FINAL REPORT: MINISTRY OF HEALTH SERVICES

STEPPING IN: LONG-TERM CARE COLLABORATIVE FALLS PREVENTION PROJECT

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British Columbia Injury Research and Prevention Unit at the Centre for Community Health & Health Evaluation Research at the Children's & Women's Health Centre of B.C.

PARTNERSHIP AGENCIES

- University of Victoria School of Nursing
- Adult Injury Management Network & School of Nursing, University of Victoria
- Institute on Health of the Elderly, University of Ottawa
- School of Nutrition & Dietetics at Acadia University, Nova Scotia

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1.0 Introduction:

This project was funded by and the Ministry of Health Services and the Health Canada, Population Health Fund, with support from local Health Authorities. This partnership funding arrangement allowed for the amalgamation of project five sites for this study from three different provinces in Canada. Provincially funded sites were located in LTC facilities in Cranbrook and Quesnel, and Nationally funded sites were located in LTC facilities in Wolfville, Nova Scotia; Ottawa, Ontario; and Sechelt, British Columbia. The two Provincially funded sites for this project were the funded by the Ministry of Health Services, with support from the Northern and Interior Health Authorities. The third BC site, and the sites in Ontario and Nova Scotia, was funded by the Health Canada, Population Health Fund. The BC Injury Research and Prevention Unit and the University of Victoria jointly administered the project. The activities and deliverables for this project are described for all five sites in the following report.

2.0 Project Summary:

The purpose of this project was to reduce falls and fall-related injuries among residents of Canadian Long Term Care Facilities through positive collaborative action by those who are at risk and those who are responsible for their care and safety. Using principles of community development, three phases of activity were undertaken by a collaborative team of falls prevention experts and residential care providers - under the direction of a National Advisory Committee. The model for falls prevention addressed the determinants of health that put residents of care facilities at greatest risk of sustaining a fall and related injuries and strengthened their capacities, and the capacities of those who care for them, through the creation of networks of support and information.

Three upward amendments from the Health Canada, Population Health Fund were approved during the three years of the project. The first was for the purposes of holding a meeting of stakeholders in order to examine preliminary study results and discuss dissemination of the final study reports. The second was to refine the surveillance instrument, test the refined version in one clinical setting and host a CAG pre-conference workshop on falls in long term care. The third upward amendment was for additional analysis of the LTC data and preparation of 2 manuscripts to disseminate the information. Separate reports on each of these are in attached documents.

Outcomes of the project include an extensively evaluated falls surveillance tool, an Operating Instructions and Manual for use of the tool, a pre-conference workshop on Preventing Falls in Long-term care, a manual on falls prevention strategies prepared for the pre-conference workshop, and a series of papers to be presented at the 2005 Canadian Injury Prevention and Safety Promotion Conference and other future conferences, a symposium presenting study findings at the 2004 Canadian Association for Gerontology (CAG) ASEM, an evaluation of the project overall, and two papers outlining the study findings - parts of which will be modified for submission to scientific journals. These materials were designed to direct Facility policies for the permanent implementation of collaborative protocols for recording and implementing effective falls and falls-related injuries prevention strategies, using appropriate tools for monitoring their effectiveness. These materials will have potential for use by other facilities across Canada and can be placed on existing web sites for access by other long-term care facilities. Two copies of these deliverables are included with this report.
3.0 Background

3.1 Project Partners

This project was a collaborative effort between the following four partners: the British Columbia Injury Research and Prevention Unit at the Centre for Community Health & Health Evaluation Research at the Children's & Women's Health Centre of B.C; the Adult Injury Management Network (AIMNet) at the University of Victoria; the Institute on Health of the Elderly, University of Ottawa; and the School of Nutrition & Dietetics at Acadia University, Nova Scotia. The BC Injury Research and Prevention Unit took a lead in the data collection and analysis. The BC Injury Research and Prevention Unit and the University of Victoria were the administrative organizations, also offering research and program support services as an in-kind contribution through the Accounting, Research Administration and Public Relations Departments. Office space and use of phone and photocopier are also provided through the BC Injury Research and Prevention Unit and the University of Victoria.

The B.C. Injury Research and Prevention Unit (BCIRPU) was established in August 1997 as part of a province-wide partnership between the Centre for Community Health & Health Evaluation Research, B.C. Ministry of Health Services and BC Children's Hospital. With unique links to government, institutions, experts in the field and community leaders, the unit also plays a key role in coordinating intervention efforts through environmental modification, legislation and policy recommendations.

BCIRPU has worked collaboratively with AIMNet on both the Best Practices Guide and the Inventory of Canadian Programs for the Prevention of Falls & Fall-related Injuries Among Seniors Living in the Community. In 2001, Dr. Scott was appointed as Senior Advisor Falls Prevention, with BCIRPU and the Office for Injury Prevention of the Ministry of Health. She is also an Adjunct Faculty member with the UVic School of Nursing and the Faculty of Medicine, Health Care and Epidemiology at the University of British Columbia. Dr. Scott’s position at BCIRPU provides direct links to the LTC facilities throughout the Canada and BC and to government agencies and organizations with jurisdiction for the safety of residents in LTC facilities.

AIMNet has an established track record in relation to research on falls and fall-related injury prevention among older people. The program was established with the financial support of Health Canada’s Health Promotion Branch and since has received several grants to conduct workshops, produce monographs and to plan an international conference on fall prevention in July, 2001.

The persons who developed the project and served as the project leaders were:

- Vicky Scott, RN, PhD Principle Investigator / Falls Prevention Advisor, BC Region; Senior Advisor, Falls Prevention, BC Injury Research & Prevention Unit; Adjunct Professor, University of Victoria School of Nursing
- Elaine Gallagher, RN, PhD, Principle Investigator / Project Leader; Professor, University of Victoria School of Nursing
- Mariana Brussoni, PhD, Co-investigator, Associate Director of the BC Injury Research & Prevention Unit; Clinical Instructor, Department of Pediatrics, Faculty of Medicine, University of British Columbia
A National Advisory Committee and Regional Steering Committees were formed to steer the project and assist with dissemination. These are discussed more fully in Section 5 of the report.

3.2 The Need for the Project

Approximately 30 to 50 percent of all long-term care residents fall each year, and of these, 40 percent fall twice or more each year (Tinetti, 1987; Aronow & Ahn, 1997; Kiely et al., 1998; Nygaard, 1998). Approximately 10 percent of these falls result in serious injury, including up to 5 percent resulting in bone fractures (Butler et al., 1996; Thapa et al., 1996). The risk of sustaining a hip fracture is 10.5 times higher for women who are in facilities than if they were living in the community, and less than 15 percent of facility residents who sustain a hip fracture regain pre-injury ambulation status (Folman et al., 1994).

For Canadian seniors, falls are the most frequent cause of injury-related hospitalization, and account for 78 percent of injury-related deaths (Raina et al., 1997). This is a growing problem, as the number of falls and fall-related injuries will increase as the proportion of those aged 80 years and over in Canada is expected to double over the next 20 years (Statistics Canada, 1997).

Despite the number and severity of falls among the elderly in residential care settings, relatively little is known about the best practices for prevention (Hill et al., 2000). The majority of studies in this area have focused on community dwelling seniors. However, according to a review of the literature on best practices for falls prevention in community and residential care settings, strategies that are shown to be effective in community settings are not readily transferable to residential care settings (Hill et al., 2000). Furthermore, among residential settings, it has been shown that there is a need to tailor prevention strategies to reflect the different levels of care and the unique aspects of some facilities (Hill et al., 2000). However, effective prevention can only be determined if facilities have standardized assessment protocols in place. In Canada, long-term residential care administrators and clinicians have identified for some time that there is an urgent need to develop a standardized system of data collection for tracking information that will assist in the development, and evaluation, of effective fall prevention strategies (Scott, Gallagher, Hay & Bhatia, 2001).

3.2.1 Why the Need for a New Falls Reporting Form and Prevention Protocols

Current practices for recording falls and fall-related injuries in Canadian LTC facilities was limited to in-house report forms designed differently by each facility, critical incident reports and/or by a new national system known as InterRAI Minimum Data Set 2.0, for charting all resident health problems, including falls and injuries.

Each of the three current recording systems has limitations. The in-house report forms tend to be designed to document information that may be necessary in the result of a legal action due to a fall or injury, and not for the purposes of preventing future falls. The data are not examined for trends or patterns and they are not shared across facilities due to the lack of standardization (Scott, et al., 2001).
The critical incident reports are limited to the nature of the injury and type of incident, i.e., fall or other incident causing injury. Once again, they are not designed with the purpose of gathering information for designing prevention strategies or understanding trends or patterns of falls.

The InterRAI Minimum Data Set 2.0 (MDS) system has the potential to assist in understanding the problem of falls in facilities but it is a long way from being introduced in all Canadian facilities and has a number of limitations with regard to designing and monitoring prevention strategies. Although the MDS captures whether or not a person has fallen, it was never designed to function as prevalence or incidence falls instrument.

As such, the MDS 2.0 has several inadequacies as a standalone instrument regarding falls. First, the MDS only reports whether an individual has fallen at any time within the past 30 or 31-180 days. Falls “prevalence” captured by the MDS, therefore, only reports the number of people who fell within that time period, prevalence of fallers and not the prevalence, nor incidence, of falls. Moreover, there is no indication of the number of times a person has actually fallen. Thus, it is not possible to use the MDS by itself to identify clinically different populations: those who fall infrequently versus who those who do, each of which requires different forms of intervention and prevention.

The MDS is also unable to provide clinically important information regarding the level of injury sustained by the fall. Nor is it able to identify environmental factors that contribute to the fall incident. Even more problematic is that falls are not specifically defined in the MDS support documentation, which is crucial for any falls prevalence/incidence instrument. Thus, specific types of falls reported by a facility in the MDS may or may not be reported across facilities. For example, one facility may only report injurious falls whereas a second may report any incident when a resident is found on the floor. Comparisons between these two facilities would inaccurately reflect a higher prevalence of falls in the second facility.

Finally, while the information available from the MDS may provide information about the intrinsic or host factors that may be associated with falls (i.e. mobility, disease diagnosis, daily routine, medication groups), the MDS does not provide a meaningful examination of fall incidents themselves.

4.0 Goals of the Project
4.1 Purpose and Goals

The overall purpose of this project was to reduce falls and fall-related injuries among residents of Canadian long-term care facilities through positive, collaborative action by those who are at risk and those who are responsible for their care and safety. Using principles of community development, three phases of activity were undertaken by a collaborative team of falls prevention experts and residential care providers, under the direction of a National Advisory Committee. The objectives of each phase were as follows.

Start-up Phase
The objectives of the start-up phase were to:

a. Secure participation agreement from three facilities representing Eastern, Central and Western Canada,
b. Establish project Advisory Committee,
c. Establish onsite interdisciplinary Falls Prevention Team in each participating facility, with both resident and family representation,
d. Conduct literature review and compile resource manual of tested interventions and those showing promise,
e. Hire and train project assistants,
f. Introduce and trial common fall reporting protocol in facilities (adapting existing forms developed by Scott and Kozak).

**Implementation Phase**

The objectives of the implementation phase were to:

a. Provide data analysis support through BC Injury Research & Prevention Unit of findings of fall reports for each facility,
b. Support each agency in their undertaking of in-house assessment of fall risk issues based on data from falls reports and current best practices literature,
c. Support development of collaborative protocols for prevention to address identified fall risk using educational, environmental, and engineering approaches,
d. Support agencies to implement falls prevention strategies based on the developed collaborative protocols,
e. Hold a mid-term workshop at BCIRPU.

**Evaluation Phase**

The objectives of evaluation phase were to:

a. Describe models of intervention which emerged,
b. Evaluate impact, outcomes and cost effectiveness of intervention models,
c. Develop sustainability collaborative protocols and disseminate results.

**4.2 Changes in Goals and Objectives**

While there were no significant changes to the goals as outlined above, two items not originally planned added value to meeting those goals. Funding from the national study supported the involvement of the national sites from Ontario and Nova Scotia in the BCIRPU mid-term workshop. This involvement was allowed for clearer understandings across all sites of prevention strategies and their integration into existing service delivery models and resources. This event was followed by education sessions for staff and Regional Advisory Committee members for the planning and implementation of the intervention phase – kicking off the second 180-day period of surveillance with intervention. To better enhance the tracking of intervention strategies, a consistent method of recording interventions was created and utilized at all facilities.

Several new goals, however, did emerge, thereby prompting the request from the National funders for three upward amendments to the project, and extending the project by two years. In addition, interest from of other BC sites, lead to a partnership with the Interior Health Authority that resulted in new sites receiving support by BCIRPU for the use of the Falls Surveillance Report.

The goal of the first upward amendment was to facilitate dissemination and uptake of the project results.
We proposed to host a one-day seminar in Ottawa, with members of the project team, the Advisory Board and other interested National organizations in attendance. The meeting would be used to present the findings of the project, discuss the practical implications, seek input as to the best format for packaging the program for wider dissemination, discuss the minimum analysis that would be needed in the package for agency use, propose methods of packaging the intervention options, and suggest ways of collecting data in a National surveillance pool of data for large-scale epidemiological research.

The purpose of the second upward amendment was to enhance dissemination, evaluation and sustainability of falls prevention activities in long-term care settings in the target sites and other facilities across Canada.

