The utility of e-learning and clinical decision support resources in improving the practice of healthcare professionals in infectious diseases

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Abstract

Introduction

Healthcare professionals can use a variety of methods to learn about infectious diseases. Two commonly used methods include e-learning and clinical decision support. BMJ Learning is the e-learning provider of the BMJ. BMJ Best Practice is the clinical decision support tool of the BMJ. In this paper, we describe an analysis of the utility of these resources in helping healthcare professionals to learn and improve their practice in the field of infectious diseases.

Methods

We conducted semi-structured interviews with healthcare professionals who are users of BMJ Learning and BMJ Best Practice to find out the utility of the resources in education and in improving clinical care in the field of infectious diseases. Detailed field notes were taken during the interviews. Notes were analysed using thematic analysis.

Results

The learners saw the value in the e-learning and clinical decision support resources as a means of helping them put their learning into practice. The context of use was important to many learners. The quality of the resources was also important. Many of the learners were teachers and were keen to use the resources in their teaching sessions. Although the majority of the comments were positive, some learners had suggestions on what could be improved.

Conclusions

The learners are keen to use these resources to improve their clinical practice. To do this, they need high-quality
resources that will work in their specific context or working environment and that will give them an answer quickly.

Keywords: E-learning; Clinical decision support; Infectious disease

Introduction

Infectious diseases are a common cause of ill-health throughout the world. Doctors, nurses and other healthcare professionals must have the necessary knowledge, skills, and behaviours to provide excellent care for patients with infectious diseases. The knowledge, skills, and behaviours required must encompass the range of learning needs that healthcare professionals might have: these may be in diagnosis, management, reporting, and prevention.

Healthcare professionals can use a variety of methods to learn about how to improve the detection, diagnosis, and management of infectious diseases. Two commonly used methods include e-learning and clinical decision support.

E-learning has many features that make it an attractive option when learning about infectious diseases. E-learning resources can be accessed at a time and place that suits the learner. (Sandars and Walsh 2006) The content can be kept continuously updated – which is important in a specialty like infectious diseases where guidance on diagnosis and management changes quite frequently. E-learning resources are often case-based which also a good fit with this specialty: healthcare professionals can learn by solving problems that are part of clinical cases and that test and train skills in diagnosis, management, and reporting of infectious diseases.

Clinical decision support resources can also help healthcare professionals to learn and to improve the care that they provide. (Berner and La Lande 2016). Ideally, such resources should be evidence-based and continually updated and should contain practical knowledge that will help healthcare professionals at the point of care. They can help in the diagnosis and differential diagnosis of infectious diseases and can also help in management by portraying treatment algorithms in a step by step way. They should be accessible on all electronic devices – especially mobile devices - and should also be available offline via apps. (Kawamoto et al 2005) Ideally, they should fit with the clinician’s workflow. (Bates et al 2003). Clinical decision support resources can help with self-directed learning and also practice improvement – with both of these outcomes continually reinforcing each other.

BMJ Learning is the e-learning provider of the BMJ. BMJ Best Practice is the clinical decision support tool of the BMJ. In this paper, we describe an analysis of the utility of these resources in helping healthcare professionals to learn and improve their practice in the important area of infectious diseases.

Methods

Healthcare professionals who are users of BMJ Learning and BMJ Best Practice were asked by email to take part in an evaluation as to the utility of the resources in education and in improving clinical care in the field of infectious diseases.

Semi-structured interviews were conducted by telephone with those who responded to the email. The interviews were conducted to enable these healthcare professionals to express their thoughts in an open way and to share with the wider community the advantages and disadvantages of using these resources in the field of infectious diseases. Interviews lasted approximately 30 minutes. Detailed field notes were taken during the interviews. Notes were analysed using thematic analysis. (Joffe and Yardley 2004). This was used to allow new concepts and themes to
emerge from the data.

This was an evaluation and not a research study. The purpose was to help judge the usefulness and worth of these e-resources.

**Results**

Eleven learners took part in the semi-structured interviews. Five key themes emerged from the interviews.

**Theme one: using e-learning and clinical decision support to improve clinical practice**

The learners saw the value in the e-learning and clinical decision support resources as a means of helping them put their learning into practice. Some of them had just started using the resources and so were at the stage of planning to improve their practice in the future. For example, one learner commented: "Using evidence-based guidelines I am going to modify treatment plans; use alternative communication methodologies with patients, families, and/or the team, change my screening/prevention practice; incorporate different diagnostic strategies into patient evaluation". Some of them had been using the resources for some time and so had already improved their practice as a result. One learner commented: "I see many patients with diarrhoea, which often turns out to be traveller's diarrhoea"; the clinical decision support resource "has helped me to rule out other more serious causes". A common theme was that users were keen on improving their practice so that it would become compatible with international guidelines. One learner commented: "My clinical practice has changed since studying the evidence-based guidelines. I am now applying all the new information I've learned about internal medicine and infectious diseases." The resources cover assessment, diagnosis, management and follow up. However, feedback shows that the content on differential diagnosis is especially used and appreciated. One user commented: "I have seen patients with fever of unknown cause and I used the content on especially dangerous pathogens to ensure that my differential diagnosis covered the most serious causes. Fortunately, I was able to rule these out."

