

University of Dundee

Assessment of final year medical students in a simulated ward:

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INTERNATIONAL JOURNAL OF CLINICAL SKILLS



A Peer Reviewed International Journal for the Advancement of Clinical Skills
– ‘docendo ac discendo’ – ‘by teaching and learning’



C.O.M.E.T. – A novel educational method in clinical skills

From simulation to reality

Shibboleths of incompetence

Development of a clinical skills bus: making simulation mobile

“See one, do one, teach one!” – the uphill struggle for clinical skills acquisition

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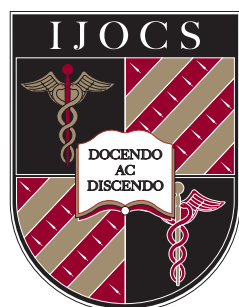
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The International Journal of Clinical Skills looks forward to contributing positively towards the training of all members of the healthcare profession.

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The clinical skills arena is an ever expanding field with an increasing wealth of knowledge; however there is no central resource for the sharing of evidence based research and information. The International Journal of Clinical Skills (IJOCS) is a peer reviewed International Journal, which will promote the sharing of information and evidence based research, as well as bringing together the clinical skills community.

The Journal aims to develop and maintain standards in research and practice, lay a platform for discussion and debate, and provide opportunity to present evidence based medicine and critical appraisal of research. Provision of this much needed resource for both students, teachers and healthcare professionals, will ultimately enhance patient care.

The IJOCS will be a regular publication, three times a year in the first instance, both online and in print. The implementation of the IJOCS website will provide a continual resource for daily use. Also, in conjunction with the 'Clinical Skills Lab', the IJOCS will allow access to an online database on over 200 clinical skills – launching in 2008.

A diverse range of reviewers support the Editorial Board, all of whom are leaders in their respective fields and the IJOCS prides itself on the quality of content. Contribution of original ideas, research, audit, policy, reviews, case reports and 'Letters to the Editor' are welcome from all those involved in this multidisciplinary field. Submissions are not limited to these specific publication types and your novel suggestions will be considered.

I wish to thank all those involved in the development of this unique venture – a Journal whose remit is highly significant to today's needs.

Dr Humayun Ayub
Editor-in-Chief
International Journal of Clinical Skills

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Foreword

International Journal of Clinical Skills – An exciting forum for clinical skills

There has been an explosion in the volume of medical information related to clinical skills, which are essential in our efforts to maintain optimal patient care. The International Journal of Clinical Skills (IJOCS) aims to disseminate this knowledge in an easily accessible form. This will not only enhance our attempts to provide a quality health service, possibly with some standardisation, but also provide a vehicle for teaching and learning, hence the Journal's motto – 'docendo ac discendo' (by teaching and by learning).

The IJOCS will not only serve as an avenue for publication of research papers, but will also act as a means of communication between clinical skills professionals at an international level. Consequently, those involved in the clinical skills field, can keep those in other countries informed of their activities, as well as offering best practice guidance.

Alongside this valuable publication, a continually evolving online database ('Clinical Skills Lab') will become available for students and teachers to access – this will hold extensive information on over 200 clinical skills. The Clinical Skills Lab will be regularly updated by all those involved in this field and provide a platform for discussion and debate.

The IJOCS also aims to present comment on items of specialist interest. For example, the current issue contains a paper by Professor Harold Ellis CBE, on 'Medico-legal consequences in surgery due to inadequate training in anatomy', and explores the potential niche for anatomical clinical skills training within the newly developed medical Foundation Years (F1 & F2). It is hoped readers will make use of the Journal to comment on matters such as this – and on others relating to the subject of clinical skills – by means of 'Letters to the Editor', research based evidence and shared practice.

In order for IJOCS to become an exciting forum for clinical skills, the Journal welcomes submission of innovative research, papers, reviews and case reports. Of course, submissions are not only limited to these specific publication types and your innovative ideas would be greatly welcome by the Editor.

I am confident that IJOCS will be appreciated by a variety of health care professionals, at an international level. It promises to be representative of an ever expanding field, and with the support of all those able to contribute, it will, without doubt become increasingly influential.

I wish those responsible for the production of the International Journal of Clinical Skills, the success which their initiative deserves.