There were two objectives, which were complimentary to the existing project goals:

**Objective 1:** To enhance dissemination and sustainability of the current falls prevention activities through the creation of onsite evaluation capability. It was proposed that information technology specialists at BC Injury Research and Prevention Unit work with the onsite falls prevention collaborative teams to carry this out.

**Objective 2:** To enhance dissemination of the findings and subsequent recommendations of the “Stepping In” project through a pre-conference workshop on “Clinical Practice Experience of Falls Prevention in Long-term Care Settings” to be held at the 2004 Canadian Association on Gerontology Annual Scientific and Educational Meeting (ASEM) to be held October 21-23 in Victoria, B.C.

The purpose of the third amendment was to collect, analyze and synthesize epidemiological data related to falls and fall-related injuries among seniors who reside in long-term care (LTC) institutional settings across Canada.

To accomplish this we proposed the following two objectives, which would enhance the results of the existing project goals.

**Objective 1:** The project team would retrieve and review data related on fall-related injuries among person aged 65 years and older in Canadian provinces and territories through an analysis and synthesis of data from the Canadian Institute for Health Information (CIHI) Discharge Abstract Database (DAD) from 1998/99 through 2002/03. This data would focus on institutionalized elderly Canadians aged 65 years and older. This information would be presented in the form of charts with accompanying interpretations.

**Objective 2:** The project team would analyze and interpret the data on falls and fall-related injuries among residents of the five LTC facilities participating in the study. This information would be presented in the form of charts with accompanying interpretations, targeting an audience of policy makers and practitioners who are responsible for the provision of services to the elderly in LTC settings. These analyses and interpretations would allow for a wider dissemination of the findings in a form that would demonstrate the strength of the findings.
The goal of the BC support for additional sites using the Falls Surveillance Report included BCIRPU support to 8 extra facilities in the East Kootenay Region in partnership with the Interior Health Authority.

In addition to the sites in Quesnel, in the Northern Health Region and in Cranbrook, British Columbia provincial funding, in partnership with regional Health Authorities and support from BCIRPU made it possible for other facilities to use the surveillance tool and conduct a similar project to the national project in the Interior Health Region. Data from these facilities will be available to BCIRPU. The additional eight sites in BC are LTC facilities in East Kootenays region in Creston, Kimberly, Fernie, Golden and Invermere.

5.0 Activities Undertaken During Program

5.1 Timeline of Activities

Figure 1 outlines the activities undertaken during this project along the project timeline.
### Figure 1: Timeline for 'Stepping In': Long-term Care Collaborative Falls Prevention Project (June 19, 2002 to April 30, 2005)

<table>
<thead>
<tr>
<th>Development of Form</th>
<th>Implementation of Fall Report Form and Prevention Strategy</th>
<th>Dissemination</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Evaluation Process</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Executive Committee Meeting</strong></td>
<td>Executive Committee Meeting</td>
<td>Executive Committee Meeting</td>
</tr>
<tr>
<td>National Advisory Committee Meeting</td>
<td>National Advisory Committee Meeting</td>
<td>National Advisory Committee Meeting</td>
</tr>
<tr>
<td>Faculty Ethics Reviews</td>
<td>Regional Steering Committee Meetings</td>
<td>Regional Steering Committee Meetings</td>
</tr>
<tr>
<td><strong>Confirm LTC site participants</strong></td>
<td>Sign Letters of Understanding</td>
<td>LTC Falls Team Meetings</td>
</tr>
<tr>
<td>Literature Review: Surveillance/Assessment Falls Prevention</td>
<td>Establish Fall Prevention plans for each facility</td>
<td>Submit: Interim Report: process evaluation and Fall Report findings</td>
</tr>
<tr>
<td>Collect data and analyze for the Interim Report Process Evaluation</td>
<td>Outcome evaluation of prevention strategies and cost effectiveness</td>
<td>Establish evaluation criteria for prevention strategies</td>
</tr>
<tr>
<td>Falls Surveillance/Report Outcome Analysis</td>
<td>Ottawa Meeting</td>
<td>CAG pre-workshop planning, delivery</td>
</tr>
</tbody>
</table>
In addition to the activities outlined in Figure 1, each facility was charged with planning interventions to address needs for injury prevention as identified during the surveillance phase. Appendix A presents a summary of these showing a breakdown by facility and by type of intervention. A wide range of interventions were undertaken, drawing heavily on published best practices as well as creative initiatives designed by participants.

5.2 Unintended Activities or Events

A large number of events took place beyond those listed in the work plan. The following list was compiled from the Quarterly Reports submitted to Health Canada.

10 October 2002:
- On June 26, Victoria MP David Anderson held a press conference at University of Victoria announcing the grant. Local CBC radio and Victoria media were in attendance. Mr. Anderson’s speech emphasized both the importance of the particular project as well as the larger falls prevention efforts across Canada.
- On June 27, Elaine Gallagher and Vicky Scott were interviewed by CBC radio as part of their coverage of Mr. Anderson’s press conference.
- Several other LTC facilities besides the three regional facilities will be using the surveillance instrument and collecting data. Funding for two other institutions in British Columbia was announced in August.
- Each region is planning to kick-off the surveillance phase with a media event. As of the end of the second quarter, only British Columbia had a kick-off date planned: October 15.

10 January 2003:
- October 15th kick-off at Sechelt facility had media coverage.
- In November, Shanthi Johnson gave a presentation based on this project to personnel from 6 Long Term care facilities in Nova Scotia.
- Progress was made towards including an Ontario LTC facility as well. St. Patrick’s will also be using the tool and sharing data with the national project. This facility has a number of veterans and will be an important addition to the data.
- The addition of 8 facilities being supported by BCIRPU to use the Falls Surveillance received press coverage in Cranbrook for the Interior Health Authority funding covering these facilities.
- Facilities from all over Canada have requested use of the surveillance tool. Progress was made during this quarter to create a license agreement so that the tool can be provided as requested. A guide will accompany the tool.
- Talks between BCIRPU Senior Advisor on Falls Prevention and the BC licensing office in the Ministry of Health Services have the promise of incorporating the surveillance tool into licensing assessments. Some concerns regarding incident reporting to the licensing office have been raised and discussions will continue to maximize the benefit to LTC facilities in reducing falls and related injuries without undue workload for documentation through a collaborative approach with facilities, licensing and BCIRPU.

10 April 2003:
- At the end of December, the Sechelt facility coordinator gave a presentation to the local health authority home health care staff meeting regarding the long-term care project. The case managers and OTs in attendance were interested in participating in falls prevention protocols.
- The BC provincial Ministry of Health Services funded BCIRPU to launch a new project targeting falls prevention among clients of home support services. This pilot study includes 60 community health workers in three cities in British Columbia and involves the CHWs recording falls using the
surveillance tool developed for this project. The Falls Surveillance Report tool has been modified to reflect information that can be acquired through the work experience of a CHW with their clients. There is hope that this tool will eventually be used by all CHWs throughout BC. One of the concerns that have been expressed by some CHWs is the minimal amount of information that a CHW has from another CHW. The use of the falls surveillance tool would provide more background information, as well as a more comprehensive picture for R.N Supervisors and OT/PTs to access.

10 July 2003:
- May 13-14 workshop was hosted by BC Provincial projects and the BCIRPU. In addition, Ontario funding paid for the Falls Advisor and the site’s falls coordinator to attend the workshop. Nova Scotia funding paid for the Falls Advisor to attend the workshop. BCIRPU provided office support during the workshop including secretarial services and computer access.
- Ontario region is developing a reporting system to accompany the data entry and collection system being developed for the surveillance tool. This will enable other sites to use the surveillance tool and gain insights from simple data analysis that will assist them in developing falls prevention plans.
- Shanthi Johnson was interviewed by The Advertiser regarding the Wolfville project.

10 October 2003:
- An informal scan of BC facilities outlined what alarm systems and monitors was conducted by the BC falls advisor and shared with the Sechelt facility along with other facilities involved in the provincial and health authority projects.
- Acadia dietary students will be conducting a project at the Wolfville facility and this project will coordinate efforts with them.

10 January 2004:
- The informal scan of BC facilities outlining what alarm systems and monitors conducted by the BCIRPU Falls Advisor was shared with other facilities throughout BC and across Canada, through a posting on the BCIRPU web site.
- Vicky Scott from BCIRPU was able to visit Residence Saint Louis in November while she was in Ottawa, allowing for both Dr. Scott and the staff at RSL to exchange ideas and information regarding interventions.

10 April 2004:
- BCIRPU has developed a falls page on their website http://injuryresearch.bc.ca highlighting LTC falls prevention activities and literature.
- New Minister and Health in Ontario has made long-term care a priority, opening up the possibility of funds to further the work of the surveillance tool.
- Joint funding between the BC Ministry of Health Services and the regional Public Health Agency of Canada (PHAC), Western Regional office has been secured to conduct and environmental scan of falls prevention initiatives in BC. This will include an extensive inventory of all falls interventions programs in BC along with a qualitative study (in-depth interviews of key players) at two sites to see the role of social capital in the development of falls intervention projects.
- A CIHR application was not funded for the proposed study of the biomechanics of falling and carrying a purse, however, there is some indication that a second submission would be possible.
- BC Ambulance services are including falls prevention in their crew review, using similar information to the Falls Surveillance Report.
10 July 2004:
- Vicky Scott of BCIRPU presented preliminary findings from this project at the International Conference on Injury Prevention in Vienna, Austria in June 2004.
- The Wolfville facility held an appreciation event with residents and family members, closing the project officially. The event was covered by the local newspaper.

10 October 2004:
- Jean Kozak held an educational session at Hillel Lodge in Ottawa (June 15) regarding falls and staff training.
- BCIRPU has conducted systematic review on Fall Screening and Assessment Tools, focusing on the LTC studies only, providing a comprehensive overview of why the validity and reliability of such tools is important. This report will be available to participants of the PCW in October.
- Shanthi Johnson has been invited to serve on the provincial intersectoral falls prevention committee set up by the NS Office of Health Promotion. Results from this project have been shared at with the committee.
- Jean Kozak will be giving an invited talk this November: Implementing an evidence-based falls program in nursing homes at the Leadership Forum for Medical Directors in LTC, November 6, Vancouver.
- Jean Kozak will be working with Dr. Pierre Soucie and Camille Hubert on an internally funded project on developing a falls clinical management protocol for nurses and physicians.

10 January 2005: Work during this period did not include events not in work plan or spin-off projects. An upward amendment with the objective to collect, analyze and synthesize epidemiological data related to falls and fall-related injuries among seniors who reside in long-term care (LTC) institutional settings across Canada was submitted in December 2004.

10 April 2005:
- Shanthi Johnson will be presenting results from this project with the Nova Scotia Department of Health - Falls Committee this spring.
- The Eastern Region is receiving support from the local district health authority to explore the possibility of using the surveillance tool in a random controlled trial study. This will be explored more fully in the coming months.
- Nine sites in the East Kootenays will adopt the Falls Surveillance Report© across the region, including using the onsite reporting capabilities.
- The Falls Surveillance Report© will remain under the supervision of BCIRPU and will be available to long-term care facilities on a cost-recovery basis.

6.0 Participation of the National and Regional Committees

The major stakeholders in this project were front line practitioners form Nursing, Medicine, Physiotherapy, Occupational Therapy and Long-term Care Managers. Accordingly, a National Advisory Committee and Regional Steering Committees comprised of professionals and seniors with strong connections to the
community and to local and national seniors’ associations, provided direction for the project. In addition, members of the committees included representatives of Continuing Care Agencies, Long-term Care Facilities, Residential Facility Licensing, National Nursing Associations, National Dietitians Association and individuals with expertise in falls prevention in facilities from a variety of health care disciplines including nursing, dietetics, geriatric medicine, and psychology. Members of the National Advisory Committee were:

- Executive committee (E. Gallagher, V. Scott, J. Kozak, S. Johnson, M. Brussoni & P. Thomas)
- Jennette Toews, Division of Aging and Seniors, Health Canada, Ex Officio member
- Dr. Taylor Alexander, President, CEO, Canadian Association of Community Care
- Sue Calthrope (senior), Vancouver, BC, Senior Citizen’s Councilor Program for the Ministry of Health Services; and former member of the Office for Seniors Committee for the International Year of Older Persons; member of Vancouver Cross Cultural Seniors’ Society and West Side Seniors’ Action Network
- Darlene Cook, Heath Policy Researcher, Canadian Healthcare Association
- Dr. William Dalziell, Canadian Geriatrics Society
- Lorna Guse, Nursing Policy, Canadian Nurses Association
- Judy Jenkins, Regional Executive Director, Dietitians of Canada, Atlantic
- Darene Toal-Sullivan, CAOT Director of Professional Practice, Canadian Association of Occupational Therapists

In addition, a Steering Committee in each region brought in representation from other facilities in the region with an interest in conducting similar falls prevention activities in their institutions as well representatives from regional organizations with a jurisdiction for safety of LTC residents.

A local working group in each participating site with representation from residents and their family members, and facility staff oversaw the implementation of the program. This local working group was facilitated and guided by an onsite coordinator at each site. Having an onsite coordinator was a key element to the success of including residents, their family members and staff not only in the participation of the local working groups, but in the ongoing efforts that were needed for surveillance and intervention. Onsite coordinators creatively encouraged participation, actively organizing onsite efforts to encourage commitment and involvement by all participants at the site level. In addition, the onsite coordinators provided the best means of communication with the executive committee, providing monthly reports and giving immediate feedback to challenges as they emerged.

