SAFETY IN LONG-TERM CARE SETTINGS:
BROADENING THE PATIENT SAFETY AGENDA TO INCLUDE LONG-TERM CARE SERVICES

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Safety in Long-Term Care Settings:
Broadening the Patient Safety Agenda to Include Long-Term Care Services

Sponsored by:

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CapitalCare Edmonton Area

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Executive Summary

Introduction

The Canadian Patient Safety Institute (CPSI), Capital Health (Edmonton), and CapitalCare (Edmonton) have jointly identified a gap in our current understanding of safety in Canadian long-term care (LTC) settings. Unlike the acute care setting, there has been little written about improving safety and adverse event prevention in Canadian LTC settings. To explore and address the need for new knowledge in this field this background paper was produced which informed an invitational roundtable meeting held in Edmonton on May 31, 2007. This final version of the report includes the literature review, final analysis and key findings of the key informant interviews, and a summary of the discussions at the roundtable. This report represents a shift towards addressing the need for new knowledge in the field of safety in LTC settings. This coordinated and collaborative effort is a critical step towards identifying the key issues and research priorities for resident safety in Canadian LTC settings. This report is intended for stakeholders within Canadian LTC associations, accrediting agencies, deans of nursing and medicine, nursing and medical associations, Ministries of Health, LTC corporations, LTC homes, administrators, directors of care, front line staff, and residents and families.

Methods

An advisory committee provided overall direction for the project, topics to include in the literature review, names of stakeholders to be interviewed as key informants and invited to the roundtable, and provided comments on earlier versions of the background paper. To assess the current state of the science on resident safety in LTC, CPSI's librarian, Orvie Dingwall, completed searches in the electronic databases Medline, Embase, and the Cumulative Index to Nursing and Allied Health Literature (CINAHL) using resident safety and LTC concepts identified by the advisory committee, such as: adverse medication events, nosocomial infections, falls, and pressure ulcers.

Key informants were selected so that the views of people in diverse groups (e.g., family members, frontline staff, researchers, policy makers, managers) from across Canada would be captured. Fourteen key informants, identified by the advisory committee, participated in audio-taped, semi-structured telephone interviews. The purpose of the interviews was to identify safety issues in LTC. These interviews were transcribed verbatim and a thematic analysis of the transcripts was conducted. Data were independently reviewed, coded, and themes developed.

The facilitated invitational roundtable discussion focused on identifying the priority safety issues and actions in the LTC sector. Sixty-five roundtable participants, including family members, frontline providers, managers, senior leaders, researchers, educators, and policy experts, from diverse disciplines and organizational backgrounds were randomly assigned to one of eight groups. The groups were asked what the key issues regarding resident safety in LTC are and why they are important. All participants recorded their top two or three issues and shared those within their group. One participant at each table recorded each idea. All groups were asked to reduce the list to the top three issues, and reach a consensus. Finally, all groups reported their top three priority issues in a plenary discussion. Once the priority areas were identified, the participants were asked to select a priority issue and identify the strategies needed to address these priorities. The notes from each table were collected after the roundtable and are reported in Appendix C. The plenary discussion was also audio-recorded and transcribed.

Findings

Literature Review

After limiting the searches to publication years 1999-2007, to English language, and by publication type, the search engines Medline, Embase, and CINAHL retrieved 497 records. A total of 121 articles were selected for review and are included by topic in the reference section. Of these, only 9 were from Canada. Other research studies were supplemented by previously identified Canadian resident safety and LTC literature and website searches.

The Canadian studies published thus far focus primarily on medication errors and infection control issues. More recently, an increased number of studies are being funded to examine safety issues in LTC, primarily due to the research grants initiatives from the Canadian Patient Safety Institute. The gaps identified in the scientific literature include, for example, further research examining aggressive behaviours and safety issues, improving information flow when patients are transferred between healthcare facilities (e.g. hospital to LTC), innovative models to successful implementation of clinical practice guidelines, and health services research, to name a few.

Key Informant Interviews

Interviews with 14 diverse key informants revealed 13 common themes listed below. These themes reflect factors, priorities, and gaps in resident safety in LTC.

- Balance between safety and quality of life
- Staff knowledge, skills, and training
- Increasing clinical complexity of residents
- Equipment and technology
- Physical environment
- Communication between management, staff, residents, and families
- Medication management
- Aggressive resident behaviours
- Falls
- Infection control
- Restraints
- Staffing
- Multiple factors affect capacity to do resident safety research in LTC

Invitational Roundtable Discussion

The key issues fell into the following categories (in order from most to least discussed): Staffing/Human Resources; Communication; Increasing Clinical Complexity; Medication Issues; Policies, Systems and Processes: Education and Training; Acceptable Risks and Personhood; Leadership; Accountability and Disclosure; Transitions; Physical Environment; Safety Culture in LTC; Falls; Pressure Ulcers; and Incontinence. Seven of the eight tables highlighted communication and staffing/human resources as priority issues affecting safety in LTC.

Conclusion

Research has been conducted on adverse events in LTC such as falls, pressure ulcers, medication errors, and infections and their relationship to key patient safety concepts. Despite this research, these adverse events are ubiquitous and continue to pose serious challenges for quality improvement. This background paper is a critical step towards understanding the key issues and identifying research priorities in LTC resident safety for Canada.

Several priority safety issues were identified in the key informant interviews and at the roundtable discussion. For example, issues requiring further inquiry include the following: examining aggressive resident behaviour and related adverse events; innovative methods to nurture the balance between safety and quality of life among LTC residents; and how best to maintain safe environments with the increasing clinical complexity of residents in LTC especially among those transferring from the acute care setting. Communication and staffing/human resource challenges were identified as barriers to improve safety among LTC stakeholders.

The key informant interviews and roundtable discussion suggest that research needs to be encouraged and supported in a number of areas. First, research is needed to understand residents' and families' priorities regarding safety as they age and their views on the interplay between safety, quality of life, and independence. Further research is required on the communication processes, including the issues, and how best to ensure effective communication. Communication plays a vital role in creating and maintaining a culture of safety in LTC and the communication process encompasses every single aspect of resident care. Team communication regarding safety issues and adverse events is an ingredient requiring further exploration in the LTC setting.

The recruitment and retention of staff in LTC is an existing key issue and will persist into the future. To that end, further collaboration with educational institutions and government is required to review curriculum, ensure adequate training spaces and mentoring, and provide fair compensation and enticing career opportunities in elder care. In addition, linking staffing data with adverse events could provide valuable information to leverage support for increased governmental funding to improve registered nurse staffing resources in LTC settings so that adverse events are minimized. There is a need to devote resources to leadership training for management in LTC to build leadership capacity. Skill building activities should provide opportunities to teach leaders how to advance the process of creating cultures of safety.

Despite the emerging research conducted on patient safety in the past decade, little research has focused on LTC and other areas outside of the acute care setting. Progress in resident safety in Canadian LTC settings is imperative to improve the safety of frail elders in this setting. Further research on safety in LTC is necessary to guide, change, and improve the quality of care. Such research will provide stakeholders with the tools necessary to address the issues that continue to persist.

Background

The Canadian Patient Safety Institute (CPSI), Capital Health (Edmonton), and CapitalCare (Edmonton) have jointly identified a knowledge gap in our current understanding of safety in the long term care (LTC) sector. Unlike the acute care setting, there has been little specifically written about safety in LTC or adverse event prevention. A coordinated and collaborative approach to exploring and addressing the need for new knowledge in this field has therefore been undertaken. An invitational roundtable meeting was held in Edmonton on May 31, 2007. It is a critical step towards understanding the key issues and identifying research priorities in LTC resident safety for Canada. In preparation for this, Dr. Laura Wagner (Baycrest, Toronto) and Ms. Tiana B. Rust (University of Alberta) were invited to prepare a background paper. This background paper provides a foundation to build capacity of future resident safety initiatives in Canadian LTC settings.

Overview of Report

This report begins by outlining methods used to develop the paper. To follow is a review of the literature, including a summary of LTC in Canada, then a summary of currently-funded safety studies in Canadian LTC settings. The findings of 14 key informant interviews are also presented. Finally, this report includes a summary of the feedback received at the roundtable and a discussion of the findings.

Methods

An advisory committee was directed by Carolyn Hoffman (CPSI), and Marguerite Rowe (Capital Health, Edmonton) and included the following members: Lillian Bayne (Victoria, BC); Réal Cloutier (Winnipeg Regional Health Authority); Orvie Dingwall (CPSI); Iris Neumann (CapitalCare, AB); Shauna Figler (NB Department of Health); Krista Robinson-Holt (Ontario LTC Association); Corinne Senechko (Capital Health, AB); and Dawn Vallet (CPSI). The committee provided overall direction, recommendations of key informants to be interviewed, questions for roundtable discussants to ponder, as well as review of this paper.

Literature Review

CPSI's librarian, Orvie Dingwall, completed searches in the electronic databases Medline, Embase, and the Cumulative Index to Nursing and Allied Health Literature (CINAHL) using resident safety and LTC concepts identified by the advisory committee, such as: adverse medication events, nosocomial infections, falls, and pressure ulcers are concepts related to resident safety. In addition, the advisory panel suggested including safety studies specific to psychological issues such as aggressive behaviours and wandering as well as quality improvement safety studies and those papers using qualitative methods.

After limiting the searches to publication years 1999-2007, to English language, and by publication type, Medline retrieved 300 unique records, Embase 132, and CINAHL 65. These 497 records were then screened for relevance by Laura Wagner and were supplemented by previously identified Canadian resident safety and LTC literature. A total of 121 articles were selected for review and are included by topic in the reference section. Of these, 9 were from Canada, 83 were conducted in the United States, and the remainder from Europe and Australia. Complete search strategies are available in appendix A.

Key Informant Interviews

Consultation with both the research team and the advisory committee lead to the development of the interview guide (Appendix B). Key informants identified by the advisory committee and the research team were contacted by Tiana Rust to briefly describe the initiative and the roundtable, as well as to invite them to participate in a 45 minute audio-taped semi-structured telephone interview; Tiana Rust also conducted all of the interviews.

Key informants were selected so that the views of people in diverse groups (e.g., family members, frontline staff, researchers, policy makers, management) from across Canada would be captured. Fourteen key informants, identified by the advisory committee, participated in audio-taped, semi-structured telephone interviews. The average length of the interviews was 45 minutes. The purpose of the interviews was to identify safety issues in long-term care (LTC).

Invitational Roundtable Discussion

Prior to the invitational roundtable, participants were asked to read the background paper and consider four questions:

1. What are the major safety issues for residents in long-term care in Canada?;
2. Is there evidence that describes these issues / related factors and where are the gaps?;
3. What priority actions are/should be implemented to improve resident safety?; and
4. What research priorities would you recommend?

The participants were provided with an opportunity to share their unique perspectives and to guide the process of broadening the patient safety agenda in Canada to include safety in LTC. During the roundtable, participants were asked to answer the four pre-circulated questions. Feedback to the large group was audio-taped and transcribed. While all participants were aware they were being audiotaped, written informed consent was not necessary as this project is considered a needs assessment.

Analysis

Fourteen audio-taped key informant interviews were completed between May 1 and May 14, 2007. These interviews and the roundtable discussion were transcribed verbatim and a thematic analysis of the transcripts was conducted. Data were independently reviewed, coded, and themes developed.

