

ISMP Canada Safety Bulletin

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Electronic Prescribing in Primary Care: Effects on Medication Safety

Electronic prescribing (e-prescribing) in primary care is defined as “the secure electronic creation and transmission of a prescription between an authorized prescriber and a patient’s pharmacy of choice, using clinical electronic medical record (EMR) and pharmacy management software.”¹ A national e-prescribing service to connect primary care practices with community pharmacies is currently being implemented in Canada, led by Canada Health Infoway, together with Health Canada, the provinces and territories, and industry stakeholders. This bulletin focuses on select findings from an environmental scan and literature search conducted by ISMP Canada. Specifically, the effects of e-prescribing on medication safety (both benefits and unintended introduction of risk), including lessons learned from some early-adopting jurisdictions, such as the United States, Australia, New Zealand, and most countries in the European Union.²

Background

To date, Canada Health Infoway has implemented limited production releases of the national e-prescribing service, PrescribeIT, in a number of communities across Canada.³ This service integrates with prescribers’ existing EMR software, utilizing, where possible, prescribing interfaces already present in the software. Additional information can be found at <https://www.prescribeit.ca>. The goals of the national e-prescribing system are safer and more

effective medication management and improved patient outcomes.

Key Medication Safety Benefits

Despite the widespread use of electronic point-of-care systems in pharmacies and prescriber offices, these systems do not communicate with each other, so most prescriptions must be manually re-entered into pharmacy systems—a potential source of transcription errors. An integrated system that communicates directly between the prescriber’s EMR and the pharmacy’s management software system will help to eliminate the risk of such errors. Several medication safety benefits beyond this reduction in transcription errors have been attributed to e-prescribing and are described below.

Key Medication Safety Benefits

- Improvement in Prescription Communication
- Support for Opioid Safety Strategies
- Support for Better Medication Adherence
- Patient Engagement through Online Patient-Facing Applications

Improvement in Prescription Communication

Communication between pharmacists and prescribers may be necessary for prescriptions that require clarification or correction to ensure patient safety. Currently, such communication occurs by telephone, by fax, or by sending the patient back to the prescriber, which can lead to delays in dispensing and starting the medication. E-prescribing systems in a number of countries, as well as Canada, have incorporated a communication feature to reduce such delays. An e-prescribing platform that provides a direct and secure electronic interface allows pharmacists and prescribers to communicate directly, reducing both verbal miscommunication⁴ and workflow interruptions associated with clarifying prescriptions, as well as allowing these communications to be stored as part of the patient's medical record. E-prescribing also helps to standardize the way in which prescription and medication information is presented, thereby reducing the risk of miscommunication.

Support for Opioid Safety Strategies

E-prescribing has the potential to support the safe use of opioids and other controlled drugs.^{5,6} For example, an e-prescribing system could provide alerts when opioid doses exceed recommended guidelines or be set up with default values (e.g., for the number of doses to be prescribed), which would facilitate improvements in evidence-based prescribing of opioids. This may potentially result in less “leftover” medication in the home that can contribute to medication incidents, including accidental poisonings and inappropriate use. E-prescribing of controlled substances (EPCS) has been mandated in several American states as one of several initiatives to combat the opioid crisis. Although data on the effects of EPCS on fatal and nonfatal overdoses are not yet available, preliminary evidence from a New York hospital indicated that the implementation of EPCS, along with supporting policies and mandates, resulted in a significant decrease in the number of prescriptions for opioids.⁷

Support for Better Medication Adherence

As many as 14% of Canadians lose or damage their prescriptions, according to a recent survey. In the study, 17% of those patients (equivalent to about 700,000 Canadians) reported that they did not get the prescription filled.^{8,9}

Established platforms, including PrescribeIT, incorporate notifications to the prescriber that a prescription has been dispensed by the pharmacy. This feature offers prescribers an opportunity to discuss with patients the reasons for not filling a medication and to seek better patient-centred solutions.

Patient Engagement through Online Patient-Facing Applications

More patient engagement is made possible through patient-facing applications (i.e., applications intended for use by the patient, not the practitioner) offered by some e-prescribing systems. These applications allow patients to view their medication profile and add other therapies (e.g., nonprescription products) to create a more complete medication list. With this more accurate picture of the patient's medications, prescribers and pharmacists may be able to identify opportunities to improve regimens or to deprescribe. In Canada, patient-facing applications may be a feature of the pharmacy interface and could be offered by pharmacy providers.