7.0 Partnerships and Intersectoral Collaboration

The most significant partnership that took place was that between three Universities, stretching from one coast of the country to the other. The PI’s met on a regular basis, by teleconference, e-mail and in person, to plan and carry out this project. Dr. Scott played a leadership role in communicating and directing all aspects of implementing the surveillance tool, and provided linkages to the data experts at BCIRPU. She also supervised all aspects of the onsite data collection and training for the three BC sites. Dr. Marianna Brussoni, Associate Director of BCIRPU, oversaw the administrative details and management of the Provincial funding budget. Dr. Gallagher and Dr. Thomas saw to the administrative details of managing the National funding budget, submitting quarterly reports, setting up the meetings and agendas. Dr. Johnson and Dr. Kozak supervised their respective sites and, as well, Dr. Kozak organized the data collection for the reliability testing of the instrument.
For the first upward amendment, a meeting was held of key stakeholders in Ottawa. This meeting was productive in presenting preliminary findings of the project and identifying strategies for dissemination of the final products. Table 2 lists the persons in attendance at the meeting.

<table>
<thead>
<tr>
<th>Name</th>
<th>Affiliation</th>
<th>Name</th>
<th>Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vicky Scott</td>
<td>BCIRPU, University of Victoria, UBC</td>
<td>Emile Therien</td>
<td>Canada Safety Council</td>
</tr>
<tr>
<td>Elaine Gallagher</td>
<td>University of Victoria</td>
<td>Ethel Archard</td>
<td>Canada Safety Council</td>
</tr>
<tr>
<td>Jean Kozak</td>
<td>Research Health Services University of Ottawa</td>
<td>Nancy Edwards</td>
<td>School of Nursing, University of Ottawa</td>
</tr>
<tr>
<td>Ian Pike</td>
<td>BCIRPU Director</td>
<td>Kathleen Holdway</td>
<td>School of Nursing, University of Ottawa</td>
</tr>
<tr>
<td>Shanthi Johnson</td>
<td>Acadia University</td>
<td>Louis Rodrique</td>
<td>Canada Mortgage and Housing Corporation</td>
</tr>
<tr>
<td>Jennette Toews</td>
<td>HC</td>
<td>Faranak Aminzadeh</td>
<td>School of Nursing, University of Ottawa</td>
</tr>
<tr>
<td>Sylvia Ralphs-Thibodeau</td>
<td>School of Nursing, University of Ottawa</td>
<td>Dr Leslie Dubinsky</td>
<td>Veterans Affairs Canada</td>
</tr>
<tr>
<td>Darene Toal-Sullivan</td>
<td>CAOT</td>
<td>Anne Marie Pellerin</td>
<td>Veterans Affairs Canada</td>
</tr>
<tr>
<td>Judy Jenkins</td>
<td>Dietitians of Canada</td>
<td>Judi Newnhamn</td>
<td>Veterans Affairs Canada</td>
</tr>
<tr>
<td>Lorna Guse</td>
<td>Canadian Nurses Association</td>
<td>Darlene Cook</td>
<td>Canadian Healthcare Association</td>
</tr>
<tr>
<td>Sue Calthrope</td>
<td>Senior Citizen's Counselor Volunteer Program</td>
<td>Cathy Bennett</td>
<td>HC Intradepartmental Injury Prevention Working Group</td>
</tr>
<tr>
<td>Taylor Alexander</td>
<td>Canadian Association for Community Care</td>
<td>Cynthia St. Pierre</td>
<td>HC Intradepartmental Injury Prevention Working Group</td>
</tr>
<tr>
<td>Kathy Belton</td>
<td>HC Intradepartmental Injury Prevention Working Group</td>
<td>Morag Mackay</td>
<td>HC Intradepartmental Injury Prevention Working Group</td>
</tr>
<tr>
<td>Carla Wells, RN, MN, GNC (C)</td>
<td>CGNA</td>
<td>Daryl Rock</td>
<td>Ontario Neurotrauma Foundation</td>
</tr>
</tbody>
</table>

Collaboration also took place at the site level. The steering committees were diverse and built on local strengths and human resources. Dr. Johnson provided a rich description of the way the Nova Scotia site committee operated. It is included here to illustrate the richness of the onsite partnerships. The process was similar at the other four sites.
The onsite falls coordinator in conjunction with the Wolfville Nursing Home (WNH) management team and Dr. Shanthi Johnson selected the members of the onsite falls committee. This group consisted of one RN (the coordinator), one LPN, one physio aide, two PCW, one resident, and one family member. They met monthly and discussed various aspects of the project, as it pertained to WNH. The initiation of the project included an in-service for RN’s/LPN’s conducted by Dr. Shanthi Johnson, introducing the nature of the project, as well as an education session regarding the proper use and completion of the Falls Surveillance Report. A regional steering committee was also set up for this project, comprised of 16 representatives from a variety of sectors including a geriatrician, administrators, directors of care/nursing, dietitian, occupational therapist, and a member of the Nova Scotia department of health (see attached for a list). They served as a consultative advisory body for the project.

The falls prevention project at WNH was a collaborative venture with active involvement of all staff and residents. The Stepping In-Long Term Care Collaborative Falls Prevention Project officially started November 4, 2002. The “Kick Off” included a Falls Prevention Day with posters promoting falls prevention, buttons designed by the onsite committee, and light refreshments for staff on all shifts and the residents. This proved to be a great success because it generated much dialogue with all members of the WNH team. This was followed by an article in our local newspaper, “The Advertiser.” The article included interviews with the onsite coordinator, Dr. Shanthi Johnson, and Monica Dhillon, the DOC at WNH. After the initial surveillance phase of the project, the Nova Scotia site also have a chance to participate in the “Stepping In”- LTC Falls Prevention Workshop held in Vancouver, B.C. and this venue provided a great opportunity for networking with the other participants in the project.

WNH and its staff proved to be very proactive in its approach to falls prevention. Scatter mats were eliminated from the rooms. Some changes in the admission policy were implemented at WNH. For example, the facility decided that no furniture can be brought to the WNH without prior assessment by physiotherapist and occupational therapist. The WNH purchased a number of hi-lo beds. The new Director of Care, Charlene Wiseman, has undertaken the task of continuing the work accomplished by the project by putting it under the umbrella of an existing accreditation group that would channel any ideas/concerns regarding falls to the appropriate parties.

The final meeting of the onsite committee was held on March 22, 2004 where certificates of recognition were provided to each of the onsite falls committee members. Also, Dr. Shanthi Johnson organized a Falls Awareness Day on April 15, 2004 to recognize the commitment of the management and staff of the Wolfville Nursing Home during the project and to mark the official end of the project. The event was covered by the local paper.

8.0 Results

There are a number of results or outcomes of this project, they include:

A. Falls Surveillance Tool
B. Falls Surveillance User Manual
The papers are in draft form and are not for circulation or use at the time of this report. Highlights of the findings concerning falls and injury are presented below, to illustrate the exciting new knowledge gained from the project. Readers are encouraged to review the other four documents for a complete understanding of the project results.

### 8.1 Falls Prevention among Residents of Long-term Care Facilities (Scott et al., in review)

The purpose of the *Stepping In* project was two-fold: 1) to examine the scope and nature of falls and injury among long-term care (LTC) residents using a standardized fall surveillance tool and 2) to test the effectiveness of clinically relevant, evidence-based fall prevention initiative designed and implemented by a collaborative team of falls prevention experts and residential care providers, under the direction of a National and Regional Advisory Committees.

This study employed a prospective design for tracking falls, fallers and injury among long-term care residents over two phases of a 16-month study: surveillance (180 days), training between phases (120 days) and intervention (180 days). Five facilities from three provinces in Canada took part in this project. Facility staff members were trained to track resident and incident circumstances at the time of the fall using a Fall Surveillance Report. Multi-factorial interventions to reduce falls were introduced in the third phase - surveillance/intervention.

Results showed the rate of fall per 1,000 bed-days were 8.4 and 7.8 during surveillance phase and intervention phase respectively. The rate of fallers (those who fell once or more) per 1,000 bed-days was 3.1 and 3.4 respectively. The differences were not statistically significant between the 2 phases. All injurious falls, and a sub set of severe falls (those requiring medical treatment on the site or transferred out for medical treatment), decreased significantly during intervention. A slightly reduction among fall frequency was seen for fallers with 3 or more falls during the intervention phase. Intervention phase results also captured information about the resident characteristics at the time of the fall, location of fall, and activities and environmental factors at the time of fall. Most fallers had one or more health problems apparent at the time of fall, and non-narcotic analgesics were most frequently reported medications taken up to 24 hours prior to the fall for both phases, followed by anti-hypertensives and antipsychotics. For both phases, the leading type of injury due to fall were bruises/abrasions, scrapes/cuts and skin tear. Head/neck was most common body part injured by the fall, followed by arm/hand/wrist and leg/foot.

Results indicate that interventions were successful in reducing the rate of falls and fall-related injuries. Continued use of the Fall Surveillance Report is recommended to track trends and patterns over time and to provide the details needed to implement tailored intervention strategies. However, further examination is needed on the effectiveness of interventions over a longer period of time, with randomized, controlled research design.

### 8.3 Understanding Injuries from Falls in Long Term Care (Scott et al., in review)

One of the goals of this project was to conduct a prospective study to examine the predictors of injurious falls among a convenience sample of long-term care (LTC) residents as part of a larger study on falls prevention within five long-term care facilities. Trained staff used a standardized fall
risk surveillance tool to record fall and fall related injury outcomes over 17-months. During this time 1691 resident falls were reported, of which 32% resulted in injury. This rate is greater than the 25% injury rate found in a study of nursing home residents in Sweden (Sadigh, Reimers, Andersson, & Laflamme, 2004) but lower than studies that found a 40% injury rate among fallers with dementia in a LTC setting (van Doorn et al., 2003) and a 54% injury rate among frail older residents in a LTC setting (Kallin et al., 2002). The 2% fracture rate observed in this sample is at the low end of the range of 2 to 8% generally observed among this population (Luukinen et al., 1994; Norse et al., 1998; Rubenstein et al., 1994; Sadigh, Reimers, Andersson, & Laflamme, 2004). The high rate of fractures among females found in this study is also consistent with findings from research in similar settings that distinguishes between male and female residents (Luukinen et al., 1995).

Bruises/abrasions were the most common type of fall-related injury and the head and neck were the most common injury location. Head injuries are frequently reported as the most common fall-related injury location among LTC residents (Luukinen et al., 1995; Sadigh et al., 2004) and may point to an inability among residents to arrest a fall using their extremities (DeGoede, & Ashton-Miller, 2003). The fact that females in this study were more likely to injure their head and hip in a fall compared to males may point to differences in extremity strength and bone density. This is supported by evidence indicating that older females tend to have weaker quadriceps and knee extension strength compared to male counterparts (Janssen, Samson, Meeuwsen, Duursma, & Verhaar, 2004; Sieri & Beretta, 2004). The greater rates of osteoporosis among females would also explain increased numbers of hip fractures compared to males (Dubey, Koval, & Zuckerman, 1999).

Regression analysis results indicate that resident factors and fall-related incident factors contribute to either an increase in injurious falls or have a protective effect on injury. Two resident factors that were significant risk factors for injury were the use of a brace/prosthetic and age. However, wheelchair use was associated with a decreased risk of injury. Although the ability to ambulate was not found to be a significant predictor of fall injury, residents using a brace/prosthetic likely have impaired gait and balance which make ambulation challenging. Lower extremity weakness is often indicated as a factor in injurious falls and risk has been shown to increase proportionally with more balance and gait problems (Rubenstein, Josephson & Robbins, 1994; Rubenstein, Powers & Maclean, 2001; Tinetti, 1987). Increased age is likely a proxy for more chronic health problems that are known to be associated with increased risk of fall injury, such as dementia, urinary frequency and mobility impairments (Myers et al., 1991; Rubenstein, Josephson & Robbins, 1994). The finding that falls among residents who normally use a wheelchair were found to be protective of injury in this study is consistent with the lower rate of injurious falls among non-ambulatory residents compared to ambulatory residents documented elsewhere (Thapa et al., 1996).

Residents in this study who used anti-anxiety and/or narcotic analgesics in the twenty-four hours before the fall were at increased risk of injury. These findings differ from those by Myers et al. (1991), who report that analgesic and sedative use among institutionalized persons are associated with falls but not injury, and that hypotensive medication use was the only medication found to be significantly associated with fall-related injury. The contribution of the use of narcotic analgesics to fall-related injuries may be a combination of the side effects of the medication and the contribution of the underlying cause of the pain for which the medication is being prescribed.

There were three environment factors associated with an increased risk of injury: uneven surface, clothing that is long or obstructive and being pushed by another resident. As advancing age corresponds with a decline in response time and lower-extremity weakness (DeGoede & Ashton-Miller, 2003; Tinetti, 1987), the capacity for older residents to effectively recover from being pushed,
or from tripping over uneven surfaces or obstructive clothing, is jeopardized. The contribution of uneven surfaces may also be a factor of the age of the facilities and lack of regular maintenance. Two environment factors found to be associated with a decreased risk of injury that appear to be counter intuitive are no or low lighting and a new arrangement of objects. One would expect that a new arrangement of objects and insufficient lighting would increase the risk of fall-related injury. However, most falls with injury occurring under conditions of no or low light would occur at night (Jensen, Lundin-Olsen, Neyberg, & Gustafson, 2002), and it is possible that many of these falls involved sliding off the bed, which would result in a low-impact fall. Less impact from a fall may also occur if residents take greater care and walk more slowly than normal due to poor lighting or when they know that there are new arrangements of objects. However, these are only speculations and further research on lighting and new arrangement of objects is warranted.

