

Medication Incidents Associated with Hospital Discharge:

A MULTI-INCIDENT ANALYSIS BY ISMP CANADA

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adverse medication events, hospital readmission, and death can be a result of suboptimal discharge.³

Medication incidents from community pharmacies can offer insights into what happens on the receiving end of hospital discharge and the impact on patient safety when something goes wrong. The purpose of this analysis is to examine these incidents to identify vulnerabilities and areas of improvement associated with the discharge process.

INTRODUCTION

Case Example: The patient was hospitalized for 2 weeks. Nitro-dur[®] was not included on the discharge order brought to the community pharmacy. Patient's wife inquired the next day and upon calling the hospital, it was realized that Nitro-dur[®] was missed. Patient had suffered angina since coming home from the hospital.

Transitional Care is defined by The American Geriatric Society (AGS) as "a set of actions designed to ensure the coordination and continuity of health care as patients transfer between different locations or different levels of care within the same location".¹ The World Health Organization recognizes medication incidents at transition of care to be a major concern for patient safety globally.²

This multi-incident analysis focuses on the transition of hospitalized patients back to their home following discharge. Patients are especially vulnerable to medication incidents during this time due to a shift from an institutional system back into the community and a potential discontinuity of care. Up to 23% of hospital discharged patients experience at least one adverse event; with 72% being adverse drug events.³ In addition, patients with one or more medication discrepancy have a higher rate of rehospitalization than patients without.⁴ Therefore,

METHODS

The Community Pharmacy Incident Reporting (CPhIR) Program (available at <http://www.cphir.ca>) is designed for community pharmacies to report near misses or medication incidents anonymously to ISMP Canada for further analysis and dissemination of shared learning from incidents.⁵ CPhIR has allowed the collection of invaluable information to help identify system-based vulnerable areas in community pharmacy practice in order to prevent medication incidents.⁵

A qualitative, multi-incident analysis^{6,7} was conducted using anonymous reports submitted to the Institute for Safe Medication Practices Canada (ISMP Canada) Community Pharmacy Incident Reporting (CPhIR) Program. Medication incidents involving the keywords "Discharge", "Hospital", "Release", "Transfer", "fax" or incidents from hospital prescriptions were extracted from the CPhIR Program from April 2010 to December 2014. Incidents with insufficient narrative information or unrelated to the pre-defined hospital discharge context were excluded. A total of 221 incidents were extracted with 83 incidents included in the analysis. Two independent analysts reviewed the medication incidents to determine the themes and trends.

RESULTS:

TABLE 1 – Theme 1 – Error on the Discharge Prescription – Incidents in which there was an error occurring when the discharge prescription was being prepared in the hospital.

SUBTHEMES	INCIDENT EXAMPLES	COMMENTARY
Medication Inappropriately Ordered	Patient was prescribed Fragmin® (Dalteparin), from a hospital hematology clinic, to temporarily replace warfarin for a procedure. Patient has pork allergy, which is a contraindication for Fragmin®. The hospital was aware of the allergy but the community pharmacy does not have the allergy information on file. It was the patient who noticed this while reading the Kroll monograph. The community pharmacy then contacted the prescriber who decided not to use Fragmin® as patient is low risk for bleeds.	Community pharmacists may not have access to the patient's chart (with patient allergy information, in this case) in the hospital and potential errors may not be identified. This example emphasizes the importance of medication reconciliation at discharge (or transition of care). Allergy information should be included on discharge prescriptions and discharge plan, if possible.
Medication Omitted	The community pharmacist was counselling a patient discharged from the hospital. Patient inquired about INR paperwork and thought he was supposed to be on warfarin, which was not included in the discharge prescription. Hospital was contacted and warfarin 5 mg was supposed to be started at night and then adjusted depending on INR results.	Home and hospital medications may be omitted during discharge. Medication reconciliation at admission and discharge should be implemented to gather a complete home medication list. This incident also highlights the importance of patient education at discharge and patients as an important source of information.
Dosing Error	Patient's parent presented with a pre-printed (fill-in-the-blanks) asthma discharge form. Prescription was written for "Flovent® 125 [mcg] II [puffs] bid". Pharmacist questioned the dose as it seemed high for the patient's age. The physician was contacted. Physician thought patient had been on "Flovent® 100 [mcg] II [puffs] bid". When physician was informed the previous dose was "Flovent® 50 [mcg] II [puffs] bid", she reordered that strength as she had not intended to change therapy.	Medication reconciliation during hospital discharge can rectify common dosing errors which may arise due to incomplete or erroneous pre-admission medication list.
Wrong Patient	Patient's daughter-in-law dropped off a discharge prescription with no name. The prescription was for Tecta® (which patient was on) and Plavix® (a new medication). The nurse also explained that patient had some clotting problems so the daughter-in-law and the community pharmacist did not question the prescription. Three weeks later, the patient experienced mild bleeding and it was discovered when he arrived for dialysis that the prescription was given to the wrong patient.	In the community, primary care prescribers often write prescriptions while the patient is present in the clinic or the prescriber's office. Discharge prescriptions are generally printed using the patient's chart or electronic profile rather than having the patient physically present (or next to the prescriber), hence a potential omission of identity verification. Confirmation bias may play a role in this type of incident. Recognizing this vulnerability, community pharmacists should be vigilant and verify patients' identity for hospital discharges (and any other new prescriptions if in doubt). For example, confirm the patient's name, address, and date of birth when receiving the prescription at the prescription drop-off counter. This can serve as an independent double check. This incident also illustrates the importance of

