A Blended Approach to Emergency Medicine Training: Developing an Integrated Curriculum for Mature Learners

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Abstract

In January 2005, a blended approach using various educational technologies was adopted for the new MSc programme in Emergency Medicine at the St. Augustine campus of the University of the West Indies. This part-time programme was developed in response to the needs for specialist training in Trinidad and Tobago. Modalities for course delivery included traditional didactic lectures and tutorials, and more contemporary and interactive learning approaches of problem-based learning, journal clubs, computer-based tutorials, case-based training exercises and case presentations. Clinical skills training included using simulated patients. This paper describes the blended approach to learning adopted for this course, and explores the following themes from the candidates' perspectives: the educational experience; relevance of materials presented; scope of information presented and applicability to current practice. Overall, candidates found the methods and materials accessible and acceptable. Areas for improvement include the better integration of skills training with real clinical practice and ensuring that all candidates are comfortable with the IT systems. The modular course format is ideally suited to distance learning, and may provide a solution to Emergency Medicine training in smaller countries that can neither support formal full-time residency programmes, nor allow their doctors to leave their posts to pursue graduate training.

INTRODUCTION

In January 2005, the Faculty of Medical Sciences of the University of the West Indies (UWI) at St. Augustine launched its post-graduate programmes in Emergency Medicine. This is a relatively new field in Trinidad and Tobago and with only one trained Emergency physician in Trinidad, the university responded to the needs for specialist training. The programmes included a full-time residency programme, the Doctor of Medicine (DM) in Emergency Medicine, and a part-time MSc programme aimed at more senior doctors who were unlikely to return to residency training, but who were interested in availing themselves of further education.

A blended approach using various educational strategies and technologies was adopted for the MSc programme in Emergency Medicine. Modalities for course delivery included didactic lectures and tutorials from guest speakers, course supervisors and course participants themselves. These were supplemented with multimedia presentations on CDs provided to the candidates, for self-directed learning. To develop their clinical skills, candidates were trained using simulated patients, and skills training sessions. Clinical training involving data interpretation was augmented with self-directed case-based training exercises also provided on CD. Candidates also participated in problem-based learning exercises, journal clubs, communication skills sessions and case presentations ('grand rounds'). This paper describes the blended approach to learning adopted for this course, examines the experiences of the first cohort, and investigates the appropriateness of the approach to a cohort of experienced, mature learners.

REVIEW OF THE LITERATURE

Traditionally, emergency rooms have been managed by junior doctors from a variety of specialties, with a variable degree of advice and support from their senior colleagues, usually over the telephone. In the early 1970's this approach was recognised as inefficient at best, as patients often had to go through a series of repetitive examinations by increasingly senior staff before any effective clinical decisions were made. Furthermore, the system could be dangerous and even life-threatening to seriously ill or injured patients. These patients often need resuscitative care

immediately, and delays in providing such care could be costly in terms of patient morbidity and mortality. In light of these findings, the specialty of Emergency Medicine was developed.

These doctors provide immediate emergency and resuscitative care to all patients presenting to Emergency Departments with acute problems. Introducing Emergency Medicine training and the provision of trained Emergency Physicians for the management of patients has improved outcomes for critically ill patients (Melniker & Leo 1998; Wyatt, Henry et al. 1999; Lecky, Woodford et al. 2000). It is also evident that direct supervision of junior doctors has improved the care of individual patients and allowed the more efficient use of resources (Sacchetti, Carraccio et al. 1992; Cooke, Kelly et al. 1998). As a result, patients are less likely to be unnecessarily admitted to hospital, inappropriately discharged or sent for needless investigations if seen by a trained Emergency Physician. Moreover, outcomes for patients with multiple trauma and acute cardiac conditions have improved with the better organization of Emergency Departments and resuscitation teams (Cales 1984; Mann & Heyworth 1996). In light of the above, it has been recognised that Emergency Medicine is an essential aspect of acute medical care, and specific training in this specialty would improve outcome in our most seriously ill and injured patients.

Emergency Medicine is a relatively new specialty throughout the world. Training today's clinicians to manage emergency and disaster medicine requires effective, flexible, just-in-time learning. Blended learning is playing an increasing role in medical education and its strategies include combining traditional classroom activities with multimedia materials (e.g. video clips), online discussions and computer based assessment (Davies, Ramsay et al. 2005). By combining e-learning technologies with traditional instructor-led training, a shift from the passive teacher-centred model of education to an active learner-centred model is occurring (Ruiz, Mintzer et al. 2006). Today's e-learning programmes go beyond delivering information to encourage independent learning and include communication and information handling, clinical skills, patient investigation and management, decision making and ethics (Harden 2002).

