

Medication Reconciliation and Medication Review: Complementary Processes for Medication Safety in Long-Term Care

A well-designed medication-use system has various built-in safeguards that work together to enhance safety. If the system is appropriately designed, an error that goes undetected by one safeguard will be detected by a subsequent safeguard. Medication reconciliation and medication review are two examples of complementary system processes that function together in this way. Medication reconciliation is intended to prevent medication errors at transition points in patient care, whereas medication review is intended to address drug-related problems arising over time.

The following case exemplifies an undetected medication incident that may have contributed to the death of a resident in a long-term care facility.

An 83-year-old resident of a long-term care facility was transferred to hospital for management of dehydration. The resident's medical history included dysphagia, cerebrovascular accident, and peripheral vascular disease. While in hospital, the following medication order was sent to the pharmacy: "K-Lor 20 mEq, 2 packs po now and repeat in 4 hours". The order was entered into the pharmacy information system and appeared on the medication profile as "POTASSIUM CHLORIDE 40 MEQ Q4H PO". The same date was given for both start and stop dates, and the notation "DC" appeared beside the second date; "DC" was intended to communicate "discontinued" (see Figure 1).

Two days later, the resident was discharged back to the long-term care facility. Potassium chloride 40 mEq po q4h was included in the medication orders, and was administered for the next 17 days. At that time, the resident was readmitted to hospital with diagnoses of hyperkalemia (potassium level > 9 mmol/L), dehydration, acute renal failure, and elevation of the white blood cell count. The resident did poorly and subsequently died.

Contributing Factors

The following factors were identified as possibly contributing to this sentinel event:

- The discontinued potassium chloride order listed on the hospital pharmacy medication profile was misinterpreted as a current order.
- The discrepancy between the computer-generated pharmacy medication profile (which included the discontinued potassium order) and a handwritten nursing discharge record listing current medications and time of last dose administration (which did not include potassium) was not identified.
- The attending physician, community pharmacist, and nurses did not identify the high daily dose of potassium as a potential problem when implementing the new medication orders.
- No serum electrolytes were ordered or recorded during the readmission to the long-term care facility.
- There was no interdisciplinary review of the resident's medications during the 17 days after return to the long-term care facility.

Recommendations

The following recommendations are suggested to reduce the likelihood of recurrence of this or similar incidents:

- Implement medication reconciliation at all transitions of care, including at the time of discharge from hospital and at the time of admission (or readmission) to long-term care facilities. Medication reconciliation includes the following steps:
 - Review forms and communication processes to ensure that the information provided is clear



Figure 1: Excerpt from the computer-generated pharmacy medication profile provided to the long-term care facility upon resident's discharge from hospital.

and unambiguous and meets the needs of the receiving facility.

- On admission (or readmission), obtain a complete and accurate list of current medications, by reviewing and comparing all available sources of information about drug therapy to develop a “best possible medication history” (also known as BPMH). In the case described here, comparing the medication profile and the nursing discharge record would have identified a discrepancy for follow up.
- In addition to undertaking regularly scheduled medication reviews in long-term care facilities, develop criteria for additional medication reviews to be performed when there is a change in patient status, such as a transfer to or from hospital.
- Standardize processes and communications for patient transfers within a region or province. (Long-term care facilities process a wide variety of types of forms and discharge communications, all with variable content, which can increase the risk of misinterpretation of information.)

Preliminary results from many acute care facilities indicates medication reconciliation is increasing the detectability and interception of medication errors.¹ Medication reconciliation for acute care, one of the original six interventions of the Safer Healthcare Now! campaign, is led by ISMP Canada. In recognition of the need for medication reconciliation in long-term care facilities, ISMP Canada is now developing a new “Getting Started Kit” for medication reconciliation in long-term care, intended for release in early 2008 as part of the second phase of the Safer Healthcare Now! campaign.

Medication reconciliation processes can provide a foundation for medication reviews to identify drug-related problems (such as drug interactions, adverse drug reactions, drug use without indication, and inappropriate dosing) that may arise during an individual’s care over a period of time. Studies in the United Kingdom have demonstrated the effectiveness

of pharmacists’ medication reviews in long-term care settings (e.g., by reducing the number of falls and the number of medications prescribed).^{2,3}

Medication reconciliation and medication review are complementary processes that will perform best if they are standardized, formalized, and integrated into routine client care.