SUBTHEMES	INCIDENT EXAMPLES	COMMENTARY
		<p>medication reconciliation at discharge where medications that the patient has been taking prior to admission, those initiated during the patient's hospital stay, and medications that patient should be taking upon discharge are all being reviewed, reconciled and resolved (if there are discrepancies), and well explained to the patient (or the patient caregiver).⁹</p>
Wrong Duration of Therapy	<p>The discharge prescription has 30-day supply with five refills for all medications. The community pharmacist double-checked with the hospital cardiologist, clopidogrel should have been prescribed for 16 days.</p>	<p>Less emphasis may be placed on quantity and refills for hospital orders, as prescribers may be used to adjusting the medication order during daily rounds.</p> <p>Medication reconciliation during hospital discharge can serve as an independent double check to avoid these errors.</p>

TABLE 2 – Theme 2 – Communication Issues – Incidents in which the discharge prescriptions were correct but due to miscommunication, errors occurred.

SUBTHEMES	INCIDENT EXAMPLES	COMMENTARY
Illegible Fax/ Prescription	<p>Lipitor® 10 mg was dispensed instead of 40 mg. Discharge prescription was faxed to the community pharmacy but a thin white line cut off the part of the “4” making it look like a “1”. Lipitor® was a new medication for the patient hence the dose was not questioned.</p>	<p>The process of faxing prescriptions to community pharmacies runs the risk of the fax being lost in transmission or appearing illegible on the receiving end .</p> <p>What can be done at the hospital end? If using a fax machine, ensure that only original prescriptions are transmitted; do not transmit NCR (i.e., no-carbon-required) copies of prescriptions.⁸</p> <p>What can be done at the community pharmacy end? Educate all pharmacy staff members about potential errors that can occur with faxes, and how to identify such errors. Schedule regular maintenance and cleaning of fax machines to ensure optimal transmission of medication-related information.⁸</p> <p>It is important to engage and educate patients throughout the medication-use process, and in this case, during hospital discharge e.g. providing patients with a list of their medications, including dose, frequency, and other information. Patients can help identify any medication discrepancies and prevent potential errors that may occur at transition of care.⁸</p>
Complex Medication Order	<p>The discharge prescription contained an order for Coversyl® 4mg once daily and another order for Coversyl® 2mg once daily on the next line. Patient was told to take the lower dose if the blood pressure remains low. This was a near-miss event where both Coversyl® strengths were filled and the patient asked the community pharmacist if both strengths should be taken.</p>	<p>For inpatients, all medications are administered by nurses who understand the required clinical conditions (for administration) on the prescription. During discharge, prescribers should simplify medication orders and avoid discharging patients on the same drug with multiple strengths, when possible, as patients may be confused as to when to use which strength of the drug.</p>

TABLE 3 – Theme 3 – Community Integration – The discontinuities between the hospital systems and community practices create vulnerabilities leading to medication errors.

