



Electronic Prescribing

Lessons Learned from International Sources

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About ISMP Canada

ISMP Canada is an independent not-for-profit organization dedicated to reducing preventable harm from medications.

Our aim is to heighten awareness of system vulnerabilities and facilitate system improvements.

- What we do
 - Incident analysis
 - Error reporting systems
 - Development of recommendations and strategies
 - Dissemination
 - Education programs
 - Medication safety workshops
 - Medication system safety consulting
- International Work
 - International Medication Safety Network
 - WHO work
 - WHO Global Challenge in Medication Safety
 - International Education and Consulting work

Project Overview

Literature and environmental scan commissioned by Canada Health Infoway to expand knowledge in the following areas:

- factors in the successful uptake of e-prescribing internationally (including professional practice, regulation and legislation, technology, adoption and change management)
- how e-prescribing can best support improved safe medication practices (with a focus on opioids and other controlled substances), including how point of service systems like EMRs and pharmacy systems could work effectively with an ePrescribing service (e.g. PrescriberIT in Canada) and Drug Information Systems
- what other benefits or challenges may arise

Focus and Methodology

Focus

- System description
- Provider connectivity
- Statistics
- Administrative features
- Safety features
- Barriers and facilitators

Team

- Medical Doctor
- Pharmacists
- Systems & IT



Survey and Interview Participants

- Survey: 13 Respondents from 11 Countries
- Interview: 26 Participants from 15 Countries



Landscape – Europe



- Led by the European Union
- Most have established national systems or are in the process of developing or implementing
- Many now evaluating cross-border electronic prescribing

Landscape – Africa, Asia, Americas

Africa

- Little information available
- South Africa does have private competing vendors of e-prescribing services

Asia

- Prescribers in some areas also dispense, nulling the need for e-prescribing
- Much less developed than in Europe or North America
- Often an extension of inpatient CPOE

North America – United States

- Financial incentives have spurred on e-prescribing
- 70-75% of prescribers; 90-95% involved
- EPCS – controlled drug e-prescribing – legislative changes since 2015
 - Mandated in 4 states – NY, MN, ME and CT

South America

- Little information available
- Brazil has plans to implement the digital production of prescriptions; perhaps electronic prescribing in the future

Landscape - Oceania

New Zealand

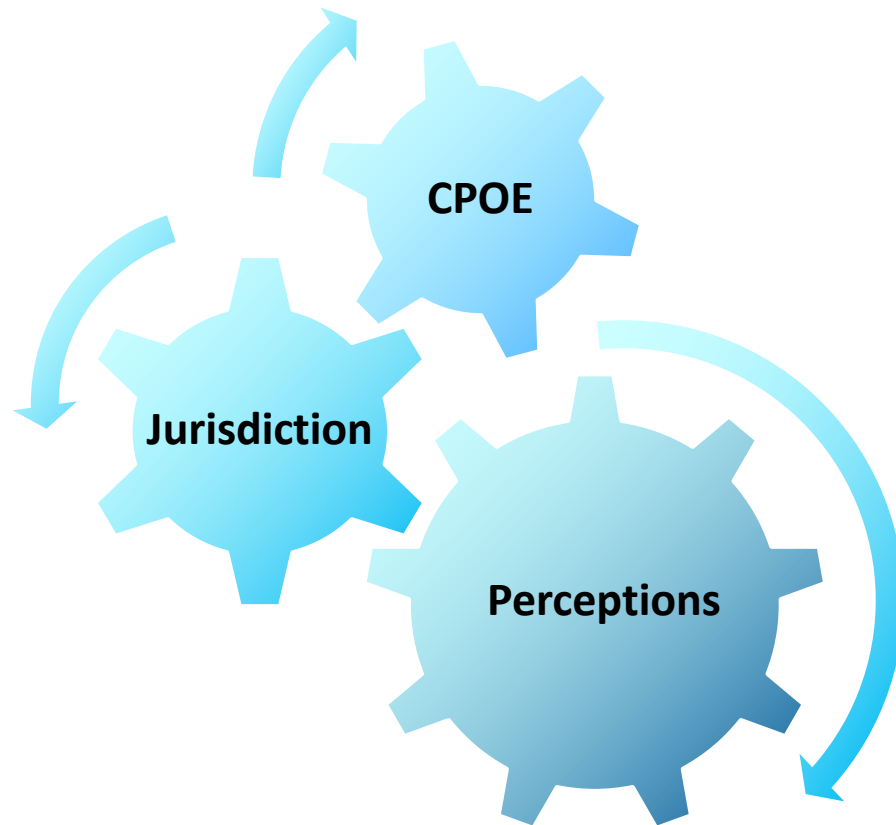
- NZePS e-prescriptions go through an exchange broker; to be upgraded to a repository/database
- Available only through 2 practice management systems; not yet nation-wide
- Some e-prescribe controlled drugs

Australia

- 90% of pharmacies and >22,000 prescribers connected to eRX
- Two service providers
- No cost for prescribers; cost neutral for pharmacies



Translatability and Applicability of Findings



- CPOE to e-prescribing?
- Local EMR/Pharmacy software vs e-prescribing system?
- Jurisdiction to jurisdiction?
- Perceptions vs. objective outcomes?

