Relationship between e-prescriptions and community pharmacy workflow

Olufunmilola K. Odukoya and Michelle A. Chui

Abstract

Objectives: To understand how community pharmacists use electronic prescribing (e-prescribing) technology and to describe the workflow challenges pharmacy personnel encounter as a result of using e-prescribing technology.

Design: Cross-sectional qualitative study.

Setting: Seven community pharmacies in Wisconsin from December 2010 to March 2011.

Participants: 16 pharmacists and 14 pharmacy technicians (in three chain and four independent pharmacies).

Interventions: Think-aloud protocols and pharmacy group interviews.

Main outcome measures: Pharmacy staff descriptions of their use of e-prescribing technology and challenges encountered in their daily workflow related to this technology.

Results: Two contributing factors were perceived to influence e-prescribing workflow: issues stemming from prescribing or transmitting software and issues from within the pharmacy. Pharmacies experienced both delayed and inaccurate e-prescriptions from physician offices. An overwhelming number of e-prescriptions with inaccurate or unclear information resulted in serious time delays for patients as pharmacists contacted physicians to clarify wrong information. In addition, lack of formal training and the disconnect between pharmacy procedures for verifying prescription accuracy and presentation of e-prescription information on the computer screen influenced the speed of processing an e-prescription.

Conclusion: E-prescriptions processing can hinder pharmacy workflow. As the number of e-prescriptions transmitted to pharmacies increases because of legislative mandates, it is essential that the technology supporting e-prescriptions (both on the prescriber and pharmacy operating systems) be redesigned to facilitate pharmacy workflow processes and to prevent unintended increase in medication errors, user frustration, and stress.

Keywords: E-prescribing, electronic prescribing, community pharmacy, workflow.

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Community pharmacies were forerunners in adopting various types of health information technology (HIT) to improve patient care.[1] Electronic prescribing (e-prescribing) is one form of HIT that is increasingly being used in pharmacies.[2] E-prescribing is defined as the direct computer-to-computer transmission of electronic prescriptions (e-prescriptions) from prescriber offices to community pharmacies.[3] E-prescribing is being used in different clinical settings to reduce medication errors and improve efficiency.[4] Consequently the number of e-prescriptions received in pharmacies is increasing annually.[2] In 2011, more than 570 million e-prescriptions were received in pharmacies in the U.S. as compared with only 320 million in 2010.[2] As the adoption of e-prescribing in the U.S. health care system grows, community pharmacies have increasingly needed to rapidly adapt to this change in delivery of health care.

Questions have arisen regarding e-prescribing technology's ability to facilitate or hinder safety and efficiency of dispensing in pharmacies. The use of this technology to generate prescriptions has been reported to result in medication errors such as wrong drug, wrong patient, and wrong drug directions because of inaccurate or omitted information.[5] One study reported that one in 10 computer-generated prescriptions received in pharmacies had at least one medication error and a third of these errors were potentially harmful.[6] Only a few studies have investigated the consequences of receiving e-prescriptions in pharmacies. Results from these studies indicate a growing concern among community pharmacists about the patient safety implications related to new kinds of medication errors and information omissions caused by the use of e-prescribing.[5,7] E-prescribing may be a threat to medication safety related to prescription processing in community pharmacies.[5]

E-prescribing processing is gradually becoming an integral part of community pharmacy workflow. Pharmacy workflow generally refers to a series of tasks that are performed in order to dispense medications to patients safely and efficiently. Workflow processes and design may affect patient care in community pharmacies. The use of automation in pharmacies has been associated with improved workflow efficiency.[8] However, implementation of HIT such as e-prescribing in health care settings has been reported to result in changes and disruptions in normal workflow that may negatively affect patient care.[9] Indeed, one study reported that community pharmacists required an average of 6.07 minutes to resolve problematic e-prescription orders.[5] Such a demand on time suggests that issues arising from e-prescribing in community pharmacies may slow down pharmacy workflow.

At a Glance

Synopsis: Using think-aloud protocols and pharmacy group interviews, researchers gathered information on the effect of electronic prescribing systems (e-prescribing) on community pharmacy workflow. Participants were 16 pharmacists and 14 pharmacy technicians from three chain and four independent pharmacies. These participants described their use of e-prescribing and ways in which it affected previously established patterns of operating, both in dispensing and in pharmacist oversight of prescriptions. The information here indicated problems in workflow caused by the transmission process of e-prescriptions from prescribers. Problems were also inherent in the way pharmacies applied the e-prescribing system. In this study, problematic e-prescriptions were found to often be a disruptive element in pharmacy workflow.

Analysis: *As this study indicates, the federal government is mandating the use of e-prescriptions, which will increase their use in the near future. As use of prescriptions becomes more common, it is easy to foresee a time when all prescriptions will routinely be transmitted without the paper in the patient's hand. Given this trend, it is a pertinent question as to how such a practice can be implemented so as to improve health care rather than create an impediment. The findings of this study indicate that more studies investigating how best to design e-prescribing for community pharmacy use are needed.*

Objectives

We sought to understand how community pharmacy personnel use e-prescribing technology and to describe their perspectives regarding workflow challenges encountered when using e-prescribing.

Methods

We selected community pharmacies that processed a minimum of 10 e-prescriptions daily and initiated the processing of e-prescriptions from the electronic order. These criteria ensured recruitment of pharmacies that were familiar with e-prescribing and used the technology as originally intended by designers.

Pharmacies were initially recruited through the Pharmacy Society of Wisconsin (PSW) Fast Facts e-mail listserv in December 2010. We recruited 14 pharmacists and 16 technicians (at least four workers from each pharmacy) from participating pharmacies through the pharmacy manager. Written informed consent forms were obtained from all participants, and human subjects' approval for the study was granted by the University of Wisconsin–Madison Institutional Review Board.

A qualitative data collection approach was used to provide an in-depth and detailed description of workflow practices when using e-prescribing technology in pharmacies. Data were obtained using two qualitative data collection techniques: think-aloud protocols and pharmacy group interviews. We employed two qualitative data collection methods to ensure validation of information provided by each participant. The combination of these methods provided in-depth information and triangulation on the workflow challenges, mental recall, and information needs of pharmacy personnel when processing e-prescriptions.

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