SUBTHEMES	INCIDENT EXAMPLES	COMMENTARY
Different Preparations Used in Hospitals	<p>Patient was taught, in hospital, how to inject a syringe using the multi-dose Fragmin®. The pre-filled syringe Fragmin® was dispensed in the community pharmacy and the patient told the pharmacist the training was done in the hospital. When the patient had to give the dose the next day, several doses were damaged before the pharmacy was contacted for help.</p> <p>Mother of baby came to the community pharmacy to get a measure to give 1 mL for Vitamin D drops. The mother had already given the child 1 mL by removing the stopper on the bottle. The correct dosage for the selected product was supposed to be 1 drop only. The hospital discharge prescription says give 1 ml as the hospital used a different concentration to give 400 units. The hospital pharmacy did counsel the mother that the concentration may be different at the community pharmacy.</p>	<p>Multiple preparations of the same medication may be present in the market. Depending on the hospital formulary, the preparation used may not be the same as what is available in the community pharmacy. Patients may assume that there is only one preparation for the medication they are given.</p> <p>This type of incident emphasizes the importance of patient education.</p>
Duplication in Medication Therapy	<p>The discharge prescription was faxed to the pharmacy but the [patient] brought in another hard copy which was entered into the computer again.</p>	<p>During hospital discharges, prescriptions may be faxed to the pharmacy and the patient might be given the original in case the fax did not go through. To prevent duplication of therapy, indicate on the original prescription which pharmacy it was faxed to, once it has been sent, before giving a copy to the patient.</p>
Multi-medication Compliance Aids	<p>Amlodipine was prescribed as a new medication upon hospital discharge. Patient normally gets medications in a blister pack [or multi-medication compliance aids] but amlodipine was given in a vial to “catch-up” to the blister pack schedule. Hence, it was not flagged as part of the blister pack and amlodipine was not included when the packs were prepared.</p>	<p>Interruptions in blister pack schedules and changes to the patient’s medications during hospital stay require community pharmacies to either make another blister pack or give the new medication in a vial until the next blister-pack cycle.</p>

MEDICATION RECONCILIATION

The above incident examples highlighted some of the vulnerabilities that are associated with the hospital discharge process. Many of the incidents are results of miscommunication or prescription errors. Medication reconciliation plays an important role in mitigating these errors with pharmacists being an indispensable member in the process.

Medication reconciliation “is a formal process in which healthcare providers work together with patients, families and care providers to ensure accurate and

comprehensive medication information is communicated consistently across transitions of care”.⁹ It involves gathering all the information (for example, what has been added, changed, or discontinued) about a patient’s medications to enable appropriate prescribing decisions.

According to the 2014 Canadian Health Accreditation Report, the national compliance rate for medication reconciliation at transfer or discharge was at 61%, an increase from 50% in 2011.¹⁰ Therefore, this represents an area of patient safety which deserves more focus.

Figure 1 outlines the optimal patient transition through

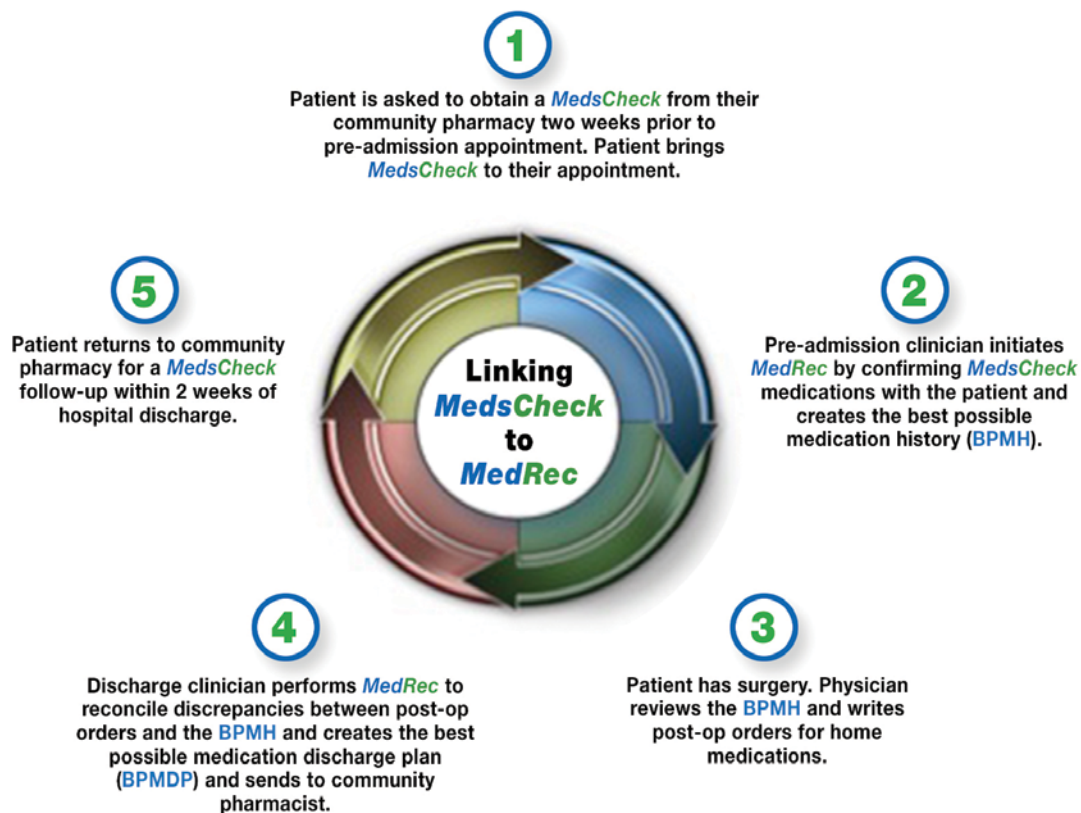
hospital admission to discharge. MedsCheck¹¹ is a medication review program available in Ontario but the idea is similar to other medication review programs across Canada. Before admission, community pharmacies should conduct a medication review with the patient using the Best Possible Medication History (or BPMH)¹² process and have the patient bring the BPMH into the hospital. Upon admission, medication reconciliation should be completed using the BPMH process again. During discharge, clinicians should reconcile discrepancies between hospital orders and the patient's BPMH to create a Best Possible Medication Discharge Plan.¹² Within two weeks of discharge (i.e. when the patient returns to the community pharmacy) a follow-up medication review (e.g. MedsCheck Follow-Up in Ontario)¹¹, again using the BPMH process, should be completed.