Clarification of Terms

Before presenting the findings, it is necessary to clarify some terms. The term **resident** (rather than 'patient') will be used to refer to individuals living in LTC settings. In Canada, LTC programs are delivered through two channels: communities and facilities (Berta, Laporte, Zarnett, Valdmanis, & Anderson, 2006) and are thus composed of a broad constellation of services provided in various settings to a heterogeneous population with diverse needs (Stone, 2000). However, for the purpose of this paper, we have only included information focused on the nursing home setting. Thus, in this paper, the term **LTC services** will refer to those services in facilities that provide living accommodation for residents who require on-site delivery of 24 hour, 7 days a week supervised care, including professional health services, personal care and services such as meals, laundry and housekeeping (Health Canada, 2005). The nursing home setting includes those residents who are in need of high levels of personal care due to medical, physical and cognitive disabilities (McGregor et al., 2005), requiring supervision or assistance in a safe and secure environment (Berta et al., 2006). Areas of LTC such as complex continuing care (sub-acute rehabilitation), assisted living, or residential care setting are primarily not included, although we do refer to these settings when discussing currently funded studies.

There are varying terminologies for an "adverse event", including adverse incident, medical error, sentinel event, critical incident, and are used somewhat interchangeably in the literature and legislation. For consistency, we will use "adverse events" throughout the paper. **Adverse Events** are defined as "unintended injuries or complications that are caused by health care management, rather than by the patient's underlying disease, and that lead to death, disability at the time of discharge or prolonged hospital stays" (Baker et al., 2004).

Long-Term Care in Canada

In Canada, although only a small portion of older Canadians reside in nursing homes (18% of those 80 years), the majority of LTC residents are frail elderly people over the age of 65 (McGregor et al., 2005). System design, funding, policies, and regulatory compliance are directed by the provincial ministries of health and the responsibility for the development and delivery of LTC services are devolved to regional health authorities in some provinces (Berta et al., 2006). In some provinces (e.g., NB), many nursing homes are private and are not operated by the regional health authorities. According to the Resident Care Facilities Survey (1996-2001 data), LTC in Canada is provided by a mix of not-for-profit and for-profit facilities and the distribution of these facilities by type of ownership varies greatly across regions. The Canadian LTC industry is primarily comprised of for-profit homes, which own 40.7% of the total LTC homes in Canada, while the Government and not-for-profits represent 25.2% and 23.9% of the LTC beds respectively. The facility-based LTC market in Alberta, the Prairies, and Ontario is dominated by government-owned facilities, while for-profits dominate Eastern Canada, and both for-profits and not-for-profits co-dominate the West. There are also differences in facility size by type of ownership, where government-owned facilities are significantly larger than for-profit and not-for-profit facilities.

In terms of the percentage of older adults institutionalized by region from 1996-2001, Alberta has seen the greatest increase (26.7%) whereas the Atlantic provinces have seen the greatest decrease (20%) (Berta et al., 2006).

Findings

Literature Review

This section highlights the results of the scientific literature review, current studies on resident safety in LTC settings being conducted in Canada, and a preliminary summary of the gaps identified during this review.

Summary of Literature Review

Resident Safety Culture

A few studies have examined resident safety culture perceptions in the nursing home setting. These studies have identified lower safety culture when comparing nursing homes to hospitals (Castle, Handler, Engberg, & Sonon, 2007; Castle & Sonon, 2006; Handler et al., 2006) and front-line staff experience lower perceptions than management (Wisniewski, 2007). Another study identified that 40% of staff found it difficult to improve safety and 2 in 5 nurses saw incident reporting as a personal attack (Hughes & Lapane, 2006).

Quality Improvement (QI) and Outcomes

A majority of the articles linked quality improvement concepts with resident safety in the areas such as incontinence, pressure ulcers, restraints, and falls, by conducting analyses on large data sets (Castle, 2003; Jensdottir et al., 2003; Wan, Zhang, & Unruh, 2006). The quality improvement safety literature in nursing home settings also included interventional studies using advanced practice nurses to implement quality improvement programs (Krichbaum, Pearson, Savik, & Mueller, 2005; Rantz et al., 2001; Ryden et al., 2000); information management technology; implementation of quality improvement programs; and quality improvement and outcomes. Other studies examined staffing and its relationship to care outcomes (Horn, Buerhaus, Bergstrom, & Smout, 2005).

Berlowitz and colleagues (2003) found that only facilities that were the 'most innovative' had better implementation of a pressure ulcer QI program. Resnick et al. (2004) identified multiple barriers (e.g., staffing, turnover) for nursing homes to successfully implement pain and falls clinical practice guidelines. Implementing information technology to improve resident safety in nursing home settings has also been discussed in the literature. Rantz and colleagues (2001) implemented quality improvement software as part of enhancing quality improvement programs. Hastings et al. (2007) published a paper on the use of a telephone on-call reporting system to enhance communication between nursing home staff and physicians. Wagner et al. (2005) and Silver (1999) report on the importance of improving incident reporting systems in nursing homes to improve quality monitoring of adverse events.

Psychological Issues and Resident Safety

Very few studies linked psychological issues such as disruptive behaviours and wandering to resident safety. One study discussed the issue of wandering and the impact of the environment and found no differences in wandering behaviour between nursing homes and assisted living facilities (Beattie, Song, & LaGore, 2005). Another study highlighted the issue of adverse events among nursing home residents with dementia and psychosis and found that accidental injury was the most common adverse event (Oliveria et al., 2006).

Pressure Ulcers

Another adverse event, pressure ulcers, has been identified in the safety literature as an important quality indicator of care. The articles retrieved for this review focused primarily on implementation of pressure ulcer quality improvement interventions (Rosen et al., 2006). While a few studies have noted that pressure ulcer clinical practice guidelines are rarely implemented (Saliba et al., 2003; Wipke-Tevis et al., 2004) another study found a decrease in treatment costs and pressure ulcers following guideline implementation, although this was not sustained over time (Xakellis, Frantz, Lewis, & Harvey, 2001).

Falls

Falls are the most frequently reported adverse event in LTC settings. The research that has been conducted on falls has focused on the multifaceted areas of preventing falls and injuries. These include identifying and assessment of risk factors (e.g., dementia, fall history) (Krueger, Brazil, & Lohfeld, 2001; van Doorn et al., 2003; Wijnia, Ooms, & van Balen, 2006) including psychoactive drugs (Hien le et al., 2005). While a multifaceted approach to falls management is ideal (Becker et al., 2003; Jensen, Lundin-Olsson, Nyberg, & Gustafson, 2002), implementation of this approach has not been widely successful.

Other researchers have tested a variety of fall prevention devices, although design flaws such as small sample sizes limit the validity of results. Hip protectors have not been found to be effective at preventing hip fractures in nursing home residents (Cameron et al., 2001) primarily because of adherence (Warnke, Meyer, Bender, & Muhlhauser, 2004) and cost (Burl, Centola, Bonner, & Burque, 2003; Meyer, Wegscheider, Kersten, Icks, & Muhlhauser, 2005) issues. Exercise programs in nursing homes have been shown to reduce falls among nursing home residents (Nowalk, Prendergast, Bayles, D'Amico, & Colvin, 2001). Studies on physical restraints (Dunn, 2001) and siderails (Capezuti, Maislin, Strumpf, & Evans, 2002; Taylor et al., 2007; Wagner et al., 2007) have also been conducted. This research has shown that these medical devices can be safely removed without increasing falls.

Other research on preventing falls has been at the organizational level focusing on staff education (Ray et al., 2005) and quality improvement implementation. These studies highlight the importance of leadership and teamwork (Taylor et al., 2007) with other disciplines (Colon-Emeric et al., 2006) to prevent falls.

Medication Safety

Numerous studies have examined issues related to medication safety in nursing homes. The areas primarily focus on the prevalence of adverse medication events in nursing homes; risk factors for adverse drug events; prescribing practices; and implementing programs to reduce medication related adverse events.

Gurwitz and colleagues (2005) have done a considerable amount of research on medication safety. Such studies have examined risk factors for adverse drug events (e.g., comorbidities, polypharmacy, use of psychoactive medications) (Field et al., 2001) and the implementation of a computerized physician-order entry (CPOE) system with clinical decision support (Judge et al., 2006; Loeb, Simor, Landry, & McGeer, 2001; Rochon et al., 2005). Baycrest (Toronto) was the first LTC facility in Canada to use CPOE to improve the quality of medication prescribing (Rochon et al., 2005, 2006). One of the main findings from this research was that 42% of all adverse drug events are preventable (Gurwitz et al., 2005). Boockvar et al. (2004) found that hospital transfers and subsequent medication changes are a prevalent cause of adverse drug events, highlighting the need to examine the transfer of information between healthcare facilities.

Another focus of medication safety in nursing homes is in the area of prescribing, especially with antibiotics. Such research has emphasized inappropriate prescribing being linked to antimicrobial resistance (Loeb et al., 2003), the cost of antimicrobial prescribing (Mylotte, 1999; Mylotte & Neff, 2003), and low adherence to antibiotic prescribing recommendations.

Nosocomial Infections

The majority of papers identified related to infection control issues in LTC settings were focused on prevalence and outbreak studies of a particular organism such as staphylococcus (Mendelson et al., 2003) legionella (Loeb et al., 1999) and drug-resistant bacteria (Capitano, Leshem, Nightingale, & Nicolau, 2003; Kreman, Hu, Pottinger, & Herwaldt, 2005; Trick et al., 2004; Weiner et al., 1999). Regardless, a few important areas of infection control related research were identified, although the issues of small sample sizes limits their generalizability (Mody, Langa, Saint, & Bradley, 2005).

Studies in the nursing home setting related to prevention of infections focus on use of hand sanitizers (Fendler et al., 2002), and influenza vaccination prophylaxis amongst staff members (Drinka et al., 2002; Manuel, Henry, Hockin, & Naus, 2002). A few studies have identified the benefits and better outcomes to treating infections in the LTC setting (Boockvar et al., 2005; Carusone, Loeb, & Lohfeld, 2006) rather than transferring the resident to hospital.

A few studies have also highlighted the success of clinical practice guideline implementation (Stevenson & Loeb, 2004) at improving care processes related to infection control practices (Hutt et al., 2006). In one report, researchers from the U.S. Centers for Disease Control and Prevention conclude that future research needs to identify the best methods of preventing infection through vaccination, treating the organism effectively, using antibiotics wisely, and preventing transmission (Richards, 2005).

Current Research in Canadian LTC Settings

1. **Transmission of infections in healthcare settings: Determining the risk of infection in Long-term care facilities (LTCFs) residents after a visit to the Emergency Room (ER), Caroline Quach** (McGill University Health Centre / Montreal Children's Hospital, Quebec)

Funded by: Canadian Patient Safety Institute

This study seeks to determine whether there is an increased risk of acute respiratory and gastrointestinal tract infections for residents of LTCFs after an ER visit. The hypothesis is that residents of LTCFs who require emergency department visits during the winter season have an increased risk of acute respiratory/ gastrointestinal tract infections compared to those who do not. The investigators seek to determine and quantify this risk so policy makers can decide if additional infection prevention measures are necessary for this vulnerable population.

2. **Optimizing psychological and behaviour symptoms of dementia (PBSD) in long-term care facilities, Johanne Monette** (Institut Lady Davis, Jewish General Hospital, Montreal)

Funded by: Canadian Patient Safety Institute

The investigators of this study have developed an interdisciplinary educational program based on recognized standards of practice with the aim of optimizing the management of psychological and behaviour symptoms through the use of pharmacological and non-pharmacological approaches. This is a longitudinal study with a control cohort from two long-term health care centres. The effects of the intervention program will be evaluated in terms of the proportion of antipsychotic users with attempted and successful withdrawals. While the program is being implemented, the safety of residents will be assured by completing repeated measurements of the prescription of other psychotropic medication, the prevalence of disruptive behaviour and the use of restraints. The stress levels experienced by nurses and attendants will also be measured during the study.