8.3 Implications for Prevention

Due to the multi-factorial nature of falls and related injuries, effective interventions are those that are tailored to the individual’s risk profile (Rubenstein, Josephson, & Robbins, 1994). This is best accomplished through a fall risk assessment on admission, with regular updates; on going falls surveillance that details the circumstances and activity at the time of the fall; and post-fall evaluation to create tailored prevention plans that utilize a multidisciplinary intervention approach. Based on the fall injury risks identified in this study; special attention should be given to assessment balance and gait problems and use of obstructive clothing among older, ambulatory residents. Attention should also be given to facility-wide contribution factors, such as the role of uneven surfaces, contributors to resident aggression that results in pushing of other residents and the use of medications that have been shown to increase the risk of falling with injury. Thus the project has the strong potential to influence biological, social, behavioural and environmental influences on health.

8.4 Future Activities and Dissemination

A range of future activities has emerged from the project. One of these is the future uptake of the surveillance tool and User Guide. This will be coordinated by the BCIRPU and will be available on a cost-recovery basis. At present, a commitment has been expressed by the Central Interior health Authority of BC to introduce the tool and on-site evaluation program at nine sites in the East Kootenays with a plan to adopt this across the region. Secondly, the project will be presented in papers at the Canadian Injury Conference in Halifax in November, 2005. Thirdly, Jennette Toews of the Canada Health Agency will be writing a paper describing the project for an article in a rehabilitation journal. Finally, the two attached draft papers will be revised and submitted for use to the Canada Health Agency and for publication in scientific journals.

9.0 Project Evaluation

9.1 Introduction

This section presents the final evaluation of the Stepping In: Long-Term Care Collaborative Falls Prevention Project, funded under Health Canada’s Population Health Fund. The goal of this project was to develop a surveillance tool that would gather meaningful information regarding incidence of falls and injuries in long-term care facilities and to monitor how well the tool enabled facilities to develop strategies to reduce falls and fall-related injuries among their residents, with the purpose to
reduce falls and fall-related injuries among residents of Canadian Long Term Care Facilities through positive, collaborative action by those who are at risk and those who are responsible for their care and safety. The project was implemented in three long-term care facilities - one each in Nova Scotia, Ontario, and British Columbia. Two additional facilities in BC, funded by the provincial government, were included in this evaluation as their process paralleled that of the three federally funded projects.

This final evaluation report covers the period from June 2002 to March 2005, with an emphasis on the period since the Interim Evaluation Report, October 2003 to March 2005, including the intervention phase of data collection, the development of an onsite reporting system, the collection and analysis of CIHI-DAD falls injury data, and the dissemination of project results. The evaluation uses a participatory approach because the methodology of such an approach fits well with the project’s purpose of developing a collaborative process for addressing falls and fall-related injury prevention.

The evaluation is based upon feedback from project stakeholders, including interviews and questionnaires, upon reviews of project documents, including regular reports, meeting minutes and email exchanges, and upon participant-observation field notes, including the notes taken at both face-to-face and teleconference meetings and the Clinical Experience of Falls Prevention Pre-Conference Workshop held on October 21, 2004 in Victoria, British Columbia at the Canadian Association on Gerontology Annual Scientific and Education Meeting. The results of this evaluation build on the Interim Evaluation Report, building on the 12 recommendations made in that report as well as the goals of the four upward amendments approved since that report.

9.2 Goals of the Project

9.2.1 Deliverables

The major tasks of this project are outlined in Table 3. Outcomes of these deliverables are also outlined in the table. These tasks reflect the original project plan as well as the goals that were set during the Interim Evaluation Process and the subsequent upward amendments. This final report will concentrate on the tasks delivered during the period of October 2003 and March 2005.
TABLE 3: Deliverables Summary for 'Stepping In': Long-term Care Collaborative Falls Prevention Project  
(June 19, 2002 to March 31, 2005)

<table>
<thead>
<tr>
<th>Task To Be Completed</th>
<th>Completion of Task</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Surveillance Tool developed and refined</td>
<td>Tool was completed for October 15, 2002 kick-off, and refined after May 2003 workshop.</td>
</tr>
<tr>
<td>2 Guidelines developed and refined</td>
<td>Guidelines were established with ongoing refinement at individual facilities.</td>
</tr>
<tr>
<td>3 Facility staff trained in use of tool</td>
<td>Training sessions were provided at all facilities.</td>
</tr>
<tr>
<td>4 Data collected</td>
<td>Data collection was constrained by challenges outlined in report – however, data was collected and was yielding usable reports.</td>
</tr>
<tr>
<td>5 Data used to refine tool</td>
<td>Changes were made to surveillance tool after review of surveillance phase data and feedback from the mid-term workshop.</td>
</tr>
<tr>
<td>6 Data collected during intervention phase</td>
<td>Data collection went more smoothly in the intervention phase with less challenges and setbacks. 180 days of data was collected at all sites.</td>
</tr>
<tr>
<td>7 Intervention data collected during intervention phase</td>
<td>A method of recording interventions was developed by the executive committee. All sites recorded interventions in a timely and thorough manner. Interventions were analyzed and incorporated into the final report.</td>
</tr>
<tr>
<td>8 Final data analysis and reliability and validity tests used to refine tool</td>
<td>A revision of the tool was completed in light of the final data analysis and the reliability and validity tests.</td>
</tr>
<tr>
<td>9 Onsite reporting system created</td>
<td>One of the nationally funded facilities and one of the provincially funded facilities served as test sites for the reporting system. A preliminary system was developed and put into place in October 2004.</td>
</tr>
<tr>
<td>10 Onsite reporting system tested</td>
<td>Feedback from the preliminary system was given and used to further develop the onsite reporting system.</td>
</tr>
<tr>
<td>11 Onsite reporting system refined with accompanying manual</td>
<td>The system was refined and completed with manual in February 2005.</td>
</tr>
</tbody>
</table>
**TABLE 3: Deliverables Summary for 'Stepping In": Long-term Care Collaborative Falls Prevention Project**
(June 19, 2002 to March 31, 2005)

<table>
<thead>
<tr>
<th></th>
<th>Task To Be Completed</th>
<th>Completion of Task</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Retrieve and review data related on fall-related injuries among person aged 65 years and older from the Canadian Institute for Health Information (CIHI) Discharge Abstract Database (DAD) from 1998/99 through 2002/03</td>
<td>Retrieval of data was delayed due to problems at CIHI. Data analysis was planned for early April, with a draft to be submitted by late April and a final report to be submitted by the end of May 2005.</td>
</tr>
<tr>
<td>2</td>
<td>Support organization in place</td>
<td>Onsite coordinators were hired, regional and national advisory committees were recruited with meetings conducted. The establishment of Falls teams has been more challenging at some sites than others, resulting in alternative methods to obtain stakeholder input.</td>
</tr>
<tr>
<td>3</td>
<td>Horizontal collaboration established and maintained</td>
<td>Good communication has been established at each of the three levels of the project.</td>
</tr>
<tr>
<td>4</td>
<td>Vertical collaboration established and maintained</td>
<td>Some challenges were outlined in the Interim Report, but overall communication between levels was established and continued throughout the project.</td>
</tr>
<tr>
<td>5</td>
<td>Continuous collaboration was maintained throughout the intervention phase</td>
<td>Communication levels continued to remain high with regular reporting from onsite coordinators and regular reports to advisory committees on both regional and national levels. E-mail and teleconferences continued to be the primary and effective means of communication. In addition, onsite visits were made by falls advisors to provide needed support to local staff in creating interventions.</td>
</tr>
<tr>
<td>6</td>
<td>Ongoing surveillance of falls at the facility level should be sustainable after the project.</td>
<td>Each of the facilities involved in the project found a way to sustain surveillance after the project is complete though they each found different ways of doing so.</td>
</tr>
<tr>
<td>1</td>
<td>Data analyzed and results provided as requested to facilities for use in strategy development</td>
<td>Preliminary data was presented at midterm workshop. Delays in data collection experienced in the Surveillance Phase were resolved successfully with lessons learned and applied to the Intervention Phase.</td>
</tr>
<tr>
<td>Task To Be Completed</td>
<td>Completion of Task</td>
<td></td>
</tr>
<tr>
<td>----------------------</td>
<td>--------------------</td>
<td></td>
</tr>
<tr>
<td>2 Literature Review provided to facilities to assist in strategy development</td>
<td>Literature Review was provided to facilities, organized at the Interim Workshop and throughout the Intervention Phase for maximum use in strategy preparation.</td>
<td></td>
</tr>
<tr>
<td>3 Preliminary results of project to be presented to key stakeholders in meeting in Ottawa.</td>
<td>Meeting was May 21, 2004 with 14 attendees.</td>
<td></td>
</tr>
<tr>
<td>4 Conduct a pre-conference workshop at the annual meeting of the Canadian Association on Gerontology (CAG).</td>
<td>The Pre-Conference Workshop was held on October 21, 2004 with 51 participants.</td>
<td></td>
</tr>
<tr>
<td>5 Conduct a regular session at the annual meeting of Canadian Association on Gerontology (CAG) presenting project data.</td>
<td>As session called “Falls in Long term Care. Report on the Stepping In Falls prevention Project.” was conducted on October 23, 2004 with approximately 45 people attending.</td>
<td></td>
</tr>
<tr>
<td>6 Publish report(s) based upon project data in peer-reviewed journals</td>
<td>Reports are being written and will be submitted for publication in 2005.</td>
<td></td>
</tr>
<tr>
<td>7 Provide a report to Health Canada on the upward amendments approved on March 15, 2004 regarding onsite reporting and the Pre-conference workshop</td>
<td>An interim report was submitted in January 2005. A final report regarding the upward amendment will be provided with the final project report.</td>
<td></td>
</tr>
<tr>
<td>8 Provide a comprehensive final report on the results of the project to Health Canada</td>
<td>Final report will be completed and submitted in March 2005.</td>
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</tbody>
</table>

**9.2.2 Recommendations from Interim Report**

Based upon the interim evaluation, the following were recommendations and expectations for the Intervention Phase of data collection and the dissemination of project results. These recommendations will be addressed as specific goals of the project and evaluated for what we did and what we learned.

1. Continue to rely upon e-mail and teleconference communications to ensure that all stakeholders in this project are kept informed.

2. Gain a clear understanding of the ways in which data collection at the sites has differed in order to interpret data at the end of the intervention phase. This includes differences in collection of data, interpreting guidelines, interpreting changes on forms, the timing of collection, facility characteristics, settings, the coordinator’s relationships to facilities, disciplinary backgrounds of coordinators and communication efforts at all levels. These factors should especially be kept in mind when interpreting cross-site data analysis.
3. Test the reliability and validity of the surveillance tool with test results and the implications of the test results being addressed in the Final Report.

4. Continue collecting surveillance data during intervention phase so that comparisons can be made and changes in falls rates can be observed after each intervention.

5. Collect intervention data so that the timing and type of intervention will be available to interpret changes in falls incidences.

6. Clarify how the surveillance form should be disseminated at the end of the project. If funding is insufficient to provide a user-friendly version that can be implemented without oversight, then consideration should be given to seeking such funds as a follow-up project to the current one.

7. Seek to use fully national and regional advisory committees during the intervention phase, especially in regards to workable prevention strategies and dissemination of results of the study.

8. Provide falls prevention strategy advice as requested to assist with effective interventions during this phase.

9. Establish protocols that allow for surveillance to be ongoing at the sites involved in this study.

10. Make a final report of data analysis that addresses facility data, cross-site findings and recommendations for changes in the surveillance tool.

11. Make a final evaluation that addresses impacts of the project and lessons learned from the project to be included in the Final Report.

12. Write scientific papers to be published in academic, peer-reviewed journals and presented at conferences and workshops.

**9.2.3 Upward Amendments**

In addition to the 12 goals outlined above, four goals from three upward amendments were approved to further the development of the Falls Surveillance Report© and the dissemination of project results:

1. A face-to-face meeting was to be held with major stakeholders in long-term care for the purpose of disseminating preliminary project results and receiving feedback regarding the Falls Surveillance Report©.

2. A pre-conference workshop at the 2004 Canadian Association on Gerontology’s Annual Scientific and Educational Meeting was to be organized to reach out to practitioners at long-term care facilities.

3. An onsite reporting system was to be developed to allow for ongoing use of the Falls Surveillance Report© without the assistance of offsite data analysis services. The express goal of this system is to encourage ongoing surveillance and intervention at long-term care facilities to encourage effective improvement in falls and fall-injury prevention strategies.

4. Using the Canadian Institutes of Health Information (CIHI) Discharge Abstract Database (DAD) in comparison with the data collected from the five facilities in this project, epidemiological data related to falls and fall-related injuries among seniors who reside in long-term care (LTC) institutional settings across Canada were to be collected, analyzed and synthesized.

The four goals of these upward amendments will be addressed as specific goals of the project and evaluated for what we did and what we learned.
9.3 Brief Overview

All of the 12 recommendations and all four upward amendment goals were addressed successfully by the end of the project. This evaluation will outline how each of these recommendations were met, what positive outcomes were achieved and what lessons were learned. Because detailed descriptions of the project exist both in the Interim Evaluation Report (June 2002 to September 2003), in the Phase Three Upward Amendments Report (February 2005) and in the Final Project Report, this evaluation will assume knowledge of the organizational structure of the project, the final revised timeline of the project and the purpose of the project.

