



Best Practice Guideline

PREVENTION OF FALLS AND FALL INJURIES IN THE OLDER ADULT *Guideline supplement*

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Supplement Integration

Similar to the original guideline publication, this document needs to be reviewed and applied, based on the specific needs of the organization or practice setting/environment, as well as the needs and wishes of the client. This supplement should be used in conjunction with the guideline: *Prevention of Falls and Fall Injuries in the Older Adult* (Registered Nurses' Association [RNAO], rev. 2005) as a tool to assist in decision-making for individualized client care, as well as ensuring that appropriate structures and supports are in place to provide the best possible care.

Background

Nurses will continue to be instrumental in the provision of care strategies for the prevention of falls and fall injuries in the older adult. Since the 2005 publication of this guideline current epidemiological data suggests that falls continue to result in significant economic costs to Canadians and can profoundly affect the quality of life of older adults, a growing segment of the Canadian population (Scott, Wagar, & Elliott, 2010).

Falls are the leading cause of overall injury costs in Canada and account for \$6.2 billion or 31% of total costs of all injuries (Smartrisk, 2009). In 2009, nearly 1.7 million people, or 41% of those who reported an injury, stated they were injured in a fall (Statistics Canada, 2009).

In 2008 - 2009, 53,545 Canadian older adults were admitted to hospital because of a fall and these falls accounted for 85% of major injury hospitalizations among Canadian older adults (Scott et al., 2010). Hip fractures accounted for nearly 40% of the fall related injuries which increased the average hospital's length stay by six days when a senior was admitted with a fall-related injury (Scott et al.). The estimated average cost of a hip fixation/repair for someone over the age of 60 ranged from \$11,807 to \$13,451 (Canadian Institute for Health Information [CIHI], 2010). Furthermore, nearly 30% of non-residential fallers were transferred to residential care after a fall-related hospitalization (CIHI).

Revision Process

The Registered Nurses' Association of Ontario has made a commitment to ensure that this practice guideline is based on the best available evidence. In order to meet this commitment, a monitoring and revision process has been established for each guideline.

A panel of nurses and other health care professionals was assembled for this review, comprised of members from the original development panel as well as other recommended individuals with particular expertise in this practice area. A structured evidence review based on the scope of the original guideline and supported by 11 clinical questions was conducted to capture the relevant literature and guidelines published since the last revision of this guideline in 2005. The following research questions were established to guide the literature review:

1. What are the risk factors/contributing factors or predictors for falls and fall injuries in the older adult population?
2. a. What is the effectiveness of high level risk screening?
b. What validated tools are available for high level risk screening?
3. What is the effectiveness of subsequent individual risk factor screening?
4. What is the effect of the individual care plans associated with specific recommended interventions?
5. What is the evidence for falls and fall injuries prevention?
6. What interventions do nurses need to implement to prevent falls and fall injuries?
7. How effective are the following in the prevention of falls and/or fall injuries:
 - a) Assessment and modification of the environment?
 - b) Education of client, family and staff?
 - c) Equipment, use of mobility aids and assistive devices, hip protectors etc?
 - d) Functional Therapy and restorative programs - activity, physical & social?
 - e) Health Management: includes medication reviews, vision tests, bone health, nutrition and hydration status, chronic disease management?
 - f) Targeting client's behaviour change, including choices for clothing, footwear etc?
8. What education do nurses need around strategies and interventions for falls and fall injuries prevention?
9. What are the benefits of preventing falls and who benefits?
10. What support does the organization need to provide to ensure nurses have the knowledge and skills for falls and fall injuries prevention?
11. What supports are needed for successful implementation of a falls prevention program?

Initial findings regarding the impact of the current evidence, based on the original recommendations, were summarized and circulated to the review panel. The revision panel members were given a mandate to review the guideline in light of the new evidence, specifically to ensure the validity, appropriateness and safety of the guideline recommendations as published in 2005.

Literature Review

One individual searched an established list of websites for guidelines and other relevant content. The list was compiled based on existing knowledge of evidence-based practice websites and recommendations from the literature.

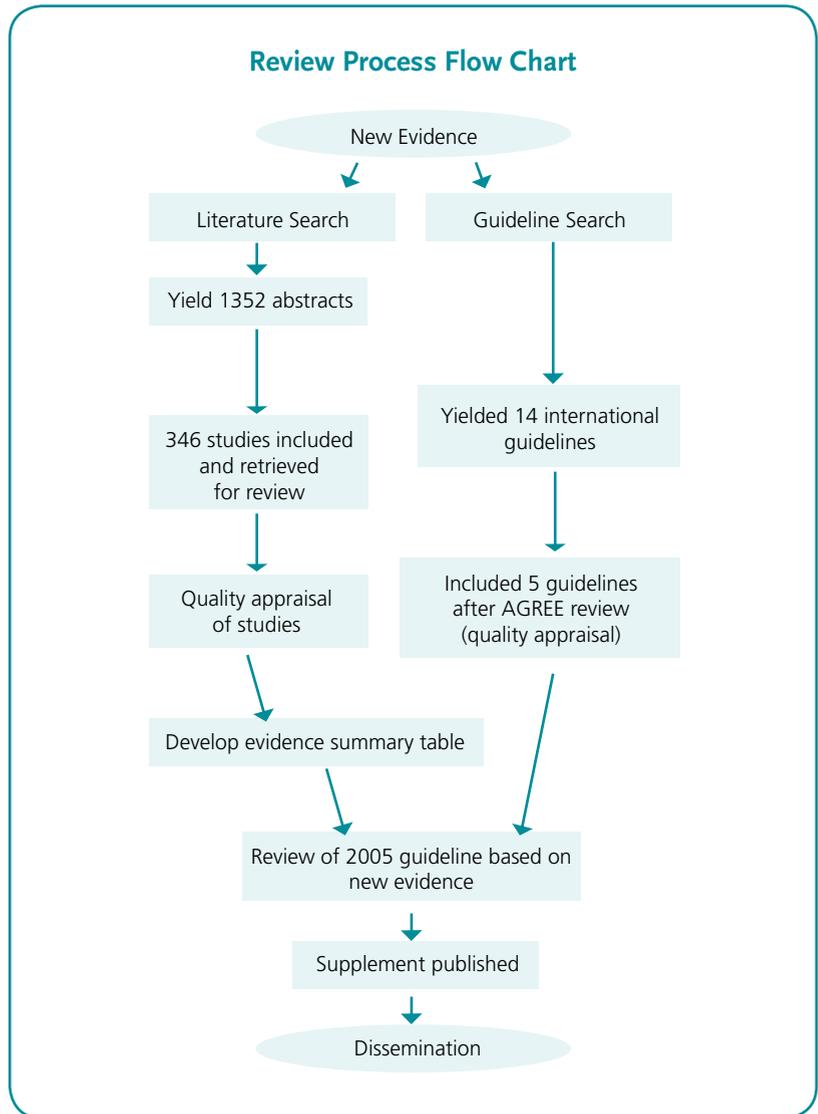
Members of the panel critically appraised 14 national and international guidelines, published since 2005, using the "Appraisal of Guidelines for Research & Evaluation II" instrument (Brouwers et al., 2010). From this quality appraisal, the following five guidelines were identified to inform the review processes:

- American Geriatrics Society and British Geriatrics Society (AGS). (2010). *Clinical practice guideline for the prevention of falls in older adults*. New York: American Geriatrics Society.
- Australian Commission on Safety and Quality in Healthcare (ACSQHC). (2009a). *Preventing falls and harm from falls in older people: Best practice guidelines for Australian hospitals 2009*. Sydney: ACSQHC.
- Australian Commission on Safety and Quality in Healthcare (ACSQHC). (2009b). *Preventing falls and harm from falls in older people: Best practice guidelines for Australian Residential Aged Care facilities 2009*. Sydney: ACSQHC.
- Institute for Clinical Systems Improvement (ICSI). (2010). *Prevention of falls (acute care). Health care protocol*. Bloomington (MN): Institute for Clinical Systems Improvement (ICSI).
- Ministry of Health, Singapore (MOS). (2005). *Prevention of falls in hospitals and long term care institutions*. Singapore: Ministry of Health.