Blended approaches to clinical training have been successfully applied in emergency and disaster medicine achieving significant improvements in knowledge, clinical and communication skills (Della Corte, La Mura et al. 2005; Gordon, Issenberg et al. 2005; Miller, Scott et al. 2006). Blended learning models may comprise different concepts including combining different modes of delivery, different instructional strategies and/or different technologies (Driscoll 2002). E-learning activities involve computers and interactive networks (Tsai & Machado 2002). E-learning will not replace teachers but it will change the roles of the teacher and student: teachers will become designers of learning experiences and students will be connected to others as they collaborate and take on the role of the teacher. No matter the model used, the mix of instructor-led and self-directed learning; synchronous and asynchronous interaction with peers, instructor and content; and supplementing learning with practice; provides choice, promotes engagement and improves performance. This multi-modal, multimedia way of teaching is about getting the "right content in the right format to the right people at the right time" (Singh 2003).

While blended learning has been used to good effect in Emergency Medicine for some years now, most specialist programmes have concentrated on full time residency programmes, such as the Fellowship of the College of Emergency Medicine (FCEM) training in the United Kingdom, the Fellowship of the Australasian College for Emergency Medicine (FACEM) in Australia and various residency programmes in the United States (Leman 1997; Wyatt & Weber 1998). This effectively excludes many potential candidates from specialist training, including practitioners working in isolated or rural areas, not able to return to full time training, and primary care doctors who wish to increase their knowledge and practice of Emergency Medicine, but do not require full specialist training or qualification. Only the Canadian system of training allows for a shortened period of training in Emergency Medicine for those doctors who have already trained in Family Medicine, but wish to further specialise in Emergency Medicine (one year as opposed to the traditional four year residency for those coming straight out of internship). We know of no other programme which offers part time training to doctors who are unable to avail themselves of a full time residency programme.

Such a programme is of particular importance in areas such as the Caribbean, where a relative lack of resources combined with the small size and comparative geographical isolation of many medical practitioners makes it almost impossible for these territories to avail themselves of traditional full time residency programmes. To date these have been restricted to the larger islands (Trinidad,

Barbados and Jamaica), and, even in these islands, have been limited to the larger, urban teaching hospitals. This restriction in accessibility of training can be seen in the fact that, although Emergency Medicine training has been offered by the University of the West Indies since 1990, only a handful of territories have benefited from the appointment of graduates of this programme. Most graduates have elected to remain in the larger islands in which they were originally trained. We believe that the approach outlined in this paper facilitates learning in a group of non-resident doctors, while addressing the potential disadvantages of such teaching without full time, direct clinical supervision.

MATERIALS AND METHODS

This is an observational analysis of the first year of the MSc course. The paper describes the teaching methods used throughout the course, and maps the methods and assessment strategies to the educational objectives, while discussing their appropriateness. Approximately six (6) months after the end of the first year of the course, focus group discussions were conducted with the entire group of participants. During the 90 minute session, evaluation questions were posed on: the educational experience; relevance of materials presented; scope of information presented and applicability to current practice.

RESULTS

The programme has used a variety of educational tools and approaches in achieving its objectives. These have been chosen to best suit the material presented, and different educational styles have been combined in specific areas of the course to reinforce the main learning objectives of these topics. Figure 1 maps the knowledge domains against both the instructional methods and assessment strategies used in the programme. All modules in the first year were clinically based, and as such the learning methods were chosen to reflect the need for clinical knowledge, as well as clinical and procedural practice, where appropriate. Furthermore, certain clinical data interpretation skills were enhanced by the use of self-directed, computer based tools. This was particularly useful in the case of interpretation of x-rays, ECGs and laboratory tests.

Resuscitation skills, in particular, were enhanced by the use of internationally recognised short courses, which were mandatory for all candidates. These included courses in cardiac and paediatric resuscitation, and emergency airway management (all critical areas of management in Emergency Medicine). While these courses were evaluated very positively by candidates, it was felt that some direct clinical teaching or supervision would have helped consolidate the lessons learned in the courses. Skills learned on these courses were also supplemented by less formal skills training sessions throughout the year. The resuscitation courses described above are used internationally to train doctors and other health care professionals in these essential skills. Interestingly, it is generally recognised that skill retention is less in participants who do not use them regularly in the workplace (Mancini & Kaye 1985; Carley & Driscoll 2001). This reinforces our candidates' view that the skills require consolidation with clinical supervision in the workplace.

