

## VIEWPOINT

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## Responsible e-Prescribing Needs e-Discontinuation

**Implementation of electronic prescribing**, also known as e-prescribing, has been one of the successes of health information technology and an advance in health care delivery. Clinician uptake of e-prescribing has been substantial, in part because it is now required by health plans, insurers, and hospitals. As of April 2014, 70% of physicians were e-prescribing, an increase from 7% who used e-prescribing in December 2008.<sup>1</sup>

e-Prescribing reduces the number of illegible prescriptions<sup>2</sup> and helps to address and may reduce medical errors through integrated tools that provide information on allergies, drug-drug interactions, and appropriate dosing. One primary care study involving 30 clinicians (of whom 15 adopted e-prescribing) and more than 3500 prescriptions at baseline and 1 year later showed that prescribing errors decreased among the e-prescribers from 42.5 per 100 prescriptions at baseline to 6.6 per 100 prescriptions in a single year with the adoption of e-prescribing.<sup>2</sup> However, e-prescribing also has been associated with some challenges; for example, when a pharmacy is closed or does not have the requested medication and it is impossible to contact the prescribing physician; there are also

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issues with the many clicks it takes to order a prescription and the numerous false-positive alerts that lead to alert fatigue.

Despite the advantages, most current e-prescribing systems do not allow electronic cancellation of medication orders, or e-discontinuation. e-Discontinuation would give physicians (and other prescribers) a way to send a message to the pharmacy to electronically stop a prescription from being filled or refilled. Health systems like the Veterans Health Administration and Kaiser Permanente, where prescriber and pharmacy are in the same organization, already have this feature. When prescribers outside such systems want to cancel a prescription, they must call the pharmacy. But because clinicians lack a financial incentive to make that call, patients for whom the medication was prescribed may be left with refillable prescriptions they should no longer fill. Some prescriptions, particularly those for chronic conditions, are written for refills that could last up to a year, meaning that a patient could keep taking a medication long after it was meant to be stopped. This is not a new problem, but it can be compounded by electronic prescribing. At the same time, e-prescribing could be part

of the solution, as the technology to solve this problem already exists.

For almost 2 decades, a standard for e-discontinuation has been available. CancelRx was first defined by the National Council for Prescription Drug Programs and was published as part of the SCRIPT standard for e-prescribing in the Federal Register by the Centers for Medicare & Medicaid Services in 2010. However, this approach was not incorporated into the "meaningful use" program for electronic health record (EHR) incentive payments, which might have encouraged uptake. Changes to meaningful use under the Medicare Access and CHIP Reauthorization Act of 2015 (MACRA) included rules that required EHRs to include the ability to cancel prescriptions and other features of the SCRIPT 10.6 standard.<sup>3</sup>

This provision was a step forward but does not mandate use or ensure that pharmacies can receive and process these messages. The necessary parties—prescribers (through EHRs), the transaction hub (most commonly a company called Surescripts), and pharmacies (through their information systems)—have the technical ability, but EHRs and pharmacies need to "certify" for CancelRx to be enabled. Electronic cancellation is taking place on average more than 25 000 times per month on the Surescripts network so far in 2016, with more than 45 000 e-cancellations in November, numbers that demonstrate the method's feasibility. However, this is only a fraction of the total number of transactions on that network (Kelly Jeffers, vice president, corporate communications, Surescripts LLC; personal communication; November 28, 2016). A third of the prescribers on the Surescripts network are using EHRs that are certified for the CancelRx transaction and about 40% of the pharmacies on the network are using certified software (K. Jeffers; personal communication; November 28, 2016).

Continued use of e-prescribing without e-discontinuation is concerning when coupled with a trend among pharmacies to directly remind patients to refill their prescriptions. Pharmacies have been using automated phone calls, text messages, and apps to reach patients with the goal to improve adherence to medications. Investment in these technologies is worthwhile because more filled prescriptions is also financially advantageous for the pharmacy.

The combination of prescription refill reminders and lack of e-discontinuation means that there is potential for unwarranted prescriptions being dispensed.<sup>4</sup> Electronic health records allow prescribers to stop a prescription, but what many physicians may not realize is that in most cases that directive is

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not sent to any pharmacy. Thus, the current situation in some ways is actually worse than what existed before e-prescribing began. A 2012 study from a large, multispecialty group found that 1.5% of 83 902 prescriptions electronically canceled in EHRs were still filled at the pharmacy, about one-third of which could have caused patients harm.<sup>5</sup> With more than 4 billion retail prescriptions filled at pharmacies each year in the United States, a change in even a small percentage of medications could have a substantial effect.

The lack of discontinuation directly affects patients. For example, a prescriber may tell the patient to stop taking a medication without knowing that the patient's spouse, who is not at the appointment, manages the medications. An auto-reminder from the pharmacy could result in the spouse filling the prescription that should have been stopped. In another case, occasionally a clinician might e-prescribe a prescription with an error. Some prescribers attempt to "correct" their mistake by immediately sending a second prescription, this time with the correct dosage or name, with the expectation that the pharmacy will realize that the second prescription is a correction of the first. However, it is possible that on occasion, the pharmacy may not get this right, and the patient may receive both medications, or the medication that was intended might be canceled. A case series of 5 patients has documented serious harm to patients, including heart failure exacerbation and suppressed white blood cell count, due to the duplications resulting from the strategy of sending multiple prescriptions without an explicit way to indicate that one serves to correct another.<sup>4</sup>

What would e-discontinuation look like in practice? For example, if a patient with hypertension experienced cough related to an angiotensin-converting enzyme (ACE) inhibitor, the physician may initiate a new order in the EHR for a thiazide while canceling the order for the ACE inhibitor. The prescriber's EHR would send the cancellation order via Surescripts, and the pharmacy's informa-

tion system automatically would update the prescription for the ACE inhibitor, noting the discontinuation with the date and time. This action would block further refills, and the pharmacy's reminder system would not remind the patient to fill the prescription for the ACE inhibitor. If the patient erroneously attempted to refill the medication, the pharmacist would see that the prescription has been canceled.

One concern sometimes raised about e-discontinuation regards not knowing which pharmacy filled the prescription. Electronic prescribing makes this easier than paper prescriptions because e-prescribing creates a record in the EHR. e-Discontinuation would not solve other issues with medication safety, such as unused medications remaining available at the patient's home even after a prescription is successfully canceled. But safety risks would not be compounded by a prescription being filled again.

Years have elapsed since the e-discontinuation standard was defined, and the technological barriers are surmountable. If physicians and physician organizations want to speed up the process of adopting e-discontinuation, they could encourage its implementation from EHRs and pharmacies. Federal or state-based legislators could require that pharmacies institute e-discontinuations by a certain date, with a penalty attached for failure to do so. Congress could also mandate that payers take on the cost. Implementation of e-discontinuation requires not just programming costs for certification but also transmission costs and changes in workflow and expectations for physicians. But payers would also realize savings through improved patient safety and prevention of adverse events—likely to exceed any e-discontinuation costs.

e-Prescriptions are here to stay. Adding e-discontinuation functionality has the potential to help reduce medication errors and take fuller advantage of e-prescribing technology. Prescribers need to be able to e-discontinue prescriptions, just as easily as they can e-prescribe them.

#### ARTICLE INFORMATION

**Conflict of Interest Disclosures:** The authors have completed and submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest and none were reported.

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