



Intercollegiate Committee for Basic Surgical Examinations

**The Membership Examination of the Surgical Royal
Colleges of Great Britain**

MRCS

Part A and B (OSCE)

2008/9 ANNUAL REPORT

July 2009

The Intercollegiate Committee for Basic Surgical Examinations (ICBSE) is responsible for the development and oversight of the Intercollegiate Membership Examinations (MRCS) on behalf of the Royal Surgical Colleges of Great Britain and Ireland.

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The Intercollegiate Committee for Basic Surgical Examinations (ICBSE) would welcome comments on this Annual Report and ways in which it can be improved in future years. If you have comments on this Report please send them to: The Chairman, ICBSE, c/o rbocz@icbse.org.uk

1. Introduction

This is the second Annual Report on the Membership Examination of the Surgical Royal Colleges of Great Britain. It covers the period August 2008 to July 2009.

The purpose of the Annual Report is to provide a definitive source of information about the examination for all interested stakeholders including candidates, trainers, Assigned Education Supervisors and the public.

The structure, standard and quality assurance of the MRCS examination is the responsibility of the Intercollegiate Committee for Basic Surgical Examinations (ICBSE) which has a number of specialist subgroups each responsible for a different aspect of the examination.

2. The MRCS examination: purpose and structure

The Membership Examination of the Surgical Royal Colleges of Great Britain (MRCS) is designed for candidates in the generality part of their specialty training. It is a crucial milestone which must be achieved if trainees are to progress to specialty surgical training as defined by the nine surgical Specialty Advisory Committees (SACs). The purpose of the MRCS is to determine that trainees have acquired the knowledge, skills and attributes required for the completion of core training in surgery and, for trainees following the Intercollegiate Surgical Curriculum Programme, to determine their ability to progress to higher specialist training in surgery.

Having achieved the intended outcomes of the curriculum it is anticipated that the surgical trainee will be able to perform as a member of the team caring for surgical patients. He or she will be able to receive patients as emergencies, review patients in clinics and initiate management and diagnostic processes based on a reasonable differential diagnosis. He or she will be able to manage the peri-operative care of patients, recognise common complications and be able to deal with them or know to whom to refer. The trainee will be a safe and useful assistant in the operating room and be able to perform some simple procedures under minimal supervision and perform more complex procedures under direct supervision.

The MRCS examination has two parts: Part A (written paper) and Part B Objective Structured Clinical Examination (OSCE).

2.1 Part A (written paper)

Part A of the MRCS is a machine-marked, written examination using multiple-choice Single Best Answer and Extended Matching Items. It is a four hour examination consisting of two papers, each of two hours' duration, taken on the same day. The papers cover generic surgical sciences and applied knowledge, including the core knowledge required in all nine specialties as follows:

Paper 1 - Applied Basic Science

Paper 2 - Principles of Surgery-in-General

The marks for both papers are combined to give a total mark for Part A. To achieve a pass the candidate is required to demonstrate a minimum level of knowledge in each of the two papers in addition to achieving or exceeding the pass mark set for the combined total mark for Part A.

2.2 Part B (OSCE)

The Part B (OSCE) was introduced for first examination in September 2008. It integrates basic surgical scientific knowledge and its application to clinical surgery. The purpose of the OSCE is to build on the test of knowledge encompassed in the Part A examination and test how candidates integrate their knowledge and apply it in clinically appropriate contexts using a series of stations reflecting elements of day-to-day clinical practice.

It normally consists of 16 examined stations divided into five broad content areas as follows:

- Anatomy and surgical pathology (3 stations),
- Surgical skills and patient safety (2 stations),
- Communication skills (3 stations),
- Applied surgical science and critical care (3 stations),
- Clinical skills in history taking and physical examination (5 stations).

Twelve of the 16 examined stations are manned by examiners; some have two examiners and some one. In stations with two examiners, each examiner normally examines different aspects of a candidate's performance.

Although the OSCE is designed for candidates in the generality part of their speciality training four of the 16 examined stations are presented within a specialty context. This is to meet the emerging intentions of trainees with regard to future career progression, and to accommodate different patterns of specialty training. The specialty contexts are:

- head and neck,
- trunk and thorax,
- limbs (including spine),
- neurosciences.

Candidates specify their choice of specialty context stations at the time of application to the examination.