9.4 Description of Evaluation

The final evaluation is based upon feedback from project stakeholders, including focus groups, interviews and questionnaires, upon reviews of project documents, including regular reports, meeting minutes and e-mail exchanges, and upon participant-observation field notes, including notes taken at face-to-face meetings and teleconferences. This final evaluation continued to utilize the principles of the participatory approach as outlined in the Guide to Project Evaluation published by Health Canada.

The first part of the evaluation will address what we did and what we learned from the tasks outlined in the twelve recommendations the goals of the four upward amendments. The second part of the evaluation will consider what impact this project has had by looking at the difference we made. Finally, the last part of the evaluation will consider possibilities of what can be built upon the successes and lessons learned from this project.

9.5 Evaluation Results—What We Did and What We Learned

9.5.1 Communications

E-mail and teleconference communication continued among all levels of the project stakeholders. This communication helped ensure that the collaborative “bottom-up” nature of the project stayed focused. All site coordinators reported that the regional falls advisors provided support needed to successfully complete the intervention phase and to further the goals of their respective sites in addressing falls and falls-injury prevention beyond the life of this project. The fact that each of the sites chose different post-project approaches to continuing their surveillance and intervention efforts supports the wisdom of the collaborative, community-based approach taken by this project (see paragraph 5.9 below for further details).

9.5.2 Cross-Site Data Analysis

Intervention phase data collection included specific descriptions of intervention strategies and methodologies taken at sites. (See 5.5 below for a full description of this process.) In addition to providing useful monitoring of these efforts, this qualitative data provided a clearer understanding of the processes used by each site to address what was learned both from the data collected during the surveillance phase and from the educational support provided to site personnel by falls advisors and site coordinators. These data also assisted researchers in understanding the differences among sites and allowed for a fuller, richer interpretation of data in final reports presented to sites, at conferences, in published reports and the final project report. This type of data collection was an important piece
of ensuring the success of the collaborative approach as an important component in using data collected to its highest advantage.

**9.5.3 Reliability and Validity of Falls Surveillance Report**

Both the reliability and the validity of the tool were supported during the intervention phase through acceptable research practices. These tests (reported in the final project report and in research presentations and publications) were useful as a means to ensure the quality of the data collected during the project. In addition, the feedback provided helped improve the surveillance tool. In future potential developments of the Falls Surveillance Report, it would make sense to include more powerful reliability tests of the tool that might be made possible in a larger, randomized, controlled study. The tests conducted during this project were quite encouraging regarding both reliability and validity of the instrument and the data collected by the instrument, giving greater confidence to the results reported. However, the nature of the project limited that confidence because more powerful tools were not possible in this kind of a study.

**9.5.4 Intervention Phase Falls Data Collection**

A full 180 days of Intervention Phase surveillance data was collected at each site. This data provided both cross-phase and cross-site comparisons. Future studies should consider longer periods of pre/post intervention surveillance to allow for differences in falls rates over a year. The possibility of designing a controlled study with some form of randomized design has been raised by the researchers as a way to strengthen the integrity of the Falls Surveillance Report and to provide better data. During the surveillance-only phase of this project, it was difficult for staff to refrain from creating specific interventions as they became aware of contributing factors. It would be inaccurate to assert that the surveillance-only phase and the intervention phase were distinct data collection periods in which the former was pure observation and the latter were the only time interventions were created and used. There are also significant ethical issues involved in establishing a pure “no-intervention” policy. A tension exists between scientific research processes and the goal of providing quality care to residents of long-term care facilities. Future research in this area will do well to duplicate the collaborative, community-based approach taken in this project to account for staff interventions and for the ethic dilemmas faced in any controlled research approach to surveillance and intervention.

**9.5.5 Intervention Phase Data Collection**

As mentioned in 5.2, intervention data was collected during the final phase of surveillance data collection. See Table 2 below for the format used to record these interventions. Though not provided for explicitly in the original project design, the intervention data provided qualitative information to better understand what steps were taken at each site to address issues raised from the data collected during the surveillance phase as well as ongoing issues identified during the intervention phase. The collection of intervention data also provided ongoing and fairly immediate feedback that allowed regional falls prevention advisors to identify areas of concern that needed attention. This made better use of their time and knowledge and supported the collaborative and “bottom-up nature of the project. It should be noted that this additional data collection added relatively little cost to the project as it was well-integrated into the existing organization and reporting system of the project, yet it clearly added a great deal of value to the success of the project, the ability to better understand the lessons learned from the project, the ongoing feedback needed in a collaborative organization the ability to better interpret the results of the project. Such an addition to the project design was possible because of the flexibility and responsiveness of a community-based approach taken in this project.
9.5.6 Dissemination of Falls Surveillance Report

A great deal of discussion has been held among the principal investigators and the stakeholders regarding the disposition of the Falls Surveillance Report after this project. Dissemination of the tool and the results of this project have been and will be accomplished in several ways. The addition of the upward amendments made it possible to create awareness of the results and the tool among all levels of stakeholders and to provide an avenue for long-term care facilities to use the tool onsite without the need of additional data analysis support. However, a mechanism for how new onsite facilities would be able to obtain the tool and begin using it remained a matter of concern as the executive committee anticipated the end of the project. As the project closes, the plan is for the final tool with onsite reporting capabilities to be made available province-wide through the British Columbia Injury Research and Prevention Unit (BCIRPU) on a cost recovery basis to licensed LTC facilities. More funding will be needed to help determine the long-term utility of the onsite reporting, but no immediate plans have been made to apply for this funding. More testing of the tool is needed before national distribution can be considered.

9.5.7 Advisory Committees

Use of advisory committees has been an integral part of the project. Through teleconferences, e-mailing, phone conversations and face-to-face meetings, project advisors have had the surveillance tool and the dissemination of results. In addition, project advisory committee members have shared the vision and results of this project with their constituents, thus increasing the impact of the project. One lesson learned regarding the use of these committees was that teleconferences would be more useful if written progress reports were provided and reviewed prior to the meetings. Because so many sites were involved and the work at these sites were complex and detailed, reports presented during meetings tended to too long, leaving little time for discussion at the end before many committee members had to leave the teleconference due to other obligations. To the credit of the executive committee, this issue was addressed directly, allowing for better and more productive use of advisory committees as the project progressed.

9.5.8 Falls Prevention Strategy Advice

Regional Falls Prevention Advisors and their onsite coordinators were effective in responding to the ongoing needs of facilities as they addressed issues identified through the surveillance process. Flexibility in responses included the provision of appropriate education in interventions, onsite visits and workshops and establishing connections between site personnel and appropriate resources. It should be noted that a distinct advantage was present in British Columbia because the Falls Prevention Advisor also held the role of Senior Advisor on Falls Prevention for the province. The connection this role offered to a comprehensive falls prevention program was a valuable asset to these sites that was more difficult to achieve in the other two regions. Some consideration should be given to finding ways to encourage similar coordinators in other regions as part of an effective strategy to reduce falls and fall-related injuries among all seniors.

9.5.9 Ongoing Surveillance Protocols

All five sites have established some ongoing method to continue addressing the factors that contribute to falls and fall-related injuries as well as ongoing methods of developing effective interventions to address identified issues. There have been significant differences in these methods.
Wolfville Nursing Home, Wolfville, NS continues to use the Falls Surveillance Report© as a hard copy report with regular reviews to aid in strategy planning for preventative interventions. They are not continuing electronic collection of data or analysis.

Residence St. Louis, Ottawa, ON continues to keep track of falls with a comprehensive tool, but they use a tool that is compatible with existing electronic reporting system rather than the Falls Surveillance Report. They credit the project with improving awareness at the site of falls and falls injury and influencing the reporting system.

Shorncliff Lodge, Sechelt, BC is a test site for the onsite reporting system for the improved Falls Surveillance Report©. They continue to collect data and analyze to improve intervention strategies designed to reduce falls and falls injuries. They have been successful in pilot testing the Access program for the automated reporting of falls using the Falls Surveillance Report© and are seeing a downward trend in falls. A summary report on the reduction of falls and fall injuries over the time of testing the automated reporting system is available in Appendix B. This site is showing a downward trend in falls.

Green Home, Cranbrook, BC is a test site for the onsite reporting system for the improved Falls Surveillance Report©. They continue to collect data and analyze to improve intervention strategies designed to reduce falls and falls injuries. They have expanded the use of the Falls Surveillance Report© to seven other sites in the East Kootenay region and have used the Access software to combine the data from all sites. They’re in the process of testing the onsite automated reporting for the Falls Surveillance Report© in one central location for all eight facilities. The Cranbrook site is reporting a downward trend in falls.

Dunrovin Park Lodge, Quesnel, BC has reported many benefits from the use of the Falls Surveillance Report© and from participation in the project. They use a similar falls surveillance tool but one that is newly mandated by their health region. Their staff reported being disappointed about the change as the Falls Surveillance Report© was more comprehensive and better tailored to falls prevention planning. The project on-site coordinator continues to apply the principles of collaboration in falls prevention planning for this site.

9.5.10 Final Reporting of Data Analysis

Several dissemination opportunities were available to give reports on the data analysis made for this project. To streamline efforts and ensure that comprehensive reporting was accomplished, the executive committee divided up the work among four categories: context of settings, analysis of outcomes, analysis of interventions, and the establishment of the validity and reliability of tool. These four categories were used in parallel in the stakeholders’ meeting in Ottawa, conference presentations, peer-reviewed publication submissions and in the final report made to Health Canada. By coordinating all dissemination efforts in this way, the workload was divided among the executive committee and each dissemination effort built upon the previous one. This was a successful method made possible because of the collaborative nature of this project and the extent to which the principal investigators maintained communication and coordinated efforts during this project.

9.5.11 Final Evaluation

This report meets the goal of providing a final evaluation of the project. The use of a more extensive interim evaluation in lieu of a singular final evaluation allowed for the ability to make adjustments during the final phases of this project. The executive committee was successful in responding to challenges identified during the interim process and this contributed to the successful outcome of the project.
9.5.12 Scientific Results Reporting

As discussed in 6.0, a streamlining of reporting was devised and carried out. Four papers are being written based upon the four categories and will be submitted to appropriate peer-reviewed journals. This will be an important contribution resulting from this project because of the success this project had in reducing falls and fall-related injuries.

9.5.13 Stakeholders Meeting May 2004

Fourteen people attended the May 21 meeting in Ottawa. It was hoped that more would be able to attend and around 25 people were invited. Invitation to the meeting, however, generated interest and established communication with stakeholders in falls prevention and, specifically, in long-term care facilities addressing falls and fall-related injury prevention. Feedback was received from these stakeholders even though they did not attend the meeting. All stakeholder feedback received was valuable in the final revisions of the Falls Surveillance Report© and final analysis of project data. The connections established by holding this meeting are continuing to be nurtured at the end of the project.

9.5.14 CAG Pre-Conference Workshop October 2004

A summary of the evaluation of this workshop is included with this report as an attachment. Fifty-one people attended the October 23 meeting, most of who were front-line clinical workers in long-term care facilities. The full day workshop was broken into four sections. The first morning section involved presentations on the design, implementation and results of the project. The second and final morning session was a presentation by Dr. Steve Castles of UCLA who provided an informative presentation on many aspects of falls prevention for elderly residents of facilities. After lunch, interventions for falls prevention were discussed. Representatives from two of the three federally-funded facilities who traveled to Victoria for the PCW spoke to their experiences during the project and the challenges of implementing interventions and sustainability. The fourth, and final session of the day involved structured small group work. Four case studies were divided among nine groups and each group was asked to work through the questions and then report back to the larger group.

Thirty-seven of those attending provided written feedback in the form of a questionnaire. The response to the workshop was decidedly positive with most questions having 80 to 95 percent of the respondents answering “excellent” or “good” on all questions. All of the participants reported that the written materials provided were “excellent” or “good,” with a number of participants making additional comments regarding the quality of the materials provided. Participants reported that the workshop was useful in helping them think about falls, fall-related injuries, tracking incidences and creating prevention strategies. The only negative comments were that the case studies were too long and repetitive and that there was not enough time to get all the information desired.

9.5.15 Onsite Reporting System

Shorncliff Lodge, Sechelt, BC (federally funded) and Green Home, Cranbrook, BC (provincially funded) are test sites for an onsite automated reporting system using Access software for the reporting of falls by way of the Falls Surveillance Report©. The Cranbrook site has expanded the use of the Falls Surveillance Report© to eight other sites in the East Kootenay region (total of nine sites) and have used the Access software to combine the data from all sites. They are in the process of testing the onsite automated reporting for the Falls Surveillance Report© in one central location for all nine facilities. Both the Sechelt and the Cranbrook site are reporting a downward trend in falls.
Several versions of the onsite automated reporting system have been tested and improved. As the project ended, a user’s manual had been developed and will be distributed. This is also included as an attachment.

A test is being run comparing data from the Sechelt site with the onsite reporting system against the previous data collected from the site that was analyzed through the central database to ensure accuracy of the new system. By all indications, the system will be useful to the sites in furthering their abilities to address system-wide factors contributing to falls and fall-related injuries at their site. All the facilities using the system have reported satisfaction with the ease of both data entry and report generation. The Falls Surveillance Report© and the Access software reporting system will be under the watch of the British Columbia Injuries Research and Prevention Unit (BCIRPU) and will be available to other facilities on a cost-recovery basis.