Concurrent with the review of existing guidelines, a search for recent literature relevant to the scope of the guideline was conducted with guidance from the Panel Leader. A search of electronic databases, (Medline, CINAHL and EMBASE) was conducted by a health sciences librarian. A Research Assistant (Masters prepared nurse) completed the inclusion/exclusion review, quality appraisal and data extraction of the retrieved studies, and prepared a summary of the literature findings. The comprehensive data tables and reference list were provided to all panel members.

Review Findings

In November 2010, the panel was convened to achieve consensus on the need to revise the existing set of recommendations. A review of the most recent literature and relevant guidelines published since March 2005 does not support dramatic changes to the recommendations, but rather suggests some refinements and stronger evidence for the approach. A summary of the review process is provided in the Review Process flow chart.



Summary of Evidence

The following content reflects the changes made to the 2005 publication of the guideline: *Prevention of Falls and Fall Injuries in the Older Adult* based on the consensus of the review panel. The literature review does not support dramatic changes to the recommendations, but rather suggests some refinements and stronger evidence for the approach.

-  unchanged
-  changed
-  additional information
-  new recommendation

- Changes to the guideline are summarized in **bold** in the following table:

Guideline:	Changed to in 2011 Revision Document:
The following terms in recommendations and discussion of evidence: <ul style="list-style-type: none"> • Multidisciplinary • Interdisciplinary 	New term used: Interprofessional
The following terms in recommendations and discussion of evidence: <ul style="list-style-type: none"> • Older adult • Elderly • Seniors • Clients 	New terms used: <ul style="list-style-type: none"> • Older adult or • Client
1.0 Assessment 1.0 Assess fall risk on admission. 1.1 Assess fall risk after a fall.	1.0 No Change to recommendation
2.0 Tai Chi Tai Chi to prevent falls in the elderly is recommended for those clients whose length of stay (LOS) is greater than four months for those clients with no history of a fall fracture. There is insufficient evidence to recommend Tai Chi to prevent falls for clients with LOS less than four months.	2.0 Multi-factorial Nurses as part of interprofessional team, implement multi-factorial fall prevention interventions to prevent future falls.
2.1 Exercise Nurses can use strength training as a component of multi-factorial fall interventions; however, there is insufficient evidence to recommend it as a stand-alone intervention.	2.1 Exercise Nurses support physical training as a component of multi-factorial fall intervention program taking into consideration client risk factors.
2.2 Multi-factorial Nurses as part of multidisciplinary team, implement multi-factorial fall prevention interventions to prevent future falls.	2.2 Medications Nurses, in consultation with the health care team, should conduct medication reviews on admission and periodically throughout the continuum of clients' care to prevent falls among older adults in healthcare settings. Clients taking multiple and known high risk medications should be identified at higher risk for falls. (Level of evidence = Ia)
2.3 Medications	2.3 Hip Protectors
2.4 Hip Protectors	2.4 Vitamin D (Level of evidence = Ia)

2.5 Vitamin D	2.5 Client Education
2.6 Client Education	2.6 Environment
3.0 Environment	<p>Education Recommendation</p> <p>3.0 Nursing Education</p> <p>Education on the prevention of falls and fall injuries should be included in nursing curricula and on-going education with specific attention to:</p> <ul style="list-style-type: none"> • Promoting safe mobility; • Risk assessment; • Interprofessional strategies; • Risk management including post-fall follow-up; • Alternatives to restraints and/or other restrictive devices; • Frequent bedside nursing visits; and • Safe mobility and toileting.
<p>Education Recommendation</p> <p>4.0 Nursing Education</p>	<p>Organization & Policy Recommendations</p> <p>4.0 Least Restraint - Siderails (Level of evidence = IIb)</p> <p>4.1 Least Restraint – Physical/Chemical Restraints</p>
<p>Organization & Policy Recommendations</p> <p>5.0 Least Restraint - Siderails</p> <p>6.0 Least Restraint - Physical/Chemical Restraints</p>	<p>5.0 Organizational Support</p> <p>Organizations create an environment that supports interventions for fall prevention that includes:</p> <ul style="list-style-type: none"> • Fall prevention programs; • Staff education; • Clinical consultation for risk assessment and intervention; • Involvement of interprofessional teams in case management; and • Availability of supplies and equipment such as transfer devices, high low beds, and bed exit alarms. <p>5.1 Medication Review</p>
7.0 Organizational Support	6.0 RNAO Toolkit
8.0 Medication Review	
9.0 RNAO Toolkit	

Practice Recommendations

<p>Assessment:</p> <p>1.0 Assess fall risk on admission.</p> <p style="text-align: right;">(Level of evidence = 1b)</p>	
<p><i>The discussion of evidence for this recommendation found on page 22 -23 of the guideline has been revised to reflect the additional literature support:</i></p> <p>Discussion of Evidence</p> <p>Risk screening continues to be supported in research as an effective method for identifying fall-prone individuals (AGS, 2010; ICSI, 2010; <i>Safer Healthcare Now!</i> [SHN], 2010). All individuals should be screened for risk of falls by a nurse on admission to identify factors known to increase the risk of falls (SHN). A number of falls risk screening tools have been developed to identify individuals with risk factors for falling who should undergo further comprehensive assessment by the interprofessional team in order to implement targeted falls prevention interventions in the individualized plan of care (SHN).</p> <p>A repository of falls related assessment tools is available at the British Columbia Injury Research and Prevention Unit (BCIRPU) website http://www.injuryresearch.bc.ca/categorypages.aspx?catid=3&catname=Library to support the decision making process (SHN, 2010). The selection of a standardized and reliable tool is a challenging decision, as healthcare organization leaders need to consider the ease of use, training of staff to use the tool, the tool's psychometric properties (validity and reliability), potential staff acceptance and adherence, and other factors (Haines, Bennell, Osborne, & Hill, 2006). For example, although the STRATIFY tool has been shown to predict falls risk for adults <75 years of age admitted to hospital medical and surgical units, it was not as predictive for older clients age 75-84 years admitted to geriatric wards (Milisen et al., 2007). Recent systematic reviews indicate that among the existing tools, few have been validated in more than one setting, and that there are currently no tools that can be applied reliably across different settings to accurately predict risk of falling among various populations (Cameron et al., 2010; Haines, Hill, Walsh, & Osborne, 2007; Scott, Votova, Scanlan, & Close, 2007). Heinze, Halfens, Roll, & Dassens (2006) found the Hendrich Fall Risk Model is not recommended for long term care settings.</p> <p>Current literature is mixed on the ability of screening tools to predict falls. Tools may have limited value in high-risk populations such as the frail clients living in long term care settings. All such high risk clients should receive an assessment linked to evidence-based interventions (Scott et al., 2007). Some studies in long term care and hospital settings suggest comparable accuracy between the use of screening tools and nurses' clinical judgment alone to predict falls (Haines et al., 2007; Meyer, Kopke, Haastert, & Muhlhauser, 2009). A meta-analysis conducted by Haines et al., (2007) suggests that the Morse falls score and nursing clinical judgment could be used as "comparison instruments" (p. 671).</p> <p>It is recommended that each organization should tailor their approach to the unique needs of their client population. If a decision is made to use an existing fall-risk assessment tool, the selected tool should be further validated internally for accuracy and ease of use for the practice setting (Chow et al., 2007; ICSI, 2010; Milisen et al., 2007). In addition to testing the psychometric properties of the selected tool (e.g. sensitivity and specificity to accurately predict falls), other factors, such as nursing time, costs, and training requirements should be considered.</p>	

