

Creating a novel mock clinical examination for the Membership of the Royal College of Paediatrics and Child Health in Malta

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Clinical medical examinations are difficult. Courses that attempt to instil such clinical examination skills are expensive, and this is even more so for Maltese graduates who must perform travel by air from the island of Malta to such venues. This year (2012) was a landmark year with a record seven Maltese candidates planning to take the MRCPCH examination, and it was therefore decided to set up a mock clinical exam under true examination conditions in Malta. This was done successfully and this paper describes the modus operandi and the requirements for such a process.

INTRODUCTION

Medical examinations function as gatekeepers, ensuring that successful candidates are able to practise their profession as safely as possible. In general, such examinations become progressively more difficult at specialisation and sub/superspecialisation levels. Indeed, the successful negotiation of such examinations typically includes exam papers with negative marking (marks are deducted from the actual score for every wrong answer) and high standards that result in only a low proportion of candidates passing the said exams.

In medical exams, clinical sections play a crucial part, and this is also the case in the MRCPCH (Membership of the Royal College of Paediatrics and Child Health) examinations where pass rates are typically around 35%. This exam consists of three sections: Part 1, Part 2 Written, and a Clinical Examination section.

The Clinical Examination tests skills such as communication, overall decision making, diagnosis, ability to discuss prognosis, options and treatment, and quick thinking.

Malta is a small country in the centre of the Mediterranean Sea with a total population of almost half a million, and a birth rate of almost 4,000 live births per annum. Maltese medical graduates traditionally take British specialisation exams since English is Malta's second official language (Maltese being the first) and the Maltese healthcare system is built around the British NHS model. Courses that attempt to instil such clinical examination skills are expensive, and this is even more so for Maltese graduates who must perform travel by air from the island of Malta to such venues.

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METHODS

Mater Dei Hospital is a regional hospital serving the Maltese archipelago. The hospital contains a paediatric day-care unit that is also designated as an examination venue. After seeking the approval of and obtaining the active help of the academic head of paediatrics (Prof. Simon Attard-Montalto), the mock exam was designed in the following way:

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The actual *modus operandi* of the examination proper was studied and decisions were made as to how this could be least modified in order to stage a mock examination in the above premises, with the available examiners, volunteer patients and role players.

The Royal College of Paediatrics and Child Health facilitate this type of organisation by making available the entire procedures for the examinations on the college website. In addition, all examination marking sheets are made available.

Prior to the day of the mock examination a meeting was held for all examiners where the mock examination procedures were discussed, and then further refined after feedback. The role players (see below) were also met beforehand and briefed.

The unit was electively closed for a Saturday morning (14/04/12). Clinical cases in paediatrics were solicited from the paediatric consultants at Mater Dei Hospital. Patients were recruited two weeks before the event by telephone, and were contacted 48 hours before the event for further confirmation.

Paediatric consultants and higher specialists in paediatrics were recruited as examiners. The authors supervised the entire process and ensured its smooth running. Other paediatric trainees not directly involved in the process were allowed to attend as observers.

Candidates were asked to assemble outside the unit 30 minutes prior to the examination and isolated in a room adjacent to the ward. Candidates were then briefed regarding examination conduct and each candidate was given copies of actual mark sheets for all exam stations and a sheet indicating at which station they would commence the exam with the sequence of stations. Patients were admitted straight into the unit and were asked to be present 30 minutes before commencement of the exam, and were individually greeted on arrival. Examiners were also asked to be present at the unit 30 minutes prior to commencement in order to review and familiarise themselves with their patients. Each examiner was responsible for one station throughout the process, i.e., for two patients (see below).

Two patients were brought to each station for the Section 1 clinical examinations and the child development station ($n = 12$) in order to minimise patient and parent fatigue, and as back-up should one of the pair fail to materialise on the day. They were seen in an alternating manner.

Candidates were individually asked for a pre-calculated monetary contribution and this was equally divided between the eight sets of attending parents, as small recompense for their time and to reimburse hospital parking expenses.