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3. **Prevalence of adverse events among frail seniors in residential care, Jean-Francois Kozak** (Providence Health Care, British Columbia)

Funded by: Canadian Patient Safety Institute

This study explores the prevalence of adverse events among residents in Canadian LTC settings and their relationships in three major areas of geriatrics: medication, falls, and abuse and neglect. The study will explore the incidence of under-prescribed medication as an adverse medication event as well as the identification of the rate of preventable events. It will also explore the reliability of electronic incident reporting systems used in LTC for the capture of adverse events. In addition, the study will seek to determine differences in detecting potential adverse events dependent upon professional training. Four LTC sites in the lower mainland of BC, stratified by size, will be studied over a 12-month period for incidents both within a random sample of medical charts (n=134) and their electronic incident reporting system.

4. **Effectiveness of managed risk agreements in Western Canadian assisted living facilities, Patricia Edney** (University of Alberta, Alberta)

Funded by: Canadian Patient Safety Institute

This qualitative study, focused on assisted living facilities, is a demonstration project that offers a four-stage inductive plan to evaluate managed risk agreements from the perspective of residents, families and staff with the Good Samaritan Society assisted-living facilities. The project first identifies the outcomes of managed risk agreements sought by subjects through analysis of semi-structured interviews (Stage 1) and a consensus exercise with a panel (Stage 2). In Stage 3 time series design comparisons of residents with managed risk agreements will test the working hypothesis that managed risk agreements significantly contribute to the achievement of specific outcomes. In Stage 4 a dissemination plan within and beyond the Good Samaritan Society will share findings and recommendations plus identify future research needs.

5. **An examination of documented fall risk and adherence to fall prevention interventions in Ontario long-term care (LTC) facilities, Laura Wagner** (Baycrest Center for Geriatric Care, Ontario)

Funded by: Canadian Patient Safety Institute

This study seeks to examine how processes of safe care related to falls risk and prevention among residents in Ontario LTC facilities are delivered. The investigators randomly selected eight facilities and will conduct chart reviews and rounds on the nursing units to see how well nursing staff are identifying fall risk and implementing fall prevention interventions in the care plan among high risk residents. They will also conduct focus groups with nursing staff to identify how fall processes are communicated in order to determine which factors interfere with this process and to ascertain barriers that staff face in implementing fall prevention strategies.

6. **Nurses' attitudes towards resident safety in long-term care settings, Laura Wagner** (Baycrest Center for Geriatric Care, Ontario)

Funded by: Sigma Theta Tau Interantional/ American Nurses' Foundation

This study is conducted in Canada and the U.S. to query over 2,000 nurses working in LTC regarding their attitudes about the culture of safety where they work. The purpose of the study is to find out what nurses think about their workplace with regards to safe staffing, supervision, support from management when the nurse makes a mistake, and how often adverse events are reported and investigated. A 'culture of safety' is a term used to describe an environment that encourages communication with the resident, or the resident's family, about medical errors or unanticipated adverse events.

7. **Improving the care of seniors with nursing home-acquired pneumonia, Mark Loeb** (McMaster University, Ontario)

Funded by: Canadian Institutes of Health Research

This study will involve a combination of quantitative and qualitative research methods to determine the safety, effectiveness, and experience of using a clinical pathway to manage nursing-home acquired pneumonia in a randomized controlled trial. An analysis will also be performed to understand if clinical outcomes are affected by staff-to-patient ratios and the type of institutional funding. The use of a clinical pathway to manage residents with pneumonia on site has the potential to reduce the rate of hospitalization and improve the quality of life in this fragile population.

8. **Improving prescribing of medications and patient safety in long-term care, Alexandra Papionannou** (Hamilton Health Sciences, Ontario)

Funded by: Canadian Institutes of Health Research

The goal of this project is to implement and evaluate a multi-factorial strategy aimed at improving prescribing in LTC for two targeted areas: warfarin and renally excreted drugs. Ten LTC facilities will be randomly selected into an initial intervention or delayed intervention group. Representative committees at each LTC will assist researchers in the intervention plan by choosing a 'tool kit' of strategies that are tailored to the characteristics and needs of the facility. Interventions will be implemented for 6 months and outcomes assessed both qualitatively and quantitatively at the end of the intervention.

9. **Demonstrating the Value of Health Care Information Technology in the Nursing Home, Paula Rochon** (Kunin-Lunenfeld Applied Research Unit at Baycrest, Ontario)

Funded by: Agency for Healthcare Research and Quality, Jerry Gurwitz, PI

The goal of this study is to evaluate the value of health information technology in the nursing home setting with a particular focus on improving the quality and safety of medication use. Specifically, the study aims to assess the effectiveness of computerized provider order entry (CPOE) with clinical decision support (CDS) in the nursing home setting for improving the quality of medication ordering with regard to choice of therapy, medication dosing, and monitoring of drug therapy. In addition, the study will determine costs directly related to the development and installation of computer-based CDS and the impact on drug, lab and personnel costs; the impact of provider productivity with reference to physicians, pharmacy staff and nurses and to assess the nursing home culture and organizational structure with respect to readiness to incorporate CPOE with CDS

Gaps in a Review of the Research

The following gaps in LTC setting research were identified: aggressive behaviours and wandering and its relationship to resident safety; reporting near misses (Affonso & Jeffs; Wagner, 2005); transitions between health care facilities; large randomized control trials testing medical devices and other interventions (e.g. exercise programmes) to prevent falls; innovative techniques to improve implementation of clinical practice guidelines; cost analyses; and family and resident communication regarding adverse events and disclosure; and research on the education and training of health care providers working in LTC.

Key Informant Interviews

The thematic analysis of the transcripts revealed the following themes, which are followed by insightful quotations from the key informants:

1. **Balance between safety and quality of life:** Since the nursing home is the residents' home, quality of life for residents is therefore important. LTC requires a balance between protecting the rights of the resident and ensuring public safety. Similarly, there is a balance between ensuring that a resident is safe and ensuring that the quality of life of the resident is not being adversely affected by the safety measures being put into place. It is important to examine both the effects of safety interventions on the incidence of adverse events and the impact of those interventions on residents' quality of life. How does one manage risk so that a proper balance can be struck between safety and quality of life?

   - *"People are living in these long term care facilities as if they were at home. But at what point in time do you say, 'Okay. Enough. We put you in your room'…and then protect the health of others, or we let you walk around, and be as if you were in your own apartment, but then maybe putting the health of others at risk. So all that knowledge of the debate between your own rights, and public health."*

   - *"We're always trying to balance the best interests. As health care providers we have so often been trained to provide care, and service, and protect as opposed to allowing people to live at risk, in an informed way obviously. I think health care really struggles with that, so as a result we may be creating a safer environment for our residents, but at what cost?"*

   - *"People who have…a risk for a choking/ swallowing. Alright, so somebody wants to be able to every once in a while have a hamburger, or a steak, or something, and they do not want to have everything pureed, and they know that if they don't, they have a risk of aspiration, or problems, but they want to take that risk, and if they were at home, they'd take it. But in an institution, there's often resistance to allowing that because they know that that risk is heightened."*

   - *"…the resident makes a choice to accept a certain level of risk in their life. I have a little bit of a concern that with our focus on safety that we're going to become more, even more paternalistic than we currently are in terms of preventing people from doing things they want to do because it's not safe or that we deem as not to be safe."*

2. **Staff knowledge, skills, and training:** The majority of direct care staff have had little training, and that training may not be sufficient to consistently ensure a safe care environment. Priority areas for education include techniques around re-directing and re-focusing frustrated and aggressive residents, dementia care, identifying and recognising risks, use of equipment, and infection control. Barriers to adequate training include availability of adequate training programs for best practices, and the ability to cover staff when they are off the floor. What knowledge and skills are important and how can they best be acquired?

   - *"The majority of our staff now are a resident attendant with minimal training. They have roughly six months [of training], and we try to do some work, too, in-house"*

   - *"health care aides…need to learn more than just personal care…they need to be able to identify triggers that would alert them as to when to call a professional to come and do a further assessment."*

- *"I am going to talk about the health care aides in most instances. I really feel that they don't always understand...all the things that they need to be vigilant around...there's an assumption that somebody else is monitoring that, and everybody needs to."*

- *"...we have not developed a very good training or education around geriatric care for people in long term care facilities. It's kind of like you're a nurse, so you can go to work in long term care. So there is no, but there's no really good training around geriatric care."*

- *"Physicians may not always have the best practice knowledge in terms of what medications are appropriate...So it's, how do you incorporate current practise standards for that physician?"*

- *"...quality management around patient safety may fall into that physician's lap but she, or he may not have any training, or background in that. So we need to develop more tailored type of educational packages, I feel for clinical staff within the nursing home sector."*

3. **Increasing clinical complexity of residents:** The care needs of residents in LTC have been increasing steadily over the years. Residents are older, frailer, have more behavioural issues, and are on more medication. Staffing levels and staff knowledge and abilities have not increased to meet the increase in need. Recruiting and retaining staff to work with the increasingly complex LTC client has become more difficult. What should be done to reduce the risks that have accompanied the increase in the complexity of care required?

- *"the complexity of the care issue that we're seeing in our care centers now...there are gaps in some levels of government, perhaps decision makers, who don't truly understand the people we have in our environments, and the potential for risk to those people. Just recently...there were two residents...one assaulted the other, and it ended up in that resident dying as a result of those injuries...there are people who do not believe we have people in our care that pose that kind of risk to others."*

- *"I think the clinical complexity of the clients that we're fitting on a greater level is pressing our practice capacity and our staffing capacity."*

- *"...the adverse events that can happen, either due to the complexity of the clinical care, it could be due to systemic issues, processes, et cetera within the facility... how do you develop policies or care guidelines for their management?"*

- *"Nowadays from when I first started there, the acuity of the resident is so high but it's less staff, right? So they need much more care, much more looking after...it's trying to do more with less"*

- *"The problems are too complex and we're expecting workers to do the job that they can't"*

4. **Equipment and technology:** Advances have been made in technology and equipment. Many choices for equipment exist, which makes the process of selection difficult. Due to resource limitations it is not always possible to purchase appropriate equipment. Risk is increased if staff members are not trained on proper use of the equipment, if proper protocols are not in place regarding use of the equipment, if equipment is not in good working order, and if it is not appropriate for the resident. Which existing technologies and equipment are appropriate and how can they be improved? How does one ensure equipment is used appropriately?

- *"…when she was found, she was on her knees leaning on the bed, but hanging on with one hand to the railing, to a point of her hand was like totally stiff when she was found from hanging on…they do have equipment at their disposal…those bed alarms, but they're so local, they are quite loud, and quite annoying if you're in the same room, but they are not really heard past that room if the door is closed, or even partially closed…they should be attached to the main panel at the desk, or made really loud…they contribute to the stress of the person in distress, but nobody else can hear it obviously…I think the equipment can always be made better."*

- *"…appropriate equipment, so lifts, and beds, and chairs, and we know that some of our facilities they're still using chairs that are inappropriate for individuals…So it's one thing having knowledge, but if you don't have the [equipment] that you need to effect a good transfer, then it doesn't work."*

- *"…that doesn't necessarily mean more bodies to monitor, but better technology to monitor people at risk, their whereabouts; their needs, create a better response of time to – to need. Because I think a lot of things happen because of the gaps in the situation, delays. "*

- *"…alternative devices, the bed alarms, the bed checks, the lifts, the mechanical lifts, the lifts for the whirlpool, all of those things help to contribute to the patient safety…there is a number of choices…for someone to do an unbiased evaluation of all those types of products…would be very helpful!"*

5. **Physical environment**: Many elements of the design of LTC facilities impact safety. Many respondents discussed challenges with older buildings resulting from small or shared bathrooms, insufficient storage space, too much clutter, poor lighting, and insufficient access to sinks. Respondents also indicated that renovation and upgrades to older buildings can have a positive impact on safety when the changes are made with safety in mind. What design features reduce risks and what can be done about older facilities?