Nurses should be aware that in addition to the risk factors associated with chronic conditions in the older adult, superimposed acute medical problems can further increase the risk of falls and injuries. Thus, screening for fall risk should occur on admission and after a significant change in the client's condition including following a fall (SHN, 2010). A fall in the previous year is the strongest predictor for a future fall (Delbaere, et al., 2008; ICSI, 2010; Kallin, Gustafson, Sandman, & Karlsson, 2005; SHN).

Despite variations in risk profiles among older adults residing in various settings, a growing body of literature continues to identify common factors that may increase the risk of falls and injury from falls. Several studies have identified a subset of risk factors that are predictive of falls. Delbaere et al. (2008) indicate that healthcare settings should use a targeted screen to identify those at risk for falls due to the presence of the following risk factors, not able to stand unaided; poor balance; history of falls in the last year; residing in a long term care setting and/or incontinence. It should be noted that most falls among older adults are multi-factorial, resulting from the complex interaction and cumulative effect of risk factors. Research continues to validate falls risk factors such as psychoactive medication use (Agashivala & Wu, 2009; Liperoti et al., 2007), gait and balance difficulties (Krauss et al., 2005), environmental factors (Chen, Chien, & Chen, 2009; Sorock et al., 2009) and cognition (Kallin et al., 2005). *The Safer Healthcare Now! Reducing Falls and Injuries From Falls, Getting Started Kit* (SHN, 2010, pg. 18-19) at <http://www.saferhealthcarenow.ca/EN/Interventions/Falls/Pages/default.aspx> identifies screening parameters and gives examples of tools and approaches to screening.

The notion of screening and/or assessment can be challenging to health professionals in relation to selecting a tool for the initial assessment to identify factors related to fall risk in an individual. The best use of any tool is to identify the specific risk factors so that prevention can be tailored to the identified risks. It is important to conduct a screen to uncover fall risk (AGS, 2010). Organizations should ensure that a Falls Risk Assessment Tool (FRAT) is validated for the population and that further assessment is performed by clinicians with the appropriate knowledge, skills, and training if the initial screening indicates fall risk factors. A comprehensive assessment should then be completed including, a focused history, physical examination, medication review, cognitive, functional and environmental assessment (AGS). The assessment findings should be linked to evidenced-based interventions (Scott et al., 2007).

Although data from meta-analysis of randomized controlled trials (RCTs) of multi-factorial falls risk assessment and management programs show a reduction in the risk and incidence of falls, the effect of individual components of such programs has not been established (RNAO, rev. 2005; Cameron et al. 2010). This is partly due to the fact that intervention studies typically do not directly assess the relative effectiveness of each intervention component. Moreover, the risks assessed and the instruments used vary among studies. Therefore, although fall risk assessment has been an integral component of most multi-factorial fall prevention programs, the level of evidence specifically related to this recommendation is difficult to establish.

Additional Literature Support
 ACSQHC (2009a, b)
 Kehinde (2009)
 MOS (2005)



<p>Assessment:</p> <p>1.1 Assess fall risk after a fall.</p> <p>(Level of evidence = 1b)</p>	
<p><i>The discussion of evidence for this recommendation found on page 24 of the guideline has been revised to reflect the additional literature support:</i></p> <p>Discussion of Evidence</p> <p>A study by Gray-Miceli, Strumpf, Johnson, Draganescu, & Ratcliffe (2006) on the psychometric properties of Post Fall Index (PFI) instrument in older clients residing in long term care settings demonstrates the importance of a comprehensive nursing assessment to identify the underlying causes of a fall. A study by Kobayashi, Kusuma Wati, Yamamoto, Sugiyama, & Sugai (2009) in geriatric hospitals sought to identify potential factors associated with a repeat fall and found that being female and having unstable gait were risk factors. However, a combination of dementia with unstable gait was a significant risk factor. A study by Vassallo et al. (2009) followed clients admitted for rehabilitation and identified a cumulative higher risk for recurrent falls and injury from falls in clients with cognitive impairment and unsafe gait.</p> <p>A detailed post fall assessment by the interprofessional team can help identify the reasons a client falls so that a comprehensive plan of care can be developed to prevent future falls. The importance of an interprofessional post fall assessment and subsequent implementation of targeted and planned interventions to reduce risk is supported in the literature because previous falls is one of the best indicators for future falls (ICSI, 2010; Kallin et al., 2005; SHN, 2010).</p> <p>Risk factors for falling include biological and medical, behavioural, environmental, social and economic factors (ACSQHC, 2009a, b; SHN, 2010).</p> <p>Post fall follow up procedures should include post fall interprofessional communication, consultation and analysis to identify the degree of injury, immediate client treatment post fall, the circumstances surrounding the fall, determining the contributing factors both client and non client, assessment of falls interventions in place, and follow up action plan which includes communication with client and family (ACSQHC, 2009a, b; AGS, 2010; ICSI, 2010; MOS, 2005; SHN, 2010). Gray-Miceli et al. (2006) identified the following domains as useful information for post fall interview (PFI):</p> <p>Details of the fall:</p> <ul style="list-style-type: none"> • client’s description of the fall, • the nurse’s perception, • the position from which the fall occurred (found to be the most useful question), and • associated symptoms. <p>Physical Examination:</p> <ul style="list-style-type: none"> • vital signs, includes checking for postural hypotension, • presence of anticoagulation therapy, • assessment of visual impairment, neck movement, • cardiovascular assessment, • musculoskeletal assessment, including ability to raise legs independently when in bed, level of assistance to get up off floor, • assessment for leg weakness, foot problems, and proper shoe fit, • neurological assessment, assessment of sensory loss, focal deficits, and sitting and standing balance. 	