In addition to the five broad content areas examined in the OSCE, six domains have been identified which encompass the knowledge, skills, competencies and professional characteristics of the competent surgeon. These domains map to GMC's Good Medical Practice (GMP) and are assessed via the 16 stations of the OSCE. They are as follows:

- Clinical knowledge,
- Clinical skill,
- Technical skill,
- Communication,
- Decision making, problem solving, situational awareness and judgement,
- Organisation and planning.

For more information about the MRCS go to www.intercollegiatemrcs.org.uk.

3. The MRCS and the Intercollegiate Surgical Curriculum Programme (ISCP)

The MRCS examination is an integral part of the assessment system of the Intercollegiate Surgical Curriculum Programme (ISCP) <http://www.iscp.ac.uk>. Nine surgical specialties: cardiothoracic surgery; general surgery; neurosurgery; oral & maxillofacial surgery; otolaryngology; paediatric surgery; plastic surgery; urology; and trauma & orthopaedic surgery have collaborated through the ISCP in developing a competence-based curriculum which defines the attributes required of a successful surgeon. The web-based ISCP curriculum and its assessment system, including the MRCS, have been approved by the Postgraduate Medical Education and Training Board (PMETB).

4. Writing the examination and standard setting

4.1 Part A written papers

Based on the ISCP curriculum, a syllabus blueprint for the Part A examination sets out a broad specification for the numbers of questions on each topic to be included in each paper of the examination. It is not possible to sample the entire syllabus within a single Part A paper but the blueprint and specification ensures that the common and important content is routinely covered and that the entire syllabus is sampled over time.

Questions are coded according to the area of the syllabus to which they relate and are held in a computerised item bank. During the year groups of question writers

were commissioned to produce new questions according to the agreed specification and, following editing and specialist review, these questions were added to the item bank. For each diet of the examination questions are selected from the bank using the examination blueprint and are compiled into a paper by the MCQ question paper group of the ICBSE.

Questions are carefully planned from the outset to be at an appropriate level of difficulty. The standard for the paper is originally set using a modification of the Angoff procedure where a group of 'judges' estimates the performance of a notional 'just good enough to pass' candidate. In order to ensure that standards are set at an appropriate and realistic level the judges include practising surgeons, trainers, a trainee and a patient representative. A number of 'marker' questions taken from a previous examination are included in each Part A paper and are used to calibrate the standard and help to ensure that there is continuity between the standard of the examination over time.

Following each examination a standard setting meeting is held at which the performance of candidates on each question is scrutinised together with their performance on the test overall. A range of statistical measures is used to evaluate the reliability and facility of the examination and its individual questions. It is at this stage that candidate feedback on the examination is considered and taken into account when deciding whether or not to exclude a specific question from the overall examination outcome. Using the benchmark of the previously described Angoff exercise, the performance of candidates on the marker questions is reviewed together with other statistical data from the present and previous examinations to set the pass/ fail cut-off mark.

Candidates are given their Part A score and the score required to pass the examination, thus giving them an indication of how far short of, or above, the required standard they are.

4.2 Part B (OSCE)

Scenarios and questions for the OSCE stations are written by a team of Broad Content Area 'champions' using detailed templates and a detailed writers' guide. Draft scenarios are scrutinised by a team of reviewers before being edited and submitted to a final review panel for approval. The scenarios are then grouped into examination 'circuits' so as to achieve the appropriate balance of content and challenge.

The same circuits are used in each of the Colleges on the same day. At the end of examination diet, the results of all candidates are combined and the pass/fail boundaries are agreed at a single standard setting meeting attended by representatives of each of the Colleges. Each standard setting meeting begins with an analysis of the level of discrimination and facility of each of the circuits and their constituent stations, including a review of candidate and examiner feedback, to ensure consistency and comparability of demand.

Each candidate's performance on each of the examined stations is assessed in two ways:

- a mark is awarded out of 16 using a structured mark sheet containing assessment criteria for each content area and for each assessed domain;
- an holistic judgement using one of the categories: Pass; Borderline pass; Borderline fail; or Fail.

The following information is therefore available for each candidate:

- a total mark for each station out of 16;
- a category result for each station i.e. Pass; Borderline pass; Borderline fail; Fail;

- a total mark for the OSCE (out of 256 marks);
- a total mark for each domain;
- a total mark for each broad content area.

