

Evidence *in* Context

Issue: Fall Prevention for Seniors in
Institutional Care Settings
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Health research – synthesized and contextualized for use in Newfoundland & Labrador

Fall Prevention for Seniors in Institutional Healthcare Settings in Newfoundland and Labrador

In late 2012, Newfoundland and Labrador's Department of Health and Community Services (DHCS) and its four Regional Health Authorities (RHAs) asked the Contextualized Health Research Synthesis Program (CHRSP) to identify and evaluate the best available research-based evidence on fall prevention for older adults in institutional healthcare settings, such as hospitals and residential care facilities. Although this research topic was initially suggested by authorities

at Western Health, consultations with the province's other RHAs and with the DHCS revealed that the experience of older adults in institutional settings was a high-priority issue for them as well. CHRSP personnel then assembled a project team that included officials from three of the four RHAs, a faculty member from Memorial University's School of Human Kinetics and Recreation, and the Executive Director of the Seniors' Resource Centre of Newfoundland and Labrador.

Dr. Vicky Scott, Clinical Associate Professor in the School of Population and Public Health at the University of British Columbia and Senior Advisor on Fall and Injury Prevention for the British Columbia Injury Research and Prevention Unit and the Ministry of Health, agreed to serve as Academic Team Leader.



Dr. Susan Gillam, CEO of Western Health, served as Health System Leader on the Research Team.

At an initial project meeting, team members confirmed that the synthesis should focus exclusively on fall prevention for older adults in institutional – as opposed to community – settings. This decision was based on two factors: firstly, a synthesis including articles on both institutional and community settings would likely be too large in scope; secondly, the team leader had recently

completed a report on fall prevention in community settings for the Public Health Agency of Canada. Therefore, our synthesis ultimately included only reviews of studies conducted in a range of institutional healthcare settings, including long-term, residential,

intermediate, acute, and sub-acute care facilities.

With the project parameters in place, Dr. Scott and the CHRSP team searched for and identified the relevant research literature, critically appraised and synthesized the evidence, and – with input from the full project team – provided additional analysis and contextualization of the research for Newfoundland and Labrador.

The Research Question:

“What interventions are most effective in preventing falls and fall-related fractures among older adults in institutional healthcare settings?”

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Disclaimer: This document is an executive summary of a larger report that contains fully referenced material. We have omitted references from this summary for the sake of brevity, but readers who wish to inspect these references can refer to the full report which is available at <http://www.nlcahr.mun.ca/CHRSP/> together with a companion document that details the project methodology.

Read the full report here: <http://www.nlcahr.mun.ca/CHRSP/>

The Consequences of Falling

Recent scholarship indicates that falls by older adults not only cause a great deal of personal suffering but also constitute a significant economic burden to society. One study indicated that costs related to falls by older people ranged between 0.85% and 1.5% of total healthcare expenditures in the U.S.A., Australia, the E.U., and the U.K. The same study found that “costs of falls in the elderly in an international perspective seemed to be higher than costs for epilepsy (0.12% to 1.12%), [and were] comparable to the direct treatment costs of specific mental disorders like depression, schizophrenia and dementia (1% to 2%).”

In their initial description of the topic, Western Health officials framed the issue as follows:

“According to the Canadian Institute for Health Information, falls were the cause of 57% of all injury-related hospitalizations, and more than three quarters of all in-hospital deaths in those admitted for an injury. Accreditation Canada has identified a fall prevention strategy as a Required Organizational Practice with the goal of reducing the risk of injuries resulting from falls. Western Health has committed significant resources to the continued spread of a fall prevention program to reduce the number of falls as well as the severity of injuries resulting from falls. Quality and Risk Management leadership would use the results of this research to improve patient/client outcomes and to enhance program delivery.”

Summary of Findings

Our literature search focused on high-level research: systematic reviews, meta-analyses, health technology assessments, as well as on very recent high-quality primary studies. Screening resulted in nineteen relevant sources being selected as the focus of our synthesis.

Multifactorial Fall-Prevention Interventions

The review evidence offers limited and qualified support for multifactorial fall-prevention interventions. The best such evidence is supplied by Cameron et al., who pooled results from studies conducted in care facilities and found that some programs targeting individual risk factors showed a possible reduction in rate and risk of falling but deemed the evidence in support of this finding as inconclusive. The same authors found clearer evidence that multifactorial programs reduced the rate of falls in hospitals, but offered no recommendations as to what specific components should be included in these programs. In general, “[t]he interpretation of the multifactorial interventions is complex because of the variation in components, frailty of the sample, duration and intensity of the intervention, and how the interventions were implemented.”

The clear implication of this evidence is that health authorities seeking to implement a multifactorial fall-prevention model would need to tailor interventions to specific care settings and populations and to ensure the availability of the infrastructure and resources – human and material – required for faithful implementation. Unfortunately, there was little consensus in the review literature as to which components should be considered essential in any multifactorial fall-prevention model. Therefore, we are not able to present evidence on a ‘one-size-fits-all’ multifactorial *model* of fall prevention; however, decision makers can use this report as a guide to the existing high-level evidence on the clinical effectiveness of potential program *components*. For instance, one component common to all the multifactorial fall-prevention interventions evaluated in the reviews was assessment of individual patient risk factors. When selecting an assessment tool for clinical use, healthcare administrators should choose one designed specifically for the context in which the tool is to be applied.

