Joint Task Force on Medication Management in Long-Term Care

Report

November 4th, 2009

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EXECUTIVE SUMMARY

The care needs of seniors residing in Long-Term Care (LTC) homes in Ontario are becoming increasingly complex. The rising average age of residents and the increase in the number of co-morbidities of each resident has had an impact on the number and type of medications prescribed and increased the risk of adverse drug events. The growing complexity of medication management for each resident has led to challenges for LTC homes in developing safe, effective medication delivery and medication use systems.

Some of the medication-related issues that affect LTC homes and their residents were noted in the Auditor General's Report on Medication Management, published in December 2007[1]. The Ontario Ministry of Health and Long-term Care (the Ministry) determined that more investigation into medication management systems would be useful to understand the risks and to highlight the strengths of existing systems within LTC Homes in Ontario.

The Ministry assembled a Joint Task Force on Medication Management in Long-term Care Homes (the Task Force) to examine issues related to medication management safety in long-term care homes in Ontario and their impact on the quality of care and quality of life for residents.

The Task Force's Mandate was to provide a report and recommendations on how to:

- Maximize appropriate use of medications in respect to systemic issues in the care of residents;
- Engage the LTC sector with practical, sustainable means to improve medication safety.

The Task Force initiated three activities to determine current medication management practices. First, all Ontario homes were offered the opportunity to complete an online risk-assessment survey regarding their current medication practices [Medication Safety Self-Assessment® (MSSA) for Long-Term Care]. Second, an onsite review of medication systems in three homes and their contracted pharmacies (Home Review) was conducted by medication safety experts with the assistance of a human factors engineer. The third activity was a review of relevant literature related to medication safety in the LTC sector.

In addition to these activities, the Task Force commissioned an examination of the medication incident data in the Ministry's Critical Incident System and reviewed the various medication incident definitions used in other jurisdictions. Additionally, the Task Force worked with other stakeholders that influence system change in LTC in Ontario, such as the Long-term Care Homes Act (LTCHA) 2006 Legislation Team and the LTC Homes Common Assessment Project to help gain an understanding of the future of LTC in Ontario and its impact on medication systems.

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[1] Office of the Auditor General Annual Report 2007 Tabled in the Legislative Assembly of Ontario on December 11, 2007 Chapter 3.10 Long-term care homes - medication management http://www.auditor.on.ca/en/reports_en/en07/310en07.pdf

While the findings of these initiatives show many strengths in the system, they also highlight a number of areas where improvements are needed to ensure safety and quality of life for residents in LTC homes.

The Task Force has identified **four priority areas for action**:

1. Medication Incident Reporting
2. Communication at admission /readmission i.e. Medication Reconciliation
3. Monitoring and documenting of high-alert drugs effects
4. Technology strategies and products

As a foundation for change and improvement, the **Task Force's four recommendations** seek to identify and mitigate systemic barriers that LTC homes face in creating optimal medication management systems:

Recommendation 1: **Medication Incident Reporting**

a) *To facilitate consistent reporting and follow-up we recommend that the LTC sector* ***adopt a common definition of a medication incident****. The definition used by the College of Nurses of Ontario incorporates the necessary elements and we recommend it be used for all reporting in the LTC sector when identifying and reporting medication incidents.*

b) *We also recommend that* ***all medication incidents be reported****. This process should be supported through inter-Ministry, extra-Ministry and/or internal home systems. Development of a communications strategy is needed to educate staff of long-term care homes on the various avenues to report and provision of or access to resources for analysis of incidents and strategies for improvements to medication management systems. This strategy will support a culture of reporting and learning as the emphasis will be on learning from errors or "good catches" rather than on punitive actions along with increased capability to design safer medication systems.*

Recommendation 2: **Medication Reconciliation**

a) *That implementation of medication reconciliation for all residents entering into, returning to, or discharged from a LTC home continue. The MOHLTC has a role to promote system-wide exchanges of healthcare information in order to create an efficient medication reconciliation process that supports resident safety. Consideration should be given* ***to adoption of electronic medication management systems in all LTC homes****. In the interim, manual processes can also be utilized to accomplish this.*

b) *To enable LTC homes to implement effective and feasible medication reconciliation processes, the Task Force should carry out* ***further consultation with experts*** *to determine the information needs and review processes for patients transferring from acute care, community care, and other long-term settings to LTC homes.*

c) *That the MOHLTC work with appropriate stakeholders and medication reconciliation experts to* ***develop and deliver training for LTC home staff, physicians, and pharmacists*** *to support the creation of the best possible medication history for each newly admitted LTC resident, a critical step in the medication reconciliation process.*

