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Patient safety education — A description and evaluation of an international, interdisciplinary e-learning programme

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SUMMARY

Patient safety is a priority within healthcare across the globe. Delivering safer healthcare demands a system wide approach and educators have a responsibility to play a full role. This article describes how e-learning can be a means of engaging and educating an international group of critical care professionals studying at Masters level. Using online tools such as blogs, wikis and discussion boards students are introduced to quality and safety subjects and tools to help them improve care at a local level. Working together as a collaborative of different professionals has engaged the student group helping them understand their role in reducing harm and has resulted in improvements to care.

Introduction

The epidemiology of adverse events has been studied for decades (Brennan et al., 1991; Leape et al., 1991; Sari et al., 2007; Hogan et al., 2012). Vincent et al. in a retrospective review of medical and nursing notes in 2001 showed an overall rate of adverse events in two acute hospitals of 11.7%. The World Health Organisation (WHO) whilst acknowledging the progress that has been made in recent years to improve patient safety has a stated mission to support the acceleration of safety improvements across the globe (World Health Organisation, 2005). In support of this goal the WHO released a multi-professional patient safety guide to assist those in education to teach patient safety to all healthcare professionals (World Health Organisation, 2011).

Cardiff University School of Medicine has referenced the WHO curriculum (World Health Organisation, 2009) in undergraduate medicine since 2010. The challenge for the post-graduate critical care faculty was how to deliver this patient safety education to students enrolled on an inter-professional online Master's degree. Our aim was to make the curriculum relevant to a diverse professional group working within the context of different health systems, to mobilise these clinicians to examine their practice and lead improvement. This paper describes a core patient safety module of a higher degree and evaluates its outcomes.

Course and Team Demographics

The Master of Science degree in Critical Care is an inter-professional, e-learning course intended for professionals and educationalists working in the field of critical care. Central to the philosophy of the course is evidence based multidisciplinary working and equitable access to educational opportunities. Cohorts of students are representative of many healthcare disciplines, for example, nurses, doctors, paramedics, pharmacists and physiotherapists, caring for patients throughout their critical illness period. Students have been recruited internationally and three cohorts (n = 60) have completed the module over a period of one year. Two clinical academic staffs support the students throughout the module and have experience in leading improvement work within their clinical roles. An e-learning technologist is available to advise and support students and lecturers on the e-learning dimensions of the course.

Module Aims and Content

The module aims for students upon completion to be able to evaluate the quality and safety elements surrounding the care and management of the critically ill patient and be able to:

- Evaluate various quality improvement aspects of critical care.
- Reflect on the strategies for implementing quality improvement for the critical care patient.
- Evaluate the evidence based approach to quality and safety from the student's own professional basis and from an inter-professional basis.
- Evaluate the benefits and risks of approaches to error management.
- Evaluate areas of controversy.
- Critically review the literature to ascertain and predict the impact of quality and safety for improvement within critical care.

The 'Six Action Areas' of the WHO World Alliance for Patient Safety (World Health Organisation, 2005) has as a core principle that errors can be best addressed by improving systems and that robust reporting

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and learning systems are essential if care is to be made safer. The module content is reflective of these goals and the WHO curriculum (World Health Organisation, 2011) and is focused on measuring harm, understanding causes of errors and identifying solutions, with an emphasis on human factors and system thinking. Managing change and improvement was a central aim of the module and students were introduced to the Model for Improvement methodology as a framework to structure their improvements (Langley et al., 2009) The Model for Improvement has been used successfully as a quality improvement tool in the United States of America (USA) and United Kingdom (UK) and is recommended by the Institute for Healthcare Improvement (2012), 1000 lives plus, the Welsh National Improvement programme (1000lives plus 2012) and the NHS Institute for Innovation and Improvement (2012).

Course Delivery

The course was delivered via an e-learning platform using virtual technologies. Developments in technology, internet access and speed have made it possible for critical care professionals from across the globe to enrol on the course. The curriculum needed to be relevant to students working in developed and developing countries and acknowledge the differing professional cultures that exist in healthcare. The core content was delivered by voice over presentations from experts in healthcare improvement and clinical academic staff with practical experience of quality and safety as an aspect of their clinical roles. Most of the content are reflective of the work in healthcare improvement in developed countries with a definite bias towards the USA and UK. However, the strategies and tools for improvement that are discussed could be used effectively in any situation irrespective of resources or infrastructure. Particular emphasis and support were given to students working in data poor countries who found understanding the epidemiology of harm events a particular challenge.

