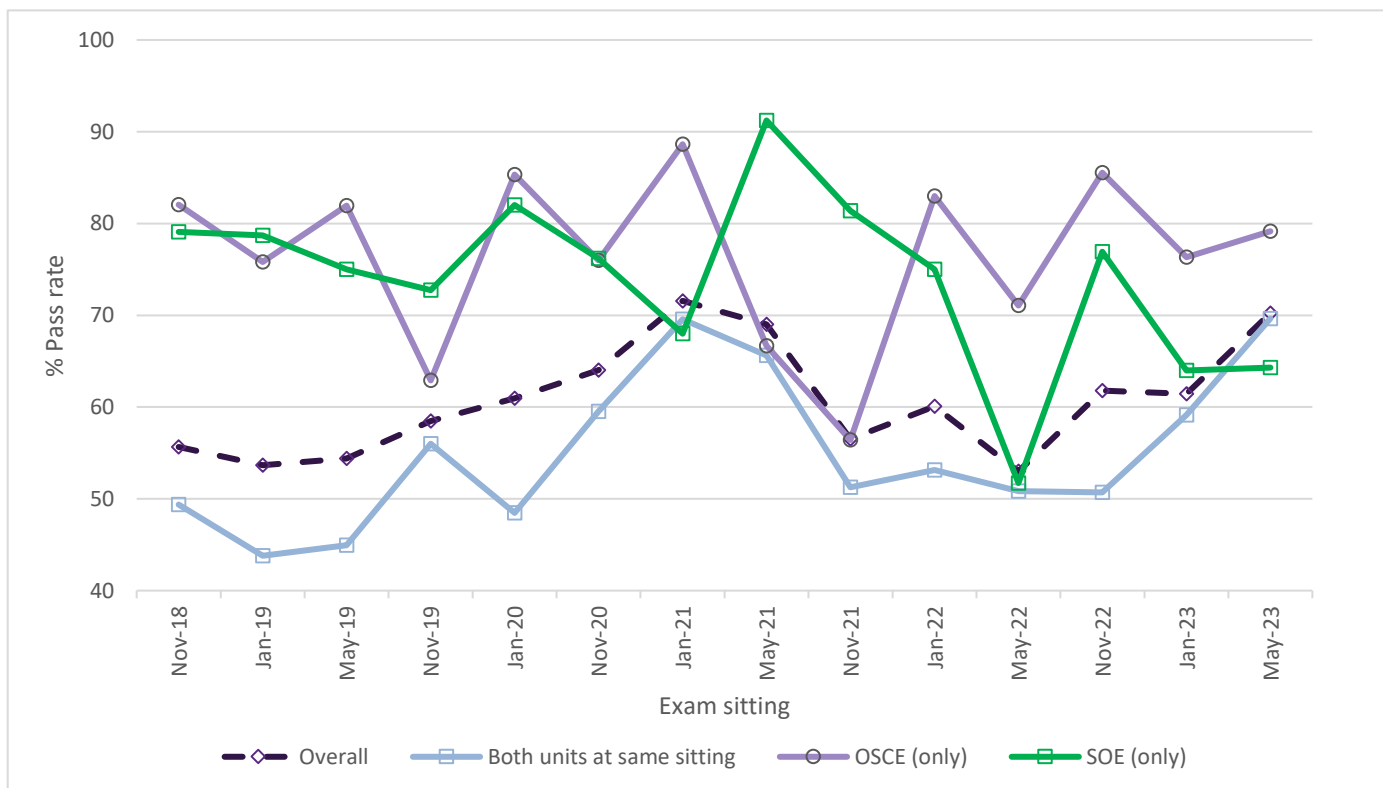


Figure 2: Pass rate for both components, SOE only and OSCE only and overall pass rate for examination over the last 5 years.



b) Examination utility

To ensure the exam content and process is consistent, fair, and reflects best practice we conduct regular working party meetings where groups of examiners in the MCQ, OSCE, and SOE review and update the question banks. A senior examiner chairs each of these working parties.

We continue to welcome and value the contribution of visitors, who being closely involved with trainees at stage 1, are a valuable source of feedback on the standard of the exam. Whilst providing visitors with an insight into the exam process, it also helps them to align practice sessions in their trust to the structure and standard of the exam. Reassuringly, visitors generally assess the standard as appropriate and the quality of examiners as fair and consistent. We have recently changed to an online process for visitor feedback, which we hope will ensure more time and consideration is given to the feedback and will increase the independence of this appraisal. Candidates can also feedback on the exam via the post-exam survey or by email to exams@rcoa.ac.uk

We have regular visits from Patient Voices, who as well as being interested in the overall exam process, have been actively involved in the development of the communication stations in the OSCE.

All new examiners must attend a training day prior to commencing their first exam, as well as completing exam-specific equality and diversity training. The training day is updated regularly, and online e-learning modules are under consideration for future use. During the probationary year, new examiners are mentored by experienced examiners to ensure they are familiar with the process. These measures are designed to ensure new examiners are well prepared for their first year of examining.

Videos are taken during the examining weeks, and experienced examiners audit the performance. This audit data and video footage is discussed at an appraisal at the end of the first year to give new examiners an opportunity to reflect on their progress, formally discuss any issues they may have, and discuss future contributions to the exam.