Recommendation 3: **High Alert Drugs**

a) *In collaboration with medication management and medication safety experts* ***a strategy in conjunction with implementation support systems need to be developed*** *to define, identify, monitor and evaluate the use of high-alert drugs in LTC facilities. To the greatest extent feasible, this strategy and the related systems should be integrated into the medication management and information technology systems in LTC with consideration to the increasing threat of nurse staffing shortages.*

b) *A strategy of increasing awareness of Beer's list drugs ("Canadianized") and selected high alert drugs (taken from incident reports and coroners' reports e.g warfarin) could begin by* ***providing an education and information campaign*** *in collaboration with a number of partners for appropriate LTC healthcare practitioners. Working further with the stakeholders, tactics for how this information could be integrated into operations could be developed and disseminated.*

Recommendation 4: **Technology Support**

a) *It is recommended that a* ***team of medication safety experts (human factors engineers, pharmacists, registered LTC staff, physicians and IT vendors) be formed*** *to recommend technological specifications to be available and support to homes in the province to assist in technology decisions associated with safe medication practices (i.e. prescribing, dispensing, administering, and monitoring/evaluating). A communications strategy to disseminate the results will also be needed.*

b) *The sector could* ***investigate additional technology solutions*** *such as BC's PharmNet and provide guidance for selection and use of technology, creating a framework for assessment of various technology, including electronic medication administration records, computerized prescriber order entry, point-of-care bar coding to assist with purchasing decisions, staff training and other aspects of implementation required to optimize these elements of the medication management system.*

The Task Force believes that improved patient safety and optimization of medication management can be achieved in Ontario through the implementation of its recommendations. It proposes extending its mandate for one year to oversee and provide continuity to that process. With the aging population and growing use of medications in long term care, the attention to medication issues in LTC is timely.

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Supported by
The Ministry of Health and Long-Term Care
Performance Improvement and Compliance Branch (PICB)

BACKGROUND

In 2006/07, approximately 19 million drug prescriptions were dispensed to residents of long-term care (LTC) homes in Ontario. The number of prescriptions per senior has increased noticeably over the past five years. Analysis of the Ontario Drug Benefit payment system indicates that the average number of prescriptions per year per resident has increased from 141 in 2003/04 to 253 in 2008/09, an increase of 55%.

Because of the growing complexity of medication management for each resident, LTC homes face challenges to develop safe and effective medication delivery and use systems. Prescribing, dispensing and administering an ever-increasing number and type of drugs requires sophisticated knowledge and skills and can increase workloads. More complex medication monitoring systems and increased workloads may mean additional costs for LTC homes and increased risks to safe use.

The increasing risks for error and growing financial requirements of medication management in Long-Term Care have increased scrutiny by funders and regulators to ensure that quality of care is being maintained.

In 2006, The Office of the Auditor General of Ontario conducted an audit on medication use in three LTC homes. The objective was to assess whether medications for residents of these long-term care homes were managed in an efficient, safe and appropriately controlled way, in accordance with applicable legislation and required policies and procedures. The Ministry of Health and Long-term Care (the Ministry) and LTC homes prepared responses to the Auditor General, which were included in the published report in December 2007.

The Auditor General's Report[2] on Medication Management in Long-Term Care focused on several areas of medication safety, including:

- Consistency of pharmacy contracts
- Consent to treatment and standing orders
- Definition and reporting of medication errors
- Management and documentation of adverse drug reactions, and pharmacy alerts
- The use and management of high risk drugs
- The appropriate ordering and management of all medications in the home.

The Auditor General's Report found a number of deficiencies in these areas in the three homes reviewed. The Report also highlighted some concerns with the overall medication system, for example, the rate of information system alert overrides by pharmacists filling prescriptions for seniors, and the apparent lack of a consistent process to destroy expired medications.

The Ministry decided that more comprehensive work on medication systems in all homes across the province was necessary to understand both strengths in the system and

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[2] [2] Office of the Auditor General Annual Report 2007 Tabled in the Legislative Assembly of Ontario on December 11, 2007 Chapter 3.10 Long-term care homes - medication management http://www.auditor.on.ca/en/reports_en/en07/310en07.pdf

opportunities for improvement. To begin this work, the Joint Task Force on Medication Management in Long-Term Care (the Task Force) was assembled, with representatives from:

- Long-Term Care homes (rural/urban, large, small, for profit, not for profit)
- The Ontario Long-Term Care Association (OLTCA)
- The Ontario Long-Term Care Physicians Association (OLTCPA)
- The Ontario Association of Non-Profit Homes and Services for Seniors (OANHSS)
- A faculty member from the University of Toronto with expertise in patient safety
- Long-Term Care pharmacy providers
- The Institute for Safe Medication Practices Canada (ISMP Canada).

The Performance Improvement and Compliance Branch of the Ministry, which worked in collaboration with the two Long-Term Care Associations to develop the mandate and terms of reference, supported the Task Force.