<p>Behaviour:</p> <ul style="list-style-type: none"> • notation of behaviour, wandering, • locomotion and transfer ability, and • restraint use. <p>Environment Context:</p> <ul style="list-style-type: none"> • location, • footwear, • floor surface type, and • equipment. 	
<p>Additional Literature Support Bradley, Karani, McGinn, & Wisnivesky (2010)</p>	+
<p>Intervention: Multi-factorial</p> <p>2.0 Nurses, as part of the interprofessional team, implement multi-factorial fall prevention interventions to prevent future falls.</p> <p style="text-align: right;">(Level of evidence = 1b)</p>	✓
<p><i>The discussion of evidence for this recommendation found on page 25-26 of the guideline has been revised to reflect the additional literature support:</i></p> <p>Discussion of Evidence</p> <p>Current literature supports that the most effective approach to falls prevention for health care facilities consists of multi-factorial and interprofessional interventions (ACSQHC, 2009a, b; SHN, 2010). A multi-factorial approach consists of the use of multiple interventions in combination that has been tailored to the individual risk profile based on a completed assessment (ACSQHC, SHN).</p> <p>A systematic review of randomized controlled trials to determine the effectiveness of interventions to reduce falls in older adults by Cameron et al. (2010) revealed multi-factorial intervention approaches reduced the rate of falls and the risk of falling in clients in long term care settings and hospitals when clients experienced a longer length of stay (Cameron et al., pg. 28, 29, 30).</p> <p>Rask et al. (2007) studied the effectiveness of multifaceted falls management programs which included the assessment of risk factors and correction of environmental and equipment hazards in long term care settings and identified a dramatic improvement in the documentation of the assessment and management of fall risk factors. Fall rates remained stable with a decrease in the use of restraints in the intervention homes whereas fall rates and restraint use increased 26% in the non intervention homes.</p> <p>Implementing and evaluating a Falls Prevention Strategy is one of the 35 Required Organizational Practices (ROP) in Canada which is identified as an essential practice that organizations must have in place to ensure client safety and minimize risk (Accreditation Canada, 2010). Scott (2007) uses a model acronym BEEACH in the Canadian Falls Prevention Curriculum that incorporates intervention categories to consider such as: behaviour change – readiness for change, education of program participants (client, family, staff within organization); equipment considerations; environment assessment and modification; activity considerations; clothing/footwear; and health management which includes medication, vision, bone health, nutrition, hydration and chronic disease management. Therefore nurses working within interprofessional teams should consider the categories for an individual’s identified risk factors and provide targeted, multi-factorial interventions based on the individual’s risk profile.</p>	+

Additional References Support Cusimano, Kwok, & Spadafora (2007) The following chart outlines the BEEACH categories and associated topics supported		+
Fall Intervention Category from Canadian Falls Prevention Curriculum -BEEACH	Category Topic/ Literature Supports	
Behaviour	Assessment: ACSQHC (2009a, b) Schwendimann, Milisen, Buhler, & De Geest (2006) SHN (2010)	
Education	<i>Education on Risk Factors/Falls Risk/Prevention:</i> ICSI (2010) SHN (2010) Sawka et al. (2010) <i>Interventions for Risk Factors:</i> ACSQHC (2009a, b) ICSI <i>Organization Staff Education/Training:</i> ACSQHC Bouwen, De Lepeleire, & Buntinx (2008) ICSI Krauss et al. (2008) SHN	
Equipment	<i>Chair or Bed Fall-Alarm Devices:</i> ACSQHC (2009a, b) ICSI (2010) <i>Mobility Aids:</i> ICSI <i>Visual Tools:</i> ACSQHC ICSI <i>Equipment Hazards:</i> Rask et al. (2007) SHN (2010)	+
Environment	<i>Increase observation, surveillance and follow up:</i> ACSQHC (2009a, b) AGS (2010) ICSI (2010) Krauss et al. (2008) <i>Lighting & Toileting Protocols:</i> ACSQHC De Lepeleire, Bouwen, De Coninck, & Buntinx (2007) ICSI Krauss et al.	

<p>Activity</p>	<p><i>Footwear:</i> Quigley et al. (2010) SHN (2010) Safe Shoe: ACSQHC (2009a, b) <i>Mobilization:</i> ACSQHC Cameron et al. (2010) Krauss et al. (2008)</p>	
<p>Clothing</p>	<p><i>Hip Protectors:</i> ACSQHC (2009a, b) ICSI (2010) Sawka et al. (2007) SHN (2010)</p>	
<p>Health Management</p>	<p><i>Chronic Disease Management:</i> ICSI (2010) Quigley et al. (2010) <i>Health Management:</i> ACSQHC (2009a) Quigley et al. SHN (2010) <i>Medication Management:</i> Krauss et al. (2005) Quigley et al.</p>	
<p>Websites Accreditation Canada. (2010). ROP. Available at: http://www.accreditation.ca/accreditation-programs/qmentum/required-organizational-practices/ British Columbia Injury Research and Prevention Unit (BCIPRU). (2010). Canadian Falls Prevention Curriculum 2010. Available at: http://www.injuryresearch.bc.ca SHN. (2010). Reducing Falls and Injuries From Falls, Getting Started Kit. Available at: http://www.saferhealth-carenow.ca/EN/Interventions/Falls/Pages/default.aspx</p>		
<p>Intervention: Exercise</p> <p>2.1 Nurses support physical training as a component of multi-factorial fall intervention program taking into consideration client risk factors.</p> <p style="text-align: right;">(Level of evidence = Ib)</p>		
<p><i>The discussion of evidence for Tai Chi and Exercise found on page 24 and 25 of the guideline has been changed and incorporated into the recommendation and discussion of evidence on exercise to reflect the current literature:</i></p> <p>Discussion of Evidence</p> <p>It is important to note that while exercise may provide a range of benefits to older adults, there is currently limited evidence to recommend for or against the use of exercise as a single intervention for the prevention of falls for the older adult in the long term care and acute care settings (Cameron et al. 2010).</p>		

Exercise is an important component of any multi-factorial fall prevention program and there is good evidence that older adults can benefit from strength, balance, gait and coordination training (ACSQHC, 2009a, b; AGS, 2010; Cameron et al., 2010; MOH, 2005). ACSQHC (2009a) reported better functional outcomes and reduced length of hospital stay for older medical inpatients who received an exercise program.

The client's physical capabilities should be considered when exercises are selected, whether in group or as individualized exercise programs. It is important for physical training to be supervised and delivered by appropriately trained professionals. The exercises should be regularly reviewed with modifications as needed (ACSQHC, 2009a, b; AGS, 2010; Donat & Ozcan, 2007; MOS, 2005; Rapp et al., 2008; SHN, 2010). For example, although Tai Chi may be effective in reducing fall risk in relatively healthy older people, it may increase the risk of falling in more frail individuals (Gregory & Watson, 2009). It is possible that for individuals not accustomed to physical activity, an improvement in mobility may initially increase their risk for falls (AGS; Gregory & Watson; O'Mathuna, 2005). A systematic review by Cameron et al., (2010) of randomized controlled studies (RCTs) among nursing home facilities showed inconsistent findings on the effect of exercise on falls rates among clients receiving exercises.

Nurses within the interprofessional team should be aware that a variety of factors may influence the effectiveness of exercise programs as the literature suggests there are confounding variables for consideration. Some of the study limitations have been related to difference in frailty levels and cognitive abilities among participants, the use of a single versus multi-modal exercise, small sample size, and differences between study settings (Acute /Long Term Care) (ACSQHC, 2009a, b).