- *"The design of some of our facilities…not particularly conducive to some of the older facilities to having corridors that people can walk in effectively, access into bathrooms so that it's appropriate that you can mobilize, and you can use lifts, and those kinds of things. The noise levels adding to confusion which sometimes leads to bad outcomes, so just a number of the physical environmental type features."*

- *"Older buildings may have some attributes that could increase the ability for residents to be injured…What's the best kind of flooring?…The use of color, and what that does in terms of mood and that kind of thing? The ability to access the outdoors in a safe way?"*

- *"…we'll soon have renovated half of our beds…just the financial challenges of getting it done, and there's a lot of nursing homes that need to be upgraded, and that greatly impacts resident safety… single rooms…larger bathrooms, the lighting is better, the doors are wider, all of the features of the renovated areas are designed for environmental safety, and better infection control."*

- *"If the buildings are old, and not designed properly then that can create a safety problem for people in that... we have buildings with mold,...where they don't have big enough rooms for all the equipment in them, we have facilities where there's not enough infection control access, so not enough sinks, too many shared toilets, where we have people who are in rooms together, who perhaps shouldn't be because they present a danger to each other because of their behavior or their physical conditions."*

6. **Communication between management, staff, residents, and families:** When residents are unable to communicate with staff because of inability to speak, cognitive impairment, or language barriers, risk is increased. Accurate and complete documentation is essential to prevent errors and ensure consistent and adequate care. Additionally, communication with family about the progression of residents' diseases is important so that family members do not put residents in unsafe situations. Effectively sharing information, be that making staff aware of new protocols, documenting information on a chart or care plan, or informing family members about safety issues, can reduce risks. How can we communicate more effectively?

   - *"When protocols and information comes out, it comes out at a fairly high level, or higher than the RA level. And it needs to be...translated down to that very front line worker, because they are the ones that are there at the bedside most often."*

   - *"60% of the people in the lower mainland by 2020 will be of the immigrant background...the depression, and the anger, and the frustration because they couldn't communicate appropriately with staff...Because if you don't understand what they need, or they're going to lash out or do something to walk down the corridor when they really can't, just because they're angry or frustrated."*

- *"so QD means once a day, but QID four times a day, and it's better if the doctor would write out daily, you know what I mean, or on the thing – if somebody is in a hurry they can mistake it for once a day, or give it four times a day."*

- *"Transfer of information...sometimes those care plans are too abbreviated for people to understand the reasoning behind why that is there, or the risk if it's not well-managed."*

- *"Communication is a huge factor in safety...Families need to know what the staff know in order to manage risk, too, because there's a lot of assumption that everybody has the same information, but in many instances they don't. So how we look at getting people involved in information, and sharing it in a timely way, and keeping track of it, and responding to it in a timely and caring way with each other."*

7. **Medication management:** Medication management is multifaceted. There is a need to ensure that the drugs prescribed are appropriate for the residents, that medication reviews are effective, that instructions regarding medications are communicated accurately, and that the right drugs are administrated to the right people, in the right dose, at the right time. What policies, procedures, and training are required to avoid adverse events related to medication?

   - *"I would like her safe in terms of the medications she's getting, that you know, persons that are giving it to her are fully qualified, and very careful, and thorough, and you know, matching names and times, and medications and dosages, and so on."*

   - *"I think the second piece is probably around the care planning with the drug regimes. So how do we get the pharmacy reviews and the physicians to the table to really make sure that we're not over-medicating, or under-medicating, whatever...we don't have enough of that happening...we still have way too many drugs happening within our long term care facilities."*

- *"So if we don't have good methods of our medication reconciliation processes...if you've got Benno Enns and you've got Meno Enns, and they're in rooms beside one another, unless you have really good processes, you could one day give the wrong medication to Meno because it should have been Benno. He got Benno's... how do we have processes that are safety and quality related?"*

- *"Physicians may not always have the best practice knowledge in terms of what medications are appropriate, let's say use of psychotropics as an example, for many people, psychotropics is totally inappropriate. It's probably one of the areas that we have uncovered, in most nursing homes where there is a much higher use than it's been clinically indicated...how do you incorporate current practise standards for that physician, and how do you make drug reviews a meaningful process in engaging the appropriate personnel with skills and knowledge? How do use a pharmacist actively in drug reviews? So, it's the quality of the drug reviews, as opposed to quantity."*

8. **Aggressive resident behaviours:** Physically, verbally, and sexually aggressive resident behaviour is an emerging issue that can affect the safety of other residents, staff, visitors and the resident him/herself. Managing the behavioural challenges posed by residents with dementia, brain injury, and mental health issues can be difficult, especially when one is attempting to minimize restraint use. How can aggressive behaviours be prevented, reduced, and managed?

- *"Certainly with dementia populations in particular, but we also have individuals with brain injury, and other things that can result in unpredictable, and aggressive behaviors, and they do absolutely become a risk to the people around them...People with dementia, a lot of them have issues related to paranoia and territoriality, so they don't want people coming into their room, and they often revert to aggressive behaviors, which can result in others being pushed, which could result in a fall, which could result in a fractured hip, those kinds of things. And some of them actually have decreased inhibition related to sexual activity, and we have a number of men who would approach other women, not necessarily recognizing that it's not their wife, that they've lost that ability of reasoning...But again, a lot of it is unpredictable, and you just have to have staff that are alert to those kinds of things, or perhaps see an escalation of you know, yelling, or unsettledness, or agitation in people, and those can be predictors for an aggressive episode to follow."*

- *"You start talking about mental safety, and I don't think people usually think about that, but even the aggressive nature of some of the other residents there. The behavior issues within nursing homes certainly impact that, too...that's a huge issue for nursing homes because we're more and more having to deal with residents who have cognitive deficits, and as a result have behavioral issues, and [our facility] has adopted a least restraint policy both physically and chemically, and so when you follow that philosophy, it can contribute to even increased threat to other people's safety. So, it's a fine balance between making sure that you are using the least amount of restraint in any way but not interfering with the safety and well-being of the other residents because if somebody's aggressive, and is striking out at the other residents or even striking out at the staff, it creates an environment of fear, and possibly even potential physical risk to the other residents."*

- *"It's a relatively small percentage of the population that's presenting those behaviors, the impact if they're on a 30 bed unit, one person can impact 30 people type of thing."*

9. **Falls:** Falls are a key safety issue in LTC because of the frailty of the population. Medications, physical environment, social environment, equipment, and facility policies can impact residents' risk of falling. How can the risk of falls be reduced?

   - *"Falls is certainly one of the biggest issues we have, and that probably accounts for most of the visits, or many of the visits to emergency departments, and those that require admission to hospital, as a result of them...We need to do research in terms of predictors for falls, and is there ways that we could be doing assessments earlier, to reduce the risk of falls?"*

   - *"minimizing falls without adding restraints, but perhaps more trying to minimize the resulting injuries as a result of falls."*

   - *"So you see a lot of falls, when the person is trying to get out. So we don't have enough staff to assist those people, for those type of situations, and so that's a major problem."*

   - *"you're dealing with this very frail, medically complex group so they're going to be at risk for many things. So, you're never going to remove the fall with that population, but certainly you can go to – we can identify the factors, and really reduce the rates of falling, within there."*

   - *"You are never going to be able to prevent 100% of the falls, but if your goal is to maximize independence, and prevent injury, so it's always a stream of information going out about that, but it's a never ending area that needs continual research."*

10. **Infection control:** Infection control is a key safety issue in LTC. Because the LTC population is frail, infection can have devastating consequences. Also, the risk of transmission of infection is heightened in LTC because of aggregate living. Hand washing, glove use, and influenza vaccinations reduce risks. Ensuring buy-in from staff on the front lines on infection control procedures is essential. What infection control processes are required in LTC and how does one encourage compliance?

    - *"...we're going around putting up all these alcohol based products outside every acute care room, and in the rooms, and really pushing the whole hand washing and have a bunch of protocols around that. Do we need the same level in residential care or don't we? What level of control practices do you need? Do we need to go to the extent of everybody having these things in their pockets, or not?"*

    - *"...what is their risk of having acquired an infection when in contact with the acute care setting, and should we isolate them for a week, in prevention just to make sure that they don't bring anything back to their long term care facility? ... and then understanding more of the additional precautions that should be used in long term care facilities for infections."*

    - *"We have facilities where there's not enough infection control access, so not enough sinks, too many shared toilets, where we have people who are in rooms together, who perhaps shouldn't be because they present a danger to each other because of their behaviour or their physical conditions."*

    - *"I remember a few years ago when we started talking about universal precautions, should wear gloves, so much resistance from the staff right. Now it's much better you know if you go to most of the good nursing homes they do wear gloves, but some do, some don't. So I'm, just saying maybe it's not basic research but research implementation and research on how you impact the staff to get them to buy into all these other things."*

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- *"Lack of more scientific protocols, we always say that you should do this infection control, we are much more sophisticated in hand washing guidelines but there's very little to reference with what to do when you handle the food, housekeeping and everything else... laundry."*

11. **Restraints:** Restraints are not being used as frequently now as they have been previously. However, there is still some resistance to the policy of least restraint from family and staff. Funding for alternatives to restraint is sometimes an issue. Work still needs to be done in terms of the alternatives to restraint that contribute to resident safety.

   - *"Use of restraints, whether that be physical, chemical, or environmental. We still, that's an issue."*

   - *"We have a least restraint practice, and we're trying to get down to zero restraints in long term care, and it's always the battle even between staff, and/or of the families wanting people restrained to prevent falls, versus us trying to get off the restraints, optimize their safety."*

   - *"...we get into some of the use of chemical restraint, and other kinds of methodologies that are not necessarily wrong, but maybe aren't best, but in order to manage a group environment."*

   - *"it's a fine balance between making sure that you are using the least amount of restraint in any way but not interfering with the safety and well-being of the other residents if somebody's aggressive"*

   - *"Many people in long term care, are people who have impaired judgment...So it's not only the people who would wander outside that need to be restrained, or kept in a secure place, but it's also people who do not want to sit in their wheelchair properly, or who are hitting out at other people. So therefore how do we keep them restrained so they don't hurt themselves or others?"*

12. **Staffing:** Type of staff, staff to patient ratios, and the ability to recruit and retain qualified staff all affect resident safety in LTC. There is insufficient funding to ensure adequate staff to patient ratios and adequate numbers of support people such as educators and infection control practitioners. It has become more difficult to recruit and retain staff and this has sometimes led to a less competent workforce. Working short-staffed is common and results in staff rushing to provide care.

   - *"You have forever casual staff, forever new people, forever trainees, people who are on a new floor with new patients, not really being familiar with their routine, not even, well 'Who's who?'...If you are short-staffed, you are bound to rush, you are bound to because of lack of experience you're probably nervous, you forget the details...I think staffing- resolution of those problems would probably resolve about 70% of the issues."*

   - *"We're faced with a staff shortage, you know sometimes our centers I think are approaching it, let's get some staff on the floor as opposed to, and so there's more to it than that. So we need to make sure that there are enough staff, but also make sure they're competent and qualified to provide the care."*

   - *"The other issue, again it really relates to the funding model for nursing homes, and that is the low staff/patient ratios, and that has been a concern for patient safety."*

   - *"...numerous nursing homes...do not have an RN during evening or night shifts...so if something happens during the evening, there is concern that you don't have enough skilled staff."*

   - *"So you see a lot of falls, when the person is trying to get out [of bed]. So we don't have enough staff to assist those people, for those type of situations, and so that's a major problem."*

   - *"...managers that work in offices literally have to go into nursing homes to cover the shifts because we can't hire staff to do it, so that's the reality."*

13. **Multiple factors affect capacity to do resident safety research in LTC:** Respondents indicated that there is a desire for research on safety in LTC. However, three major gaps exist that affect capacity to do resident safety research. These include a lack of funding, researchers who are interested in the topic, and manpower. Respondents indicated that there has not been enough emphasis placed on funding research in LTC, that more funding is required, and that support is required for obtaining the funding that does exist. The need for infrastructural funding to pull teams of researchers and stakeholders together to generate proposals for peer reviewed funding in this area was also mentioned. Respondents indicated that LTC research has not been a priority topic for researchers and that the profile of this type of research needs to be raised to attract researchers to the field. The lack of staff who have time dedicated to doing research, and the lack of staff to help conduct the research, limit the ability to do resident safety research.