Professor The Lord McColl of Dulwich CBE
September 2007

Assessment of final year medical students in a simulated ward: developing content validity for an assessment instrument

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KEYWORDS:
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Validity
Assessment
Clinical skills
Delphi method
Medical student

Introduction

Despite changes in undergraduate curricula and assessment, the United Kingdom is still graduating medical students who are 'unfit for practice' in their pre-registration year¹ suggesting that there is a failure in identifying them at undergraduate level. Whilst work place based assessment is the most authentic method of testing performance, the tools available are limited to postgraduate assessment^{2,3}. At undergraduate level, Objective Structured Clinical Examinations (OSCEs) are currently the mainstay of sampling different competencies⁴. The OSCE has a standardised format, is reliable, reproducible and feasible⁵ but can only demonstrate the examination or management of one patient at any one time. None of the postgraduate or undergraduate instruments currently assess a candidate's ability to perform in a pressurised ward environment, when caring for more than one patient simultaneously.

Simulation has been successfully used to provide a safe, realistic, learner-centred health care context.^{6,7} Within the Clinical Skills Centre in Dundee we have developed a simulated ward to reflect a real ward environment and provide an opportunity to observe how a student would perform when responsible for the care of several patients simultaneously. It has been evaluated positively by pre-registration house officers⁸ previously and anecdotally reported by consultant physicians as replicating how junior doctors perform on the real ward. At present, the simulated ward is used as a learning environment but has the potential to be developed for use in assessment to highlight the students that need more support prior to graduation. We have developed a standardised simulated ward exercise using simulated patients and a medium fidelity simulator where the final year medical student is given a handover and asked to manage the patient for the next 25 minutes as if they were the Foundation Year 1 doctor. The simulation is videoed for review and feedback. This exercise provides an opportunity to assess the students individually on their performance representing the 'does' in the top tier for Miller's pyramid⁹.

Van der Vleuten has described the five criteria for an assessment tool¹⁰, one of which is validity. An assessment tool can only be valid if the items against which a student is assessed are themselves valid. This paper describes the items and how they were derived.

Methodology

A Modified Delphi Method was used to develop valid criteria for the assessment instrument for the simulated ward exercise. There are many descriptions of the Delphi Method and its modifications¹¹. The method used in this study is shown in Figure 1.

Initial Generation of List of Items

For this item determination study, expert opinion was initially harnessed through the formation of an expert group.

An expert was defined as a professional with

1. Up to date knowledge of the requirements of a final year medical student
2. Up to date knowledge of the requirements of a junior doctor on a medical ward (both of the GMC requirements and the day to day role)
3. An awareness of the ward simulation exercise.

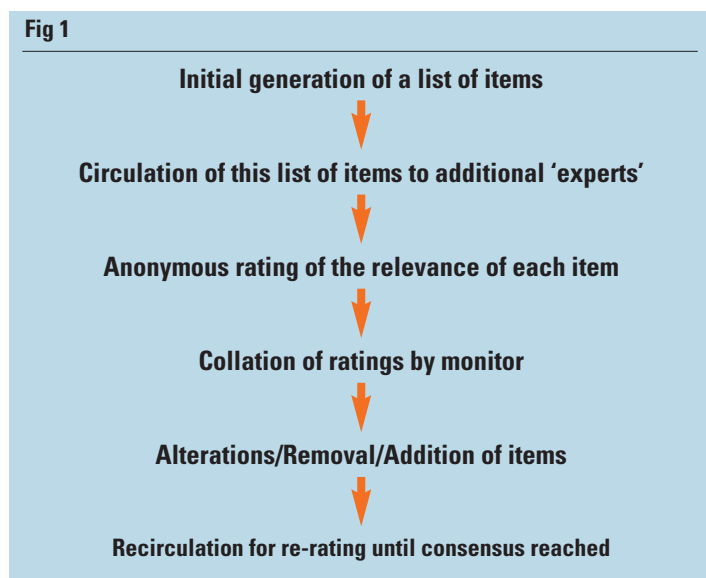
The importance however, of generating 'correct' items is so fundamental to the assessment process that the suggestions from the expert group were further validated by additional experts.