Hauer, Becker, Lindemann, & Beyer (2006), in a systematic review of randomized controlled trials (RCTs) on the use of physical training in clients with cognitive impairment outlined that studies showed an improvement in gait variables with significant reduction in activity restriction when multi-factorial interventions included physical training. However, only a limited number of these studies demonstrated a significant improvement in motor function or impact on rate of falls.

Cameron et al. (2010) conducted a systematic review and concluded inconsistent results relating to the effectiveness of exercise in reducing the rate or risk of falls possibly due to variations in the type of study and the sample population and intensity of exercise used. Cameron et al. reported from the review that the effectiveness of exercise for clients in long term care settings was uncertain but improvement in relation to falls and risk reduction was seen in hospital settings.

Kato, Izumi, Hiramatsu, & Shogenji (2006) conducted a study in a long term care setting to test an exercise program focused on increasing balance, mobility and muscle strength and found the program was effective for mobility, decreased postural sway and number of falls. The effect however, was attributed to foot exercises without verification of improvement in the muscle strength of the lower extremities.

Intervention: Medications

2.2 Nurses, in consultation with the health care team, should conduct medication reviews on admission and periodically throughout the continuum of clients' care to prevent falls among older adults in health care settings. Clients taking multiple and known high risk medications should be identified at higher risk for falls.

(Level of evidence = 1a)



The discussion of evidence for this recommendation found on page 26-27 of the guideline has been revised to reflect the additional literature support:

Discussion of Evidence

Over the past two decades, medications have been consistently associated with the increased risk of falls and fall injuries in various settings, from community to long term care. Medications can contribute to falls in the older adult through: a) intended mechanisms of action (direct effect such as the lowering of blood pressure, changes in heart rates, sedation, etc.), and b) unintended effects (side effects such as fatigue, dizziness, confusion, drowsiness, altered gait and balance, slow reaction, visual disturbances, orthostatic hypotension, urinary frequency and urgency, etc.) (SHN, 2010).

Older adults are more prone to these effects for various reasons, including metabolic changes such as decline in renal and hepatic function, and increased sensitivity and changes to response to medications (pharmacodynamics). Therefore, the risk increases with co-morbidities and polypharmacy which is defined as the use of four or more different prescription medications (Agashivala & Wu, 2009; AGS, 2010; ICSI, 2010; SHN, 2010). Polypharmacy has been shown to be an independent predictor for one or more falls due to the increase in the additive and synergistic effects of medications (Corsinovi et al., 2009). In one study, fall risks increased from 25% with the use of one medication to 60% with the use of six or more concurrent medications (Rhalimi, Helou, & Jaecker, 2009).

Nurses should be aware that any medication that affects cognitive, neuro-sensory, circulatory and musculoskeletal functions can potentially increase the risk for falls. In fact, over the years, different types of medications have been implicated as risk factors for falls. The Reducing Falls and Injuries from Falls Getting Started Kit (SHN, 2010, Appendix G, pg 76-78) provides a summary table on Medications and Risk for Falls, available at <http://www.saferhealthcarenow.ca/EN/Interventions/Falls/Pages/GSK.aspx>, which lists various classes of prescription and over the counter medications that may increase the risk of falls and their mechanisms of action.

The strongest risk associations with falls, recurrent falls and injurious falls seem to occur with the psychotropic medications, including sedatives, hypnotics, anxiolytics, antidepressants, and anti-psychotic drugs (Agashivala & Wu, 2009; AGS, 2010; Chen et al., 2009; Fonad, Robins Wahlin, Winblad, Emami, & Sandmark, 2008; Hien Le et al., 2005; Kallin et al., 2005; Liperoti et al., 2007; Sterke, Verhagen, van Beeck, & van der Cammen, 2008). The risk may increase with recent use (especially, the first few days), higher doses, and the concurrent use of other psychotropic drugs, particularly in the presence of other co-morbidities and functional impairments (AGS; Chen et al.; Hien Le et al.; ICSI, 2010; Sorock et al., 2009; Sterke et al.).

In recent years, newer classes of anti-depressant medications, such as Selective Serotonin Reuptake Inhibitors (SSRI), and atypical anti-psychotic drugs have been increasingly prescribed to minimize some of the adverse effects of tricyclic anti-depressants and conventional anti-psychotic drugs, respectively. However, evidence is building that these newer drugs may increase falls risk as much as their older counterparts (AGS, 2010; Hien Le et al., 2005; Kallin et al., 2005; Liperoti et al., 2007).

Therefore, it is recommended that the use of psychoactive medications be closely monitored, and as much as possible minimized, with appropriate tapering if indicated. Generally, the goal of conducting interprofessional medication reviews, on admission and periodically is to reduce the total number of medications, the use of high risk medications and the dose of individual medications while optimizing the treatment of underlying medical conditions (AGS, 2010; ICSI, 2010; SHN, 2010). Although, there are no



<p>recently published randomized controlled trials of medication reduction and modification as a single intervention to reduce falls, this has been a key component of a number of effective multi-factorial and multi-component fall prevention strategies (AGS; ICSI; SHN).</p>	
<p>Additional Literature Support ACSQHC (2009 a, b) Capezuti et al. (2008) MOS (2005)</p>	+
<p>Intervention: Hip Protectors</p> <p>2.3 Nurses could consider the use of hip protectors to reduce hip fractures among those clients considered at high risk of fractures associated with falls; however, there is no evidence to support universal use of hip protectors among the older adult in healthcare settings.</p> <p style="text-align: right;">(Level of evidence = Ib)</p>	✓
<p><i>The discussion of evidence for this recommendation found on page 27 of the original guideline has been changed to reflect the current literature:</i></p> <p>Discussion of Evidence</p> <p>Hip protectors are external devices that are either hard-shelled or soft-shelled which disperse or absorb fall impact energy and decrease the risk of hip fracture especially in older adult clients at high risk for falling. Although there may be insufficient and mixed evidence to recommend the use of hip protectors as a single intervention, studies continue to demonstrate value for use as part of a multidimensional falls program (Cryer, Knox, & Stevenson, 2007; Garfinkel, Radomisky, Jamal, & Ben-Israel, 2008; Koike et al., 2009). Researchers have studied older adults in a variety of healthcare settings and witnessed a reduction in hip fractures with the provision of two-sided hip protectors for clients residing in long term care who have a history of falling, cognitive impairment and previous fractures when combined with high application and wearing compliance (Bentzen, Bergland, & Forsen, 2008; Bentzen, Forsen, Becker, & Bergland, 2008; Cryer et al.; Garfinkel et al.; Koike et al.; Sawka et al., 2010).</p> <p>To promote the wearing of hip protectors, nurses should identify and address any client concerns such as sizing and fit; comfort and skin irritation; toileting; adherence and cost. Organizations must address staff concerns related to the care requirements for hip protectors such as correct application, maintenance, replacement and the monitoring required for adherence or resistance especially in clients who are cognitively impaired (ACSQHC, 2009a, b; Cryer et al., 2007; O'Halloran et al., 2007; Sawka et al., 2010).</p> <p>The ACSQHC (2009a - Appendix 6,7,8,9, pg. 167-173; 2009b - Appendix 7,8,9,10, pg.153-159) contain assessment and justification checklists, care planning and observation records for use of hip protectors that help direct the nurse about client and staff concerns. Staff, clients and their families should all be included in educational sessions about hip protectors.</p>	
<p>Additional Literature Support ICSI (2010) Sawka et al. (2007) SHN (2010)</p>	+