**Theme two: the context of use of e-learning**

The context of use was important to many learners. Where and how they used the resources was almost as important as the resources themselves. One learner commented: "I usually use BMJ Best Practice in my everyday practice, at least referring to it five to eight times a week, when the need for efficient and authoritative decision-support is vital. It is used with a patient in ordinary GP consultation or used after the initial consultation to consider diagnosis, management, and follow-up care". Another common thread within this category was that the learners were usually short of time and so needed a resource that would give them access quickly. One learner commented: "It is very quick and efficient to refer to in a patient consultation as I can simply login and get the guidance I need." Learners also frequently commented that they needed a resource that would work on any device. One learner commented: "I can access the information I need on my smartphone as well as on the internet. This means I can use BMJ Best Practice anytime… whether it's at work or at night when I'm at home."

**Theme three: the quality of the resources**
The quality of the resources was important to many learners. Learners viewed quality from a number of perspectives. First and foremost was the quality of the content itself. Learners thought about the quality of the content from the perspective of its evidence-based medicine credentials, its currency, and its independence. There were comments that it was "free of commercial bias", that the content was "continually updated", and that it was "evidence-based" and "peer reviewed". Secondly, learners viewed quality from the perspective of ease of use of the resources. Learners wanted content that was easy to use, with a clear structure that is simple to search, and that takes them through new knowledge in a step by step manner. There were comments that the content was "well designed for practical use" and that learners could "easily select the topic that is of interest to us from the front screen and then find the supporting information to help us manage and treat our patients confidently and effectively". Another learner commented that "the step-by-step treatment analysis" made it "easier to understand and remember key information".

Theme four: learning to be passed on

Many of the learners were also teachers and were keen to use the resources in their teaching sessions. One learner commented: "I regularly update the materials of my lectures with the latest information." Another fed back that they used the "resources in the classroom with my students." However, many learners were keen on also using the resources more strategically – to create local guidelines that would implement evidence-based medicine more widely. One learner commented that their "team have already prepared protocols in the treatment of nosocomial pneumonia, community-acquired pneumonia and acute liver failure. They are all built on evidence-based guidance, and they are reasonably easy and cost-effective to implement." Another commented that they "can now start to work together with program managers on the long-term application of the information and guidelines to plan and manage services for patients with tuberculosis and other infectious and non-infectious diseases."

Theme five: room for improvement

Although the majority of the comments were positive, many learners still had suggestions on what could be improved. Some learners commented that it would be helpful if they could get continuing professional development credits from using the resources. One learner stated that "achievements (certificates- credit hours, activity) should be integrated into local validation process (sic) and recognized". There were also some comments that the resources still left some learning needs unfulfilled. One learner commented that there were "some pathologies that are not discussed in enough detail"; another commented that there were "some topics that were a little bit too simple and needed further information."

Conclusions

Learners view the utility of e-learning and clinical decision support resources in improving the practice of healthcare professionals in infectious diseases in a number of ways. The predominant theme is that they see value in using e-learning and clinical decision support to improve clinical practice. The quality of the resources is important to many learners but equally important is the context in which they can use the resources. The learners are keen to pass their learning on – through traditional teaching or through the development of guidelines that will disseminate evidence-based medicine. Learners had suggestions of what could be improved – these suggestions were related to continuing
professional development credits or unfulfilled learning needs.

There are limitations to this evaluation. All of the learners were users of e-learning or clinical decision support – they may not represent the wider population who do not use these types of resources. All were users of resources from a single provider - once again they may not be representative of users of other resources from other providers.

This paper evaluates the utility of e-learning and clinical decision support resources in improving the practice of healthcare professionals in infectious diseases from the perspective of the learner. The learners are keen to use these resources to improve their clinical practice. To do this, they need high-quality resources that will work in their specific context or working environment. In this regard, learners need content that will give them an answer quickly, that they can use in their everyday practice and that will work on any electronic device – and especially on mobile devices.

**Take Home Messages**

**Notes On Contributors**

Kieran Walsh is Clinical Director of BMJ Learning and BMJ Best Practice.

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Appendices

Declarations

The author has declared the conflicts of interest below.

Kieran Walsh works for BMJ, which produces BMJ Learning and BMJ Best Practice. Both resources cover a range of topics in infectious and non-infectious diseases.

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