The members of the expert group were asked to define the required

Abstract

Performance assessment is becoming increasingly important in both undergraduate and postgraduate assessment. At present, the tools used to assess a medical student's performance evaluate only their care for one patient at a time. The development of the simulated ward has provided an opportunity to assess how a final year medical student would perform caring for a variety of patients simultaneously in a realistic ward environment, without risk to patients. This paper describes the development of valid assessment criteria using a modified Delphi method.

Fig 1



attributes of a junior doctor that could be demonstrated in the ward simulation exercise. Each item had to be singular, so that the student either did, or did not fulfill the criteria. The experts were circulated electronic and paper versions of the questionnaire to improve response rate.

The items generated were collated into manageable groups by the monitor and one member of the expert group.

Circulation of Items to Additional Experts

The additional experts were asked to rate the items for assessment in the ward simulation exercise against the following scale.

- 1. Not relevant
- 2. Unable to assess relevance without item revision or item in need of such revision that it would not longer be relevant
- 3. Relevant but needs minor alteration
- 4. Very relevant and succinct.

Comments were invited on individual or additional items. The individual ratings were collated by the monitor. The monitor was unconnected to either group of experts, to reduce the risk of bias. Items were altered as appropriate, and recirculated until consensus was reached. The cut-off was chosen prior to commencement of the study as 80% of responders rating the item '3' or '4'. Items achieving less than this were removed.

Results

Expert Group: The initial expert group comprised 4 senior health care professionals experienced in medical education. 36 items were generated by the expert group.

Second Expert Group: This group comprised experts with the same criteria as the first group, but who had not originally been involved. There were 10 who received the questionnaire representing a broad area of expertise in general practice and hospital medicine. All members of the expert group had a significant involvement in the assessment of undergraduate medical students in their senior years.

9 (90%) responded. After 2 rounds, all items received a rating of 3 or 4 from ≥80% of the clinicians asked (≥89% of those who responded). The items are shown in Table 1.

Table 1. Modified Delphi Result

General	
1.	The doctor forms an initial overview of the ward using all information available
2.	The doctor prioritises appropriately
3.	The doctor performs all essential tasks
4.	The doctor gives clear and concise handover at the end
Clinical Skills	
5.	The doctor takes an effective history
6.	The doctor examines appropriately
7.	The doctor performs clinical procedures competently
8.	The doctor initiates appropriate investigations
9.	The doctor demonstrates competency in interpreting results
10.	The doctor makes informed decisions using appropriate information
Critically Ill Patient	
11.	The doctor recognises that the patient is sick
12.	The doctor makes an appropriate assessment of the critically ill patient
13.	The doctor resuscitates the critically ill patient appropriately
14.	The doctor manages the emergency within an appropriate timeframe
15.	The doctor seeks help appropriately
Prescribing/written documentation	
16.	The doctor prescribes safely
17.	The doctor prescribes appropriately
18.	The doctor records appropriately in notes
19.	The doctor completes written tasks appropriately
20.	The doctor recognises mistakes/errors
Response to interruptions	
21.	The doctor responds appropriately to timed interruptions
22.	The doctor follows up timed interruptions appropriately
23.	The doctor reacts appropriately to nursing observations
Communication	
24.	The doctor gives clear instructions
25.	The doctor demonstrates appropriate listening skills
26.	The doctor communicates appropriately with team members
27.	The doctor works well with nursing colleague.
28.	The doctor communicates appropriately with patients or relatives
29.	The doctor has appropriate language skills
30.	The doctor treats patient with appropriate respect
31.	The doctor respects the patient's privacy
32.	The doctor respects the patient's confidentiality
Health and Safety	
33.	The doctor demonstrates safe practice
34.	The doctor takes sufficient care to prevent cross-infection
35.	The doctor demonstrates good handwashing procedures
36.	The doctor demonstrates insight into errors.

The second group of experts expressed potential difficulty with the terms "appropriate", "essential", "competently" and "sufficient", but agreed that clarification with the examiners prior to any assessment would minimise this.

One addition was suggested by the members of the expert panel of "The doctor adhered to appropriate local prescribing guideline". It was agreed that this item should be included under Item 17 "the doctor prescribes appropriately". No other items were added.