9.5.16 Review of CIHI-DAD Epidemiological Data

Due to problems at CIHI, the review of the DAD data in comparison with project data has been unavoidably delayed. At the time of this evaluation, an extension has been granted by the Public Health Agency of Canada to allow for this delay. The data is expected to be released from CIHI by mid-April, and a final report submitted to HC by the end of May 2005.

9.6 What Difference We Made

9.6.1 Falls and Falls-Related Injuries Reduced at All Sites

By far the most important contribution made by this project is that falls and fall-related injuries were reduced across all sites. The Falls Surveillance Report© was successfully used to identify and measure system-wide factors contributing to incidences of falls and fall-related injuries and to guide effective interventions that were carried out and subsequently tracked. For many of the sites involved in this project, paying attention to falls and fall-related injuries increased awareness of how complex these factors can become and helped staff become more conscious of these factors at the facility. Stakeholders at the facilities such as residents, family members, volunteers and others concerned with the welfare of residents also became aware of factors contributing to falls and fall-related injuries.

9.6.2 Surveillance Encouraged in Other Places

This project gained considerable attention beyond the five sites involved. In British Columbia, other sites will be using the Falls Surveillance Report© at their facilities. The province is considering incorporating some elements of the tool into its injury incident report required of long-term care facilities. The tool also served to inspire measures used in falls and fall-related injury prevention efforts made by homecare workers for a separate project. In Ontario, at least one other facility has begun investigating the use of a surveillance system because of its connection to Residence Saint Louis.

Because of the encouraging results of this study, all principal investigators involved in this project have had the opportunity to present information regarding the factors and effective intervention strategies for prevention of falls and fall-related injuries at Canadian and international conferences. These principal investigators have increased their interaction with scholars in Europe, the United States and Australia, in part, because of interest generated by this project.
9.6.3 Frontline Clinical Workers Empowered

The collaborative and bottom-up nature of this project was also successful. This had the effect of empowering frontline clinical workers at the sites participating in this project as well as among the fifty-one participants at the pre-conference workshop in October 2004. The attention paid to these clinical workers is an important contribution made by this project because it involved a rarely recognized component of making a difference in institutional settings – that is, the importance of supporting those people who have to implement surveillance and intervention efforts. By recognizing the important contribution made by frontline clinical workers in prevention efforts and by using a community-based model to accomplish this recognition, this project can serve as a model for future efforts of similar bottom-up, collaborative projects.

9.6.4 Stakeholders More Invested in Prevention

Finally, this project has contributed to a growing awareness among a wide variety of stakeholders in British Columbia and across Canada that falls and falls-injuries prevention among seniors is a complex and serious problem that must be addressed effectively to provide more effective healthcare for seniors, to prevent premature deaths among seniors and improve the quality of life for seniors. The success of this project contributes to the success of similar projects because it provides a building block in a comprehensive effort made across Canada with the support of Ministry of Health Services and Health Canada, as well as other federal and provincial agencies.

9.7 What Next?

9.7.1 Validity and Reliability

Developing any kind of ongoing reporting tool to be used in clinical settings requires extensive testing and retesting of that tool to ensure that what is being measured is valid and reliable. The complex nature of factors contributing to falls and falls-prevention among seniors makes such testing and retesting more challenging. In addition, clinical settings dedicated to health care for individuals carry the privilege and burden of providing ongoing care in an ethical and effective manner.

This project was a good first step towards developing an effective surveillance tool, but some questions remain unanswered because of the length and design of this project. A more comprehensive and longer study would further ensure the validity and reliability of the tool and would account for seasonal variations in falls and falls-injuries incidences (something that has been documented in other places). A closer approximation to a randomized experimental design with control sites would also ensure the validity and reliability of the tool, though as noted in other places in this report, the achievement of a pure experimental model would be mitigated by the complexity of the contributing factors and the ethical demands of clinical care.

9.7.2 Automation

Another challenge is that facilities are at various stages of computerization. Most frontline clinical workers are not qualified or compensated for knowledge of computers and electronically generated reporting systems. This is changing, but differences in rural settings versus urban settings can be seen, as well as between larger and smaller facilities. As facilities become more automated, integration into existing reporting systems will be necessary. Future efforts should be made to partner with existing reporting systems, including privately designed systems so that the tool can be
integrated into systems used by larger facilities. This could provide additional funding as well, including private sector partnerships.

9.7.3 Specialization

There is recognition on the part of the principal investigators and stakeholders in this project that a comprehensive reporting system might not be useful as an ongoing tool because of the demands placed upon staff to implement and maintain it, especially in smaller facilities where automated reporting is not in use. Future efforts might examine what kinds of ongoing systems might be developed while using the Falls Surveillance Report© as a diagnostic tool to bring ongoing attention to falls and fall-related injuries prevention, and using it as a potential treatment plan where system-wide rises in falls and fall-related injuries occur. This attention to specialization and developing variations for the reporting system would be quite valuable considering the wide variety of situations possible in long-term care facilities as demonstrated in this project among the five sites.

9.7.4 Role of Provincial Senior Advisor

Finally, in British Columbia, the existence of a Senior Advisor on Falls Prevention contributed considerably to the success of this project. Future efforts should consider ways to encourage and support this role in other provinces and at the federal level. Such an advisor has the knowledge and power to connect efforts such as this project to a larger picture, ensuring such projects reach far beyond the immediate efforts at the pilot sites. This project should be used as a stepping-stone for the development of such advisors so that a coordinated effort can be made among the various falls and fall-related injuries prevention efforts that are taking place across Canada.

9.7.5 Concluding Assessment

Falls and fall-related injuries remain an important issue facing those concerned with the health and well-being of Canadian seniors. This project was a complex, multi-site, national project involving many participants and several years’ commitment. It has considerable value for a relatively small budget. The work done in this project has contributed to the improvement of the lives of Canadian seniors and represents a solid base upon which future efforts can be built.

10.0 Recommendations

10.1 What we have gained from project that we would like to share

This project has demonstrated that evidence-based, system-wide intervention strategies can be effective in reducing falls in long term care facilities. Effective and comprehensive surveillance designed to provide that evidence is a key factor in creating such intervention strategies.

This project has also demonstrated the importance of using a community approach when implementing such comprehensive surveillance and intervention. The bottom-up approach taken proved to be effective because the commitment on the part of front-line workers required to collect accurate surveillance information is considerable. By involving front-line workers from the beginning and providing the support they needed to understand the importance as well as the results of their efforts, ensured their commitment. A top-down approach would not be as effective because it depends upon commitment to the process at all levels in the long term care facility organizational structure.
This project has demonstrated the importance of support from stakeholders both inside and outside the facility. By connecting facilities with each other and with organizations concerned with the wellbeing of seniors, it has been a part of building and enhancing an important network of people committed to reducing falls and fall-related injuries.

**10.2 What we would do differently**

Surveillance was not conducted over a consecutive two-year period allowing for seasonal comparisons of surveillance and intervention periods. This prevented the examination of time as part of the analysis. Since falls have been observed to be seasonal in nature by some studies, the question of falls and falls-injuries reduction by season is an important question to address. The project would have been improved by ensuring full years data for comparison between the surveillance only and the intervention periods.

The lack of a control group limited the generalizability of the results from this project. The ideal would be to have random, controlled experimental groups with at least one site being monitored for falls, not using the Falls Surveillance Report© for surveillance; at least one site being monitored for falls using the Falls Surveillance Report© but no intervention other than normal practice; and at least one site being monitored for falls using the Falls Surveillance Report© and implementing evidence-based intervention. This ideal would be challenging to deliver in real world in some care delivery situations because of the ethical considerations and the changing dynamic in of the provision of care.

It is important to point out that these two design changes would have added considerable costs to the project. Budgetary considerations, not methodological flaws, determined the model chosen for this project. Given these budgetary restraints, this project’s methodology maximized the value of the project and provided considerable advancement in our understanding of effective intervention in long-term care facilities.

**10.3 Comments about project experience**

The community-based approach taken in this project is a model than can be used effectively in evaluation and expansion of a number of treatment situations. While many health considerations lend themselves well to experimental and laboratory approaches, complex phenomena such as the multifaceted and complex factors contributing to falls and fall-related injuries require a balancing of scientific, clinical and organizational considerations. This project stands as an excellent example of what can be accomplished in improvement of treatment when that balance is pursued.
11.0 References


Sieri, T., & Beretta, G. (204). *Fall risk assessment in very old males and females living in nursing homes.* *Disability & Rehabilitation, 26*(12): 718-23.


### Interventions Used in Stepping In: Preventing Falls and Injuries in Long Term Care

<table>
<thead>
<tr>
<th>Initiative</th>
<th>Settings</th>
<th>Targets</th>
<th>Personnel</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjust bed height</td>
<td>Ottawa</td>
<td>All residents</td>
<td>OT, RN</td>
<td>No added cost</td>
</tr>
<tr>
<td>Assess/re-arrange furniture to reduce clutter, remove scatter mats</td>
<td>Ottawa, Wolfville</td>
<td>All residents</td>
<td>OT, RN, PSW Nursing, housekeeping</td>
<td>No Cost</td>
</tr>
<tr>
<td>Use non-glare floor wax</td>
<td>Ottawa, Wolfville</td>
<td>All residents</td>
<td>Janitors, PSW Housekeeping</td>
<td>No added cost</td>
</tr>
<tr>
<td>Color bands across doors to reduce wandering</td>
<td>Wolfville</td>
<td>Dementia residents</td>
<td>Nursing, Housekeeping</td>
<td>No added cost</td>
</tr>
<tr>
<td>Install secure doors to all exits</td>
<td>Wolfville</td>
<td>All confused mobile residents</td>
<td>Management</td>
<td>Cost assessment being carried out</td>
</tr>
<tr>
<td>Conduct environmental scan of building Safety scan of patient rooms</td>
<td>Wolfville, Sechelt</td>
<td>All residents</td>
<td>LTC Committee RN, Onsite coordinator</td>
<td>No added cost</td>
</tr>
<tr>
<td>Renovations of flooring. Removed carpet and installed linoleum</td>
<td>Sechelt</td>
<td>First floor lounge and dining areas</td>
<td>Outside contract</td>
<td>Facility</td>
</tr>
<tr>
<td>- adhesive strips in front of sinks</td>
<td>Sechelt</td>
<td>All residents</td>
<td>Maintenance</td>
<td>Facility</td>
</tr>
<tr>
<td>- brakes on wheels of kitchen carts</td>
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<tr>
<td>- secure TV’s to stands</td>
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<tr>
<td>- raise height of lounge chairs</td>
<td></td>
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<tr>
<td>- direction signs for elevators</td>
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<tr>
<td>- put handicap spot in parking lot</td>
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<tr>
<td>- put rough surface over smooth concrete on sidewalk</td>
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<td></td>
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<tr>
<td>- fill cracks in walkways</td>
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<tr>
<td>- install hook and eye bolt on storage room door</td>
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<td></td>
<td></td>
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<tr>
<td>- enlarge door handles</td>
<td></td>
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</tr>
<tr>
<td>- installed a bed pole</td>
<td>Quesnel</td>
<td>Selected rooms for high risk residents</td>
<td>Maintenance</td>
<td>Within existing facility budget</td>
</tr>
<tr>
<td>- portable ceiling lift &amp; track installed in one room</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individual risk assessments in resident bedroom/bathroom.</td>
<td>Cranbrook</td>
<td>Residents</td>
<td>Residents / Staff Family / Eyes and Ears Team</td>
<td>No added costs</td>
</tr>
<tr>
<td>Assigning an ‘eyes and ears team’ to designated area to assess environmental risks</td>
<td></td>
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</tbody>
</table>
### Appendix A

**Interventions Used in Stepping In: Preventing Falls and Injuries in Long Term Care**

<table>
<thead>
<tr>
<th>Initiative</th>
<th>Settings</th>
<th>Targets</th>
<th>Personnel</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check of ambulatory aids: routine and after a fall</td>
<td>Ottawa</td>
<td>All residents with aids</td>
<td>PT, OT</td>
<td>No added cost</td>
</tr>
<tr>
<td>Use of helmets</td>
<td>Ottawa</td>
<td>Frequent fallers (dementia unit)</td>
<td>OT, RN, PSW</td>
<td>Family purchase</td>
</tr>
<tr>
<td>Hip Protectors</td>
<td>Ottawa, Sechelt</td>
<td>Frequent fallers</td>
<td>OT, RN, PSW</td>
<td>Family purchase - Approx. $200 for 2-3 pairs for each resident</td>
</tr>
<tr>
<td>Anti-slippery socks</td>
<td>Ottawa, Wolfville</td>
<td>Frequent fallers, All Mobile Residents</td>
<td>OT, RN, PSW, All Staff</td>
<td>Family Purchase</td>
</tr>
<tr>
<td>In-service education on use of lifts</td>
<td>Sechelt</td>
<td>All staff</td>
<td>All staff</td>
<td>No added cost</td>
</tr>
<tr>
<td>Hip protectors for Maple House unit</td>
<td>Quesnel</td>
<td>Ambulatory residents with osteoporosis, high risk for falls for whom other fall interventions are not working</td>
<td>Physio and Nursing</td>
<td>$60 per protector. To purchase 6 pairs every 6 months until need is fulfilled. Through physio/ nursing budgets</td>
</tr>
<tr>
<td>Hip protectors</td>
<td>Cranbrook</td>
<td>At risk residents</td>
<td>Physio and Nursing</td>
<td>Health Authority to cover cost</td>
</tr>
<tr>
<td>Statnurs Motion Sensor Alarm System</td>
<td>Cranbrook</td>
<td>At risk residents</td>
<td>All staff</td>
<td>Facility</td>
</tr>
<tr>
<td>Non-slip socks</td>
<td>Quesnel</td>
<td>Any resident who gets up at night unsafely and wears socks to bed</td>
<td>Care aids</td>
<td>Families asked to purchase. Several pairs purchased through physio budget. $6 to 12 / pair of socks</td>
</tr>
<tr>
<td>Falls mats by bedside</td>
<td>Quesnel</td>
<td>Residents who prefer sleeping on the floor</td>
<td>Care aides / Nursing</td>
<td>$150 per mat - purchased by nursing budget</td>
</tr>
</tbody>
</table>
### Falls in Long Term Care