Beverages were available for patients, candidates and examiners as well as toilet facilities. Six patients (three of the above pairs) were allotted to a large six-bedded room and screened, with 3 examiners, and another four patients (two pairs) were allotted to another large six-bedded room and screened, with 2 examiners. Each patient thus had a bed. Chairs for parents were available as well as medical equipment for candidates, such as sphygmomanometers, pulse oximeters, ophthalmoscopes and otoscopes, tendon hammers, spatulas, tape measures and growth charts. Each patient's height and weight were pre-documented. Two treatment rooms with closed doors were used for communication stations A and B.

The progress of the examination is usually done as per *Table 1*, left-hand column. However, due to the small group involved ($n = 7$) and the need for the day's clinical work to be carried out, the examination containing exactly the same components was carried out as per *Table 1*, right-hand column. The candidates were brought to each station prior to commencing the examination, and the exam was initiated with a three minute wait for the reason described below.

The seven candidates first simultaneously rotated through section 1, occupying seven of the eight available stations and rotating through them in a pre-determined order. As per actual exam, 9 minutes were allocated to each station with a notification at 7 minutes using the ward's public address (PA) system. Candidates were allowed three minutes to move from station to station. This also allowed the candidates about to enter the communication stations time to read the obligatory preparatory script that comprises an integral part of these two particular stations and take necessary notes.

The patients were then released and the candidates went on to Section 2. They were split into two pre-determined groups ($n = 3$ and $n = 4$), in two different rooms. One group did the History Taking and Management Planning station while the other group did the Clinical Video station using a pre-prepared

Table 1. Clinical stations: rotation as per exam proper on the left and as per mock examination described in this paper on the right.

Actual progression through the MRCPCH examination			Progression through the mock MRCPCH examination		
Station no.	Skills Tested	Time (mins)	Section 1	Skills Tested	Time (mins)
Station 1	Child development	9	Section 1	Child development	9
Station 2	Communication Skills A	9	Section 1	Communication Skills A	9
Station 3	History Taking and Management Planning	22	Section 1	Communication Skills B	9
Station 4	Clinical Video	22	Section 1	Clinical exam: cardiovascular	9
Station 5	Communication Skills B	9	Section 1	Clinical exam: respiratory/other	9
Station 6	Clinical exam: cardiovascular	9	Section 1	Clinical exam: abdominal/other	9
Station 7	Clinical exam: respiratory/other	9	Section 1	Clinical exam: musculo-skeletal/other	9
Station 8	Clinical exam: abdominal/other	9	Section 1	Clinical exam: neurological/neurodisability	9
Station 9	Clinical exam: musculo-skeletal/other	9	Section 2	History Taking and Management Planning	22
Station 10	Clinical exam: neurological/neurodisability	9	Section 2	Clinical Video	22

set of videos projected onto a common screen under supervision. These sessions each lasted 22 minutes, as per actual exam. For the History Taking and Management Planning station a notification was given at 9 minutes and then at 13 minutes to end the patient encounter, with the role player or parent/patient allowed to leave the room; a further 9 minutes was then allowed for a discussion with the examiner regarding Management Planning. The Clinical Video station consisted of 10 videos with corresponding questions (2 minutes each). The two groups then switched places. The nurse in charge of the unit kept time throughout and announced timings over the ward's PA system.

The clinical video was assembled by a Foundation Year 1 doctor rotating through Paediatrics, and who has a special interest in video editing (Dr. Karl Cutajar) using clips found on the Internet. Actors (basic trainees) and actual parents/patients were used for the Communications stations (A and B) in Section 1 and in the History Taking sessions in Section 2.

The appropriate documentation, including signage, templates and checklists were retained, thereby potentially allowing modification and reuse in subsequent mock examinations.

Individual candidates' final marks from the exam stations were tabulated and a pass/fail result was issued based on the MRCPCH Clinical Examination grading system. Moreover, the actual mark sheets of the individual stations were given back to the candidates in order that they could review and obtain examiner feedback regarding their performance during the exam sessions.

A 'Thank you' letter was sent to all participating patient families and a 'Thank you' email was circulated to the examiners and the unit staff.

RESULTS

Timings are shown in *Table 2*. Cases examined included a syndromic infant with pulmonary stenosis and a cyanosed child with tricuspid atresia after bidirectional Glenn procedure for the Cardiovascular station. Two patients with cystic fibrosis were enrolled for the Respiratory station. The Neurological station comprised a patient with closed spina bifida and a young girl with secondary cranial nerve palsies. The Abdominal stations include a patient with a glycogen storage disorder (hepatomegaly) and a cystic fibrosis patient with liver disease (splenomegaly). The Musculoskeletal cases included a child with hypomelanosis of Ito and another child with Cornelia de Lange syndrome. The Development station included a teenager with trisomy 21 and a developmentally-normal child.

