Fundamentals of Patient Safety and Human Factors in Healthcare

Progress report of the development and pre-testing of a certificated e-learning module for NES training groups and educational supervisors

Commissioned by NHS Education for Scotland Patient Safety Multidisciplinary Steering Group

Carl de Wet
GP/Patient Safety Researcher

Sabine Nolte
Educational Project Manager

Paul Bowie
Associate Adviser

June 2011
Introduction

Improving the safety and quality of patient care and services are top priority policy goals in NHS Scotland and a professional obligation of NHS clinicians, managers and staff. The provision of timely and easily accessible educational resources to support the NHS Scotland workforce to achieve these aims is a linked NHS Education for Scotland (NES) objective.

In 2009, the NES Patient Safety Multidisciplinary Steering Group (PSMSG) commissioned a review of existing national and international e-learning products (educational modules, programmes and training courses) related to patient safety. The aim of this exercise was to identify, describe and evaluate the potential value of relevant products for use in NHS Scotland. The outcome of this review suggests that modules relating to a Scottish setting are lacking. The full report can be accessed via the NES patient safety web pages:
http://www.nes.scot.nhs.uk/media/649709/final%20report%20of%20ps%20online%20modules%20january%202010.pdf

In addition to this, a parallel NES workstream is currently underway to develop and embed in the postgraduate curricula of NES training groups (e.g. pharmacists, dentists, foundation year doctors) more explicit education and training around patient safety and quality improvement. The first element in this development is to raise awareness amongst NES training groups and educational supervisors/postgraduate tutors of basic patient safety and human factors concepts through short, highly focused e-learning modules (the chosen educational intervention reflects the packed curricula and time constraints faced by all concerned).

In support of this new development and the NHSScotland Quality Strategy, and after considering the aforementioned review and feedback from NHS stakeholders, including the Scottish Patient Safety Programme, the PSMSG agreed to fund the design of a certificated e-learning module on the fundamentals of patient safety. The intention is for the module to be piloted initially with selected NES training groups and supervisors before being made available to the wider NHS Scotland workforce.
E-Learning as an educational resource

E-learning was selected as the mode of delivery in order to enable learners to fit the learning into very busy work and life schedules and to enable “anywhere, anytime” access. The case studies will also serve as a “bank” of information, which can be accessed at any time, raising awareness of the patient safety problem. E-learning is an increasingly popular and common way to deliver educational resources and has been shown to be effective in some health care settings.

The online modules will be made accessible to all NHS staff via LearnPro, a Learning Management System already in use in most of the NHS Scotland health boards. This system also provides a direct link to the DOTS system used by FY1/FY2 doctors. The modules can also be deployed on other learning management systems.

The draft version of the ‘Introduction to patient safety’ module

The purpose of the module is to raise awareness of a number of key patient safety and human factors concepts to the NHS Scotland workforce. The field of patient safety is vast so the choice of content material is limited to ‘awareness raising’ in the first instance. With time, higher level modules can be ‘bolted-on’ to meet the educational needs of clinicians and staff who require more advanced safety and human factors knowledge, skills and training.

To improve the module’s accessibility, the content was divided into three sections, as shown below:

Section 1: Patient safety fundamentals
This section describes the scale and cost of the ‘known’ patient safety problem (most of the evidence is limited to acute secondary care settings). Related terms such as ‘error’, ‘harm’ and ‘patient safety incident’, and concepts such as Reason’s ‘Swiss cheese model’ and the importance of a ‘just culture’ are defined and described.

Section 2: Managing human error
This section describes human limitations, adaptive mechanisms and other factors that influence behaviour in a positive or negative way. It also considers two approaches to the effective management of error and describes the ‘three buckets’ model.
Section 3: How do we improve patient safety?
This question is answered by summarizing the national patient safety improvement initiatives in the UK, and by suggesting a number of practical ways in which every health care worker can contribute to patient safety.

The module should take approximately 90 minutes to complete. However, several hours of extra, optional, reading are also included for interested readers.

Initial pilot of the e-learning module: An introduction to patient safety
A draft version of the module was piloted over a three month period from December 2010 to February 2011. A number of trainees and tutors from various professional groups were invited to complete the module and to provide online feedback.

