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Original Research

Learning to work with electronic patient records and prescription charts: experiences and perceptions of hospital pharmacists

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Abstract

Background: The use of electronic patient records (EPR) and electronic prescribing systems (such as electronic patient medication and administration records (EPMAR)) have many benefits. Changes and problems can result, however. Anecdotally, how pharmacists respond to system introduction varies greatly; there is very little information regarding pharmacists' experience in the literature.
Objectives: This study aimed to establish the changes that electronic systems afforded to hospital pharmacists' working practices and to investigate how and why they had responded to EPR and EPMAR.
Methods: Four semi-structured focus groups were conducted with pharmacists with different levels of seniority, with 4–6 participants in each. The focus groups were held 8 months after implementation of EPR and EPMAR were complete, and each focus group met once. Transcripts were analyzed manually using thematic analysis and data interpreted through the application of Actor Network Theory (ANT) and human activity systems as described in Engestrom's Expansive Learning Theory (ELT).
Results: The three main overarching themes identified involved reduced patient contact, professional representation in the clinical environment and documentation in the EPR. Pharmacists felt less visible to, and had poorer relationships with, patients as they no longer saw them when they checked prescriptions. Interprofessional relationships changed as pharmacists provided informal EPMAR training for doctors and spoke more often with nurses to relay important information. Changes in whether, what and how pharmacists recorded information also were seen, particularly between pharmacists of different generations and years of working at the hospital. Analysis of the changes afforded by electronic systems using ANT and ELT suggest that pharmacists develop individual working practices in response to changes that electronic systems provide.
Conclusion: For implementation success of EPR and EPMAR systems, pharmacists need to be taught not just the practicalities of system use, but also how to ensure that patients remain the focus of care, in response to the professional changes that may well occur following computerization.

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Introduction

Over the last 20 years, the UK Government has driven the implementation of electronic systems in health care with the aim of improving patient care.[1,2] The established benefits of electronic patient records (EPR) are well documented, and include improved legibility, improved completion and identification of author, improved quality and completion of records, and increased accessibility.[3,4] The benefits of electronic prescribing are a little more contested and difficult to assess due to the multiple changes offered by these systems. Although found to reduce the number of medication errors associated with paper prescription charts, they do not eliminate errors completely. Rather, they serve to change the type of error made.[5–9] There are currently only a few hospitals in the UK that have both EPR and electronic prescribing and medicines administration record (EPMAR) systems in place. More hospitals are due to work toward implementing dual systems in the foreseeable future.

The implementation of the electronic interface has been recognized as resulting in huge organizational change.[10–12] Historically, research has explored the perceived benefits of information technology (IT) systems in health care using quantitative questionnaires.[13,14] The reliability of this method of data collection maybe limited as questionnaires can be misinterpreted, rushed or the answers given may not be full truths.[15] It is also difficult to see how this method of data collection can tease out the intricacies of the complex nature of IT in health care, which Berg and colleagues' work on the sociotechnical aspects of these systems has highlighted.[16–18] More recently, systematic reviews have identified some of the changes, and problems, that occur secondary to computerization and the social aspects of technology are being used to understand and interpret integration of these systems.[4,19,20]

Actor Network Theory (ANT)[17,18,21,22] and Expansive Learning Theory (ELT),[23] are educational theories which make it possible to consider the sociotechnical nature of patient medical notes and the electronic interface. ANT and ELT enable the exploration of what is happening within the interactions between humans and the electronic interface. The former explores the interaction between non-human and human entities, and the resulting behaviors and links that occur, whilst the latter allows us to make sense of what is happening at the point of interaction. This can be further supported by workplace learning theory proposed by both Billet[24] and Eraut.[25]

As human and non-human entities (actors) exist and interact, they produce a patterned 'nodular' network.[26,27] As actors come together to form these nodules, they undergo the process of 'translation' which ultimately results in ordered re-organization, sometimes with unexpected outcomes.[19,22,26] The process of translation can vary between actors and can be affected by, for example, politics, individual differences and experiences. To understand what is happening at the translation process (i.e., a network nodule), it is useful to employ Engestrom's ELT, which considers human activity systems as part of activity theory (see Fig. 1).[23] The activity system can be applied to the pharmaceutical care model where, for example, the patient can be considered the 'object,' the 'subject' is the pharmacist and the 'instrument' is the medical notes or prescription chart. The 'outcome' would represent the delivery of pharmaceutical care to the patient. "Contradictions," or tensions, can be found within activity systems, particularly if a new element is introduced (such as a new instrument in the form of an electronic prescription chart) to an activity system. When a contradiction is present, transformation of an activity system can occur which may result in changes to outcome and ultimately changes in the activity. Applying the pharmaceutical care model and pharmacist practice to the human activity system described by Engestrom provides a means of interpreting the forces at play within this complex scenario.[23] As the pharmaceutical care model seemed to fit to the activity system, it was felt that using a combination of this, and ANT would provide understanding of why pharmacists work practices had changed.

Anecdotally, the way pharmacists respond to the introduction of electronic systems varies greatly but there is very little information regarding this in the literature. As hospitals move toward the introduction of the electronic interface, an understanding of the impact of these systems on working practices is essential for successful implementation. This study aimed to establish the changes that electronic systems afforded to pharmacist's work