In 2022, four new Primary examiners joined the board of examiners all of whom successfully completed their probationary year and no examiners moved to the Final examination. Following the completion of a 10-year tenure, two examiners retired from examining and four examiners moved to the ["Retire and Return" contract](#).

At the end of each exam day, the examiners meet for an evening debrief to discuss any process issues from that day and any new questions coming up on the following day. The meeting also allows examiners to receive updates on contemporary examination practices.

Exam results are released approximately two to three weeks after the last day of the exam week. A moderation board comprising senior examiners from each section and relevant members of the Examinations Team meets prior to the release of results to review the data, discuss any feedback and process issues, and confirm prize winners. Borderline marks are reviewed in both the OSCE and SOE. All marks of '36' in the SOE and 'fail by one' marks in the OSCE are checked for accuracy and cross-checked to examiner feedback on candidate performance. Moderation is a vital part of the process to ensure that problems, improvements, and developments are appropriately discussed and approved.

Accessibility

Anaesthesia is the largest hospital specialty which means that each year there are a large number of candidates who need to take this examination to ensure their career progression. The May 2023 diet was over-subscribed therefore section 4 of the Examinations Regulations for the [Prioritisation of Applications](#) was used to select candidates for places on the exam. 45 applicants did not receive a place and 33 candidates were placed on a waiting list. Of these 33, 13 candidates were offered a place on the exam. Those candidates who did not receive a place on this exam diet were offered the opportunity to apply for the November 2023 diet of the examination at the same fee for this year, 22-23. It was not necessary to prioritise the November 2022 or January 2023 exam diets. There were sufficient numbers of examiners to facilitate examining and audit, but numbers were too tight for resource development within the exam weeks.

Cost

The examination fees are set to reflect the costs incurred and not to provide an operational surplus to the College. [Cost of training](#) is explained in full on the College website.

Examiner support and Continuing Professional Development

As part of the process of developing the Primary FRCA exam in line with recommendations in the [independent review of exams](#) published in February 2023, members of different working parties visited the exams of other Royal Colleges to observe how they are delivered and to take away areas of best practice and learn from their experiences. Additionally, leads from the SBA and OSCE working groups attended HPAC courses to acquire a thorough grounding in the theory, design, delivery, and quality assurance of examinations.

Examiners are encouraged to complete exam-specific EDI Training modules and to express their interest in further development or leadership positions during their appraisals.

Professionalism of the exam

New policies were developed and implemented to define the level of professionalism required of examiners. These included a general code of conduct, a social media policy, and an examiner misconduct policy.

Reasonable adjustments panel

A range of reasonable adjustments are available to candidates in the OSCE SOE such as increased reading or exam time and a separate room off the main exam floor in which to sit the SOE. Requests for reasonable adjustments must be made on booking the exam and further information on this process is available on the [College website](#).

A subgroup with the purpose of reviewing non-standard requests for reasonable adjustments in exams was formed this year in response to the greater number of more complex requests received over the past couple of years. This reasonable adjustment panel comprises examiners, members of the Examinations Department, and where possible, representatives from anaesthetists in training. Meetings are only convened where there are complex cases for discussion so may not be required before each clinical exam diet. The meetings are held soon after the booking window for each exam diet closes to provide the group with sufficient time to fully discuss the request, confirm any adjustments agreed with candidates, and where necessary, ask for further information to be provided.

In these meetings, the focus is on the recommendations provided in the formal report submitted to support the request for reasonable adjustments and any other supporting evidence provided by the candidate. Each request is reviewed on a case-by-case basis and the extent to which the request is reasonable in terms of each specific component of the exam, its purpose, format and delivery mode, is considered.

Exam Reviews

The outcome and recommendations of the [internal](#) and [independent](#) exam reviews were discussed by the senior examinations team, Chairs and Council members towards the end of 2022. This was followed by scheduled listening events hosted by Council members and examination leads to invite feedback and generate discussion from examiners and Anaesthetists in Training. The recommendations were prioritized, feedback from stakeholders was taken into consideration and an action plan with an implementation timeline was published in February 2023.

The Primary examiner group has moved a considerable distance since the publication of the exam reviews earlier this year, following a brainstorming day in April 2023. The purpose of the Primary FRCA was revisited and an outline of how the new exam may look was constructed. The written exam will comprise predominantly SBAs and a face-to-face clinical exam will be based on performance, decision-making, clinical reasoning, and critical thinking. The short-term timeline (2022/23) consists of outlining the frameworks for the exam and establishing a governance structure in the form of a new Examinations Development and Assurance Group (EDAG). In the medium timeline (2023-26), standard setting methods will be agreed upon, exam materials created and piloted, and training materials and candidate resources will be developed. Candidates and Trainers will be informed of any changes to the exam a year in advance. The new exam formats will be introduced in the academic year 2027-28 following the publication of transition plans.

The Primary FRCA will continue to be a summative assessment that sets the standard for performance at stage 1 of the 2021 curriculum.

End note

Finally, we wish to acknowledge our partners in the delivery of this exam, the staff in the examinations department of the College without whom the Primary FRCA examination would not be the smooth and efficient process that it is.

