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## Beyond the basics: Refills by electronic prescribing

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### ABSTRACT

**Introduction:** E-prescribing is part of a new generation of electronic solutions for the medical industry that may have great potential for improving work flow and communication between medical practices and pharmacies. In the US, it has been introduced with minimal monitoring of errors and general usability. This paper examines refill functionality in e-prescribing software.

**Methods:** A mixed method study including focus groups and surveys was conducted. Qualitative data were collected in on-site focus groups or individual interviews with clinicians and medical office staff at 64 physician office practices. Focus group participants described their experiences with the refill functionality of e-prescribing software, provided suggestions for improving it, and suggested improvements in office procedures and software functionality.

**Results:** Overall, ~50% reduction in time spent each day on refills was reported. Overall reports of refill functionality were positive; but clinicians and staff identified numerous difficulties and glitches associated managing prescription refills. These glitches diminished over time. Benefits included time saved as well as patient convenience. Potential for refilling without thought because of the ease of use was noted. Clinicians and staff appreciated the ability to track whether patients are filling and refilling prescriptions.

**Discussion:** E-prescribing software for managing medication refills has not yet reached its full potential. To reduce work flow barriers and medication errors, software companies need to develop error reporting systems and response teams to deal effectively with problems experienced by users. Examining usability issues on both the medical office and pharmacy ends is required to identify the behavioral and cultural changes that accompany technological innovation and ease the transition to full use of e-prescribing software.

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## 1. Introduction

Electronic prescribing is the direct computer-to-computer transmission of prescription information from physician offices to pharmacies. By the end of 2008, about 12% of office-

based practices were using some variant of this technology in the United States (<http://www.surescripts.com>; accessed on February 18, 2010). E-prescribing, still in its infancy and experiencing the requisite growing pains, will take on a greater role in patient management in general [1]. The overall potential for e-prescribing is enormous as it will provide physicians

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with a system to track patient refill histories, streamline the administration of patient records, check for drug conflicts and facilitate better communication between pharmacies and physician offices [2]. E-prescribing is expected to assist in reducing medication errors [3,4].

Nevertheless, there may be significant obstacles to the successful implementation of e-prescribing software in physician office practices. Users of e-prescribing software participate in a "live experiment" until the goal of error-free transmission is realized. While studies of the utility of drug alerts in e-prescribing exist [5,6], research regarding functionality issues specific to refills is sparse. Thus, this paper specifically examines both the potential of e-prescribing for pharmacy refills and the barriers that currently exist that may impede the large-scale adoption of this new technology. We conducted a large one year study to evaluate healthcare providers' opinions about the role of e-prescribing applications in improving patient safety and efficiency. This study summarizes qualitative and quantitative data collected via focus groups and surveys of 64 practices spread out across six states and using one of six different e-prescribing software systems. The current report focuses on statements or comments about using e-prescribing for processing refills.

## 2. Methods

### 2.1. E-prescribing systems

SureScripts, LLC, the nation's largest e-prescribing network, identified states with the highest electronic prescribing activity on their network in the fall of 2005. From these, we included six states in this study to provide geographic diversity: Florida, Massachusetts, New Jersey, Nevada, Rhode Island, and Tennessee. Within these states, we worked with SureScripts, LLC to identify physician software vendors with substantial activity: OnCallData, InstantDX, LLC, Gaithersburg, MD in Rhode Island, PocketScript, Zix Corporation, Dallas, TX; Rcopia in Massachusetts and New Jersey, DrFirst, Inc., Rockville, MD in Massachusetts, Care360, Medplus, Inc., Mason, OH in New Jersey and Florida, eMPOWERx, GoldStandard Multimedia, Inc., Tampa, FL in Florida, and Touchworks, AllScripts, LLC, Chicago, IL in Nevada and Tennessee. SureScripts, LLC provided the volume of refill transactions by month throughout the study period (January through October 2006).

### 2.2. Subjects

Focus group participants were part of a larger study of e-prescribing standards funded by the Agency for Healthcare Research and Quality. The physician software companies above assisted in recruitment of ambulatory care practices with a patient-mix of at least 25% Medicare eligible patients. The data for the current study represent information derived from focus groups conducted in 64 practices with experience using electronic prescribing. These practices participated in focus groups, observation, and other data collection administered at their sites. All data were collected before any changes to the electronic prescribing software were made to accommodate the electronic prescribing

standards. Physicians participating in the study received a \$500 incentive for participating in two surveys, conducting a survey of their patients, participating with partners and office staff in the focus group, testing the software changes, and allowing on-site observation lasting 1/2 day. The Brown University Institutional Review Board approved the study protocol.

### 2.3. Clinician surveys

In advance of or during the site visit, clinicians ( $n = 157$ ) completed surveys available via the web or paper. Most preferred the web-based option. A multidisciplinary advisory team including practicing clinicians, pharmacists, and researchers designed the survey to elicit and assess clinician perceptions of the impact of e-prescribing on efficiency, workflow, and quality as well as their views on patient communication regarding medication issues. The survey included the following questions related to refills: "How many minutes in a typical work day do you (or did you) respond to and process refill/renewal requests, before and after you started using e-prescribing software (total minutes per day)?" Participants were also asked "In a typical week, how often do you use e-prescribing software to enter information for refills/renewals?" and to what extent participants would view alerting the physician when the patient has NOT picked up a prescription as useful (Very, somewhat, or not at all useful). We also asked what the clinician would do "if the e-prescribing software alerted you to when patients did not pick up prescriptions that would have serious medical consequences if not taken". Responses included: call the patient, address it at the next visit, nothing, or other. Lastly, we asked participants "How concerned are you about liability if you know a patient did not pick up a prescription?" (Very, somewhat or not at all concerned). We cross-tabulated clinician responses to these questions by physician software system. Vendor-specific results are presented without identifying the name of the vendor.

### 2.4. Development of the focus group guide

The multidisciplinary research team consisting of pharmacists, physicians, software vendors, and researchers developed a semi-structured facilitator guide. The guide outlined the major subject areas to explore during the focus group discussion. These included: (1) overall impressions of e-prescribing usability, implementation barriers, and impact on patient safety; (2) refill functionality ways it makes job easier, mechanisms to improve safety and efficiency, information desired; (3) access to medication history; and (4) access to formulary and benefit information. The guide included probes for each topic. The research team piloted the protocol by conducting several pilot focus groups with users of an e-prescribing software solution not included in the study and who were faculty at Brown University. An investigator (CD) received feedback from the pilot participants regarding the questions with the goal of refining the guide before launching the full study. The focus of this paper is on the comments made in response to the section on refill functionality.

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