### Appendix A

#### Interventions Used in Stepping In: Preventing Falls and Injuries in Long Term Care

<table>
<thead>
<tr>
<th>Initiative</th>
<th>Settings</th>
<th>Targets</th>
<th>Personnel</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Segufix Prev-2000 Positioning belt</td>
<td>Ottawa</td>
<td>Frequent fallers</td>
<td>OT, RN, PSW</td>
<td>$20</td>
</tr>
<tr>
<td>Call bells: put in bathrooms with yellow cord</td>
<td>Ottawa</td>
<td>All residents</td>
<td>OT, Nursing staff</td>
<td>Under $5</td>
</tr>
<tr>
<td>Personal alarm attached to clothes</td>
<td>Ottawa</td>
<td>Frequent fallers</td>
<td>OT, RN, PSW</td>
<td>Approx $10</td>
</tr>
<tr>
<td>Tabs alarm on bed/chair</td>
<td>Ottawa</td>
<td>Frequent fallers</td>
<td>OT, Nursing</td>
<td>$300-$500 Purchased by family</td>
</tr>
<tr>
<td>Motion detector</td>
<td>Ottawa</td>
<td>Frequent fallers</td>
<td>OT, Nursing</td>
<td>Purchased by family</td>
</tr>
<tr>
<td>Encourage frequent family visits, use of sitter</td>
<td>Ottawa</td>
<td>Frequent fallers</td>
<td>Family, Sitters</td>
<td>No cost</td>
</tr>
<tr>
<td>Mechanical lifts</td>
<td>Ottawa</td>
<td>Non-ambulatory</td>
<td>RN, PSW</td>
<td>Approx $2000</td>
</tr>
<tr>
<td>Assess safety of beds</td>
<td>Wolfville</td>
<td>Mobile confused residents</td>
<td>Management, RN, LPN, PCW</td>
<td>Assessing cost of new bed options</td>
</tr>
<tr>
<td>Survey for staff, family and residents re: opinions on restraints, surveillance tools, hip protectors, ideas about fall prevention</td>
<td>Quesnel</td>
<td>All staff, family and residents</td>
<td>Falls coordinator</td>
<td>No added cost</td>
</tr>
<tr>
<td>Identified clarification needs of Restraint Policy for all staff, residents, families, and other HCT members</td>
<td>Cranbrook</td>
<td>Facility manager</td>
<td>Falls team</td>
<td>No added cost</td>
</tr>
<tr>
<td>Initiative</td>
<td>Settings</td>
<td>Targets</td>
<td>Personnel</td>
<td>Cost</td>
</tr>
<tr>
<td>----------------------------------------------------------------------------</td>
<td>----------------</td>
<td>-------------------------------------------------------------------------</td>
<td>---------------------------------------</td>
<td>-------------------------------------</td>
</tr>
<tr>
<td>Fall risk education and supervision</td>
<td>Ottawa</td>
<td>All frequent fallers</td>
<td>OT, RN, PSW</td>
<td>No added cost</td>
</tr>
<tr>
<td>Bathroom scheduling</td>
<td>Ottawa</td>
<td>All frequent fallers</td>
<td>OT, RN, PSW</td>
<td>No added cost</td>
</tr>
<tr>
<td>Snoezelen relaxation training</td>
<td>Ottawa</td>
<td>All frequent fallers</td>
<td>OT, RN, PSW</td>
<td>Approx $200</td>
</tr>
<tr>
<td>Fall risk assessment on admission, condition change or after a fall</td>
<td>Ottawa</td>
<td>All residents</td>
<td>OT, RN</td>
<td>No added cost</td>
</tr>
<tr>
<td>Orange dots to identify high faller risk residents.</td>
<td>Wolfville</td>
<td>All residents who fall</td>
<td>Nursing, OT, Physio</td>
<td>No added cost. If AD needed, resident pays all or part.</td>
</tr>
<tr>
<td>Also used TUG</td>
<td>Sechelt</td>
<td>SCU residents, on admission, residents who fall or experience health decline</td>
<td>Nursing, Care aides</td>
<td>No added cost</td>
</tr>
<tr>
<td>Falls Prevention Resident Safety Checklist – part of Fall Risk Assessment Policy - documentation of the fall prevention strategies for each resident on a Resident Safety Checklist Board located in the residents’ rooms</td>
<td>Sechelt</td>
<td>All residents on the 1st floor</td>
<td>LTCAs, RN, Administrative Assistant, Project On-site Coordinator</td>
<td>Approximately $200 for 64 laminated cards with 64 dry ink pens and mounting tape.</td>
</tr>
<tr>
<td>Safety plan checklist placed in bathroom of residents who are at high risk of falls</td>
<td>Quesnel</td>
<td>All residents who are at high risk for falling</td>
<td>Physio and Nursing</td>
<td>Cost assumed by facility</td>
</tr>
<tr>
<td>Purchase of 6 TABS monitors</td>
<td>Quesnel</td>
<td>Residents who unsafely get up from bed alone and are at high risk for falling</td>
<td>Physio and Nursing</td>
<td>$500 per unit – donated by Quesnel Residential Care Society</td>
</tr>
<tr>
<td>Development of a fall risk tool</td>
<td>Quesnel</td>
<td>All new residents and eventually residents already living Lodge</td>
<td>Physio / Nursing</td>
<td>Costs assumed by facility</td>
</tr>
<tr>
<td>Review and modify Risk Assessment Tool</td>
<td>Cranbrook</td>
<td>All new and existing residents</td>
<td>Falls team</td>
<td>Costs assumed by facility</td>
</tr>
<tr>
<td>Post fall assessment to determine role that fatigue played: Followed by family education</td>
<td>Wolfville</td>
<td>Resident who fell after strenuous outings with family</td>
<td>RN, LPN, Nurse manager, family</td>
<td>No added cost</td>
</tr>
<tr>
<td>2 bed sensor alarm pads</td>
<td>Cranbrook</td>
<td>Residents who need assistance with transfer</td>
<td>All staff</td>
<td>Cost assumed by facility</td>
</tr>
<tr>
<td>Symbol by door and distinctive coloured poster in room with falls prevention interventions</td>
<td>Cranbrook</td>
<td>High risk fallers</td>
<td>All staff/ Falls team</td>
<td>No added cost</td>
</tr>
<tr>
<td>Initiative</td>
<td>Settings</td>
<td>Targets</td>
<td>Personnel</td>
<td>Cost</td>
</tr>
<tr>
<td>---------------------------------------------------------------------------</td>
<td>------------------</td>
<td>---------------</td>
<td>----------------------------</td>
<td>-----------------</td>
</tr>
</tbody>
</table>
| Fall surveillance report to be completed after every fall                 | Ottawa  
Wolfville  
Sechelt  
Quesnel  
Cranbrook | All residents   | OT, RN        | No added cost              |
| Place pictogram in plexiglass at door of resident room                    | Ottawa           | All residents | All staff                     | No added cost |
| Restraint/Transfer Pictogram                                              | Ottawa           | Selected residents | All staff              | No added cost |
| Transfer Status Pictograms                                                | Wolfville        | All residents  | All Staff                     | No added Cost |
| Establishment of Fall Working Group                                        | Ottawa           | All residents  | Reps of all staff            | No added cost  |
| Policy to remove all scatter mats from resident’s rooms                   | Wolfville        | All residents  | Nursing, Housekeeping        | No added cost  |
| Policy to have all personal furniture assessed by physio and OT            | Wolfville        | All residents  | Management, Physio, OT       | No added cost  |
| Hip protector policy- included in the Shorncliffe Care Dept. Policy Manual| Sechelt          | All residents  | LTCAs, LPNs, RNs           | No added cost  |
| Fall Risk Assessment Policy – included in the Shorncliffe Care Department Policy Manual | Sechelt          | All staff      | Project On-Site Coordinator, RNs, LPNs. | No added cost |
| Information letters to each physician in Quesnel about the falls project  | Quesnel          | Physicians     | Falls coordinator           | No cost        |
| The Falls Communication book for updates on prevention activities,         | Cranbrook        | All Care Staff | Falls Team Staff            | No added cost  |
| education sessions and monthly falls stats                                |                  |               |                             |                 |
| Weekly resident care conferences where falls are discussed                | Cranbrook        | A rep. from each Dept., a family member and facility manager | Falls team / Staff | No added cost |
# Falls in Long Term Care

## Exercise/activities

<table>
<thead>
<tr>
<th>Initiative</th>
<th>Settings</th>
<th>Targets</th>
<th>Personnel</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specialized schedule of activities</td>
<td>Ottawa</td>
<td>All residents</td>
<td>All staff</td>
<td>No added cost</td>
</tr>
<tr>
<td>Routine exercise program (3X week)</td>
<td>Ottawa</td>
<td>All ambulatory residents</td>
<td>PT, RT, RN, PSW</td>
<td>No added cost</td>
</tr>
<tr>
<td></td>
<td>Sechelt</td>
<td>12 ambulatory residents with history of a fall</td>
<td>2 Canada World Youth student volunteers</td>
<td>No added cost</td>
</tr>
<tr>
<td>Walking group</td>
<td>Ottawa</td>
<td>All ambulatory residents</td>
<td>PT, RT, RN, PSW</td>
<td>No added cost</td>
</tr>
<tr>
<td></td>
<td>Wolfville</td>
<td>Residents approved by Physio</td>
<td>Nursing, Rehab assistant, Program Director, Volunteers from Acadia U.</td>
<td>No added cost</td>
</tr>
<tr>
<td>Combined walking, strength and balance group</td>
<td>Sechelt</td>
<td>6 second floor residents</td>
<td>2 Canada World Youth student volunteers, PT, OT</td>
<td>No added cost</td>
</tr>
<tr>
<td>Walking and exercise programs</td>
<td>Cranbrook</td>
<td>Residents recommended by Physio</td>
<td>Physio and Falls team</td>
<td>Some extra physio time covered by facility</td>
</tr>
</tbody>
</table>

## Medication/Nutrition Initiatives

<table>
<thead>
<tr>
<th>Initiative</th>
<th>Settings</th>
<th>Targets</th>
<th>Personnel</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individualized assessment and prescription of Calcium, Vit D, dietary supplements</td>
<td>Ottawa</td>
<td>All residents</td>
<td>MD, RN, RPN, Dietician, PSW</td>
<td>No additional cost</td>
</tr>
<tr>
<td>Individualized assessment and prescription of bone enhancing medication (Didrocal, Fosamax, etc.)</td>
<td>Ottawa</td>
<td>All residents</td>
<td>MD, RN, RPN, Dietician, PSW</td>
<td>No additional cost</td>
</tr>
<tr>
<td>Water tank at every unit. Encourage 3-4 glasses/day</td>
<td>Ottawa</td>
<td>All residents</td>
<td>All staff</td>
<td>No added cost</td>
</tr>
<tr>
<td>Medication review after fall</td>
<td>Ottawa</td>
<td>Residents who fall</td>
<td>MD, RN</td>
<td>No added cost</td>
</tr>
<tr>
<td>On-going Use of Falls Surveillance Tool</td>
<td>Wolfville</td>
<td>All Resident Falls</td>
<td>R.N., LPN</td>
<td>No added cost</td>
</tr>
<tr>
<td>Fortification of powdered milk to increase calcium and Vit D intake, as well as receive one other fortified menu item such as cream soup or pudding each day</td>
<td>Sechelt</td>
<td>All residents</td>
<td>Facility RDN, Armark Food Services Manager, Cooks, Food Services Staff</td>
<td>Modest cost</td>
</tr>
<tr>
<td>Medication reviews</td>
<td>Cranbrook</td>
<td>All residents</td>
<td>Nursing and physicians</td>
<td>No added costs</td>
</tr>
<tr>
<td>On-going Use of Falls Surveillance Tool and testing of on-site automated reporting feature</td>
<td>Sechelt</td>
<td>All residents and Staff</td>
<td>Falls team</td>
<td>Shared costs with project funding and facility</td>
</tr>
</tbody>
</table>
## Educational/Other Initiatives