<p>Intervention: Vitamin D</p> <p>2.4 Nurses provide clients with information on the benefits of vitamin D supplementation in relation to reducing fall risk. In addition, information on dietary, life style, and treatment choice for the prevention of osteoporosis is relevant in relation to reducing the risk of fracture.</p> <p style="text-align: right;">(Level of evidence = Ia)</p>	✓
<p><i>The discussion of evidence for this recommendation found on page 27-28 of the guideline has been revised to reflect the additional literature support:</i></p> <p>Discussion of Evidence</p> <p>Vitamin D may improve muscle strength; balance and lower-extremity function; and prevent falls. Research continues to demonstrate that falls in older adults are multi-factorial which validates the need to ensure older adults are receiving adequate vitamin D supplementation as one aspect of a falls intervention program (Broe et al., 2007; Cameron et al., 2010; Flicker et al., 2005). A systematic review by Bishchoff-Ferrari et al. (2009) on fall prevention identified a relationship between vitamin D and falls suggesting that a daily dose beginning with a supplement of 700 IU of vitamin D to achieve a 25-hydroxyvitamin D concentration of 60nmol/L resulted in a 19% reduction in falls. This review also identified a significant inverse relationship between the dose and the risk of sustaining at least one fall. Fractures are a serious consequence of falls. Sawka et al. (2010) found evidence that vitamin D3 ≥800 IU daily supplementation reduced the risk of hip fracture in clients who reside in long term care settings. The results of some studies on fall prevention and vitamin D are inconsistent due to differences in populations, doses and methods of capturing data on falls (Hanley et al., 2010).</p> <p>Nurses should recommend vitamin D supplementation for clients since the production of vitamin D in the skin falls to near zero for four to five months of the year in Canada, which raises the risk for vitamin D insufficiency or deficiency (Hanley et al., 2010). The skin of older adults synthesizes vitamin D less effectively. Many nursing home clients rarely venture outside and the amount of vitamin D obtained through diet is minimal. A guideline statement from Osteoporosis Canada (Hanley et al.) recommends that for optimal vitamin D status, high risk/older adult Canadians require vitamin D supplementation of 20–50 µg (800–2000 IU) daily. Serum levels above 75nmol/L reflect optimal vitamin D intake/synthesis.</p> <p>The 2010 clinical practice guidelines for the diagnosis and management of osteoporosis in Canada (Papaioannou et al., 2010) focus on preventing fragility fractures and their negative consequences. Nurses with the interprofessional team need to provide older adults at risk of fragility fractures from falls and osteoporosis with updated information about:</p> <ul style="list-style-type: none"> • available treatment and therapeutic options, • investigations such as bone mineral density and biochemical testing (e.g. 25-hydroxyvitamin D), • exercises focused on resistance (e.g. weight bearing exercise such as walking), core stability and balance, • calcium intake primarily from diet and as necessary the addition of calcium supplementation, • vitamin D supplementation, and • pharmacologic treatments (e.g. bisphosphonates). 	+

<p>Nurses should inform the attending physician of any identified client fall risk factors and need for further assessment regarding daily Vitamin D supplementation and Vitamin D insufficiency or deficiency determinations.</p>	
<p>Additional Literature Support ACSQHC (2009a,b) SHN, 2010</p>	+
<p>Intervention: Client Education</p> <p>2.5 All clients who have been assessed as high risk for falling receive education regarding their risk of falling.</p> <p style="text-align: right;">(Level of evidence = IV)</p>	✓
<p><i>The discussion of evidence for this recommendation found on page 28 of the guideline has been revised to reflect the additional literature support:</i></p> <p>Discussion of Evidence</p> <p>Client and family education remains an important part of any multi-factorial falls prevention program. Client education as a single strategy for preventing falls and injury from falls continues to be weak and evidence shows the best falls prevention programs are multi-factorial with client education being one of the components (AGS, 2010; ICSI, 2010; Sawka et al., 2010).</p> <p>Client education on fall prevention strategies can be provided in a variety of ways (written and verbal with use of technology) and in multiple settings (ICSI, 2010). Utilizing a person-centred approach in fall's education can decrease the client's fear of falling and result in an improvement of the client's self-efficacy (SHN, 2010). Educational materials distributed to clients and family should consider factors that are influenced by the aging process (ACSQHC 2009a, b; Sawka et al., 2010; SHN; ICSI).</p> <p>Assessment and subsequent education of the client by an occupational therapist and/or physiotherapist that focuses on the client's home environment and personal equipment can maximize safety and ensure continuity from hospital to home (ACSQHC, 2009a, b).</p> <p>Education should be aligned with an organization's fall prevention program and geared towards keeping the client independent and safe (ACSQHC, 2009a, b). Terminology used should be easy for the client to comprehend.</p> <p>Additional topics to consider in client education and training:</p> <ul style="list-style-type: none"> • definition of a fall (ACSQHC, 2009a, b), • results of falls risk assessment and clients own risk factors (SHN, 2010), • environmental risk factors (ACSQHC; Hill et al., 2009), • safe transfers (SHN), • safe use of assistive devices (SHN), • basic foot care and footwear (ACSQHC, 2009 a, pg.61-66), • medication (ACSQHC; SHN), • hip protector use (ACSQHC, 2009a, pg. 11-116 & e.g. Hip Protector Education Plan- Appendix 9, pg. 173), • improving nutritional status (SHN), • psychological issues (SHN). 	+
<p>Additional Literature Support ACSQHC (2009b) – Foot Care (pg 57-62) and Hip Protector Use (107-114)</p>	+