- *"The emphasis hasn't been on providing a lot of dollars, and credibility, and support for research in long term care. I think that's part of it. I think that it needs to be seen as, and elevated to having the same value as one places on acute care, community, and primary."*

- *"I'm sure probably the more grants there are, the better. I mean typically gerontology, and geriatrics is not a real targeted area."*

- *"I don't see a lot of the folks in the universities, or even in the clinical perspective that are interested and skilled in long term care. There seems to be a lot more interest in kind of community, or acute care, but I don't see people banging on my door with an interest in doing anything in long term care."*

- *"don't think, now that's just my own perception. I mean, we do see some research out there, but it's not the kind of things that a lot of people are drawn to, or get the big headlines...the behavioral challenges, and that sort of thing is not something that has a high profile. It needs to have a higher profile, I guess."*

- *"...if we didn't have the people to go in the nursing home to get the data, and do the research...- the long term care facility were not able to provide us with that manpower. So they are interested in participating, but they don't have the manpower."*

- *"Not having dedicated staffing to conduct the research. So much of the research that we do now is kind of on the side of your desk, so I would go to that more dedicated staffing. Research clinics - researchers."*

In summary, interviews with 14 diverse key informants revealed 13 common themes listed below. These themes reflect factors, priorities, and gaps in resident safety in LTC.

- Balance between safety and quality of life
- Staff knowledge, skills, and training
- Increasing clinical complexity of residents
- Equipment and technology
- Physical environment
- Communication between management, staff, residents, and families
- Medication management
- Aggressive resident behaviours
- Falls
- Infection control
- Restraints
- Staffing
- Multiple factors affect capacity to do resident safety research in LTC

Invitational Roundtable Discussion

An invitational roundtable discussion was held on May 31, 2007 in Edmonton, Alberta. The facilitated discussion focused on identifying the priority safety issues and actions in the LTC sector. Sixty-five roundtable participants, including family members, frontline providers, managers, senior leaders, researchers, educators, and policy experts, from diverse disciplinary and organizational backgrounds offered their unique perspectives on safety issues and priority actions in safety in Canadian LTC settings.

In the first session participants were randomly assigned to one of eight groups and were asked 'What are the key issues regarding resident safety in LTC, and why is that particularly important?' Each participant was asked to reflect on the question and record their top two or three issues, then share their issues within their group. One participant at each table recorded the ideas, then each group was asked to reach a consensus and reduce the list to the top three issues. Finally, each group reported their top three priority issues in a plenary discussion.

The notes from each table were collected after the session. See Appendix C for the key issues that were recorded at each table, grouped into themes. The key issues fell into the following categories (in order from most to least discussed):

- Staffing/Human Resources
- Communication
- Increasing Clinical Complexity
- Medication Issues
- Policies, Systems, and Processes
- Education/Training
- Acceptable Risks/Personhood
- Leadership
- Accountability/Disclosure
- Transitions
- Physical Environment
- Safety Culture in LTC
- Falls
- Pressure ulcers
- Incontinence

The plenary discussion was recorded and transcribed. The transcript of the plenary discussion was analyzed and it was found that 7 of the 8 tables highlighted communication and staffing/human resources as priority issues affecting safety in LTC. See the table below for a summary of the key features of the priority issues and the strategies for improvement.

Priority Issues Affecting Safety in LTC		
	Communication	Staffing/Human Resources
Key Features	• interdisciplinary communication • family engagement • care planning • disclosure of incidents • change management • transitions • medication • role of communication in creating and maintaining a culture of safety	• staff skills • staff education • need for more managers • mix of staff • large number of unregulated staff • need for training • leadership • difficulties with recruitment and retention
Strategies for Improvement	• share strategies that work with others • policy development for disclosure • conferencing • use of technology for clearer communication • need for increased care in communication around transitions • shift overlap • positive effect of continuity of staff on communication	• leadership - reduce the scale of the responsibilities of managers - increasing the numbers of managers - training and leadership development for management • increase the attractiveness and profile of LTC - public awareness campaign - report good news stories about LTC - ensure that staff feel valued - good role modeling - LTC seen as a good career choice

Priority Issues

1. **Communication.** The groups indicated that communication between staff members, physicians, residents, family members, government and other facilities is a key issue in resident safety in LTC. Participants talked about communication in terms of interdisciplinary communication, family engagement, care planning, disclosure of incidents, change management, transitions, medication, and the role of communication in creating and maintaining a culture of safety. The importance of staff, including physicians, working together as a team and communicating effectively especially during the care planning and medication management processes, and the importance of regular communication with family members and residents were noted. The listening skills of family, residents, staff, and management is an important aspect of communication, as is the consistency of communication. The following quotes are examples of communication as a priority:

  - *"... communication and change management. We grouped those two together because of the value of communication, and change management, and the leadership, and the way it's presented, and the communication not only within the facilities, but with the families, and with the governments, with the other groups, the other facilities in the region. When communication is going through, and people are understanding what's going on, it just makes for a better culture, and a better safe environment for everyone, and so the capacity to implement the programs will be improved."*

  - *"... communication, and again, we tried to put a lot under communication because it's between many, many sectors. It's really reminding our staff about the person that we're taking care of, and remembering the personhood - that was the word that was used - and letting that person drive the care that we're giving, and we don't get to know the person unless we communicate with families, and let staff communicate between each other, when we hear from the physician, we're all part of the team."*

  - *"... we talked about family engagement, increasing our listening skills, and that's listening skills of family, of residents, of staff, of management. Looking at expectations of family, residents, and staff right from onset."*

  - *"...the notion that information between the staff and their managers, and the care planning process is critical, and again the small number of professional staff means that there are many inadequacies in that family communication, and the type of assessment that would often help in reducing the problems that families complain about."*

2. **Staffing/Human Resources.** The groups indicated that staffing/human resources is a priority issue in safety in LTC. Staffing challenges include recruitment of appropriate staff, retention of existing staff, and providing staff with continuing education so that they are prepared to provide care. The numbers and abilities of staff have not kept up with the increasing clinical complexity of residents in LTC. Staffing ratios, mix, models, and competencies impact safety in LTC. Workloads and demands on staff are high, creating an environment that may exacerbate difficulties with recruitment and retention. Funding is required for education and training for staff, as a large proportion of the LTC workforce is from an unregulated/unlicensed group, however, front line staff are overwhelmed with the number of changes they are being asked to make.

- *"Our number one priority was related to staffing, and like others we grouped a number of things. Looking at ratios, staff mix, but I think most importantly looking at education, and being able to recognize that funding for education needs to be there. We need to think about how we prepare our staff to work with our residents, and families, and so that they can be knowledgeable, and that's education at all levels, in terms of the front line health care aides and nurses, all the way through our leadership team. Certainly, recruitment, and retention issues were something we spent quite a bit of time talking about.*"

- *"We looked at it under the human resources, looking at selection of staff, retention of staff, the actual competency, and the mix. Do we have the right number? Do we have the right model? With the change in our clients, and our residents that we're receiving, do we need to have a skilled nursing model, and do we need to focus on moving residents to DAL, and having appropriate staffing for DAL, and then appropriate staffing for skilled nursing. Riding over all of the human resources, are the leadership, the culture of an organization comes from the leaders, and do the leaders have enough time to share that, and in a positive way with front line staff?"*

- *"...With respect to the managers, a point was made here that the span of control of the managers is often too large, and one leader for 200 people is just not an acceptable way to work with such a large, unlicensed work force, and further more, the staff say they need to see their manager."*

- *"We were quite specific to say that we needed to address human resources issues, if we're gonna move forward with a safety culture in long term care...Probably one of the largest issues is the work load of our staff, the demands on our existing staff, and whether that's creating an environment where people want to work."*

Strategies to Improve Safety in LTC Settings

Once the priority areas were identified, the participants were asked to select a priority issue and identify the strategies needed to address these priorities.

1. **Strategies to Improve Communication**. One group developed the following six point plan to address communication: 1) Establish best practice guidelines for front line staff, around effective communication with families. 2) Provide education related to leadership development for management. 3) Establish concerns and resolutions processes involving management and families. 4) Present the concerns resolution process to families upon admission, and on an ongoing basis. 5) Social marketing and health care, geared towards our audience and customers. 6) Develop policy and education for staff on appropriate disclosure. Other strategies identified to address communication include encouraging communication with other organizations and jurisdictions to share strategies that have worked for them; establishing processes for communication that ensure continuity of care, especially in transitions; including family in conferencing; and using technology strategically to aid in clear and effective communication. Examining whether eliminating shift overlap impacts safety and continuity of care was also suggested. It was noted that communication between residents and staff is enhanced when staff work with the same residents for long periods of time, therefore, consistent staffing patterns where the same staff work with the same residents could improve communication.

   - *"We talked a bit about communication, particularly around the transitions, and continuity of care, and being able to flag those particular situations where we really need to make sure that there is good system processes..."*

- *"We talked around disclosure, and how we can learn from disclosure in other jurisdictions. So if there was a bad outcome, or a bad event in another jurisdiction, some strategies put in place to address that situation. How can we all learn from that, put those same strategies in place without having to invoke an entire CQI process locally? But really learn from others, and go into some rapid solutions."*

- *"…disclosure is a very difficult thing to do, especially in a severe, adverse event for disclosure, but it is very important also to mentor those people in a leadership role, to how to get life, and how to make it more supportive, to all the stakeholders."*

- *"We are talking about transferring residents from one area to the next, within the continuum of services, and care. So there is consistencies, there is clarity using the technology so that we can retrieve the information, and that is legible, that's clear, and is supporting to what the medication is used for. Getting rid of the silos."*

- *"…some staff members have worked with the same residents for 5 years. And that really does enhance the communication."*

2. **Strategies to Improve Staffing and Human Resources.** Many strategies identified to address staffing/human resource issues revolved around leadership. The importance of leaders in the creation of a culture of safety was stressed. One strategy is to reduce the scale of the responsibilities of managers by increasing the number of managers so that they can interact with, encourage, empower, and mentor their staff. This would not only reduce workload, but could also affect the job satisfaction of staff and the managers themselves. Competencies leaders should possess were identified as being supportive of transparency and reporting, the ability to deal with the fear of disclosure, and understanding assessment, best practices, continuous quality improvement, the quality and safety agenda and the resident assessment instrument. Mentorship

programs, where leaders can receive support in real life situations, were suggested. Training and leadership development are required for management so that they have the competencies of leaders who ensure that the safety agenda is explicit and who are committed to facilitating a culture of safety. Learning how leaders can best be supported is important. Resources must be devoted to building leadership capacity at all levels of staff and throughout their organizations.