There is evidence to indicate that multifactorial programs significantly reduced the number of recurrent fallers in residential care settings and shared some common general intervention strategies. These included environment modification, resident and staff

Multifactorial Fall-Prevention Interventions continued....

education, and “specific strategies tailored to the needs of individual residents, such as medication reviews and the provision of hip protectors for recurrent fallers”. The review evidence on these and other strategies is outlined below; however, it is important to remember that failure to identify evidence of a given strategy’s effectiveness does not necessarily indicate that the strategy is ineffective. Instead, it may be that the effectiveness of individual model components – such as education – is diminished or obscured when these individual components are implemented and evaluated in isolation from other model components.

Vitamin D and Calcium

The bulk of the higher-and moderate-quality evidence in our synthesis indicates that daily vitamin D in combination with calcium is an effective way to reduce the risk of fractures among elderly residents of care facilities. In the studies that support this finding, the minimum daily dose of vitamin D was 800 IU and the minimum daily dose of calcium was 600 mg, though according to the highest quality review on vitamin D’s effectiveness in our synthesis, “there is evidence supporting the hypothesis... that vitamin D in doses of 700-800 IU daily, with co-administration of 1000 mg calcium, is effective in reducing the rate of hip fractures in frail older people in institutional care”. Because of a lack of systematic review evidence, we were unable to draw conclusions about vitamin D’s effectiveness in preventing falls and fractures among hospitalized seniors.

Exercise

The evidence indicates that balance training using specialized mechanical apparatus was the only exercise modality that was associated with a reduction in fall rate. These are individualized forms of exercise that target gait, balance, and coordination. Beyond these two interventions, there was “no evidence overall that exercise reduces falls in care facilities”.

Pooled data also showed a significant reduction in the risk of falling among older inpatients in sub-acute hospital wards who were offered additional physiotherapy that consisted of stretches, lower limb exercise, and balance and gait activities.

Interventions targeting medications, the physical environment, staff education, and organization of care

The highest-quality evidence in our synthesis on medication review found that results relating to pharmacist-led medication reviews in care facilities were inconsistent. As well, there was no evidence to

indicate that staff education, changes to the organization of care, and/or environmental adaptations, such as low beds or wireless position-monitoring devices, have any effect on the rate or risk of falls in either hospitals or care facilities. However, there was other evidence to indicate that environmental hazard checks

reduced falls, and that support for fall prevention, supply and repair of mobility aids, and medication adjustments reduced fractures. Considered together, the evidence suggests that this category of interventions becomes maximally effective only as part of a multi-component fall-prevention model.

Hip Protectors

The up-to-date review evidence assessing the effectiveness of hip protectors in reducing the risk of fracture in residential or nursing care populations is uncertain, in large part because study participants’ acceptance of, and adherence to, this intervention has been consistently low. These findings conflict with the bulk of the evidence published prior to 2001 that indicated hip protectors significantly reduced the incidence of hip fractures. Accordingly, there appears to be a clear need for additional studies using more recent hip protector models that have undergone biomechanical testing.



Implications for Decision Makers

1. There is no 'one-size-fits-all' model of fall prevention that is guaranteed to work in any and all practice settings; rather, decision makers are well-advised to tailor their interventions to specific care settings and resident populations, and to educate their staff to ensure faithful and consistent implementation of these interventions.
2. The effectiveness of fall-prevention programming is heavily dependent on the availability of sufficient allied health resources – particularly PTs, OTs, and pharmacists – and decision makers should ensure that any planned interventions can be feasibly delivered with the resources at hand.
3. The ongoing construction of new LTC facilities in various parts of the province provides an opportunity for decision makers to assess the ways that the design and organizational layout of older facilities may have heightened or failed to reduce the risk of resident falls, and to apply any lessons learned to the design of new sites.
4. Decision makers should carefully examine established care processes – such as safe patient-handling protocols, least-restraint policies, and the prescription of behavior-changing drugs – to ascertain their impacts on the risk of client falls, and take steps to harmonize any new fall-prevention initiatives with existing practices.
5. Regular collection and analysis of client feedback can help to ensure the success of interventions like hip protectors, which require a high degree of acceptance and adherence on the part of individual in order to be effective.
6. Given the confusion and mixed messages surrounding the safety and effectiveness of vitamin D and calcium, decision makers who wish to expand the use of these supplements may need to further educate clinicians and build consensus on their health effects.
7. Certain forms of balance training demonstrate real promise in preventing falls among LTC residents; decision makers may wish to stay abreast of the research in this area in the event that new and more affordable modalities emerge.
8. Given the important groundwork that has already been laid in this area, decision makers should now focus on ensuring that existing fall-prevention policies are carried out consistently across their respective regions, in part by continuing to foster a sense of accountability among providers, senior healthcare managers, and decision makers.

For the complete CHRSP report, including details on the evidence reviewed by the project team, and for more information about the CHRSP process, please visit the NLCAHR website: <http://www.nlcahr.mun.ca/CHRSP/>