Mandate of Task Force:
To provide a report and recommendations on how to:

- o Maximize appropriate use of medications in respect to systemic issues in the care of residents
- o Engage the LTC sector with practical, sustainable means to improve medication safety.

Scope of Activities:

- A LTC focus with identified linkages/dependencies across other sectors of health care
- Examination of issues related to medication management and their impact(s) on residents of LTC homes
- Approaches and best practices in other jurisdictions that might be applicable.

Approach:
To obtain a representative portrait of medication management in LTC homes, the Task Force decided to focus on:

1. What medication safety systems are in place in Ontario;
2. What best practices for medication safety are evident in LTC homes; and
3. An analysis of the gaps that exist in medication management systems in LTC homes and achievable best practices.

METHODOLOGY

The Task Force initiated three activities to determine current medication management practices:

1. A comprehensive campaign to have all homes in Ontario complete and share the results of an online medication system safety self-assessment program
2. An in-depth review of the medication management systems in three LTC homes
3. A literature search on medication management in various jurisdictions.

In addition, the Task Force collaborated with inter-Ministry groups on long-term care initiatives that have specific impacts on medication management systems. This work included contributing to the development of regulations for Bill 140 (see box) concerning medication management, and the pilot of the medication specific section of the common assessment tool Minimum Data Set – Resident Assessment Instrument (MDS-RAI).

Bill 140: New LTC legislation incorporates three current Acts

The Nursing Homes Act, The Charitable Institutions Act, and The Homes for the Aged and Rest Homes Act currently govern long-term care homes. Bill 140 – An Act Respecting Long-Term Care Homes will replace all three Acts. The Task Force was consulted in the development of the regulations for Bill 140 associated with the pharmacy and medications items.

Homes are also governed by the standards of practice for the three professions of the primary care team members: physicians (through *The College of Physicians and Surgeons of Ontario),* pharmacists (through *The Ontario College of Pharmacists)*, and nurses (through *The College of Nurses of Ontario).*

The Task Force also commissioned an examination of the medication incident data in the Ministry's Critical Incident System and reviewed the various medication incident definitions used in other jurisdictions.

Medication incidents and reporting – a cornerstone of safety

Systems can be improved only when problems are identified and resolved. Medication incident reporting is a cornerstone of improving medication safety. The term "medication incident" is preferred rather than the older term of "medication error" that imputes blame. Expanded reporting of medication incidents requires greater staff knowledge about the how and when to report issues in medication use.

Medication Incident Reporting

As a starting point, the Task Force reviewed a number of definitions of medication incident in use in Canada (including those developed by the Canadian Patient Safety Institute, Ontario College of Pharmacists, College of Nurses of Ontario, College of Physicians and Surgeons of Ontario) and selected the definition disseminated by the College of Nurses of Ontario for use by LTC. (See Recommendation 1)

What is a medication incident? [3]

A medication incident is defined as any preventable event that may cause or lead to inappropriate medication use or client harm while the medication is in the control of the health care professional, client or consumer. Such events may be related to professional practice, health care products, procedures and systems, including prescribing; order communication; product labeling, packaging and nomenclature; compounding; dispensing; distribution; administration; education; monitoring and use.

Medication incidents can be further classified into errors of commission (for example, giving the wrong medication) and errors of omission (for example, not administering an ordered medication), which can result in an adverse drug event resulting in harm, injury or death. Or, it could result in a "near miss." In this situation, an error does not reach the client, but if it had, the client could have been harmed. (For example, a wrong dose is prescribed but is intercepted before administration.)

[3] College of Nurses of Ontario Practice Standard Medication Revised 2008 Available at: http://www.cno.org/docs/prac/41007_Medication.pdf

Medication Safety Self-Assessment Program

(**For the full MSSA Report, see Appendix 2**)

About the Self Assessment Tool:
The Medication Safety Self-Assessment® for Long-Term Care (MSSA-LTC) is a web-based medication system self-assessment developed by ISMP Canada for use by LTC homes.

The assessment reviews 10 key elements of safe medication use and 20 core characteristics, each of which is measured by specific items (125 items in total). The Task Force asked homes to complete the assessment. Scores for each item are weighted, based on an assessment of the impact and the sustained improvement value of the item on resident safety and the current level of implementation of that item.

The goals of the MSSA-LTC program are to:

- Identify areas of strength and vulnerability in the medication management practices of homes
- Support the development of a 'performance improvement' culture so that homes learn to identify and resolve medication management issues as they arise.

The self-assessment nature of the program, combined with a focus on an interdisciplinary team response, supports homes to encourage open discussion of their medication practices and system safeguards.

Survey Process:
In collaboration with the LTC associations, the Task Force invited all 624 Ontario LTC homes to participate in the initiative, and delivered five education/information sessions on the program across the province via the Ontario Telemedicine Network.