- *"… providing a middle management, more middle management where it was cut out 10 - 15 years ago, so we need that support for the upper management by providing middle management to nurture the connection from upper management to front line staff."*

- *"… it's so important to support the managers because these are the people who are essentially providing leadership to the organization, and looking at the span of control, how do we support them? How do we empower – empower the front line staff, as well as looking at the accountability model? How do we engage staff, so there is really learning happening?"*

- *"… leadership really is the key to creating an optimal safety culture. We felt we needed some standardized skills and competencies to actually describe what a good leader in long term care would look like, if they were to promote this culture, and they would certainly well understand the assessment, the RAI, the data, CQI, and best practices… We would like to see flexible education programs developed for these leaders, to help to build those competencies…."*

- *"…a leader's role in making sure that the front line staff, and everybody in the organization really understands the quality and safety agenda. Supportive of transparency and reporting, and the ability to deal with the fear of disclosure is an important characteristic of one of these leaders, and certainly supportive of the appropriate resources in the organization to support the CQI initiatives."*

Another strategy identified to address staffing/human resource issues revolved around increasing the attractiveness and profile of LTC. Adverse events in LTC make the news, while good news stories do not. Good news stories and public awareness campaigns could be used to make LTC a more desirable place to work. Making changes to the nature of compensation for workers in LTC, making LTC appear exciting to new grads, and providing good role models and quality clinical learning experiences for students were suggestions for increasing the attractiveness of LTC so that it may be seen as a rewarding career choice.

- *"We talked about how students need to see this area as a career area, and the people that are going to become resident care, personal care attendants need to also see their work as a career. And part of the issue there is role modeling, so that we talked about a number of possible ways that this could happen... the quality of the clinical learning experience for new students is very important... it was important that nursing students see things done properly."*

- *"We need to look at the whole structure of the compensation package, and increasing our profile of long term care"*

- *"... public awareness campaign about continuing care, and that it is a great place to work, and that there is a value in it."*

- *"... new grads aren't attracted to the long term care setting because they think it's not very exciting. So how do we make it an exciting setting?"*

In summary, sixty-five family members, frontline providers, managers, senior leaders, researchers, educators, and policy experts came together to discuss safety issues and priority actions in safety in LTC in Canada. The discussion revealed that staffing/human resources and communication are the priority safety issues in LTC and some suggestions for priority actions were provided.

Discussion

There is an urgent need for building capacity towards improving resident safety in Canadian LTC settings. While literature examining safety and quality issues in LTC is abundant, there are numerous limitations and very few of these studies have been conducted in Canada. The key informant interviews reinforced the limitations of the literature review. In addition, the invitational roundtable discussion highlighted the key barriers for improving safety in LTC. Research is needed to understand residents' and families' priorities regarding safety as they age and their views on the interplay between safety, quality of life, and independence. Ethical questions arise regarding communal living, the resident's right to choose, and adherence to plans of care when instituting safety-related policies in LTC.

Creating a culture of safety that is receptive to reporting and learning from adverse events can create safer work environments (Jeffs, Law, & Baker, 2007). Since improving the culture of safety can reduce the barriers that nursing home face to making resident care safer, examination of the culture in LTC is needed. While one of the currently funded studies examines safety culture in Canadian LTC settings, it only provides a snapshot of the current perceptions. The importance of safety culture was discussed at each table during the break-out sessions, further highlighting the need to explore this concept in greater detail:

"When communication is going through, and people are understanding what's going on, it just makes for a better culture, and a better safe environment for everyone, and so the capacity to implement the programs will be improved" (Roundtable Participant)

Managing aggressive behaviours was another emerging issue presenting a challenge for providers in LTC. While the literature review identified very few studies linking patient safety concepts with psychological issues such as aggression, abuse, and depression, both the key informants and roundtable discussants addressed the issue for which further research needs to be conducted:

"We talked about several of the other sort of resident focused issues, behaviour and aggression being one area where we also felt that there were increasing pressures as the population changes. Depression was mentioned, as a very common issue" (Roundtable Participant)

Despite the research conducted in LTC on adverse events such as falls, pressure ulcers, adverse medication events, and infections, and their relationship to key patient safety concepts, they are ubiquitous and continue to pose serious challenges for quality improvement. Further research needs to be conducted on the barriers to uptake in the LTC sector in order for the occurrence of these events to be minimized:

"We felt that it is very, very important in looking at, and addressing the issues, and the risks of falls, and fall prevention ... we have literature written on falls, but we haven't really had a good look in one of the effective ways of fall prevention in long term care settings, so more research is needed in this area, and it is quite a significant area in terms of safety. Medication management is another one that we felt strongly about, ...not just the safety in dispensing medications, but a whole hands on, as well as the understanding of all the facts and the applicancy, effectiveness, and therapeutic prescribing medication. How that is being communicated to family, residents, and staff, and how staff is responding to that, and what's the whole monitoring of medication, and also the whole dialogue with different sectors. (Roundtable Participant)

While numerous key safety issues were identified, the invitational roundtable discussion identified communication and staffing/human resource as the two salient issues facing the LTC industry. Communication plays a vital role in creating and maintaining a culture of safety in LTC and the communication process encompasses every single aspect of resident care. Breakdowns in communication can lead anywhere from a near miss (Jeffs & Affonso, 2007) to a sentinel event. While there is an abundance of research on how communication improves safety (Lindgard, et al. 2005; 2006), team communication regarding safety issues and adverse events is an ingredient requiring further exploration in the LTC setting. The strategies highlighted in the roundtable focused on disclosure policy development, utilizing information technology, and identifying best practices of effective communication processes regarding safety.

Staffing and human resource issues were also identified as a major obstacle to improving resident safety in LTC settings. Staffing challenges such as turnover and other workforce issues plague the LTC industry, thus they can have a negative effect on resident safety. While hospital data suggests greater incidence of adverse events with lower registered nursing staff proportions (Hall, et al., 2004), this link has not been explicated in the LTC setting in Canada and is an area for future exploration. Such data could provide valuable information to leverage support for increased governmental funding to improve registered nurse staffing resources so that adverse events are kept at a minimum. Furthermore, other human resource issues such as enhancing the supportive relationships between care providers, supervisors, and families is needed to change the culture of the workplace to a positive environment (McGilton et al., 2003). Several of the key informants and roundtable participants discussed improving the image of LTC to recruit and retain more researchers and care providers so that improvements in safety can be made. To that end, further collaboration with educational institutions and government is required to review curriculum, ensure adequate training spaces and mentoring, and provide fair compensation and enticing career opportunities in elder care.

Given the changing labour market, there is also a need to encourage innovation and health information technology solutions. The Minimum Data Set/Resident Assessment Instrument (MDS/RAI) provides data to assist in care planning and cane be used to identify areas in which staff require more training to keep up with the increasing clinical complexity of residents. Technology solutions that may address safe medication administration and improve communication of care processes should also be explored.

Leadership has emerged as a key theme in the patient safety movement to improve safety in Canadian healthcare settings (Nicklin et al., 2004). Since nursing leadership plays a fundamental role in the quality of work life in LTC, improvements made in this area can have profound impacts on staffing and human resource issues as well as communication and teamwork amongst staff members. Doing so will elevate the importance of resident safety. Several strategies noted in the roundtable discussion to improve resident safety centered around the concept of leadership.

> *"...the priority there was really around leadership, and making sure that the safety agenda was very explicit, and that leaders – that the leadership of organizations and systems was really walking the talk there. And, that that leadership needed to be really visible, and very present in the facilities, and making not just talking about implementing things, but actually being there to assist with that implementation, and checking with staff to see how it's going for them."* (Roundtable participant)

Resources need to be dedicated to leadership activities geared towards how to implement resident safety concepts in LTC homes. Such concepts include open disclosure to residents and families, non-punitive reporting, and safety culture assessment. Training needs to not only occur at the corporate or administration level, but also with mid-level managers and charge nurses who work directly with front-line staff. Mentoring or role modeling is a key component of the process of learning to lead. Programs such as the Dorothy M. Wylie Nursing Leadership Institute in Ontario serve as a model for engaging and motivating nurses, building leadership capacity, building learning communities, leading self-managed work teams, and managing practice change (Simpson, Skelton-Green, Scott, & O'Brien-Pallas, 2002).

The amalgamation of findings from the literature review, the key informant interviews, and the information obtained from the stakeholders at the roundtable discussion provided a comprehensive list of gaps and priorities for future research and other initiatives aimed at improving and ensuring the safety of resident in LTC. These priorities focus on both the critical need for applied health services research and action-oriented/demonstration projects that seek to:

1. Improve the clarity and accuracy of medical information when patients are transferred from one health care facility to another (e.g., acute care to LTC) so that information is not lost or misinterpreted in the process;
2. Identify ways for nursing home staff to improve their communication with residents and families and disclosure of information when an adverse event occurs;
3. Examine innovative models to improve the implementation of evidence based clinical practice guidelines of clinical issues (e.g., falls, pressure ulcers, infections) to enhance safety;

4. Enhance the education of nursing home staff at all levels and across disciplines incorporating patient safety concepts into the curriculum so that safety is seen as an integral part of resident care. This includes basic fundamental information about patient safety concepts (e.g., culture assessment, root cause analysis) and leadership training for those in a management position; and

5. Introduce health information technology such as computerized physician order entry and medication administration, incident reporting and quality improvement systems, and electronic medical record implementation in LTC homes.

It is evident that attention towards improving safety in Canadian LTC settings is the next step. The partners in this initiative (CPSI, Capital Health-Edmonton, and CapitalCare) have galvanized an effort to promote safety in LTC. By doing so, Canada has the opportunity to take the lead in this endeavour. Cutting-edge research on safety in this clinical setting will require an increased interest and commitment from grant funding agencies, researchers, clinicians, policy-makers, and concerned family members in order for improvements to be made. Supporting centres of excellence for evaluating safety in LTC settings is needed to build capacity and establish a leadership group dedicated to developing, understanding, and widely disseminating evidence-based strategies for the prevention of adverse events among this population of frail elders.

Conclusion

Improving the safety of residents in Canadian LTC settings is at a critical juncture. Despite the emerging research conducted on patient safety in the past decade, less research has focused on areas outside of the acute care setting. Further improvements in safety in Canadian LTC settings are imperative. Building research capacity in this setting is urgently needed to advance our understanding of the salient issues and challenges facing our LTC homes. In addition, further research is needed to test strategies in order to reduce the risks of adverse event occurrence in this frail population. The synergistic effect of care providers, researchers, family members and residents, and policy makers all working together will permit us to make significant advances in maximizing resident safety across Canada in every LTC home.

Appendix A

Medline Search Strategy (Friday April 20, 2007)

#	Search History	Results
1	*safety management/	4676
2	(safe$ adj3 manage$).tw.	2222
3	*medical errors/	4341
4	(medica$ adj3 error$).tw.	3194
5	*medication errors/	3945
6	(patient$ adj3 safe$).tw.	12366
7	(resident$ adj3 safe$).tw.	139
8	patient safety.jw.	177
9	(adverse$ adj3 event$).tw.	32169
10	(adverse$ adj3 effect$).mp.	64465
11	(health care adj3 error$).tw.	125
12	(healthcare adj3 error$).tw.	42
13	(sentinel adj3 event$).tw.	353
14	*diagnostic errors/	3847
15	(diagnos$ adj3 error$).tw.	3814
16	(nurs$ adj3 error$).tw.	210
17	(physician$ adj3 error$).tw.	249
18	(patient care adj3 error$).tw.	45
19	(surg$ adj3 error$).tw.	617
20	(safe$ adj3 cultur$).tw.	511
21	(safe$ adj3 climate$).tw.	102
22	near$ miss$2.tw.	623
23	(critical$ adj3 incident$).tw.	925
24	(critical$ adj3 outcome$).tw.	1217
25	(adverse$ adj3 outcome$).tw.	10750
26	(unanticipated adj4 outcome$).tw.	52
27	*iatrogenic disease/	4100
28	*accidental falls/	3971
29	(fall or falls or falling).tw.	80693
30	*pressure ulcer/	5626
31	pressure ulcer$.tw.	2240
32	bed sore$.tw.	98
33	pressure sore$.tw.	1949
34	bedsore$.tw.	266
35	exp *cross infection/	23306
36	exp *staphylococcus/	29630
37	exp *drug resistance/	50145
38	nosocomial$.tw.	13531
39	(healthcare adj4 associated adj3 infection$).tw.	126
40	(healthcare adj4 acquire$ adj4 infection$).tw.	33
41	or/1-40	325277
42	*long-term care/	5964
43	exp *nursing homes/	17255
44	*homes for the aged/	5209
45	or/42-44	24655
46	"personnel staffing and scheduling"/	10032
47	46 and 41 and 45	19
48	41 or 47	325277
49	41 and 45	1379