Unintended Introduction of Risk

The introduction of any new process or technology carries a risk of unintended consequences. An overarching concern is the effect of a poorly integrated system or one that does not fit well into existing workflows. The period of transition from a predominantly paper-based system to an electronic system is a time of vulnerability, with prescribers and pharmacists requiring processes to simultaneously manage paper, phone, verbal, fax, and electronic prescriptions.

Unintended Introduction of Risk

- Prescription Modifications Missed by the System
- Loss of Prescription Bundling
- Confusing Free-Text Entries
- Reduced Patient Engagement

Technology-related issues, such as automation complacency¹⁰ (over-reliance on technology) and incorrect selection from drop-down menus, have the potential to arise, similar to those that have been experienced with the introduction of computerized physician order entry in hospitals. Several potential unintended adverse consequences of e-prescribing are discussed below and make visible opportunities for system improvements.

Prescription Modifications Missed by the System

There exists a risk that changes made in one component of the e-prescribing system may not be communicated to other components. For example, a prescriber may make a last-minute change to a previously transmitted e-prescription.¹¹ Depending on the e-prescribing system, the revised prescription may override the initial one, or it may be necessary for the prescriber to cancel the initial prescription before transmitting the updated prescription. In one study, 1.5% of e-prescriptions discontinued by the prescriber were dispensed, and about 12% of these improperly dispensed prescriptions were potentially harmful.¹² In Canada, prescribers will be prompted to send a cancellation notification to the patient's pharmacy, to help manage this risk.

Loss of Prescription Bundling

With paper-based prescriptions, all of a patient's prescriptions arrive or are "bundled" together (i.e., the patient brings in multiple prescriptions to be filled, or the prescriber transmits multiple prescriptions within a single fax). Such bundling provides an opportunity for the pharmacy team to simultaneously assess all the medications that have

been ordered and also to confirm with the patient which ones need to be dispensed. With some e-prescribing systems, prescriptions for multiple patients, from various prescribers, arrive in the pharmacy sequentially in the order of prescription submission. For example, the pharmacy might receive 2 consecutive prescriptions for Patient A, followed by one for Patient B, one for Patient C, one more for Patient A, and finally 2 more for Patient C. This lack of prescription bundling can create confusion for the pharmacy team and may result in patients leaving the pharmacy without receiving all their prescriptions or with prescriptions intended for another person.¹² This system improvement opportunity is being reviewed and considered by stakeholders in Canada.

Confusing Free-Text Entries

Many systems offer a free-text field within electronic prescriptions so that prescribers can enter supplementary information and/or elaborate on any dispensing instructions. In a US study involving review of more than 3 million prescriptions, it was found that 15% of e-prescriptions contained free-text data. About two-thirds of these free-text entries captured unnecessary information already present in other fields of the prescription; such duplication can be confusing to pharmacy staff. Notably, for 19% of the prescriptions with free-text entries, the information provided in the free-text field contradicted other prescription information (e.g., duration of therapy entered as "3 days" in the free-text area and "7 days" in the duration field).¹³ In Canada, education and training programs for e-prescribing will encourage the use of coded fields, whenever possible, to help address this issue.

Reduced Patient Engagement

Enabling patients to take a more active role in their medication management requires that the prescriber and/or pharmacist provide them with key information about the medications prescribed. In a paper prescribing system, patients can review and scrutinize their prescriptions between the time of receipt from the prescriber and delivery to pharmacy. An e-prescribing system that removes the patient from the process of conveying the prescription to the pharmacy, bypasses the patient's potential safety

check. Prescribers should engage the patient in discussion at the time prescriptions are entered¹⁴ and provide patients with a printed summary of their prescribed medications. In Canada, stakeholders are developing patient-facing applications (e.g., patient portal) to support patient-based safety checks.