33/79 (42%) health care workers from psychology, general practice, pharmacy and secondary care provided feedback. Of these, 12/30 (40%) were health care workers in training and 18/30 (60%) had a teaching role.

Summary of respondents' feedback

Duration of module
The vast majority (27/33, 82%) of respondents reported that they had required between one and two hours to complete the module, while 3/33 (9%) required less than one and 3/33 (9%) more than two hours. The vast majority (28/32, 88%) of respondents perceived the length of the module to be ‘about right’ with an equal minority (2/32, 6%) finding it too short or too long.

Module content
The vast majority of respondents reported that the module was useful, interesting and enjoyable. Specific features that respondents valued were:

- The option to complete the module at their own pace and at different times
- The quality and quantity of optional material, examples and links that had been included
- That the module provided an overview of patient safety initiatives, but with a Scottish perspective
• Reading about error types, causes of error and how to manage it.

‘...Informative, links to other sites, references provided...’
‘...interesting to look at all the initiatives that are going on. Despite being involved in patient care I was unaware of many of the initiatives with respect to patient safety...’
‘...recognising what factors contribute to errors and how to target each stage to avoid errors...’
‘...It provides a good summary of the background to how patient safety has become an increasing concern and to the UK's response to the challenge...’
‘...Conceptual brevity...’
‘...can access at any time...’

**Perceived difficulty of content**
The vast majority (25/32, 78%) of respondents rated the difficulty of the content as ‘about right’, while a minority rated it as ‘too difficult’ (4/32, 13%), ‘much too difficult’ (1/32, 3%) or ‘too easy’ (2/32, 6%).

**Perceived quality of content**
The vast majority (27/33, 82%) of respondents rated the content quality as ‘good’ or ‘excellent’. A very small minority rated the quality as ‘poor’ (2/33, 6%) or ‘very poor’ (1/33, 3%).

**Assessment**
Respondents generally understood the value of answering the assessment questions before starting the module.

‘...Good to do pre-assessment to pre-test knowledge...’

There was an overall improvement between the pre (64%) and post (75%) module results of the respondents. The questions relating to section two had the least discriminating power.

A significant number of respondents felt that the **assessment could be improved**. They felt that some questions had not been relevant to the module content, or had been too subjective, asking for opinions rather than fact. Many suggested that answers and explanations should have been provided. The draft version of the module did have answers and explanations, but they could not be displayed due to a software limitation.
‘...Tell me why some of my answers are wrong. Would be good to have an explanation of answers post assessment...’
‘...I found the questions rather misleading - many of them were asking for my personal opinion rather than a right answer, however I would still be penalised for not choosing the ‘correct’ answer...’

Technical aspects of module

Content design, navigation and usability

The vast majority (26/33, 79%) of respondents rated the module design, navigation system and general ease of use as ‘good’ or ‘excellent’. A small minority (2/33, 6%) rated this aspect ‘poor’ or ‘very poor’.

‘...navigation around the programme took a little time but once mastered was fairly straightforward...’
‘...Ok once you get into it but kept having to go back to the main menu which was a little annoying...’

Technical difficulties

A significant minority (12/32, 38%) of respondents reported that they had experienced technical difficulties with the online programme. Examples of difficulties included ‘slow’ computer speed, programmes ‘freezing’ and with the registration and ‘logging in’ process.

‘...A couple of times the assessment froze and I had to restart it to get it to work...’
‘...The program was quite slow and I occasionally got kicked out of it for some reason...’
‘...Just initially in the sign up to Learnpro log in...’

Suggested areas for content improvement

The feedback from the vast majority of respondents was very positive.

‘...I think its fine the way it is...’
‘...Nothing - I thought it was really good...’

A minority expressed concern about the patient safety terminology, specifically the number of terms, definitions and classification. They suggested that this could be simplified and illustrated with more practical examples. At least one respondent thought that a glossary of terms would have been helpful.
‘...I'm also not sure how much of the terminology I will remember from module 2; I think being able to print out the terminology would have been useful...’

‘...I found the technical language regarding classification of errors particularly challenging because I had never come across it...’

Learning needs after completing the module
A small majority (18/33, 55%) indicated that they would be interested in additional training in patient safety.