Completing the MSSA-LTC provides homes with the data to identify priorities for enhancing safe medication practices.

As of April 29, 2009, 456 (73% of the total number of homes) had registered for the Medication Safety Self-Assessment Long-Term Care project and 369 (59%) had completed the MSSA as part of this initiative. (The MSSA results reviewed in this report were compiled based on the 296 (47%) homes that had submitted their responses by January 20, 2009.)

Survey Findings:

Overview
The overall aggregate score for Ontario homes was 77% of the maximum achievable score (100%). While there was variation in the scores between homes (51% to 90%), the average Ontario scores are similar to those for homes in British Columbia, Alberta, and Manitoba, where similar province-wide or regional assessments have been completed. Scores were calculated for individual homes, which were made available to the homes only. Results were aggregated at a regional (Local Health Improvement Network) and provincial level for public reporting.

Resident and Drug Information
Homes reported that overall, the basic resident information is visible on medication orders and admission information is transmitted to the pharmacy. Also, 93% of homes reported partial to full implementation of the pharmacist's involvement in the care team in a consultative role, and 98% of pharmacy information systems maintain past and current medication profiles.

Homes recognize that further work needs to be done to ensure that allergy information is easily visible on all records used in prescribing, dispensing and administration.

The MSSA results highlight challenges in obtaining current medication information at the time of admission to a home or readmission from an alternate healthcare facility. This information is an important input into a recognized safety practice termed "medication reconciliation on admission", that depends on information from other providers including home care, acute care, and community pharmacies. Enhancement of practitioner skills in completing the medication history and the reconciliation process would contribute to improved resident safety. (See Recommendation 2)

Communication of Drug Orders
Homes reported successful compliance related to safe use of telephoned medication orders. Only 26% of the respondents, however, rated themselves as fully compliant on the use of a list of dangerous abbreviations and unacceptable methods of expressing doses – known contributing factors of many medication errors. Avoiding "dangerous abbreviations" has been added to the Required Organizational Practices (ROP) from Accreditation Canada for 2009; thus this is a key opportunity for improvement that lends itself to a provincial education campaign to support change to relevant medication use processes.

An additional identified area for improvement is the inclusion of clinical indications on drug orders as only 33 of the 296 homes rated themselves as fully compliant on this item. Including the clinical indication with new medication orders facilitates dispensing the correct product and assists those monitoring the effects of the treatment.

Use of Technology
The Task Force notes that technology has the potential to enhance the safeguards for ordering, dispensing, administration and monitoring the use of medications.

As expected, assessment scores were low for items relating to technology implementation. Responses from almost half of the respondents indicated they were using computer–generated or electronic medication administration records (cMARs or eMARs). This means a substantial number of homes are still using manually transcribed MARs which is associated with a high risk for error.

Although homes are steadily acquiring technological capabilities, the lack of a clear vision of future directions and common knowledge of the benefits and risks of new technology for medication management limits the diffusion of such technology.

The implementation of the Resident Assessment Instrument – Minimum Data Set (RAI-MDS), will provide a common assessment tool with a consistent assessment framework and care planning to support long-term care staff in providing appropriate care to residents. This technology could be the cornerstone for other functions, e.g., admitting, eMARs. The province-wide implementation of this tool is bringing information technology vendors, the Ministry and homes together in the development of a shared technological foundation, but there has not been a similar alignment of the technology available to assist homes with medication management. As a result, some homes may be approaching technology independently and with little opportunity to create alignment with the RAI-MDS or other systems within their homes.

Going forward, it will be important to ensure that a home's resident medication profile and database are shared between the pharmacy system and the computerized prescriber order entry system and eMAR and that all the electronic systems include clinical decision support appropriate to each discipline. Processes to ensure pharmacist review of orders prior to administration, as well as additional verification processes by nursing staff as appropriate, also need to be included in implementation plans for this technology. (See Recommendation 4)

Drug Labelling, Packaging, Nomenclature, Standardization, Storage and Distribution

Homes generally reported that pharmacy computer systems produce easy-to-read labels that do not contain dangerous abbreviations. The labels comply with current legislation and those administering the medications find them to be understandable. Pharmacies dispense labelled, ready-to-use single doses to homes, and products such as inhalers and topicals (e.g., eyedrops, creams, ointments) are labelled for each resident, minimizing the risk of selecting the incorrect drug and dose for administration.

Labels that show the date such containers are opened for use should also be available and used.

Medication Delivery

The highest scores obtained in the self-assessment were for items related to timely, safe, and secure delivery of medications from pharmacies to care units, the availability of medications stored in the home in limited numbers and quantities, and secure storage of medications. Homes also reported that medication delivery systems are in place to cover after hours and emergency access to drugs and pharmacy resources.