Participation and learning are described as '*inseparable*' by Hrastinski (2009) and the structure of online courses should be designed to support and encourage student participation. The method of delivery was thus a blended or mixed approach to enable students to participate and engage with interactive learning opportunities. The social aspect of learning is a theory which is also gaining currency in clinical practice and collaborative approaches to improvement are proven to be successful (Institute for Healthcare Improvement, 2003). So although delivery of course content was by a traditional voiced PowerPoint presentation students were directed to videos, seminal papers and tasked with seeing how the theory related to the real world in which they practised. For example, in reference to Vincent et al. (2001) retrospective case note review they were asked to comment if 1:10 patients are harmed in their clinical area. The students also had access to a discussion board and the mode of assessment encouraged discourse and participation. The potential benefit of this approach is that it facilitates asynchronous collaborative learning. Students can post a question or discuss an aspect of the module at a time and place that suits them and have feedback and comments not only from the course team but also their peer group. This is particularly important in a multidisciplinary course; professionals are often taught and work in their own professional silos and the value of bringing them together working towards a common goal can be a very powerful learning experience. It also mitigates against the feelings of social isolation that can prevail on a distance learning course. This approach is designed to not only encourage students to access the module content but also to develop negotiation and co-operation skills as they work towards a common goal of producing a shared piece of work.

Method of Assessment

Online learning can be a straightforward process whereby students access the course material and complete an assignment. The philosophy of the course team is that we want to enhance this experience by encouraging not just the production of an assignment but active participation believing that this will enrich the learning experience. Thus, the assessment process is designed to encourage and reward participation, to enable this we used Web-based technology collaborationware namely wikis and blogs.

The first part of the assessment was an individual blog. Blogs function as online personal journals with students posting their work and reflections. Other students and the faculty are able to comment on their postings sometimes to challenge them further to help promote a deeper engagement with the learning objectives. This is an especially powerful learning tool in the context of patient safety which for many was a completely new way of thinking about healthcare. However, not all students are confident enough to post comments so as a strategy to encourage participation the second part of the assessment was structured as a collaborative wiki. Wikis are web sites which can be edited by any member of the wiki team, the assessment involved students working together on a joint PowerPoint presentation with the common goal of making the administration of medicines safer using the Model for Improvement as a tool. Medicine administration was chosen as this is a process which involves all members of the multidisciplinary team who will have their own discipline specific perspective. This was an opportunity for a team to think through the whole process from prescribing, dispensing, administration and effect. The summative assessments are weighted with the blog accounting for 40% of the mark and the wiki 60%. The marking criteria explicitly details that are marks are awarded for online collaboration.

Results

Evaluating the outcomes of any educational programme can be demanding. For this module we employed several strategies looking at both online engagement and achievement of the academic standard of a Level 7 course. The team looked collectively at the body of students' work which included self-reflection on learning and the improvement work in their clinical areas, through this process themes naturally emerged. Although this approach could not attribute or is evidence of causation it was an approach that enabled the team to understand if the module content and assessment strategies had engaged students and if the blended approach to course delivery was appropriate and enabled students to achieve their aims. Although quantitative evidence was collected on students' interaction online, for the purpose of this paper the focus will be on students' reflections on learning, improvement and innovations as this will be illustrative of the value of this approach to patient safety education.

Culture and Barriers

The subject that attracted the most debate on discussion boards and blogs was the culture within organisations and how this can influence safe care. Students were simply asked to describe how errors were defined in their organisation and the number and type of error reported. Most thought this would be an easy task and when confronted with barriers to accessing data began to ask questions within their own organisations and amongst the group.

Reporting systems according to Vincent (2010:75) should be about communication and can be 'positive, informative and reassuring', the students on this module used adjectives like 'shocked', 'deterrent', 'surprised', 'disincentive' 'hostility' when describing the reporting systems within their clinical area. The blog functioning as a journal illustrated frustration at not being able to access data. All students contributed describing their experience and the debate matured into how to define an error. For example, one student discovered that the most reported incidents were pressure ulcers; she felt that the potential for harm in the administration of drugs was high yet underreported and thus questioned the value of the current system. Many agreed and felt that the narrow definition of incidents did not reflect the errors they witnessed and this had