Discussion

This study has produced 36 items for development of the assessment tool for use in a simulated ward environment. Whilst it could be argued that these items are “expert opinion rather than indisputable fact”,¹² they represent a consensus of opinion of a body of experts. This consensus has been derived by a process recognised as acceptable worldwide when accurate, precise information is unavailable. The experts were drawn from those professionals involved across the fields of undergraduate and postgraduate medical education. This group was limited however, to those who had experience of the ward simulation exercise. Patients and other lay people were not included as it was felt that they were not sufficiently expert in any of the areas.

Within the health care environment, the consensus building enabled by the Delphi Method has been used widely. It has led to national curriculum development in a variety of areas^{13,14,15} and has been used in the development of assessments using simulation¹⁶.

The anonymous nature of the questionnaire is designed to encourage the contributor to ‘voice’ their opinion, something which they may be reluctant to do in the context of a face to face group meeting. However, McKenna’s description is perhaps more accurate of the ‘quasi-anonymity’ of this stage, as the monitor is aware of the identity of the individual responder¹⁷.

The monitor and one of the members of the expert group did collate the items under domain headings. This has the potential to cause bias in the marking of the questionnaire by the experts, as it may produce a ‘halo effect’¹⁸. It is difficult to assess this, and there are indeed two domains which score a ‘4’ throughout by all responders. (The critically ill patient, Prescribing/written documentation). In contrast however, the items scoring ‘3’ are well distributed across the other domains and the 4 scores of ‘2’ occur in four separate domains, suggesting that these respondents were not affected by the grouping.

There appears to be very clear consensus in the items, and while this is encouraging, it perhaps suggests that the initial expert group were too restrictive with their items, and could have suggested more. In an attempt to counterbalance this suggestion however, it must be pointed out that each member of the second expert group receiving the questionnaire was given a blank space on the form to add any suggestions and only added one, perhaps confirming that the initial expert panel identified all the possible items. The return rate of 90% suggests keen participation in the study by this second expert group rather than disinterest in the items.

Some concern was expressed by the participants over the wording of the items, in particular those using “appropriate”, “essential”, “competently” and “sufficient” but it has been agreed that these are important concepts in the ethos of the ward simulation exercise, where there is not only one ‘correct way’. Future studies will be required to determine whether these concerns are justified, and could be dealt with training and explanation of the items to the examiners before marking the students. This tool will have a subjective element but is intended to be used by clinicians used to making expert judgments.

Conclusion

This study has generated a set of items (criteria) for a new assessment in the simulated ward environment. These have been derived by consensus of practicing clinicians using a validated Delphi method ensuring validity of the items. The simulated ward exercise is not designed as a panacea for undergraduate assessment, but to provide a safe, realistic environment in

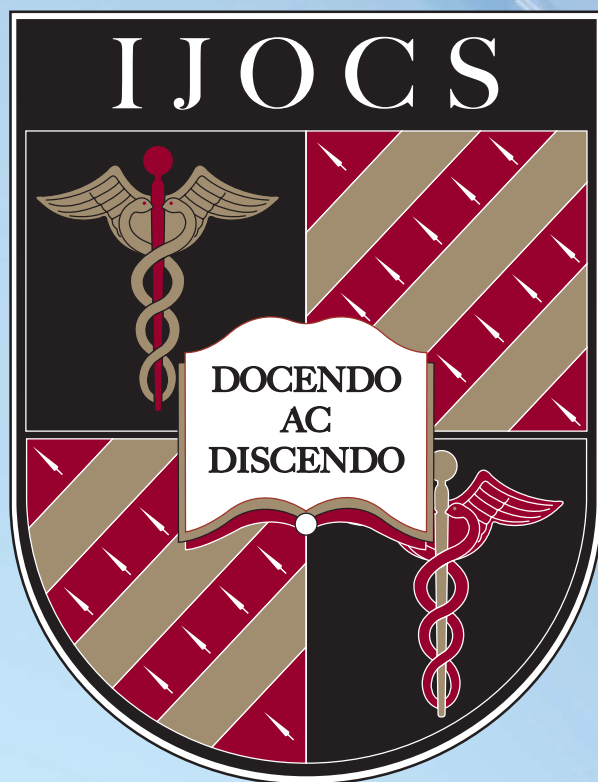
which to assess senior medical students. The description of the items and the method of their derivation should ensure transferability of the assessment to other institutions. Further validation of the simulated ward environment as an assessment tool is underway. ■

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- Communication skills
- Clinical examination/interpretation skills
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