#	Search History	Results
50	randomized controlled trial.pt.	233672
51	controlled clinical trial.pt.	74707
52	randomized controlled trials/	48151
53	random allocation/	57661
54	double blind method/	90848
55	single blind method/	10848
56	clinical trial.pt.	434900
57	exp clinical trials/	190060
58	(clin$ adj25 trial$).ti,ab.	128925
59	((singl$ or doubl$ or trebl$ or tripl$) adj25 (blind$ or mask$)).ti,ab.	90129
60	PLACEBOS.sh.	26065
61	placebo$.ti,ab.	101593
62	RESEARCH DESIGN/	47102
63	comparative study.pt.	1327330
64	exp EVALUATION STUDIES/	592383
65	FOLLOW UP STUDIES/	336398
66	PROSPECTIVE STUDIES/	219516
67	(control$ or prospectiv$ or volunteer$).ti,ab.	1763635
68	qualitative research/	4120
69	focus groups/	6404
70	qualit$ improve$.tw.	7185
71	or/50-70	3669907
72	limit 71 to animals	1042307
73	limit 72 to humans	240770
74	71 not (72 not 73)	2868370
75	49 and 74	577
76	limit 75 to (english language and yr=1999-2007)	305

Embase Search Strategy (Wednesday May 2, 2007)

#	Search History	Results
1	*patient safety/	358
2	(patient$ adj3 safe$).mp.	17588
3	(resident$ adj3 safe$).tw.	82
4	exp *medical error/	2677
5	(medica$ adj3 error$).mp.	5832
6	(therap$ adj3 error$).mp.	533
7	(diagnos$ adj3 error$).mp.	16836
8	(false$ adj3 result$).tw.	8587
9	(surg$ adj3 error$).mp.	800
10	adverse event/	9
11	(adverse$ adj3 event$).mp.	33068
12	(adverse$ adj3 effect$).tw.	55355
13	sentinel event/	15
14	(sentinel adj3 event$).tw.	188
15	(health care adj3 error$).mp.	137
16	(healthcare adj3 error$).mp.	21
17	(nurs$ adj3 error$).mp.	193
18	(physician$ adj3 error$).mp.	351
19	(patient care adj3 error$).mp.	224
20	near$ miss$2.tw.	382
21	(critical$ adj3 incident$).mp.	579
22	(critical$ adj3 outcome$).mp.	1579
23	adverse outcome/	80
24	(adverse$ adj3 outcome$).mp.	10013
25	(unanticipated adj4 outcome$).tw.	27
26	*iatrogenic disease/	1880
27	*adverse drug reaction/	3372
28	*device infection/	301
29	(safe$ adj3 cultur$).tw.	313
30	(safe$ adj3 climate$).tw.	81
31	(safe$ adj3 manage$).mp.	2128
32	*falling/	2534
33	(fall or falls or falling).tw.	51479
34	*decubitus/	1493
35	pressure ulcer$.tw.	944
36	pressure sore$.tw.	978
37	bed sore$.tw.	53
38	bedsore$.tw.	116
39	*hospital infection/	8243
40	*cross infection/	161
41	exp *staphylococcus/	14515
42	exp *drug resistance/	28844
43	(healthcare adj4 associated adj3 infection$).tw.	103
44	(healthcare adj4 acquire$ adj4 infection$).tw.	24
45	or/1-44	249825
46	exp *long term care/	7520
47	*nursing home/	3718
48	*assisted living facility/	57
49	or/46-48	11134
50	45 and 49	724
51	RANDOMIZED CONTROLLED TRIAL/	117101

#	Search History	Results
52	CONTROLLED CLINICAL TRIAL/	284989
53	RANDOM ALLOCATION/	22088
54	DOUBLE BLIND METHOD/	59140
55	SINGLE BLIND METHOD/	6520
56	exp CLINICAL TRIALS/	427462
57	(clin$ adj25 trial$).ti,ab.	110679
58	((singl$ or doubl$ or trebl$ or tripl$) adj25 (blind$ or mask$)).ti,ab.	70916
59	PLACEBOS/	72205
60	placebo$.ti,ab.	83686
61	RESEARCH DESIGN/	188638
62	COMPARATIVE STUDY/	89424
63	exp EVALUATION STUDIES/	48396
64	FOLLOW UP STUDIES/	216428
65	PROSPECTIVE STUDIES/	63589
66	(control$ or prospectiv$ or volunteer$).ti,ab.	1317122
67	focus group$.tw.	4914
68	qualitative analysis/	13743
69	qualitative research/	1473
70	or/51-69	2061538
71	50 and 70	362
72	limit 71 to (english language and yr=1999-2007)	193

CINAHL Search (May 10, 2007)

Search ID#	Search Terms	Actions
S57	(S55 and S43 and S39) Limiters - Publication Year: 1999-2007; Language: English	159
S56	(S55 and S43 and S39)	236
S55	(S54 or S53 or S52 or S51 or S50 or S49 or S48 or S47 or S46 or S45 or S44)	154245
S54	(TI quality* improve* or AB quality* improve*)	3344
S53	(TI (control* or prospective* or volunteer*) or AB (control* or prospective* or volunteer*))	129959
S52	MM "data collection methods+"	5710
S51	MM Comparative studies	38
S50	MM "study design+"	6872
S49	MM placebos	355
S48	(TI placebo* or AB placebo*)	10772
S47	(TI Clin* N25 trial* or AB Clin* N25 trial*)	16720
S46	MM "random sample+"	85
S45	MM "experimental studies+"	3475
S44	(TI randomi* control* trial* or AB randomi* control* trial*)	10415
S43	(S42 or S41 or S40)	14736
S42	MM "nursing homes+"	5714
S41	MM nursing home patients	2787
S40	MM long term care	7913
S39	(S38 or S37 or S36 or S35 or S34 or S33 or S32 or S31 or S30 or S29 or S28 or S27 or S26 or S25 or S24 or S23 or S22 or S21 or S20 or S19 or S18 or S17 or S16 or S15 or S14 or S13 or S12 or S11 or S10 or S9 or S8 or S7 or S6 or S5 or S4 or S3 or S2 or S1)	54239
S38	(TI resident* N3 safe* or AB resident* N3 safe*)	108
S37	(TI healthcare N4 acquire* N4 infection* or AB healthcare N4 acquire* N4 infection*)	25
S36	(TI healthcare N4 associated N3 infection* or AB healthcare N4 associated N3 infection*)	147
S35	(TI nosocomial* or AB nosocomial*)	2821
S34	(MM "drug resistance+")	4862
S33	MM staphylococcus+	805
S32	(MM "cross infection+")	7072
S31	(TI bedsore* or AB bedsore*)	91
S30	(TI pressure sore* or AB pressure sore*)	1219
S29	(TI bed sore* or AB bed sore*)	41
S28	(TI pressure ulcer* or AB pressure ulcer*)	2345
S27	MJ pressure ulcer	3921
S26	(TI fall or AB fall or TI falls or AB falls or TI falling or AB falling)	9294
S25	MM accidental falls	3022
S24	(MM "iatrogenic disease")	394
S23	(MJ unanticipated N4 outcome* or TI unanticipated N4 outcome* or AB unanticipated N4 outcome*)	28
S22	(MJ adverse* N3 outcome* or TI adverse* N3 outcome* or AB adverse* N3 outcome*)	2254
S21	(MJ critical* N3 outcome* or TI critical* N3 outcome* or AB critical* N3 outcome*)	531
S20	(MJ critical* N3 incident* or TI critical* N3 incident* or AB critical* N3 incident*)	735
S19	(MJ near* miss* or TI near* miss* or AB near* miss*)	186
S18	(MJ surg* N3 error* or TI surg* N3 error* or AB surg* N3 error*)	338
S17	(MJ diagnos* N3 error* or TI diagnos* N3 error* or AB diagnos* N3 error*)	1348
S16	(MJ sentinel N3 event* or TI sentinel N3 event* or AB sentinel N3 event*)	288
S15	(MJ healthcare N3 error* or TI healthcare N3 error* or AB healthcare N3 error*)	55
S14	(MJ health care N3 error* or TI health care N3 error* or AB health care N3 error*)	709
S13	(MJ patient care N3 error* or TI patient care N3 error* or AB patient care N3 error*)	25
S12	(MJ physician* N3 error* or AB physician* N3 error* or TI physician* N3 error*)	62

S11	(MJ medica* N3 error* or AB medica* N3 error* or TI medica* N3 error*)	4390
S10	(MJ nurs* N3 error* or AB nurs* N3 error* or TI nurs* N3 error*)	327
S9	(MM "medication errors")	3126
S8	(MJ safe* N3 manage* or AB safe* N3 manage* or TI safe* N3 manage*)	664
S7	(MJ safe* N3 climate* or AB safe* N3 climate* or TI safe* N3 climate*)	61
S6	(MJ safe* N3 cultur* or AB safe* N3 cultur* or TI safe* N3 cultur*)	474
S5	(AB adverse* N3 effect* or TI adverse* N3 effect*)	6766
S4	(MJ adverse* N3 event* or AB adverse* N3 event* or TI adverse* N3 event*)	6523
S3	SO patient safety	968
S2	(MJ patient* N3 safe* or AB patient* N3 safe* or TI patient* N3 safe*)	9856
S1	(MM "Patient Safety+")	13049

Appendix B

Safety in Long-Term Care Interview Guide

Based on the safety in home care interview guide (Lang & Edwards, 2006)

Thank you very much for taking the time to do this interview. CPSI and Capital Health are spearheading this initiative for safety in long-term care. A roundtable discussion will take place in Edmonton on May 31, the aim of which is to set a research agenda for resident safety in long-term care. For the purposes of this project we are limiting the term "long term care" to nursing homes and homes for the aged (complex/chronic care hospitals are not included).

We are conducting these interviews with 12-15 key informants, identified by the safety in long-term care advisory committee. The purpose of these interviews is to assist us in the preparation of a background paper to be used as a springboard for the roundtable discussion in May.

Please feel free to expand on any of the questions that I will be asking you today. Before we begin I would like to ask you if you wish to have your name listed as having contributed suggestions. Would it be OK with you to turn on the recorder?

1. **Definitions**
   How would you define resident safety in long-term care?

2. **Safety issues in long-term care**
   What are the key safety issues in long-term care?

3. **Factors affecting patient safety in long-term care**
   What are the priority factors that may adversely affect resident safety in long-term care?

4. **Gaps in knowledge**
   Would you please describe the major gaps in knowledge regarding resident safety in long-term care?

5. **Priorities**
   a. In your opinion, what are the priorities for research regarding resident safety in long-term care? Please be as specific as possible.
   b. In your opinion, what are the priorities for targeted interventions to increase safety in long-term care? Please be as specific as possible.

6. **Building capacity**
   To do research requires research capacity.
   a. What are the gaps in our current capacity to do resident safety research in long-term care in Canada?
   b. What are priorities for building capacity to conduct leading edge research on safety in long-term care in Canada?

7. **Exemplars**
   What examples can you provide of structures, mechanisms, or activities that are being used to address safety issues in long-term care?

8. **Other**
   Is there anything else you have to say, or anything I have missed, that you feel would be important?