‘...each method of reducing patient safety could be a module in itself. If this were the case I would be very interested in completing these...’

Their main learning need was for additional practical examples. The examples should be specialty-specific, illustrate the practical implications of patient safety theory, and provide examples of improvement efforts.

‘...Need more practical examples...’
‘...Something that is a lot more practical that you can apply to the clinical setting...’
‘...More practical ways to improve safety in practice...’
‘...Tailored to specific disciplines (key areas of patient safety within healthcare areas - situation based)...’

Potential impact of module
The vast majority of respondents (29/33, 88%) reported that the module would have a positive impact on their work. At an individual level, they indicated greater awareness of potential error, increased likelihood to report incidents and raise concerns appropriately. At an organisational level, they indicated that they would promote the module to trainees and consider improving specific systems.

‘...My role is in education and training, so ensuring that trainees access and complete the modules will be on my agenda...’
‘...Spend more time analysing incidents and sharing experience with the wider team rather than those just involved with the incident...’

However, a minority indicated that while the content addressed awareness and attitudes, it was not specific or detailed enough to allow them to implement changes.
‘...This course for me gives you an overview of the subject but does not really give you examples of how you could use this within practice...’

The vast majority (28/33, 85%) of respondents indicated that they would recommend this module to their colleagues.

Response to feedback: actions, improvements and additions

Terminology
The module content has been extensively revised and restructured. The number of terms and classification systems have been reduced and simplified and further explained through new, practical examples.

An alphabetical glossary has been added with descriptions of the more than sixty patient safety terms, techniques, organisations and initiatives mentioned in the module. Respondents have also been given the option to print sections out.

Assessment
In the draft module, each of the three sections had a separate assessment. This was potentially confusing and increased the workload. The assessments have now been combined into a single set of questions that respondents answer before and after reading all sections of the module.

The type of question has been changed to ‘multiple choice’ or ‘true/false’ to make them more objective. The overall number of questions has been reduced, and the majority is completely new and content-based. Respondents will also be able to view the correct answers after they had completed the assessment. Due to software restrictions, an explanation cannot be provided for assessment question answers. However, reflective questions within the module do have feedback.

Practical examples
An additional section has been added to the module, with twenty seven summarized, multidisciplinary Scottish NHS patient safety incidents. Every incident has occurred in NHS Scotland over the last few years and involved real patients. Additional information has also been included to help clarify these incidents and to discuss their practical relation to the patient safety concepts in sections one, two and three.
The incidents were grouped according to setting, specialty, profession and patient safety topic for convenience. To preserve confidentiality and ensure anonymity we changed the personal details of some incidents. This section is optional and in response to feedback (above) and does not form part of the assessment.

Technical changes
The LearnPro menu has been changed to make navigation between sections of the module more intuitive. The registration and ‘logging in’ processes will be simplified in future.

Other changes
A significant minority of respondents commented on the ‘global’ approach of the module. They suggested additional content, or more detail regarding concepts in the module. We therefore further clarified the aims and positioning of this module as the first in a number of patient safety and quality improvement modules that are to be developed. Future modules will deal in detail with various improvement tools and techniques and be targeted specifically to certain professional groups and settings.
Conclusion

Feedback from the vast majority of respondents was positive. They indicated that the module was useful, interesting and enjoyable. The duration and content was considered appropriate. A minority experienced technical difficulties, but was still able to complete the module.

As a result of the feedback, a number of improvements have been made to the module: content and terminology have been reduced, simplified and explained through additional practical examples, a glossary of terms has been included, a new, objective and structured assessment has been developed and some of the technical difficulties have been addressed. An additional section has been added to the module, with twenty seven summarized, multidisciplinary Scottish NHS patient safety incidents and their specific learning points.

The improvements and additions, informed by multidisciplinary feedback from NHS staff, have helped to prepare the module for the next stage of a formal pilot.

‘...I thought [the module] had relevant and interesting information. It was easy to understand and got the point of the importance of patient safety across well...’

‘...Easy to use, correct level, useful information and in an area that can be difficult to find good e-learning modules on. Relevant to all healthcare workers...’

‘...A good starter programme for any NHS employee that gives a brief overview to patient safety...’