The MSSA results indicated that homes are experiencing some challenges when family members bring in herbal remedies and vitamins for residents, and it is noted by the Task Force that more education is needed for residents and families regarding the risks of possible interactions of these non-prescription medications with prescribed drugs.

Environmental Factors

Some significant concerns emerged in the area of environmental factors with many homes reporting multiple distractions or interruptions for staff during the medication administration process.

Some homes have instituted innovative practices to mitigate these factors, but more communication of and research to identify successful strategies is needed. For example, to avoid errors in manual transcription or computer order entry of new medication orders, the ideal situation is the availability of a quiet, separate area that is free of distractions and noise. Some homes have set up a dedicated room, separate from the nursing station and medication room, specifically for charting and computer entry.

Staff Competence and Education
The education and capacity building of the staff in long-term care is crucial to the evolution of a safe medication system**.**

Two hundred and fifty seven (87% of the responses) homes that completed the self-assessment reported that there is a medication management system orientation process for new staff, and over 200 homes (70%) reported that there is a follow-up process in place to assure correct medication administration with monitoring of outcomes.

There is opportunity to support and encourage critical thinking by including more information on medication errors and mitigation strategies (system-based strategies to reduce errors) in the medication management orientation packages.

Training in system improvement tools such as root cause analysis (RCA) and failure mode and effects analysis (FMEA) would provide an enhanced understanding of the impact of system-based factors on the occurrence of incidents and the likelihood of sustained success for proposed improvements, as well as further supporting development of critical thinking skills. Such training would also increase capacity in resident safety, quality improvement and quality measurement, which are critical elements in ongoing performance improvement. (See Recommendation 1)

Resident Education
The majority of homes indicated that including the resident is essential to develop strategies that ensure that the right medication is administered to the right person at the right time. For those residents who are able, stating their name, the drug name to increase awareness of what drugs they are on and what the drugs look like can provide a second check. Staff members need to be cued to understand that if questions arise from the resident, verification with the original documents is necessary.

Quality/Risk Management
Opportunity exists for a multidisciplinary committee e.g. Professional Advisory Committee or equivalent in homes to review and use published error reports as well as own home's reported adverse events as part of a resident safety and quality improvement program.

Feedback from participants overwhelmingly indicated that completion of the MSSA was a "very valuable exercise" that "identified areas where we could implement changes immediately". The MSSA assists homes in prioritizing areas for their quality improvement plans.

Home Medication System Reviews

(For the full Home Review Report, see Appendix 3)

Purpose:
The Task Force commissioned Institute for Safe Medication Practices Canada to review medication practices in three long-term care homes to provide additional information to the MSSA findings on potential best practices and areas for improvement. The pharmacies that provide services to the homes play an integral role in the medication use system in each home, and as such, were included in the review process.

Review Process:
Three long-term care homes volunteered to participate in the home reviews:

1. A rural home with 90 beds which has implemented RAI MDS and is beginning to use a Computerized Prescriber Order Entry system
2. A home with 160 beds near a small city, which is not enrolled in RAI MDS, has a manual medication system and a newer building
3. An urban 128 bed home with an electronic medication administration record, electronic pen for prescribing, a newly renovated building and RAI MDS implemented.

The three pharmacies contracted to these homes also participated in the review. The review team of medication safety experts (pharmacists, nurse) and a human factors engineer reviewed medication documents prior to the site visit, observed practices during the two-day site visit of both the home and pharmacy, interviewed staff, and analyzed data following the visit to complete a report on each home. On-site visits to all three homes were completed between September and November 2008.

LTC Homes and Pharmacies – Medication Safety Partners

Ontario legislation mandates that each LTC home must enter into a contract with a licensed pharmacy for services related to dispensing prescriptions, as well as other services supporting medication management in the home.

The scope of this contract includes pharmacy participation in inter-disciplinary resident reviews, performing audits of medication storage in the homes and providing other ancillary services including the provision of medication carts as part of the delivery system. This partnership between the homes and their consulting pharmacies and pharmacists is crucial to appropriate management of residents' medications as well as providing the home with support and advice on the medication management system as a whole.

The scope of pharmacy services is also guided by the policy framework of the Ontario Drug Benefit Program which funds these services.

Home Review Findings:

All three homes and pharmacies selected for the review had a similar drug distribution system in place. Pharmacies provided an extensive infrastructure to support nursing staff medication-related functions. Their distribution systems are built around seven-day supply cycles with individually labelled drug packages for each administration time for each resident. The results of the home reviews demonstrate that a good relationship with a pharmacy provider has a very positive impact on the safety of the residents in the home.

This intensive review revealed some issues similar to the Medication Safety Self-Assessment, but also provided information at a deeper level and offered the perspective from external observers.