Communication skills were taught using simulated patients, and peer practice (candidates playing the part of patients). Both these methods were viewed positively by candidates, who saw the need for and benefit of these sessions. Communication skills are now seen as an essential part of good medical practice by the General Medical Council (GMC) of the United Kingdom, and are tested at both undergraduate and postgraduate levels in many settings. The College of Emergency Medicine of the United Kingdom has at least two mandatory communication skills assessment stations in their final clinical examination for their emergency medicine residents. In this regard, the programme at UWI is in keeping with best international practice.

On the whole, candidates' reactions to the course were positive. While in most cases it was clearly a challenge for them to return to the classroom after many years and they needed to adjust to new methods of learning, there was support for this transition. In particular, the Medical Sciences Library was a valuable resource offering an orientation to the use of information technology and a portal for gaining access to information. Other adjustments included the need for structured reading and study, using information technology, practising with simulated patients and taking part in skills training. Candidates indicated a high degree of satisfaction with the course material. They felt that the material was both relevant and applicable to their practice. Specifically, materials presented in electronic format and intended for independent learning were used readily by candidates.

Benefits of the programme (in the eyes of the candidates) were surprisingly diverse. Candidates felt that the course brought them up to date with international standards in the specialty, and brought focus and clarity to an area of medicine which was hitherto perceived as vague and ill-defined. They appreciated Emergency Medicine as a specialty in its own right, with its own priorities and treatment protocols, as opposed to it being a subordinate of other more well-recognised specialities (such as surgery or internal medicine). Furthermore, they were able to evaluate critically their own practice through a process of audit. At least one candidate explained that he identified weaknesses in clinical practice in his department, and was able to implement meaningful change by this process. Additionally, candidates felt that they were able to reflect positively on the specific learning needs which emerged during the course of the year, and respond positively to these. Interestingly, most candidates recognised an administrative advantage to the learning experience, as they were better able to identify resource and management needs within their departments, and successfully lobby for change. Some of these needs included the acquisition of new equipment, the education of other members of staff and the promotion of new and more effective ways of practicing clinical medicine in the emergency setting. At least one of the candidates admitted that his role was more of an administrative one, but that he had been able to make better decisions regarding his department because of this course. Most of the candidates saw themselves as agents for change (rather than just better clinicians) after having attended the course.

With regard to possible areas for improvement, candidates felt that the end of year examination was a particular challenge to them, and that more specific examination preparation would have been useful. Having said this, they identified certain areas of the examination which were particularly well designed and relevant. The computer-based data interpretation examination was singled out as an example of a good assessment tool. It appears that not all the examiners were as comfortable with the assessment methodologies as was required. Candidates particularly had difficulties with some of the clinical examination stations (OSCE), and parts of the oral examination station. However, they felt sufficiently confident in their knowledge to challenge the assertions of examiners when they thought that the examiners' interpretations of the clinical scenarios were incorrect. In addition, they felt that the external examiner was quite impressed with their overall performance, and this certainly enhanced their self-confidence. Candidates were pleased with both the content and delivery of the course, and felt that it should be accessible to a wider audience of participants, as this would help to influence the development of Emergency Medicine in the country, and support much needed change in this field of medicine.

DISCUSSION

The MSc in Emergency Medicine of the University of the West Indies, Trinidad has been enthusiastically received by its initial cohort of participants. It is a blended approach to medical education that includes traditional didactic methods and more contemporary and interactive learning approaches, such as problem-based learning and computer-based self-directed tutorials. Overall, candidates found these methods accessible and acceptable. The use of different educational modalities allows candidates with different learning styles to access educational materials in a format that is most appropriate for them. Furthermore, the use of IT and simulation allows the teaching and reinforcement of clinical skills in a situation of minimal clinical supervision.

There is still room for development of the course, particularly with regard to using IT for self-directed learning and assessment, and ensuring that all candidates are comfortable with IT systems and electronic media. To reinforce clinical knowledge, skills training needs to be better integrated with clinical teaching and practice. The part-time modular course format is ideally suited to distance learning, and may provide a solution to Emergency Medicine training in smaller countries that can neither support formal full-time residency programmes nor allow their doctors to leave their posts to pursue graduate training.

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Figures

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