Using the above information, a variant of the *contrasting groups* method of standard setting (1) is used to determine the pass fail boundary for the OSCE out of 256 marks as follows:

1. A *lower limiting mark* is calculated using the scores for all candidates awarded 'borderline fail'.
2. An *upper limiting mark* is calculated using the scores for all candidates awarded 'borderline pass'.
3. The Standard Error of Measurement (SEM) for the OSCE is calculated and added to the mid point between the upper and lower limiting marks. The resultant sum, rounded upwards, is taken as the pass/fail mark out of 256.
4. To safeguard the interests of patients, and as a driver to learning, it is a requirement for passing the OSCE that in addition to achieving a pass mark in the OSCE overall, a minimum level of competence must be achieved in each broad content area *AND* in each domain. The minimum level of competence for the broad content areas and domains is an examiner judgement - normally taken as corresponding to the lower limiting mark.

Each candidate is given detailed feedback showing their mark on each Broad Content Area, each domain and for the OSCE overall.

(1) Norcini, J. J. Setting Standards on Educational Tests, *Medical Education* 2003;37:464-469

5. The Quality Assurance and the role of IQA

The quality of the MRCS examination is monitored by the ICBSE's Intercollegiate Internal Quality Assurance Committee (IQA). The IQA meets at least three times each year and receives, for each part of the examination, the following information:

- overall pass rates and descriptive statistics for the latest diet and previous diets;
- pass/fail breakdown by candidates' first language for the latest diet and previous diets;
- pass/fail breakdown by candidates' gender for the latest diet and previous diets;
- pass/fail breakdown by candidates' primary medical qualification for the latest diet and previous diets;
- pass/fail breakdown by candidates' ethnicity for the latest diet and previous diets.

After each examination, every candidate is invited to complete an anonymous feedback questionnaire. Examiners are invited to complete similar questionnaires. The IQA receives and reviews the feedback from examiners and candidates and correlates them with the statistical information on the examination.

In its interpretation of the data on the examination, the IQA is advised and assisted by an independent Educational Consultant who analyses the information and writes a brief report on each part of the examination drawing any potential anomalies to the attention of the Committee for consideration and action.

The IQA Committee will refer matters which it considers to be in need of attention or further scrutiny to either the mcq or OSCE subgroups of ICBSE. It also makes regular reports and recommendations to the ICBSE which has overall responsibility for the MRCS examination.

6. Summary descriptive statistics: Part A

	Total number sat	Passing % (and number)	Failing % (and number)	Pass mark %	Measure of reliability*	Measurement error** %
September 2008	636	63.2 (402)	36.8 (234)	64.7	0.9	2.5
January 2009	664	60.4 (401)	39.6 (263)	66.9	0.9	2.5
April 2009	566	61.5 (348)	38.5 (218)	65.6	0.9	2.5

* An expression of the consistency and reproducibility (precision) of the examination. The measure used here is KR-20.

** Measurement error refers to the difference between the 'true' score and the score obtained in an assessment. Measurement error is present in all assessments but is minimised by good item design and test construction.

7. Summary descriptive statistics: Part B (OSCE)

	Total number sat	Passing % (and number)	Failing % (and number)	Pass mark %	Measure of reliability*	Measurement error** %
October 2008	155	63.9 (99)	36.1 (56)	69.5	0.8	3.9
February 2009	278	54.7 (152)	45.3 (126)	68.0	0.8	4.1
May 2009	432	60.4 (261)	39.6 (171)	67.6	0.8	4.0

* An expression of the consistency and reproducibility (precision) of the examination. The measure used here is Cronbach's alpha.

** Measurement error refers to the difference between the 'true' score and the score obtained in an assessment. Measurement error is present in all assessments but is minimised by good item design and test construction.

8. MRCS: Review and further development

The ICBSE continues to review and further develop the MRCS examination based on the evidence available.

During the year, and following an announcement to candidates, a programme of pretesting was introduced to the Part A examination involving the inclusion of a number of non-contributory items in each question paper. A similar programme is to be introduced to the Part B (OSCE) during 2009/10.

Following a review process involving submissions from trainees, trainers, patient representatives and examiners, ICBSE is planning to prepare proposals for changes to the MRCS for submission to the Postgraduate Medical Education and Training Board (PMETB) in autumn 2009. These are likely to include a revised examination syllabus and blueprint, amendments to the format of the Part A written papers and alterations to the structure and weighting of the Part B (OSCE) examination.

These changes are likely to be introduced progressively during 2009/10 and all candidates and their trainers will be informed via announcements on www.intercollegiatemrcs.org.uk.