Appendix C

Key Issues Recorded at Each Table during the Roundtable

Staffing/Human Resources

- working to increase scope/learning of the Licensed Practical Nurse to use maximum skills
- staffing numbers
- staffing ratios
- casual workers
- lower skill set caring for complex cases
- expectation that the resident will decline may interfere with optimal clinical judgment
- staffing in LTC predominantly non-professional & is a key issue for training etc.
- difficulty in appropriately educating, replacement of staff, workload, work short and compromises care and safe care; assessments less thorough, management trying to staff vs. working with staff and problem-solve; lost of initiatives are coming and do education but sustainability is difficult; culture change takes 7-10 years, how to sustain
- labour shortage, recruitment
- competency
- recruitment and retention of staff
- lack of staff for transfers
- high staff turnover
- time to plan care
- more professional support; ↑ scope of responsibility
- rehabilitation not a priority in some facilities for resident safety. Maintain strengths
- Over work is interfering with learning and sustainability
- funding has not kept up with complexity of care
- implementing practices that are realistic
- little structure for management
- lack of Human Resources now and into future affects all levels of staff
- not enough skilled and competent staff
- wages – unable to retain skilled workers
- programs for improvement are lost as staff turnover becomes issue

- staff apathetic worse over last 8 years
- workload issues-staffing, client numbers, demands on professionals
- human resource infrastructure: old staffing model doesn't fit new clinical environment, no capacity to do the ongoing necessary training, is there a model that supports sharing resources between "systems" e.g. education
- need more skills
- low professional staff levels and higher non-professional – how do the professionals have time to mentor/teach non-professionals.
- knowledge base of staff
- ageism- not seen as "sexy" to draw the staff to continue care. You need more skills because other allied professionals to support you
- funding resources that enable the acquisition of human and other resources

Communication

- family and staff include in care plan
- communication skill set
- Information sharing
- lack of lead contact for family members
- more focus on family engagement needed
- advance directives not always clear and well implemented
- root cause may be communication between care providers, families
- time to communicate with families
- families say important to talk and prevent the spiral of issues
- include residents and families in the planning
- take time to discuss safety (e.g. restraints)
- transitions – between acute and sites and families (includes medication reconciliation)
- communication between staff/shift
- communication between staff/family/ residents
- English as a Second Language
- family communicates, staff not listening
- listening skills/family/resident/staff/ management
- expectations of family/resident/staff
- health literacy of family/residents
- staff communication- consistency of care re: care plan

- communication between physician/nurse and family
- communication between shifts
- communication - the most sited factor when reviewing critical events
- every family will be different – communication is essential
- transfer of information at transition points

Increasing Clinical Complexity

- mix of complexities
- more behaviour & dementia issues
- people are less stable
- model still reflects stable population
- family expectations
- more than one chronic disease
- mental health, behaviour challenges
- increase in dementia
- assessments need Registered Nurse level
- strength = interdisciplinary team
- difficult to get to developing care plans
- complexity of clinical issues does not match the training/skills of staff
- aging population results in more co-morbidities
- staff abuse- from residents (various diseases) families.. n.b. to support both staff and family in the situations
- management of challenging behaviours – multiple conditions, drugs
- abuse- resident aggression (resident to resident)
- aggressive behaviours
- dementia
- Aggression management and wandering behaviors

Medication Issues

- 'trials' not done on geriatric population- so are we using the right approach for our population
- transfer of information at transition points - medication reconciliation
- Restraint medication
- over-sedation
- reconciliation & review of meds – the "why"?
- "standardized medication review"
- poly pharmacy: Drug interactions. Can't keep up with new drugs
- Medication safety- 5 Rights- appropriate utilization

- technology – automated drug dispensing
- varies with legislation and standards
- review processes
- medication administration
- after second year nursing students give meds. Not enough training. Require orientation to meds.

Policies, Systems, and Processes

- "formalized" hazard assessment, then prioritize - no systematic process
- lack of standard information-
- challenge to look prospectively and strategize for prevention
- pressures in workplace - how to develop step-by-step approach
- common standardized safety framework required
- professional practice/non-professional
- medical care coverage and alternatives
- compensation for physicians – time spent in LTC
- use of the Minimum Data Set
- measurement, data for monitoring
- do we need to evolve our system to a more skilled nursing level and then have Designated Assisted Living etc. with lower clinical needs.
- need step-by-step process support (best practice)

Education/Training

- safety education for family
- continuing education
- staff training challenge – orientation to good/safe process
- supportive pathways program – important program, barriers to access to training
- during work hours
- focus on safety in programs
- starting on admission (residents/staff training)
- education level of front line
- 80% staff unregulated

Acceptable Risks/Personhood

- falls; staff struggle with this
- what is acceptable risk?
- client driven risk
- staff struggle with balancing the client and their risk

- right to choose and balance
- larger than falls (smoking, wandering)
- finding a balance between risk management and quality of life
- Personhood of individual - becoming so institutionalized, focused on falls that we forget the person represented- to understand who he is

Leadership

- culture of safety requires tools & leadership, reporting environment & good data -leaders must make safety job #1
- consistent and appropriate professional leadership of the staff and care being given
- leadership (administration, management, supervisors)
- effective and enough leadership
- empowerment to full scope of practice
- cultural shift to social model from medical model. Need leadership to effect change
- leadership: who is leading the team- Quality of care provided

Accountability/Disclosure

- maintenance/no admission of liability
- disclosure to families
- reporting of "Incidents" – misc.
- accountability – "Lack of Accountability"
- no disciplinary action/negligence
- culture "common sense", no blame

Transitions

- transfer of information at transition points
- transition points- (plan of care, medication reconciliation)
- transition time / transitions of care
- from acute to community (push to get them out)
- related to med. reconciliation/holistic care/ communication

Physical Environment

- old buildings- safety concern
- shared bathroom
- Funding for staff equipment
- Side rails

Safety Culture in LTC

- culture of safety – at all levels in organization

Falls

Pressure ulcers

Incontinence

Appendix D

Canadian Studies

Authors	Title	Main Topic	Qualitative	Quantitative	Sample	Key findings	Interpretation
Krueger et al. (2001)	Risk factors for falls and injuries in a long-term care facility in Ontario	Falls		X Case-control study	335 residents in a LTCF in Ontario	The most important risk factors for falls included: having fallen in the past 3 months; residing in a secured unit; living in the facility for two or more years; having the potential to cause injury to others; and having an illness, disease, or behaviour that may cause a fall. The most important risk factor for injury among those who fell was altered mental state.	The risk factors identified may be helpful to those planning falls prevention initiatives within LTC settings.
Loeb et al. (1999)	Two nursing home outbreaks of respiratory infection with Legionella sainthelensi	Infection control/ outbreak		X Case-control study	Case-residents of two nursing homes in Ontario who met criteria for Legionella infection. Control-residents are those in the homes who are asymtomatic.	29 cases were identified. A history of stroke, eating pureed food, and having fluids administered with medication were significant risk factors. Only eating pureed food remained significant.	The association with illness of dietary characteristics indicative of swallowing disorders suggests that aspiration was the most likely mode of infection. Diagnosis of legionellosis should be considered during outbreaks of respiratory infection in NHs.
Manuel et al. (2002)	Health behaviour associated with influenza vaccination among healthcare workers in long-term-care facilities	Infection control/ outbreak	X Focus groups (for nonmanagerial staff)	X Questionnaires (for HCWs)	231 HCWs of two LTCFs in the Waterloo Region Community Health Department jurisdiction	Vaccinated HCWs had a more positive attitude toward influenza vaccination and a greater belief that the vaccine is effective. Nonvaccinated HCWs were more likely to believe that other preventive measures, such as washing hands, taking vitamins, eating a nutritious diet, exercising, and taking naturopathic medications, were more effective. HCWs believe that the main purpose of vaccination programs is to protect residents' health at the expense, potential harm, and burden of responsibility of the staff.	A message that emphasizes the health benefits of vaccination to staff members, such as including vaccination as part of a staff "wellness" program, may improve the credibility of influenza immunization programs.

Study	Topic	Study Type	Setting/Sample	Findings	Recommendations
Rochon et al. (2005)	Medication errors	X Description of a facility's experiences in developing and implementing a CPOE system with clinical decision support	A LTCF	Successful implementation of CPOE may have potential to reduce risk for ADEs. Experience with this study is consistent with literature, indicating that a CPOE/CDS system does not initially save time for the clinician. This has produced concerns and some resistance to implement the system.	Make the use of the system time-neutral for the clinician.
Loeb et al. (2001)	Infectious Diseases	X Prospective cohort study, standardized data collection form	Random sample of 646 courses in 638 older adults who were treated with antibiotics for a presumptive diagnosis of pneumonia and those with radiologically confirmed pneumonia	Only 27.6% of antibiotic prescriptions met antibiotic recommendations for nursing-home-acquired pneumonia, and the proportion meeting these varied greatly by facility, ranging from 0% to 53% (median 31%). For persons with confirmed pneumonia, age, sex, and adherence to recommended antibiotics were associated with death. Adherence to antibiotics also associated with adverse reactions.	Use of recommended antibiotic regimens was associated with increased adverse events and worse outcomes in patients with confirmed pneumonia.
Dasgupta et al. (2000)	Medication errors	X Prospective observational study	55 residents of a LTCF treated with fluid therapy during a 5-week period	Hypodermoclysis was used for maintenance fluid needs in 24 residents. Hypodermoclysis was associated with clinical improvement in 57% and no clinical change in 25%. Recipients of IV fluids improved 81% of the time and remainder remained unchanged. However, hypodermoclysis was associated with fewer fluid therapy-related complications relative to IV.	Hypodermoclysis is an effective procedure for providing fluids for both chronic maintenance needs and acute situations associated with mild to moderate dehydration in a LTC setting. It also appears safer and can avoid transfers to hospital for rehydration.

Title of Rochon et al. (2005): Computerized physician order entry with clinical decision support in the long-term care setting: insights from the Baycrest Center for Geriatric Care

Title of Loeb et al. (2001): Adherence to antibiotic guidelines for pneumonia in chronic-care facilities in Ontario

Title of Dasgupta et al. (2000): Subcutaneous fluid infusion in a long-term care setting

Citation	Title	Category		Study design	Sample	Results	Conclusion
Dhalla et al. (2002)	Inappropriate prescribing before and after nursing home admission	Medication errors		X A pre/post retrospective study, used a logistic regression model	19,911 individuals aged 66 and older, newly admitted to nursing homes in Ontario between Apr. 1, 1997 and Mar.31, 1999	Proportion of patients receiving a prescription for at least one inappropriate drug decreased from 25.4% before NH admission to 20.8% afterward. Patients under 85 were more likely to receive inappropriate drug therapy. Other significant predictors were having more than one presriber, having a physician aged 50+, a male physician, a nonspecialist physician, a nonurban physician, and having a physician practicing outside the greater Ontario metropolitan area.	Although a substantial number of NH residents receive inappropriate drug therapy, the prevalence of inappropriate prescriptions declined after admission despite an overall increase in drug use. Patient and physician characteristics associated with inappropriate prescribing.
Boyd et al. (2004)	Complete nucleotide sequence of a 92-kilobase plasmid harboring the CTX-M-15 extended-spectrum beta-lactamasem- involved in an outbreak in long-term-care facilities in Toronto, Canada	Infection control/outbreak	X		6 LTCFs and two acute care facilities in Toronto	Molecular studies revealed a possible relationship of the Canadian plasmid with a plasmid associated with outbreaks in India.	Further studies required to determine why this particular ESBL-containing plasmid has been identified in both acute and LTC settings in Canada.
Health Canada (2001)	Canada Communicable Disease Report	Infection control/outbreak		X	A 300-bed extended nursing care home with residents' mean age of 78.	Oseltamivir was very effective in protecting NH residents from influenza-like illness and in halting the Influenza B outbreak. There was a 10% attack rate in this facility compared to another one that did not use Oseltamivir and had a 19% attack rate.	Further research experience and evaluation is required before oseltamivir can be routinely recommended for prophylaxis of influenza in NH outbreaks.

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