This review also provided some context and support for the findings described in the Auditor General's Report on Medication Management in Long-Term Care. The three homes selected displayed examples of leading or innovative practice in their medication management processes, but they also displayed some medication management system gaps that corresponded with the findings of the Auditor General's report.

The leading practices described below are models for improvement in medication management systems in other homes. Other examples are included in the Home Review report (Appendix 3).

Examples of leading practices observed in one or more of the homes:

- **Electronic medication administration records and computerized prescriber order entry systems were in place**. These systems provide increased safeguards in the medication management system.
- **On-call pharmacists can view electronic images of faxed prescriptions** allowing for review with resident profile and resolution of clinical issues prior to dispensing/administration.
- **The homes had a separate room for writing/entering orders,** reviewing progress notes and resident charts. This quiet area allows staff to work on tasks requiring focus without interruptions and distractions.
- **A notification system in place to advise residents' family of new orders.** In one home, the new order was placed on clipboard and hung in nursing station as a cue for action; once contact with a family member has been made the nurse documents this on the order sheet with the name of person contacted, the date and time of the notification and signature of the nurse, and files the order sheet.
- **A wall display in the lobby highlights safe practices** in a photo/ quiz manner.

- **Review of drug administration frequency** and consolidation of medication administration times from four times daily to twice for most scheduled drugs, greatly reducing the nursing time required to administer medications.

- **Discussion of safety bulletins and incident reports at nursing staff meetings and Professional Advisory Committee meetings.**

Opportunities for improvement are also noted in the full report. Selected items from this report are listed below.

Opportunities for improvement identified:

- **At admission, acquiring accurate, complete lists of current medications** being taken by residents and the reasons for their use is an important safeguard. This assessment, known as a "best possible medication history" is required for medication reconciliation. Medication reconciliation ensures that residents who transfer between Long-Term care and other facilities continue to receive their correct medication and dosage and that no medications are omitted that they require. The literature and coroners' reports describe how transfer of individuals between care settings is a key risk area for preventable adverse events. (See recommendation 2)

- **Greater staff awareness about medications that have a high risk of harm** if used in error (high alert drugs[4]) and development and implementation of appropriate protocols and system practices to minimize risk of error in the use of these drugs are needed. Increased knowledge of drugs that should be used with caution in the elderly (e.g., medications included in lists of potentially inappropriate medications such as Beer's list[5], warfarin and fentanyl – two drugs most frequently reported associated with harm in Ontario[6]) Further there is a need to ensure that safe disposal of drug patches e.g. fentanyl is practiced to protect residents, staff, and visitors. (See Recommendation 3)

- **Knowledge and understanding of how to examine incident reports,** analyze these using a system-based approach, and determine effective strategies to prevent their recurrence needs to be increased. A lack of comprehensive systems approach to error

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[4] High-Alert Medications: High-alert medications are drugs that bear a heightened risk of causing significant patient harm when they are used in error. ISMP's List of High-Alert Medications. Available at: www.ismp.org/Tools/highalertmedications.pdf

[5] Potentially inappropriate medications for the elderly according to the revised Beer's criteria. Available from:http://www.dcri.duke.edu/ccge/curtis/beers.html

[6] ISMP Canada's Ontario Medication Incident Database August 2009

- management evident in the current healthcare culture does not address or consider the root causes of many errors and limits the capability of designing safer systems. (See Recommendation 1)

- **Systematic monitoring and documentation of the effects of newly prescribed medications** or changes to dose on a resident particularly the high alert drugs should be standard practice.

- **Greater efforts are needed to eliminate the use of dangerous abbreviations** that may promote errors in all medication-related documents and software applications.

- **Clear and consistent resolution of confusion about definitions** and use of medical directives, standing orders, protocols, preprinted orders is needed.

- **Homes would benefit from an enhanced role for the Professional Advisory Committee**, or equivalent, to include medication incident analysis leading to implementation of system improvements, and review of drug utilization reports leading to improvements in practice.

- **There needs to be the development of a sector-wide strategy for resident identification** since armbands are not generally used with Long-Term care residents.

- **An enhanced role of consultant pharmacists** would contribute more fully to the clinical review of resident drug profiles, sharing of drug use trends with recommendations for change, and in-depth review of medication administration times to seek ways to reduce the medication administration burden for nurses.

- **New technology purchases should be evaluated in terms of the intended functionality, the ease of use by staff**, the linkage to other technology, and the safety principles included in software (e.g., lack of use of dangerous abbreviations.) Usability testing is needed for all new technology to ensure these areas are addressed. (See Recommendation 4)

Literature Review

(For the full Literature Review Report, see Appendix 4)

Review Purpose:
A review of recent literature on medication management challenges and experiences in other jurisdictions, including other parts of Canada, the United States and the United Kingdom, was undertaken to help identify current and emerging best practices.