The role players in the Communications stations simulated a case of non-accidental injury and a Counselling station for a mother at 24 weeks of gestation who was entering premature labour.

For the History Taking sessions we enrolled trained paediatric trainees and actual parents and children. We developed two History scenarios which we used for all candidates. The cases described a boy with juvenile chronic arthritis requiring multidisciplinary assessment and a girl with trisomy 21 with an abnormal thyroid function test and concerns regarding growth.

The mock examination generated 3 passes (mark 100 or above out of 120 total mark) and 4 fails.

Feedback forms were also given to the candidates for the purposes of fine-tuning any future such mock examination sessions.

Table 2. Mock examination timings.

Start	End	Mins	Section/Action	Station Skill Tested
8:00 AM	8:03 AM	3	Find start stations, communication stations to read script	
8:03 AM	8:12 AM	9	Section 1	Child development
8:12 AM	8:15 AM	3	Rotate to next station	
8:15 AM	8:24 AM	9	Section 1	Communication Skills A
8:24 AM	8:27 AM	3	Rotate to next station	
8:27 AM	8:36 AM	9	Section 1	Communication Skills B
8:36 AM	8:39 AM	3	Rotate to next station	
8:39 AM	8:48 AM	9	Section 1	Clinical exam: cardiovascular
8:48 AM	8:51 AM	3	Rotate to next station	
8:51 AM	9:00 AM	9	Section 1	Clinical exam: respiratory/other
9:00 AM	9:03 AM	3	Rotate to next station	
9:03 AM	9:12 AM	9	Section 1	Clinical exam: abdominal/other
9:12 AM	9:15 AM	3	Rotate to next station	
9:15 AM	9:24 AM	9	Section 1	Clinical exam: musculo-skeletal/other
9:24 AM	9:27 AM	3	Rotate to next station	
9:27 AM	9:36 AM	9	Section 1	Clinical exam: neurological/neurodisability
9:36 AM	9:39 AM	3	Rotate to next section	
9:39 AM	10:01 AM	22	Section 2	History Taking and Management Planning
10:01 AM	10:04 AM	3	Rotate to next station	
10:04 AM	10:26 AM	22	Section 2	Clinical Video

All readers will be familiar with mental stress experienced during examinations, and particularly during sessions which require face-to-face encounters with examiners. Mock examinations familiarise candidates with such situations, allowing them to develop coping strategies, and also help to identify weak areas in candidates' knowledge and practical and presentation skills.

While the organisation of the exam¹, the examiner's viewpoint², and patients' viewpoints have all been discussed³, there is little available material detailing the possibilities of organising a paediatric mock clinical examination.

Meticulous attention to timing, planning and detail was found to be crucial to the organisation of this event⁴. The compilation of worklists and a timetable was very useful in order to ensure that no details were forgotten and that no delays were incurred. An adequate venue with the above-mentioned staff and facilities is essential for such an event to be held.

Various strategies must be used, as described, in order to ensure that children with common chronic conditions do not become bored or tired and hence, uncooperative.

While interesting histories and management issues are useful for 'long cases', clinical signs that can be seen or elicited are more important for these types of examinations. Rare conditions are less suitable unless they are used in order to create more difficult examination scenarios that elevate examination standards.

With increasing numbers of students and lack of adequate staff, other examination modalities such as the objective structured clinical examination (OSCE) are gaining popularity⁵. However, it is unlikely that clinical examinations will be abandoned⁶. Indeed, 'the essential unit of medical practice is the consultation and all else derives from it'⁷. While this clinical examination may be described as a consultation in an artificial situation, prepared candidates who are actively taught the art in multiple competencies will find themselves better prepared for this type of examination, hence the usefulness of such processes.

Moreover, the process proved to be an enjoyable and memorable experience for the entire department, including the candidates, actors and examiners. This encourages us to repeat the process for our trainees and also to perhaps open up the process to non-Maltese trainees.

DISCUSSION

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