<p>Websites</p> <p>SHN. (2010). Reducing Falls and Injuries From Falls, Getting Started Kit. Appendix E - Selected Falls Prevention Educational Resources, pg 69-70. Available at: http://www.saferhealthcarenow.ca/EN/Interventions/Falls/Pages/default.aspx</p>	
<p>Intervention: Environment</p> <p>2.6 Nurses include environmental modifications as a component of fall prevention strategies.</p> <p>(Level of evidence = 1b)</p>	✓
<p><i>The discussion of evidence for this recommendation found on page 29 of the original guideline has been revised to reflect the additional literature support:</i></p> <p>Discussion of Evidence</p> <p>The current research supports that the interprofessional team, all hospital staff and the client/family scan the environment to ensure factors such as appropriate lighting for the time of day, clutter from chairs and tables, type of floor surface, use of handrails, client clothing including footwear and personal assistive devices are modified as appropriate to reduce falls and injuries from falls (ACSQHC, 2009a, b; AGS, 2010; Dykes, Carroll, Hurley, Benoit, & Middleton, 2009; Hill et al., 2009; ICSI, 2010; Johansson, Bachrach-Lindstrom, Struksnes, & Hedelin, 2009; MOS, 2005; Rapp et al., 2008; Rask et al., 2007; Sada, Uchiyama, Ohnishi, Ninomiya, & Masino, 2010; Sawka et al., 2010; SHN, 2010; Tzeng & Yin, 2008a, b, c). Organizations should establish checklists to guide the interprofessional team and hospital staff in completing environmental scans. SHN (2010, Appendix H-Environmental Falls Risk Assessment Checklist, pg 80-81) available at http://www.saferhealthcarenow.ca/EN/Interventions/Falls/Pages/default.aspx and ACSQHC (2009a, Appendix 4 - Environmental Checklist, pg. 161-163, Appendix 5 - Equipment Safety Checklist, pg. 165-166) are examples of checklists to support environmental scans. ACSQHC (2009a, pg. 158) has a Safe Shoe Checklist to support evaluation of shoes depending on an individual's activity level.</p> <p>Nurses should be aware of how the time of day can impact the client's risk for falls. Environmental issues related to lack of lighting during the evening or night and on cloudy days can increase falls and injury from falls in clients with visual impairments and sundowning syndrome (De Lepeleire et al., 2007; Frisina, Guellnitz, & Alverzo, 2010; Lester, Haq, Vadnerkar, & Feuerman, 2008). A retrospective study by Kallstrand-Ericson & Hildingh (2009) suggests that when organizations dim lights on evenings and nights it may actually contribute to the higher rate of falls. Nurses should assess and be aware of the client's visual challenges and consider interventions in the plan of care associated with altering the room lighting and use of colour contrast to facilitate better visual input to prevent falls or injury from falls (Sada et al., 2010).</p> <p>Nurses and other interprofessional team members (e.g. occupational therapist or physiotherapist) should assess the client's cognitive ability to understand and fully participate in strategies related to environmental adjustments to prevent falls. Krauss et al. (2005) identified both client and hospital factors associated with significantly increasing the risk for falls. Client factors included gait/balance deficit or lower extremity problem; confusion; use of sedatives/hypnotic, diabetes medications; activity level of up with assistance and bathroom privileges and the hospital factor implicated was staffing - nurse-client ratio (Krauss et al.).</p>	+
<p>Additional Literature Support</p> <p>Corsinovi et al. (2009)</p> <p>Levtzion-Korach et al. (2009)</p>	+

Education Recommendation

Nursing Education

3.0 Education on the prevention of falls and fall injuries should be included in nursing curricula and on-going education with specific attention to:

- Promoting safe mobility;
- Risk assessment;
- Interprofessional strategies;
- Risk management including post-fall follow-up;
- Alternatives to restraints and/or other restrictive devices;
- Frequent bedside nursing visits; and
- Safe mobility and toileting.

(Level of evidence = IV)



The discussion of evidence for this recommendation found on page 30 of the guideline has been revised to reflect the additional literature support:

Discussion of Evidence

Formal nursing education on falls prevention has been linked to a decrease in falls rates in acute care. Medical units with two or more geriatric-certified nurses had fall rates significantly less than on units without (Lange et al., 2009). Fall prevention self-study modules designed for nurses working in a hospital setting (including an enhanced protocol for fall prevention) increased knowledge and use of prevention strategies (e.g. client education pamphlets, use of bed alarms or low bed and floor mat, placement of the client in a room close to the care station, request for family members to sit with client, writing mobility needs on the client's communication board, implementing a toileting schedule, reviewing medications, asking the physician to order physiotherapy and/or occupational therapy consultations for clients deemed at high risk for falls, providing walking aids if one used at home) and decreased fall rates after the education intervention (Krauss et al., 2008). Teamwork and knowledge of how to access equipment needed for a client's fall prevention plan are important factors for nurses working in acute care (Dykes et al., 2009). Multi-factorial, interprofessional approaches are best in all healthcare settings (Cameron et al., 2010).

Education to ensure ongoing monitoring with frequent bedside nursing visits is important to prevent falls in individuals at risk (ICSI, 2010; SHN, 2010; Tzeng & Yin, 2008a). Evidence suggests using assessment tools to objectively identify individuals at risk is ideal (AGS, 2010; SHN). If organizations consider the use of sitters they must develop and provide formal educational programs. Sitters must understand the role behaviours and expectations. Nurses should know the role and the responsibilities of sitters (Harding, 2010). Sitters used for direct observation for falls prevention is an expensive and ineffective strategy to keep individuals safe who are at risk for injurious falls. There is no current research to support the practice of using sitters for constant observation (Harding, 2010). Hospital-paid sitters are not professionally regulated and use of family members can be difficult to manage as their participation is voluntary.

In long term care settings, multi-factorial interventions are effective at reducing falls rates, but only when provided by the interprofessional team. There is no evidence that interventions targeting single risk factors reduce falls. Multi-faceted education, provided to nurses about the occurrence of accidental falls, risk factors for falls, and



<p>possible environmental or behavioural modifications can be effective when reinforced by reminders. Falls education sessions should be planned during times when nursing work is less intensive (e.g. afternoons and evenings) to allow most nurses to participate. If nurses are not able to attend, they should receive hard copies of the educational materials, and be contacted to see if they have any questions (Bouwen et al., 2008). Other factors that nurses must consider when working in long term care settings are the specific needs of clients with dementia who are at risk for falling, common factors in the environment that contribute to falling, and balancing safety needs with the client's rights to integrity and autonomy (Johansson et al., 2009).</p> <p>Nursing education programs on falls prevention should include management strategies (for older adults in both hospitals and residential care) for common fall risk factors and related clinical issues, e.g. balance and mobility limitations, cognitive impairment, continence issues, feet and footwear concerns, syncope, dizziness and vertigo, postural hypotension, medication, vision, environmental considerations, individual surveillance and observation flagging, sitter programs, response systems, restraints, minimizing injuries from falls (hip protectors), vitamin D and calcium supplementation, osteoporosis management and post-fall management (ACSQHC, 2009a, b; AGS, 2010; Harding, 2010).</p>	
<p>Additional Literature Support AGS (2010) MOS (2005)</p>	+

Organization and Policy Recommendations

<p>Least Restraint</p> <p>4.0 Nurses should not use side rails for the prevention of falls or recurrent falls for clients receiving care in health care facilities; however, other client factors may influence decision-making around the use of side rails.</p> <p style="text-align: right;">(Level of evidence = IIb)</p>	
<p><i>The discussion of evidence for this recommendation found on page 31 of the original guideline has been revised to reflect the additional literature support:</i></p> <p>Discussion of Evidence</p> <p>Literature continues to identify an increase in injurious falls with restrictive use of siderails (Bowers, Lloyd, Lee, Powell-Cope, & Baptiste, 2008; Bredthauer, Becker, Eichner, Koczy, & Nikolaus, 2005; Capezuti et al., 2007; Chen et al., 2009; Ng, McMaster & Heng, 2008). Ng et al. conducted a systematic review on factors contributing to fall and injury severity for the purposes of developing a policy and identified no difference in injury rate for falls when restrictive siderails were not in use thus supporting a policy for not using siderails as part of a fall prevention strategy.</p> <p>Lowering the height of the bed rather than using siderails as a physical restraint continues to be supported in literature for reducing falls and injury from falls (Kallin et al., 2005; Rapp et al., 2008). A laboratory study using a mannequin from various heights of the bed by Bowers et al. (2008) identified a 25% higher chance of a serious head injury from a fall feet-first from a bed height of 97.5 cm onto a tiled surface and this risk increased by 40% when the height by bedrails was added. Bowers et al. identified a less than one percent chance or injury when a floor mat was used and suggest that the use of floor mats and height-adjustable beds positioned to the lowest height should be considered to decrease the risk of injury associated with falling from bed.</p>	+