Process:
A Medline and Google search was conducted using key words of: Long Term Care, Nursing Homes, Medication, Medication Systems, Medication Errors (limit to "adverse drug reactions" and "prevention and control"), Best Practice, Pharmaceutical Preparations, Medical Directives, Standing Orders, Technology, and High Risk Medications.

Review Findings:

LTC Home Culture is a Critical Factor
A key finding in the literature review was that LTC homes with a culture of blame, where individuals involved in an incident (error) event are penalized or punished, are much less likely to have front-line staff come forward to report medication errors.

A related finding is that there is significant confusion about the definition of medication error and how to report it – to whom, how and when? (See Recommendation 1)

Patient Transfers are a High-Risk Time for Medication Errors
The literature review identified that seniors with increasing co-morbidities are likely to experience frequent changes in their medication regimen, and in particular when any transfers to or from acute care occur.

One study found that *"86% of the transfers of residents in the study to the hospital result in the alteration of at least one medication".*[7] Some of these medication changes are unintended additions or deletions of appropriate drugs. Often medication records transferred with residents are incomplete, or diagnostic information is not provided, creating a great risk that a medication order may be missed or misunderstood, with the possible result of a medication error and an adverse event for a resident. The results of the review of incident reports, the MSSA and home reviews support this finding in Ontario homes. (See Recommendation 2)

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[7] Boockvar K, Fishman E, Kyriacou CK, Monias A, Gavi S, Cortes T. Adverse events due to discontinuations in drug use and dose changes in patients transferred between acute and long-term care facilities. *Arch Intern Med* 2004;164:545-550.

Technology Creates Both Benefits and Risks

Recent literature notes that while technology can help to create a safer medication use system, it also creates the risks of new types of errors. Automated medication systems and electronic information systems may help staff to deal with the growing complexity and risks of medication management, but these systems must be carefully selected and implemented. For example, the design of the electronic information systems may allow the prescriber to select the wrong patient or the incorrect drug order, or the pharmacy inventory as displayed could be confused with recommended medication doses.

Poorly designed technology solutions that do not optimally support workflow can cause users to create workarounds. For example, too many low risk alerts in an information system can cause the user to become “alert blind”, increasing the rate of overrides and the potential to miss an important alert. (See Recommendation 4)

Medication Technology Must Match the Environment

Medication technology must be matched to the environment – both for the staff and the residents. How much staff training will be required? What types of interfaces are needed to blend with the existing systems? Have human factors principles been incorporated? What studies have been done to ensure safety?

Examples of medication system technology that may be applicable in LTC environments include:

- Computerized Medication Administration Records (cMAR) or electronic Medication Administration Record (eMAR)
- Bar code validation in medication processes such as medication administration and dispensing
- Automated dispensing machines (ADM)
- Computerized physician or prescriber order entry (CPOE)
- Clinical decision support software (CDS)
  (See Recommendation 4)

Investing in Technology Improves Safety and Saves Time

Although technology can require a significant capital investment, studies have shown benefits relating to enhanced patient safety, reduced time in completing some functions, and improved documentation[8, 9]. (See Recommendation 4)

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[8] Skibinski K et al. Effects of technological interventions on the safety of a medication-use system. AmJHealth-Syst Pharm 2007; 64 (1):90-96.

[9] Subramanian S, Hoover S, Gilman B, Field TS, Mutter R, Gurwitz JH. Computerized physician order entry with clinical decision support in long-term care facilities: costs and benefits to stakeholders. J Am Geriatr Soc. 2007; 55(9):1451-7.

RECOMMENDATIONS

The intent of this Report was to consider the current state of medication management in the long-term care sector, identify and share strengths and make recommendations on system improvements that will enhance overall safety.

While the findings of the three initiatives show many strengths in the system that are valuable best practices to share, they also highlight a number of areas where improvements are needed to ensure the safety and quality of life of residents in LTC homes.

The Task Force has identified four priority areas for action:

1. Medication incident reporting
2. Communications at admission /readmission i.e. Medication Reconciliation
3. Monitoring and documenting of high-alert drugs effects
4. Technology strategies and products

The Task Force's recommendations reflect the general tone of the recommendations made by the Auditor General's 2007 report. Members of the Task Force note that many of the Auditor General's findings point to underlying barriers that LTC homes have to achieve optimal medication management systems.

The recommendations in this report seek to identify and mitigate these barriers creating a foundation from which further improvements in these areas can be implemented.

