

Certina Ho

RPh, BScPhm, MIST, MEd

Atsushi Kawano

BSc, MSc, BScPhm Candidate

Calvin Poon

BScPhm Candidate

Overview

Incidents reported to the ISMP Canada Community Pharmacy Incident Reporting Program (CPhIR) were used to conduct an aggregate analysis of medication incidents associated with the geriatric population. Using a search criterion of “>65 years” for the type of medication incident, we retrieved 265 reports from the CPhIR database.

Older persons (>65 years of age) are susceptible to medication incidents due to an increased likelihood of chronic illness, multiple medications, and physiological changes. Along with a growing trend in medication use, older persons undergo physiological (i.e. pharmacokinetic and pharmacodynamic) changes that alter the therapeutic profile of some medications. These physiological changes also make older persons more vulnerable to certain medications, including high-alert medications listed on the Institute for Safe Medication Practices (ISMP) website and inappropriate medications for older persons contained in the Beers List.¹ (The Beers List was developed to reduce preventable adverse drug events among older persons.⁴) These unique factors put older persons at risk for adverse drug events (ADEs). Community pharmacies are in a position to address the needs of older persons by implementing safety measures aimed to ensure or advance safe medication practices in geriatric medication use.

ISMP Canada
Institute for Safe Medication Practices Canada
www.ismp-canada.org

CPhIR
Community Pharmacy Incident Reporting Program
www.cphir.ca

High-alert Medications
Institute for Safe Medication Practices
<http://www.ismp.org/Tools/highalertmedications.pdf>

CMIRPS
Canadian Medication Incident Reporting and Prevention System
<http://www.ismp-canada.org/cmirps/index.htm>

Aggregate Analysis

Four main themes were identified through an aggregate analysis of the 265 reports retrieved from the CPhIR database

THEME 1: Allergy

Older persons are at risk for allergic reactions due to a wide range of medications used for different indications. This becomes a particular concern if the patient is allergic to medications containing sulfonamide groups. Many medications are cross-allergenic with sulfonamides (refer to Table 1).⁵ Unfortunately, the potential cross-reactivity may not be apparent from the drug name or class. Older persons are at risk because they may not be aware of medications that may trigger a cross-allergic reaction with sulfonamides.

Sample case: “A physician prescribed trimethoprim-sulfamethoxazole DS for an elderly patient who has a sulfa allergy on their profile. The allergy was missed by both the physician and the pharmacy staff. Two days into the therapy, the pharmacy staff discovered the allergy. Fortunately, the patient did not experience any harm or reaction.”

THEME 2: Blister Packs

To increase medication adherence, blister packs are commonly used to help older persons take the right medication at the right time. Before preparing blister packs, pharmacy members need to clearly communicate all therapeutic alterations to those involved in patient care. Blister packs are especially vulnerable to error when medications are dose-adjusted on a regular basis (for example, warfarin, levothyroxine, or pain medications). Blister packs are also vulnerable to dose omission, duplication, and labeling error. Dose omission can occur when prescription dispensing labels are not properly updated or pharmacy staff inadvertently forgets to fill the medication. Duplication can occur when medications shift from one slot to another during the sealing process of the blister packs.

Sample case: “An elderly patient receives the medications in a blister pack. While one of the pharmacy members was sealing the blister pack, one of the digoxin tablets ‘jumped’ from one slot to another during the sealing process, resulting in one slot with no digoxin and another with a duplicated digoxin dose.”

Sample case: “A patient’s husband brought back a blister pack for his wife. The blister pack was filled correctly. The label on the outside was correct but the label on the inside was for another patient.”

TABLE 1. Medications with potential cross-allergenicity with sulfonamides^{5,6}

(Note: This is not a comprehensive list.)

Therapeutic Category	Medications (Examples)
Antibiotics	Trimethoprim-sulfamethoxazole
Medications for Inflammatory Bowel Disease	Sulfasalazine
Anti-inflammatory	Celecoxib
Hypoglycemic Agents	Glyburide Gliclazide
Diuretics	Furosemide Hydrochlorothiazide
Migraine Therapy	Sumatriptan

THEME 3: Multiple Medications

Multiple medications increase the risk for adverse drug events for older persons. Use of different medications can cause confusion to both pharmacy members and patients, especially after an alteration in therapy. During order entry, the dispensing software facilitates the common practice of processing a refill prescription by offering the option of copying from an old prescription. Unfortunately, this represents a dangerous practice, especially when there are subtle changes on the new prescription order. Furthermore, if older persons decide to refill multiple medications at once, pharmacy members are placed in a situation where confusion may result during the order entry and/or dispensing process. This may lead to the possibility of one medication being mixed up with another.

Sample case: “An elderly patient was taking insulin NPH. The prescriber changed insulin NPH to insulin glargine. The patient was not aware that he was supposed to stop the insulin NPH while on insulin glargine. Upon the next check-up, the patient’s blood glucose was very low.”

Sample case: “An elderly patient was prescribed ramipril 10 mg. While filling the prescription, it was noticed that the patient had received ramipril in the past so the old prescription was copied and filled for the new one. The old prescription was, however, prescribed as ramipril 5 mg, which was not changed while copying to fill the new prescription for ramipril 10 mg.”

THEME 4: Formulation

Medications may be available in the same strength, but have various formulations (for instance, controlled release (CR), long acting (LA), double strength (DS), enteric coated (EC), etc.). To denote the different formulations, the medications are typically labeled with unique abbreviations or suffixes (e.g. CR, LA, DS, EC, etc.). Each abbreviation corresponds to different pharmaceutical (e.g. dosage) and/or pharmacokinetic (e.g. long acting) properties.

Sample case: “A patient was prescribed verapamil SR 120 mg daily. The pharmacy has filled verapamil 120 mg daily for a few months with the assumption that the SR formulation is the same as the regular verapamil.”

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References

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Medications that are potentially inappropriate for older persons

Selected medications from the following drug classes are examples that can be found in the Beers List (non-comprehensive)¹:

- Analgesics
- Antidepressants
- Antihistamines
- Antihypertensives
- Antiplatelets
- Anxiolytics
- Hypnotics
- Muscle relaxants
- Nonsteroidal anti-inflammatory drugs

High-alert medications

Medications considered as high-alert medications in community pharmacy or long-term care:^{2,3}

- Anticoagulants (in particular, warfarin)
- Insulin
- Opioids (or narcotics)
- Digoxin