HEALTHCARE STUDENTS AND ELECTRONIC PATIENT RECORDS: CUT, COPY AND PASTE?

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Abstract

Background:
The patient record is fast becoming digitised in the UK. Electronic Patient Records (EPRs) enable real-time sharing of information within and across the interface of care. Training is essential as sub-optimal use of EPRs increases the risk of errors. Healthcare students are increasingly exposed to EPR systems, and so need require robust training within an environment made safe for learning.

A national working group with representatives from 14 Universities met to define and refine learning outcomes, necessary to guide teaching.

The next steps included creation, sharing, use and re-use of simulated EPRs for local use. This facilitates collaboration and sharing of learning content within and across educational institutions. As commercial EPRs are auditable and record all additions and changes, the team found that records soon became unusable for teaching and had to be rebuilt from the beginning. This was time consuming and unworkable.

Methods:

Members of the national group worked with a commercial EPR provider to explore the use of their system to specifically support healthcare simulation education rather than real clinical care. The commercial provider agreed to their system being used by academic institutions to support healthcare education without charge. The commercial provider provided technical expertise and the working group used their academic expertise to design the EPR system for use in clinical education.

Results:

The collaboration developed and refined a new feature of the EPR, which allows creation of simulated patient record templates. These can be used for streamlined copying and creation of new records to support teaching, and can be easily shared across institutions.

Conclusion:

Students need to learn to work with and alongside EPRs in preparation for clinical practice in digital healthcare. The working group and commercial provider addressed a key barrier to the use of EPRs as part of simulation in healthcare training: the creation, sharing and re-use of EPRs to support education. Simulated EPRs as part of teaching offer new and important authenticity in the simulation of the modern clinical workplace.

Keywords: simulation, electronic patient records, digital healthcare.

1 INTRODUCTION

Patient records are almost exclusively digitised in UK family practice and more recently, in many hospital settings. The creation and use of Electronic Patient Records (EPRs) enable real-time sharing of information within health care environments and across the interface of care, as patients and information about them moves from one environment to another. It is hoped that the adoption of EPR systems throughout the UK National Health Service (NHS) will improve healthcare through the facilitation of more effective and more economic clinical interventions [1,2].

Already, there is evidence that technology within the EPR, such as electronic prescribing (ePrescribing), can reduce the risk of error [3-6]. Given that a variety of EPR commercial systems are used within the UK, interoperability of systems is required to bring about reductions in expenditure [7]. The NHS in England has committed to making all patient care records digital, real-time and interoperable by 2023 [8].
To use EPR systems safely and effectively, clinicians require a number of skills, including familiarity with the EPR and competence in accessing and contributing to the records they encounter. Clinicians must be able to use the data effectively to inform their clinical decision-making, to document these decisions and to communicate digitally with other staff involved in their patient’s care. Training is essential for the successful implementation and on-going use of the technology [9, 10]; sub-optimal use can increase the risk of clinical and procedural errors [10-12].

Whilst NHS England is working to improve the digital competence of the current, qualified healthcare professions [13, 14], the training offered does not extend healthcare students. Students are increasingly exposed to EPR systems, and so need to be given the opportunity to develop the competencies to “access, discriminate, analyse, apply knowledge and master large flows” of information from these [15]. Importantly, they require robust training within an environment made safe for learning.

A national working group of clinical academics have been working with representatives from NHS England and the commercial EPR sector to agree learning outcomes for the design of teaching relating to the EPR. This was subjected to independent, external review by experts in medical education. A final version has been ratified and published [16].

Commercial EPRs record all additions and changes made by the practitioner. In the academic setting, records quickly become unusable for teaching. This is because when a student (or group of students) make changes to the record (e.g. data entry), it is recorded indefinitely, changing the record in such a way that it cannot be used to re-run the teaching session. As such, patient cases need to be rebuilt or reset to provide the same teaching for a cohort of students. This is time consuming and unworkable for large cohorts, particularly when providing interprofessional education sessions where the size of the cohort increases.