Key Barriers and Facilitators

Key Barriers

- Cost of implementation / ongoing maintenance
 - Resistance in Austria by Prescribers owing to cost of upgrade
- Lack of understanding of benefits
 - Prescribers in Sweden thought e-prescribing was not necessary
 - Pharmacists typically understand the benefits
- Lack of standardization and requirements
 - Difficulties with standard drug nomenclature in the US
- Implementation – training, staffing and IT issues

Key Facilitators

- Legislative support and directives
 - Mandatory e-prescribing in a number of countries
- Incentives – drives end-users to experience the benefits (improves critical mass)
 - US – bonus for early adopters
- Well-designed system and implementation plan (human factors)
 - Improvements in user interface decreased call-backs in the US
- Effective training of end-users
 - Strong ongoing technical support services in Estonia

Medication Safety

Prescribers

- Improvement in legibility
- Avoidance of phoned-in prescription misunderstanding

Pharmacies

- Mixed perception
 - Some report ↑ time dealing with clarifications; others ↓ time
 - Interrupted workflow for clarifications during transition
 - Understanding free text modifications



Patients

- Improved primary adherence from lost / misplaced Rx
 - Decreased non-adherence over paper from 31.5% to 15.2% (US study)
- Sense of loss of control over medications (no prescriptions to use as a double check)

Medication Safety

Unintended Consequences

Prescribing

- Inclusion of contradictory info in free text fields
 - US study - 15% of e-prescriptions contain free text, 20% of which contain conflicting information
- Perpetuation of errors due to poor processes (e.g., copying of old prescriptions)
- Loss of patient to the “automatic renewal” system

Transcribing / Dispensing

- Differences in presentation format for pharmacy and e-prescribing systems
- Dispensing of discontinued / cancelled / modified prescriptions
 - Over 70% of Finnish pharmacists find it more difficult to correct e-prescriptions
- Clarifications for incomplete / conflicting information

Controlled Medicine/Drugs

Outcomes

- Reduced ability to manipulate prescription/provide duplicate prescription/or fraudulently create prescription
- Prescribing smaller quantities with little impact on the patient
- Little data to demonstrate the impact of electronic prescribing

Perception

- Almost universal perception that controlled drugs more safely managed
 - [Simpler process](#)
 - [View previous Rx](#)
 - [Being used to reduce “doctor shopping” in Austria](#)

Financial/Societal Benefits

Prescribers

- Financial incentives for adoption
 - In 2009 in the US, 2% incentive, declining to a 2% penalty if not using e-prescribing by 2014
- Workflow improvements
 - Norwegian survey: simplified office process for prescription renewal

Pharmacies

- Streamlining processes, improved workflow
- Reduced prescription process time
 - Over 70% of Finnish pharmacists note a benefit

Patients

- More likely to have prescription filled
 - Non-filling reduced from 65.5% (paper) to 22.2% (electronic) in one US study
- Time and cost savings due to fewer trips to the prescriber for refills

Public / Private Insurers

- Integrated CDSS can influence prescribers to select a more cost-effective/generic agent
 - Generic drug prescribing rose from 39.7% to 95.9% in one US study
- Reduced duplication

Financial and Other Costs

Pharmacies

- Start-up and maintenance costs
 - Estimated at 345 MNOK in Norway
- Ongoing transaction fees
 - US: 20-30¢; Australia: 15¢
- Costs related to unclaimed filled Rx
 - One US study estimated \$18-\$25 per prescription in an independent pharmacy (~ 600\$ per month)

Patients

- Reduced engagement with own medications (not known what is prescribed)
- Increased frustration if expectation is that prescriptions will be ready at the pharmacy at pick-up
- Time spent tracking down Rx if sent to the wrong pharmacy

Prescribers

- Start-up and maintenance costs
 - Estimated at 356 MNOK in Norway
- Administrative time to identify pharmacies that accept e-Rx and to enter pharmacy-of-choice
- Time to deal with interoperability issues



High Level Learning

- Inclusion of human factors (ergonomic principles) when designing systems and workflow
 - “Make the system invisible” – respondent from NL
- Integrate existing systems into e-prescribing systems
 - ADR
 - Allergies
 - Prescription monitoring programs
 - Insurance systems
- Ensure changes in one area of the system are reflected in all areas of the system (e.g., if one prescriber stops a medication, this information is populated in all communicating systems)
- Consider including diagnosis in a prescription to enhance safety
- Consider mandatory controlled drug e-prescribing

High Level Learning

- Integrate well designed evaluation of e-prescribing (qualitative and quantitative, outcome and process)
 - “Few countries are doing what we are doing” – respondent from Finland
- Work with legislative and regulatory bodies to prioritize and facilitate adoption of e-prescribing
- Proactively design error surveillance and management system
 - “It is critical to have a system/incident management process for dealing with errors caused by the system or with downtime or system outages.” – respondent from UK
- Take advantage of opportunities for information sharing
 - Electronic Prescribing Conference
 - “What are other people doing?”



Thank You!

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