Conclusion

A national e-prescribing service is currently being implemented in Canada. Canada Health Infoway and stakeholders are evaluating limited production releases in select communities across the country and are learning from countries that have already

developed and implemented successful national e-prescribing systems. A well-designed and user-tested system that minimizes changes to current workflow (or improves workflow), optimizes the potential benefits of electronic communication, and addresses unintended adverse consequences will further patient safety. Ultimately, e-prescribing services, with standardized medication-related communication and data sharing, can facilitate medication safety initiatives such as medication reviews, medication reconciliation, and provincial/territorial data networks and monitoring programs.

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Canada's National Incident Data Repository for Community Pharmacies



The **Canadian Medication Incident Reporting and Prevention System** (CMIRPS) is a collaborative pan-Canadian program designed to reduce and prevent harmful medication incidents in Canada. Reporting, sharing and learning from medication incidents helps to reduce their recurrence, mitigate patient harm and support a safer healthcare system. ISMP Canada, along with Health Canada, the Canadian Institute for Health Information (CIHI) and the Canadian Patient Safety Institute (CPSI) including Patients for Patient Safety Canada (PPFSC), are key partners in the CMIRPS program.

ISMP Canada established a national incident data repository for community pharmacies through its community pharmacy incident reporting program. Community pharmacies in several provinces are already contributing to this national repository for continuous quality improvement, and pharmacies in other provinces are considering participation in this effort as well. The repository is helping to create a more cohesive information-sharing system that will facilitate better understanding of medication incidents and the development of more robust strategies to prevent harm.

We look forward to continued collaboration with all stakeholders and building on the success of the reporting and prevention system for safer patient care. Find out how community pharmacies can contribute to this data repository and share learning from medication incidents by contacting info@ismp-canada.org

This segment of the bulletin describes a recent SafeMedicationUse.ca publication from ISMP Canada's Consumer Program.

September 2018 - Newsletter:

SafeMedicationUse.ca

Have Unused Medications Overstayed Their Welcome?

Careful storage and disposal of medications is important to prevent accidents in the home. Leftover medications that are within easy reach can be dangerous to children and pets. Even a single dose of some medications can cause serious harm or death.

Tips for Practitioners:

- Provide patients with information about the importance of proper storage and disposal of their medications, especially opioids.
- Educate patients about the potential for harm if their medications are ingested by children, family members, visitors, or pets. Specifically identify the risks associated with opioids, if relevant.
- Provide patients with contact information for [Poison Centres in Canada](#) to deal with accidental poisoning and to help them recognize when to call 911.
- Share resources for handling leftover medications and disposal of unused medications in the home. The Health Products Stewardship Association (www.healthsteward.ca) is one such resource.
- Recognize that certain patient groups, such as those receiving end-of-life and palliative care, may require additional support regarding storage and disposal of their opioids and other medications.

For more information, read the full newsletter: <https://safemedicationuse.ca/newsletter/storagedisposal.html>





Med Safety Exchange – Webinar Series

Wednesday, January 23, 2019

Join your colleagues across Canada for complimentary bi-monthly 50 minute webinars to share, learn and discuss incident reports, trends and emerging issues in medication safety!

For more information, visit
www.ismp-canada.org/MedSafetyExchange/



The Canadian Medication Incident Reporting and Prevention System (CMIRPS) is a collaborative pan-Canadian program of Health Canada, the Canadian Institute for Health Information (CIHI), the Institute for Safe Medication Practices Canada (ISMP Canada) and the Canadian Patient Safety Institute (CPSI). The goal of CMIRPS is to reduce and prevent harmful medication incidents in Canada.



The Healthcare Insurance Reciprocal of Canada (HIROC) provides support for the bulletin and is a member owned expert provider of professional and general liability coverage and risk management support.



The Institute for Safe Medication Practices Canada (ISMP Canada) is an independent national not-for-profit organization committed to the advancement of medication safety in all healthcare settings. ISMP Canada's mandate includes analyzing medication incidents, making recommendations for the prevention of harmful medication incidents, and facilitating quality improvement initiatives.

Report Medication Incidents

(Including near misses)

Online: www.ismp-canada.org/err_index.htm

Phone: 1-866-544-7672

ISMP Canada strives to ensure confidentiality and security of information received, and respects the wishes of the reporter as to the level of detail to be included in publications. Medication Safety bulletins contribute to Global Patient Safety Alerts.

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This bulletin shares information about safe medication practices, is noncommercial, and is therefore exempt from Canadian anti-spam legislation.

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