In view of the digital footprint created by every interaction within the record, to move forwards, the creation and sharing of simulated records needed to be explored, whilst maintaining the realistic interface and function of a genuine EPR. Alongside this, the EPR system need to be modified to facilitate the use and re-use of simulated records. Both of these developments would facilitate collaboration and sharing of learning content within and across educational institutions, and tackle the issues with time needed to create and recreate records.

2 METHODOLOGY

Academics from 14 higher education institutions met as a national group, along with technologists from a commercial EPR provider. Together, the requirements for a record for education purposes were outlined, including the ability to re-use simulated electronic records in a time-efficient manner.

Methods for the storage and distribution of ‘template’ EPRs across institutions were explored. Funding arrangements for the use of the commercial system were highlighted during discussions. The academic institutions and the commercial provider needed assurances that the EPR system would be a long-term investment. This would be necessary to justify the academic time invested in the planning and delivery of teaching in the digital environment, and for the commercial provider to make modifications to their system.

The commercial EPR provider recruited interns working with their company to explore the development of their system to specifically support healthcare simulation education rather than real clinical care. Funding arrangements were discussed at their board meeting.

3 RESULTS

Considering the main requirements of the educational EPR system outlined by the working group, the interns coded new features within the dropdown menus of the commercial system, introducing the facility to identify and copy from a single ‘template’ record and create a user defined number of new records. These records were each created by the system with a new, computer generated name, but with all other features such as clinical notes, results and electronically prescribed medicines in keeping with the original. Each of the copy records could be allocated automatically to individual students or groups of students who had been registered as users for the EPR system.

The commercial provider agreed to their system being used by the academics in the working group without charge for educational purposes. This removed potential barriers that would be introduced
through institutional funding of the commercial system, and widened the potential for sharing and reuse of simulated template records across academic institutions in the working group and to other UK Universities interested in joining and contributing. The system was designed so that simulated record ‘templates’ could be stored in a central, cloud-based repository, made accessible to lead academics at each institution in the working group. These template records have the facility to be downloaded for copying, using and re-using at a local level.

The academics attended training sessions to understand how to create simulated patient records, and how to re-use these for students or groups of students. Exemplar template patients were created, using and adding to data already developed for education at Manchester University.

4 CONCLUSIONS

The integration of the knowledge, skills and attitudes gained in healthcare training cannot be expressed for the benefit of patients unless clinicians can interact effectively with EPRs. These are important, transferable skills that will always be the final common pathway, linking education and training to clinical practice in the 21st century.

Honeyman et al. highlight the need for practising clinicians to be part of the drive for engagement and training in order to reap the benefits of digital healthcare: “Progress in this area requires much more focus on engaging and upskilling the people (at all levels in the NHS) who are expected to use it. The importance of engaging clinicians, in particular, and conveying the benefits associated with digitisation should not be underestimated.” However, as the future workforce for the NHS, undergraduate healthcare students, studying at UK Universities also need to be part of this drive. They too need to learn to work with and alongside EPRs in preparation for clinical practice in digital healthcare.

EPRs are protected to maintain security and confidentiality. While these protections are necessary for patient care, they limit undergraduate exposure to the digital environment, which they will often be expected to access, and contribute to, once qualified. Furthermore, since the EPR systems are commercial ventures, investment in their use for training and simulation, rather than direct patient care, can be prohibitively expensive.

The working group and commercial provider have addressed a key barrier to the use of EPRs in healthcare training: the creation, sharing and re-use of EPRs to support education. Simulated EPRs provide authenticity to the digital environment in the simulation of the modern clinical workplace. The ability to copy records facilitates the design and delivery of teaching sessions for undergraduate healthcare students. This paradigm shift is opening up new and innovative opportunities in UK healthcare education, with many new possibilities for undergraduate healthcare experiential learning and simulation.

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