<table>
<thead>
<tr>
<th>Initiative</th>
<th>Settings</th>
<th>Targets</th>
<th>Personnel</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presentation to other facility</td>
<td>Ottawa</td>
<td>2 talks</td>
<td>Falls coordinator</td>
<td>None</td>
</tr>
<tr>
<td>Literature review of falls, falls prevention and restraint reduction</td>
<td>Ottawa</td>
<td>1 review</td>
<td>OT summer student</td>
<td>None</td>
</tr>
<tr>
<td>Fall prevention brochure</td>
<td>Wolfville</td>
<td>1 brochure for use with all staff and families</td>
<td>Onsite falls steering committee</td>
<td>Unknown</td>
</tr>
<tr>
<td>Publication of falls facts and tips in monthly newsletter</td>
<td>Wolfville</td>
<td>All staff, family, friends</td>
<td>Falls steering committee</td>
<td>No added cost</td>
</tr>
<tr>
<td>Inservice workshop facilitated by Vicky Scott</td>
<td>Sechelt</td>
<td>31 people attended</td>
<td>Fall prevention Team, Vicky Scott</td>
<td>No added cost</td>
</tr>
<tr>
<td>Staff education: four 30-minute sessions over a 2 week period on prevention strategies. As well as Ongoing Education - through Falls Prevention Resource Binder</td>
<td>Sechelt</td>
<td>All staff</td>
<td>Falls coordinator</td>
<td>No added cost</td>
</tr>
<tr>
<td>On-going Falls Group</td>
<td>Wolfville</td>
<td>High risk Fallers/Safety</td>
<td>All Staff</td>
<td>None</td>
</tr>
<tr>
<td>In-service - Alzheimer’s disease/falls prevention concepts</td>
<td>Quesnel</td>
<td>Residents with dementia</td>
<td>Therapists and Nurses</td>
<td>Release time for staff to attend</td>
</tr>
<tr>
<td>Pin board for falls locations</td>
<td>Cranbrook</td>
<td>All residents</td>
<td>Falls team</td>
<td>No added cost</td>
</tr>
<tr>
<td>Falls prevention education sessions</td>
<td>Quesnel, Cranbrook</td>
<td>All staff and Regional Steering committee members</td>
<td>Regional Fall Supervisor/ Falls coordinator</td>
<td>No added cost</td>
</tr>
<tr>
<td>Posters on falls prevention media coverage and thank-you to staff for participation in project</td>
<td>Quesnel</td>
<td>All staff, residents and family members</td>
<td>Falls coordinator</td>
<td>No added cost</td>
</tr>
<tr>
<td>Bulletin board near the staff room to post up information about this project</td>
<td>Quesnel</td>
<td>All staff, residents and family members</td>
<td>Falls coordinator</td>
<td>No added cost</td>
</tr>
<tr>
<td>Educational brochure on Hip Protectors and least restraint</td>
<td>Cranbrook</td>
<td>All staff, family and residents</td>
<td>Falls team</td>
<td>No added cost</td>
</tr>
<tr>
<td>Education booklet about fall prevention strategies for seniors living in long-term care facilities</td>
<td>Quesnel</td>
<td>Families/residents who are high risk fallers as per the fall risk tool</td>
<td>Physiotherapist</td>
<td>No added cost</td>
</tr>
</tbody>
</table>
Appendix B

Summary of Phase 3: On-Site Reporting of Falls and Evaluation of Falls Prevention In Long-term Care (LTC) Facilities.

Objective of Phase 3:
To enhance dissemination and sustainability of the current Stepping In falls prevention activities after the research arm is removed through the creation of on-site reporting and evaluation capability.

Phases of the Stepping In Study:

Background:
During Phase 1 and Phase 2 of the Stepping In Project, data collected from the Falls Surveillance Report form was sent from each facility to the research unit for analysis. Data summaries were then sent back to each site. This support ended when Phase 2 of the project terminated in March 2004. To support each site with data entry and analysis revisions to the Falls Surveillance Report form and support with the Falls Reporting computer program were necessary. The revisions and support are what made up Phase 3 of the Stepping In project. The end result of Phase 3 will be a feature in the Falls Reporting computer program that allows for data tables to be generated and enable each site to run and analyze reports on falls.

The benefits of having each site run and analyze their own falls reports is expanded potential for dissemination of the process and outcomes of falls prevention in LTC settings. With the ability to generate tailored outcome measures, the participating facilities will be able to share the results of their efforts to a wider audience at times and in ways that suit them. In addition, the final product – revised from data entry software with automated reporting features - will be packaged in such way that it could be made available to other LTC facilities across Canada on a cost-recovery basis.

On-site Evaluation Capabilities

The Falls Reporting computer program designed for the Stepping In project enables facilities to track falls and to generate falls reports based on site-specific information. The falls reports were tailored according to the types of information that front-line staff and facility planners wanted to see in the reports. To ensure that the Falls Reporting computer program and its companion the Fall Surveillance Report form are easily implemented in LTC facilities and that training continues in existing facilities a user manual was created (please see Appendix 3). The manual outlines the rationale behind falls prevention in LTC facilities and provides research to support fall risk factors.
Summary of Phase 3 Falls Prevention at Shorncliffe Long-Term Care Facility

Shorncliffe Long-term Care Facility (LTC) is a 61-bed residential care facility in Sechelt, British Columbia within the Vancouver-Garibaldi Coast Health Region. The proportion of staff to bed ratio is 0.49:1. Shorncliffe residents range in age from 50-102 years with the average age of residents 75 years. The majority of residents are female (78%) and a high percentage of residents have a diagnosis of dementia (89%).

After meeting with Shorncliffe facility staff in August of 2004, the research unit agreed to provide quality checks on the falls data collected by facility staff for the duration of Phase 3 but would withdraw its role as primary data analyst. This process was to ensure that falls prevention surveillance, intervention and evaluation are sustainable once the research arm is removed. In return, Shorncliffe agreed to provide ongoing feedback about the new on-site report-generating feature of the Falls Reporting computer program and the user manual.

The following analysis is based on data collected at Shorncliffe during Phase 3 of Stepping In project. Overall there is a reduction the number of falls, fallers and injury over the six months compared to the six months of intervention during Phase 2. This attests to the sustainability of the falls prevention program in LTC facilities and the feasibility of collecting and tracking data with minimal support. Furthermore, these findings shed insight into the importance of tracking interventions over longer periods of time in order to detect a significant reduction in the rate of falls, fallers and injury as falls prevention becomes part of daily care.

Falls: As shown in Table 1, there was a substantial reduction in falls from Phase 2 to Phase 3 with 66 fewer falls over the same time period.

<table>
<thead>
<tr>
<th></th>
<th>Phase 1</th>
<th>Phase 2</th>
<th>Phase 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bed-days</strong></td>
<td>10980</td>
<td>10980</td>
<td>10980</td>
</tr>
<tr>
<td><strong>Falls</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number</td>
<td>164</td>
<td>192</td>
<td>126</td>
</tr>
<tr>
<td>Rate/1,000 bed-day</td>
<td>14.9</td>
<td>17.5</td>
<td>11.48</td>
</tr>
<tr>
<td><strong>Fallers</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number</td>
<td>41</td>
<td>75</td>
<td>57</td>
</tr>
<tr>
<td>Rate/1,000 bed-day</td>
<td>3.7</td>
<td>6.8</td>
<td>5.19</td>
</tr>
</tbody>
</table>

Fallers: The number of fallers decreased by Phase 3 (see Table 1 on previous page). There was an even number of female (50.9%) and male (40.1%) fallers during Phase 3. Throughout the study, the average age of fallers remained approximately the same. In Phase 1 fallers were 81 years old with a slight increase to 83 years of age in Phase 2 and 83.5 years of age in Phase 3.
At least 70% of the fallers had at least one prior fall at least within the last six months prior to the fall being reported. This finding demonstrates how previous falls are a good predictor for future falls and highlights the need to conduct a thorough review of the Falls Surveillance Report© findings to identify areas of risk to target for prevention. The question “fall within the last six months” was only added to the Fall Surveillance Report© form as part of Phase 3 revisions, so comparisons on previous falls per faller during Phase 1 and Phase 2 is not possible.

**Injury:** Both the number of injurious falls and the number of severe injuries were down in Phase 3. Thirty-five (27.8%) of the 126 falls in Phase 3 involved injury. There were three serious injuries in Phase 3. All three were hip fractures. The number of hip fractures in Phase 3 remains the same as the number of hip fractures recorded in Phase 2 (three hip fractures). However, Phases 2 and 3 reported one less hip fracture than Phase 1, when there were four fractures of the hip.

<table>
<thead>
<tr>
<th></th>
<th>Phase 1</th>
<th>Phase 2</th>
<th>Phase 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of total falls</strong></td>
<td>164</td>
<td>192</td>
<td>126</td>
</tr>
<tr>
<td><strong>Number of injurious fall</strong></td>
<td>50</td>
<td>43</td>
<td>35</td>
</tr>
<tr>
<td><strong>Percent of injurious fall</strong></td>
<td>30.5%</td>
<td>22.4%</td>
<td>27.8%</td>
</tr>
<tr>
<td><strong>Injurious falls rate per 1000 bed-days</strong></td>
<td>4.6/1,000</td>
<td>3.9/1,000</td>
<td>3.2/1,000</td>
</tr>
<tr>
<td><strong>Number of Severe fall</strong></td>
<td>6</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td><strong>Percent of severe fall</strong></td>
<td>12%</td>
<td>16%</td>
<td>9%</td>
</tr>
</tbody>
</table>
Attachments:

1. The Fall Surveillance Report © and Falls Reporting Program ©
Required Evaluation

A full report on the evaluation of this project can be found under 9.0 Evaluation Plan in the main body of this report. That section is a follow-up to the comprehensive interim evaluation submitted in 2003. The following is a summary of the findings of these reports.

1. **What? Did we do what we said we would do?**

   The goal of this project was to reduce falls and fall-related injuries in long-term care facilities. We had a reduction of falls and fall-related injuries in the long-term care facilities involved in this project.

2. **Why? What did we learn about what worked and what didn’t work?**

   The community-based, bottom-up approach taken in this project created an effective approach to both surveillance and intervention. The differences observed among the sites confirmed the need to be sensitive to the variations among staff, organizations and physical facilities. The process orientation of such an approach allows for such variations. The approach also ensured frontline staff “buy-in” to the process which is necessary to successfully and accurately recording data needed to produce effective interventions.

   The differences in staff sophistication and technological expertise created the most challenges among the sites. While this approach enabled quick and decisive response to these challenges, there needs to be more consideration given to the wide possibilities of differences along the lines of large versus small facilities, urban versus rural facilities and other forms of diversity. One size fits all approaches will not work.

   Communication among the various levels of the project and long term care stakeholders was an important factor in the success of this project. Electronic communication (e-mails and teleconferences) were effective. Teleconferences with support committees could have been better planned and lessons learned in the first part of the project were applied in the latter half of the project. Reporting systems from onsite coordinators were the most effective method of sharing challenges, successes, intervention data and intervention strategies. Since almost everyone involved in this project wore “other hats,” sensitivity to schedules and other considerations was necessary to ensure good communication.

3. **So what? What difference did it make that we did this work?**

   The most important difference we made is that all sites reported a reduction in falls and fall-related injuries. All sites also instituted some form of surveillance and intervention that will outlive the project.

   In addition, this project has generated considerable national and international attention that will encourage further efforts to prevent injuries from falls among long term care residents.

   Frontline workers also reported that our approach made a difference in their work and through the sharing of that report with frontline workers at other facilities, the influence of the community-based approach we took in this project will be felt beyond the sites involved in this project.
The Falls Surveillance Report® and its accompanying onsite reporting capabilities will continue to be available to long term care facilities through BCIRPU on a cost-recovery basis. Therefore the tool developed in this project will continue to provide an effective means to reduce falls in long term care facilities.

Finally, government officials from all three regions are considering incorporating falls information into their licensing and inspection procedures that go beyond legal liability. The influence of this project may lead to better collection of incidents report at the provincial level.

4. Now what? What could we do differently

As has been discussed on several occasions, the major drawback of this project is its lack of scientific generalizability. Creating a controlled study would be the next step in ensuring that the Falls Surveillance Report® is an effective, valid and reliable tool that can be used to create evidence-based intervention practices in a variety of long term care settings.

Also apparent from the experiences at each site is that use of a surveillance tool and reporting system creates different burdens at different facilities. Those facilities with automated capabilities and a well-trained and electronically savvy staff are more likely to incorporate ongoing surveillance and reporting into their routines. Smaller staffs that are not well-versed in electronic reporting systems find the burden more cumbersome. Some exploration should be made into creating a hybrid tool to lighten the burden so that the more comprehensive tool developed in this project can serve as for intense feedback to bring falls incidences under control and then a less burdensome tool could be used to monitor on an ongoing basis.

5. Then what? How do we plan to use the evaluation findings for continuous learning?

Future falls and fall-related injuries prevention projects should continue to be concerned with frontline staff and their important role in providing evidence-based interventions to reduce incidences. This approach was confirmed by the response received from frontline staff in the facilities as well as those attending the pre-conference workshop in October 2004. The community-based approach taken in this project offers an effective way to engage staff and allow for the many variations among long-term care facilities.

By tracking interventions, a better understanding of what worked and what did not work is available regarding specific, system-wide interventions. By concentrating on more than individual patient risk factors, this project has provided a foundation for future work to take into consideration a larger picture concerning the risk factors for falls. These system factors should not be ignored.

The Falls Surveillance Report® has already been adapted for use among homecare workers in community settings. Such adaptations will provide a broader influence for the use of tracking incidences and providing evidence-based interventions for both institutionalized and community seniors. The expanding of the use of this approach will be facilitated by its availability to long term care facilities on a cost-recovery basis through BCIRPU.
Falls in Long Term Care

There is no doubt that the effects of this project will be felt long after the end of the project. As long as facilities remain interested in preventing falls and fall-related injuries, the Falls Surveillance Report© will provide an important resource for their efforts, especially with the addition of onsite reporting capabilities.