This ensures continuity of care and allows the opportunity for identification and resolution of medication discrepancies due to communication issues.

OTHER POSSIBLE INTERVENTIONS

1. Inform patient of changes to their medications and what to expect upon discharge. Patients should be counselled that medications used in the hospital may have different formulations in the community and always check with the pharmacist before using the same directions as in hospital.¹⁴⁻¹⁵
2. Inform primary health care professionals about the discharge plan – clear understanding of the reason for admission, changes made in hospital and discharge plan can eliminate errors from communication issues.¹⁴⁻¹⁵
3. Indicate on the original discharge prescription which community pharmacy it was faxed to once it has been sent before giving a copy to the patient to prevent duplication of therapy.
4. Develop a hospital helpline for patients and other primary health care providers. Inability to contact hospital prescribers was noted as a problem in some of the incidents. Bi-directional communication between health care professionals can encourage collaboration and improve the transition of care for patients.¹⁴
5. Prepare (or re-pack, if possible) blister packs or multi-medication compliance aids to incorporate changes of medication therapy rather than giving the new medications to patients in a separate vial until the next scheduled cycle.
6. Conduct independent double checks whenever possible in the pharmacy workflow.¹³

FIGURE 1: The process of coordinating MedsCheck and medication reconciliation to ensure continuity of care during a patient's transition through hospital stay.⁹ (ISMP Canada)



7. Provide follow-up and monitoring support by the community pharmacy to enhance patient adherence and therapeutic effectiveness.¹⁵

LIMITATIONS:

The results of this analysis were limited to the voluntary nature of medication incident reporting and what was actually inputted by the reporter to the Incident Description field of the CPhIR database. As well, follow-up with reporters of the medication incidents was not possible due to the nature of the database.

CONCLUSION


This qualitative, multi-incident analysis highlighted the importance of learning from medication incidents. It provided valuable insight into vulnerabilities and areas of improvement in the hospital discharge process. It also presented opportunities where community pharmacists can have an impact on the continuity of care for hospital discharge patients through the MedsCheck program in Ontario.

SUGGESTED RESOURCES:

- Ontario Ministry of Health and Long-Term Care: Meds-Check Program: <http://www.Medscheck.ca>
- Health Quality Ontario's Quality Compass: <http://qualitycompass.hqontario.ca/portal/transitions/Transitions>
- Medication Reconciliation (ISMP Canada): <https://www.ismp-canada.org/medrec/>
- Safer Health Care Now!: <http://www.saferhealthcarenow.ca/EN/Interventions/medrec/Pages/default.aspx>

ACKNOWLEDGEMENT

The authors would like to acknowledge Roger Cheng, Project Lead, ISMP Canada, for his assistance in conducting the incident analysis of this report.

ISMP Canada would like to acknowledge support from the Ontario Ministry of Health and Long-Term Care for the development of the Community Pharmacy Incident Reporting (CPhIR) Program (<http://www.cphir.ca>). The CPhIR Program also contributes to the Canadian Medication Incident Reporting and Prevention System (CMIRPS) (<http://www.ismpcanada.org/cmirps.htm>). A goal of CMIRPS is to analyze medication incident reports and develop recommendations for enhancing medication safety in all healthcare settings. The incidents anonymously reported by community pharmacy practitioners to CPhIR were extremely helpful in the preparation of this article. 

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