Recommendation 1: **Medication Incident Reporting**

a) *To facilitate consistent reporting and follow-up we recommend that the LTC sector* ***adopt a common definition of a medication incident****. The definition used by the College of Nurses of Ontario incorporates the necessary elements and we recommend it be used for all reporting in the LTC sector when identifying and reporting medication incidents.*

b) *We also recommend that* ***all medication incidents be reported****. This process should be supported through inter-Ministry, extra-Ministry and/or internal home systems. Development of a communications strategy is needed to educate staff of long-term care homes on the various avenues to report and* ***provision of or access to*** *resources for analysis of incidents and strategies for improvements to medication management systems. This strategy will support a culture of reporting and learning as the emphasis will be on learning from errors or "good catches" rather than on punitive actions along with increased capability to design safer medication systems.*

Recommendation 2: **Medication Reconciliation**

a) *That implementation of medication reconciliation for all residents entering into, returning to or discharged from a LTC home continue. The MOHLTC has a role to promote system-wide exchanges of healthcare information in order to create an efficient medication reconciliation process that supports resident safety. Consideration*

*should be given **to adoption of electronic medication management systems in all LTC homes**. In the interim, manual processes can also be utilized to accomplish this.*

b) *To enable LTC homes to implement effective and feasible medication reconciliation processes, the Task Force should carry out **further consultation with experts** to determine the information needs and review processes for patients transferring from acute care, community care, and other long-term settings to LTC homes.*

c) *That the MOHLTC work with appropriate stakeholders and medication reconciliation experts to **develop and deliver training for LTC home staff, physicians, and pharmacists** to support the creation of the best possible medication history for each newly admitted LTC resident, a critical step in the medication reconciliation process.*

Recommendation 3: **High Alert Drugs**

a) *In collaboration with medication management and medication safety experts **a strategy in conjunction with implementation support systems need to be developed** to define, identify, monitor and evaluate the use of high-alert drugs in LTC facilities. To the greatest extent feasible, this strategy and the related systems should be integrated into the medication management and information technology systems in LTC with consideration to the increasing threat of nurse staffing shortages.*

b) *A strategy of increasing awareness of Beer's list drugs ("Canadianized") and selected high alert drugs (taken from incident reports and coroners' reports e.g warfarin) could begin by **providing an education and information campaign** in collaboration with a number of partners for appropriate LTC healthcare practitioners. Working further with the stakeholders, tactics for how this information could be integrated into operations could be developed and disseminated.*

Recommendation 5: **Technology Support**

a) *It is recommended that a **team of medication safety experts (human factors engineers, pharmacists, registered LTC staff, physicians and IT vendors) be formed** to recommend technological specifications to be available and support to homes in the province to assist in technology decisions associated with safe medication practices (i.e. prescribing, dispensing, administering, and monitoring/evaluating). A communications strategy to disseminate the results will also be needed.*

b) *The sector could **investigate additional technology solutions** such as BC's PharmNet and provide guidance for selection and use of technology, creating a framework for assessment of various technology, including electronic medication administration records, computerized prescriber order entry, point-of-care bar coding to assist with purchasing decisions, staff training and other aspects of implementation required to optimize these elements of the medication management system.*

CONCLUSIONS/NEXT STEPS

Continued investment in medication management systems in long-term care homes (including building staff knowledge and skills) is needed to meet the requirements of an evolving medication management system and the growing complexity of medication use in the elderly.

The Task Force believes that improved safety and optimization of medication management can be achieved in Ontario through the implementation of its recommendations.

The Task Force is committed to seeing suggested improvements in the medication management system come to fruition. It therefore proposes that its mandate remain in force for another year to provide oversight and continuity for the implementation of its recommendations. Follow up would include an implementation plan with high-level deliverables and timelines.

With the aging population and growing use of medications in long term care, the Ministry's attention to LTC issues is timely. Initiating systemic improvements ahead of this demographic curve is good planning and a sound investment.

APPENDICES

Appendix 1: Medication Management Task Force Timeline

Meeting	Risk assessment survey	Home Review	Literature Review	Additional Tasks	Bill 140
July 2008	Planning	Planning		Discussed the CNO definition of medication error.	
August	Education Seminars at five locations in Ontario	Invited homes to participate			
September	Homes complete assessments	Three visits with onsite and offsite analysis			
October					
November	Target date for data entry by homes		Conducted review of multiple information sources. Prepared a report.		
December	Date extended for data entry	Report compilation by ISMP Canada			
January 2009	Report compilation by ISMP Canada	Draft report issued to Task Force			
February	Report issued to Task Force Online survey to participants about the MSSA survey	Task Force review report		RAI-MDS and Section U discussion with Common Assessment Project team members	
March	Task Force review report	Discuss recommendations			Meeting with Bill 140 Writer
April	Online survey results distributed, recommendations reviewed and discussed	Finalize recommendations	Review report Finalize recommendations		
May				Task Force report themes for recommendations developed	
June				Task Force report draft 1 reviewed	
July – Sept				Report finalized	
October				Report Circulated	

Appendix 2: MSSA for Long-Term Care Report

Appendix 3: Home Review Report

Appendix 4: Literature Review Report