Medication incidents involving drug tapering: A multi-incident analysis

Amanda Chen[1,2], Certina Ho[1,2]
[1]Leslie Dan Faculty of Pharmacy, University of Toronto, Toronto, Ontario; [2] Institute for Safe Medication Practices Canada, Toronto, Ontario

Background

- Drug tapering prescriptions are often complex in nature, involving multiple, sequential doses of medication(s), extensive directions of use, and complex mathematical calculations.[1-3]
- Lack of standardized tapering guidelines may explain the wide variety of unique tapering regimens prescribed in practice that do not follow a homogenous, consensus-based pattern.[1-3]
- All of these considerations illustrate the inherent vulnerability of drug tapering to errors that may occur at any stage of the medication-use process.

Objectives

- To identify potential systems-based contributing factors and areas of vulnerability toward medication errors involving drug tapering.
- To provide specific examples of reported incidents to develop systems-based improvements that can be customized to pharmacy practice settings.

Methodology

- Reports of medication incidents involving drug tapering were retrieved from the Institute for Safe Medication Practices Canada (ISMP Canada) Community Pharmacy Incident Reporting (CPhIR) Program from 2010 to 2014.[4]
  - Search terms included "taper," "titrate," "wean," "escalate," "de-escalate," "increasing dose," or "decreasing dose
- 122 medication incidents were included in this qualitative, multi-incident analysis.
- Incidents were independently reviewed by two ISMP Canada analysts
- Incidents were categorized into major themes (Table 1) and subthemes (Tables 1-5).

Results

TABLE 1 – Themes and Subthemes

Themes	Subthemes
Lack of standardized tapering guidelines	Prescribing Error
	Miscommunication
Operational limitations	Labeling restrictions
	Billing restrictions
Inadequate patient counseling	Cross-taper
	Multi-medication compliance aids
Complexity of prescription	Calculation error
	Transcribing error
	Wrong selection of prescription to be filled
	Prescription preparation error

TABLE 2 – Theme #1 Lack of Standardized Tapering Guidelines

Subtheme	Incident Examples
Prescribing error	*"The prednisone prescription had a quantity of 30 days, but the tapering schedule only lasted 17 days. The pharmacy technician filled the prescription assuming it was for the full 30 days, but later discovered that the prescription was intended to last only 17 days. 13 extra tablets were given to the patient."* *"The physician wrote a high dose prednisone prescription that lasted over 14 days, but did not prescribe a tapering regimen thereafter."*
Miscommunication (i.e. amongst healthcare professionals)	*"The patient brought in a prescription for prednisone, with directions stating 'take 6 tabs for 5 days…will wean after 7 days' with no further directions or total quantity given. The patient was unsure about the directions of use as well."*

TABLE 3 – Theme #2 Operational Limitations

Subtheme	Incident Examples
Labeling restrictions	*"The wrong sig was entered during order entry because the original instructions were too long for the space provided. The technician tried to condense it, but important parts of the instructions were left out."*
Billing restrictions	*"The prescription was for budesonide taper over a 10 week period. Unfortunately, the patient's drug plan only allowed a month's supply per prescription fill so the full supply was not able to be dispensed in one transaction. This resulted in a transcribing error on the second part of the prescription, which was logged."*

TABLE 4 – Theme #3 Inadequate Patient Counseling

Subtheme	Incident Examples
Cross-taper	*"Patient brought in a new venlafaxine prescription to be switched with his old sertraline prescription. However, cross-tapering directions were not specified, and the patient was unclear on the directions of use as well."*
Multi-medication compliance aids	*"The patient's prescriptions were being blister packed for the first time. Because prednisone was being tapered, it was not blister packed, but included in a separate vial instead. Several days later, the patient called the pharmacy stating that she just saw the prednisone vial in the prescription bag and had missed her doses for the past couple of days. She thought all of her medications would have been included in the blister pack."*

TABLE 5 – Theme #4 Complexity of Prescription

Subtheme	Incident Examples
Calculation error	*"A miscalculation for a lamotrigine titration prescription resulted in erroneously dispensing 448 capsules instead of 280."*
Transcribing error (i.e. typo, wrong dose, formulation, frequency, refills)	*"2 refills were added mistakenly onto a prednisone taper prescription during order entry. When the patient came in to pick up his refill, he asked if he should start with taking 8 tablets again and wean down. The pharmacist noted the error then and took back the medication, informing him that he had completed his therapy already."*
Wrong selection of prescription to be filled	*"For a galantamine titration prescription, the 8 mg dose was filled, while the 16 and 24 mg strengths were logged for later months. When the patient came in for the next fill, the 24 mg prescription was selected in error, skipping the 16 mg dose."*
Prescription preparation error	*"The prescription was written for 'prednisone 50 mg daily x 5 days, then taper by 5 mg every 3rd day until discontinued.' However, the prescription was filled as 'prednisone 50 mg – take 10 tablets daily x 5 days, then taper by 1 tablet (5 mg) every 3rd day until discontinued. The technician meant to select 5mg not 50 mg."*

Conclusion

- Errors associated with drug tapering regimens occur on all levels of patient care that involve physicians, pharmacists, patients, and caregivers alike.
- Learning from medication incidents is an imperative step in improving medication-use systems.
- It is hoped that these insights can pave way for future developments in quality improvement initiatives at the local, provincial and national levels.