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Resources Available:

The following resources may be helpful in implementing or enhancing medication reconciliation and medication review processes:

1. Getting Started Kit: Medication Reconciliation. Prevention of Adverse Drug Events How-to Guide. Available from: <http://www.saferhealthcarenow.ca/Default.aspx?folderId=82&contentId=124>
 - A detailed, step-by-step guide on how to implement medication reconciliation in the acute care setting
2. Getting Started Kit: Medication Reconciliation in Long-Term Care. Prevention of Adverse Drug Events How-to Guide. Forthcoming (will be available in early 2008)
 - A detailed, step-by-step guide on how to implement medication reconciliation in the long-term care setting
3. PharmaCheck . . . Am I Getting the Most from My Medication? Available from: http://www.pharmacists.ca/content/hcp/resource_centre/practice_resources/PharmaCheck.cfm
 - A medication review tool to help identify common medication-related issues for adults who are taking medications on a long-term basis; suitable for various health care settings, including long-term care

References:

1. Safer Healthcare Now! [internet]. Edmonton (AB): Safer Healthcare Now; [updated 2007 April 7]. National learning series IV. Learning, celebrating and Reflecting: Results of phase I, getting ready for phase II. Presented by: *Safer Healthcare Now!* in collaboration with the Quebec campaign – *Together, let’s improve healthcare safety*, 2007 March 27-28 [cited 2007 Dec 21]; Montreal, QC; Medication reconciliation presentations. Available from: <http://www.saferhealthcarenow.ca/Default.aspx?folderId=134&contentId=1083>
2. Zermansky AG. Clinical medication review is effective in care homes. *BMJ*. 2007;334(7586):169-170.
3. Furniss L, Burns A, Craig SK, Scobie S, Cooke J, Faragher B. Effects of a pharmacist’s medication review in nursing homes. Randomised controlled trial. *Br J Psychiatry*. 2000;176:563-567.

Risk Assessment Program for Medication System Safety in the Long-Term Care Setting

A new risk assessment program has been developed by ISMP Canada to assist and guide individual long-term care* facilities in identifying opportunities to improve their medication-use systems. The program, which complements other efforts to decrease the risk of harm to residents, can be used by facilities of any size, organizational structure, and geographic location. Completion of this Medication Safety Self-Assessment helps to fulfill the long-term care quality improvement standard of the Canadian Council on Health Services Accreditation.

Development of the project was funded by the Ontario Ministry of Health and Long-Term Care. The provincial governments of Alberta, British Columbia, and Ontario are supporting the availability of this new program to facilities on a regional or provincial basis. It is hoped that the aggregate results will assist in identifying opportunities for provincial and national collaborative initiatives to enhance medication safety.

The program is also available at a reasonable cost to individual facilities that are not covered by a regional or provincial agreement. For more information, please send an email message to mssa@ismp-canada.org

*Long-term care is defined as care provided in facilities offering accommodation for people who require on-site delivery of supervised care, 24 hours a day, 7 days a week, including professional health services and high levels of personal care and services (e.g., in nursing homes and residential continuing care facilities). The acuity of people receiving long-term care is *generally* less than that of patients in acute care or complex continuing care settings. Medications for residents in long-term care are *usually* provided by community pharmacies. Definition adapted from: Long-term facilities-based care [Internet]. Ottawa (ON): Health Canada; 2005 [cited 2007 Dec 28]. Available from: http://www.hc-sc.gc.ca/hcs-sss/home-domicile/longdur/index_e.html

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ISMP Canada is a national voluntary medication incident and 'near miss' reporting program founded for the purpose of sharing the learning experiences from medication errors. Implementation of preventative strategies and system safeguards to decrease the risk for error-induced injury and thereby promote medication safety in healthcare is our collaborative goal.

Medication Incidents (including near misses) can be reported to ISMP Canada:

- (i) through the website http://www.ismp-canada.org/err_report.htm or
- (ii) by phone: 416-733-3131 or toll free: 1-866-544-7672.

ISMP Canada can also be contacted by e-mail: cmirps@ismp-canada.org. ISMP Canada guarantees confidentiality and security of information received, and respects the wishes of the reporter as to the level of detail to be included in publications.

A Key Partner in the Canadian Medication Incident Reporting and Prevention System