<p>Siderails as a confining physical restraint should only be considered after taking into consideration the client's characteristics and as the last option after alternative strategies have failed. Studies (ACSQHC, 2009a, b; Bredthauer et al., 2005; Wang & Moyle, 2005) continue to demonstrate no difference in rate of falls and an actual increase in fall related fractures with use of siderails. A study by Capezuti et al. (2007) recommended the use of an advanced practice nurse (APN) to support client-specific interventions and facility wide strategies to assist staff in the development of skills in falls risk assessment and the reduction of the use of restrictive side rails. Twelve months post-intervention, APN support resulted in a reduction in restrictive siderail use and injurious falls.</p>	
<p>Additional Literature Support ICSI (2010) Tzeng & Yin (2008c)</p>	+
<p>4.1 Organizations establish a corporate policy for least restraint that includes components of physical and chemical restraints. (Level of evidence = IV)</p>	✓
<p><i>The discussion of evidence for this recommendation found on page 31-32 of the guideline has been revised to reflect the additional literature support:</i></p> <p>Discussion of Evidence</p> <p>Research continues to support that organizations should focus on client safety, understanding the cause of client's behaviour and promoting the use of alternative strategies in individuals at risk for falls rather than trying to control behaviour through use of restraints (ACSQHC, 2009 a, b; Bredthauer et al., 2005; ICSI, 2010; Wang & Moyle, 2005). Research continues to demonstrate that organizations which focus on alternative strategies and remove physical restraints experience a reduction in use of restraints and injury from falls with no change in rate of falls (Bredthauer et al.; ICSI; Rask et al., 2007; Wang & Moyle).</p> <p>ACSQHC (2009 a, b) identifies good policy and practice in regards to restraints as consisting of :</p> <ul style="list-style-type: none"> • understanding the cause of client behaviour; • use of alternative strategies other than restraints to control behaviour; • consideration of restraint use only after alternative strategies have been exhausted based on specific rationale that ensures limited restraint use (type of restraint used and duration of use) agreed upon by interprofessional team; • limited use of drugs (minimal dose, minimal duration) when considered for restraint purposes with frequent review and monitoring to ensure drugs are not being substituted for quality care and use of alternative strategies to manage behaviours; • use of hospital policy and protocol for physical or chemical restraint use; and • interprofessional team collaboration and agreement with client/family on alternative strategies to prevent use of restraints only as a last resort. <p>Organizations should explore concerns with reducing the use of restraints with staff and clients/families to understand the issues in establishing a restraint free or least restraint practices as mandated by legislation. A qualitative study by Lai (2007) outlined that nurses use restraints as a means to mitigate the guilt feelings and stress associated with injury of an individual due to falls and the volume of work. Lai identified restraint use as part of unit culture outlining poor communication and guidance from administrators on least restraint policy and pressure from staff and the client's family based</p>	+

<p>on fear of harm as reasons for resorting to use of restraints. Organizations need to support ongoing education for policy to develop a least restraint culture which includes education on the use of alternative strategies for different behaviour patterns of individuals (e.g. agitation, wandering, delirium and dementia) and understanding the barriers and facilitators to ensure restraint free or least restraint environments (ACSQHC, 2000a, b; Lai; Wang & Moyle, 2005).</p>	
<p>Website Patient Restraints Minimization Act (2001) - Available at: http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_01p16_e.htm</p> <p>Long-Term Care Homes Act, 2007 – Available at: http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_07l08_e.htm</p> <p>Ontario e-laws – Available at: http://www.e-laws.gov.on.ca/navigation?file=home&lang=en</p>	+
<p>Organizational Support</p> <p>5.0 Organizations create an environment that supports interventions for fall prevention that includes:</p> <ul style="list-style-type: none"> • Fall prevention programs; • Staff education; • Clinical consultation for risk assessment and intervention; • Involvement of interprofessional teams in case management; and • Availability of supplies and equipment such as transfer devices, high low beds, and bed exit alarms. <p style="text-align: right;">(Level of evidence = IV)</p>	✓
<p><i>The discussion of evidence for this recommendation found on page 32-33 of the guideline has been revised to reflect the additional literature support:</i></p> <p>Discussion of Evidence</p> <p>Organizational policies must promote a culture where all interprofessional team members and all other hospital employees have a role in their falls prevention and injury reduction program (SHN, 2010). The organization should have a post-fall policy detailing reporting mechanisms, action to be taken to ensure client safety, post-fall analysis and problem-solving by the interprofessional team (ACSQHC, 2009 a, b; SHN).</p> <p>Cameron et al. (2010) identified that organizations must have an explicit culture that emphasizes the importance of reducing falls and injuries from falls. However, organizations must also consider allocation of a budget for this initiative in client safety as studies suggest that there is a possibility that implementing falls prevention programs without providing additional resources may increase rates of falls (Cameron et al.).</p> <p>Organizations can appoint an individual or champion to lead and provide support for initiatives in falls prevention and injury reduction (ICSI, 2010). Interprofessional team members must be involved in the falls prevention program plan and receive education on strategies that also includes support for alternative approaches to use of restraints and support for a least restraints environment (ICSI; Lai, 2007; Ng et al., 2008).</p> <p>The organization should engage in regular environmental safety checks so that necessary adjustments can be made to avoid falls caused by faulty equipment, lighting or surfaces</p>	+

(ACSQHC, 2009 a, b). Such checks can be done collaboratively with representatives from technical services, clinical staff and housekeeping, etc.

Accreditation Canada (2010) suggest programs can include staff training, balance and strength training for clients, and using bed exit alarms for clients who are at high risk of falling. Accreditation Canada recognises the costs associated with falls and fall related injuries as well as the impact on quality of life and evaluates organizational teams to ensure they have implemented a falls prevention strategy that:

- identifies the populations at risk,
- addresses the specific needs of the populations at risk,
- evaluates on an ongoing basis, the falls prevention strategy to identify trends, causes, and degree of injury,
- utilizes evaluation information to make improvements to the falls prevention strategy.

The influence of nursing staff levels in supporting reduction of falls and injury from falls remains inconclusive and is only one aspect to consider when reviewing the success of a falls prevention and injury reduction program (Lake & Cheung, 2006).

A study by Dykes et al. (2009) on staff perspectives around falls in long term care settings identified the following components that should be considered in a falls prevention program:

- communicate falls risk at shift change;
- be specific about the nature of help needed by client;
- clarify usefulness of visual cues/signage to identify clients at risk;
- be alert to need to maintain a safe environment for client;
- work as a team;
- involve client and family as part of team.

Organizations should review any contextual factors known to influence successful implementation of a falls prevention and injury reduction program and continually work with interprofessional team members to identify barriers and facilitators that enhance program outcomes.

A documentation tool should be adopted to guide and assist staff to follow through on components of the falls prevention and injury reduction program (Capezuti et al., 2007). Organizations should consider staff interest in falls prevention; time to coordinate the multiple program components; computer availability and staff proficiency; access to rehabilitative services; administrative stability and skills for quality improvement initiatives (Capezuti et al.; ICSI, 2010; Levtzion-Korach et al., 2009; SHN 2010).

Additional Literature Support

- Bredthauer et al. (2005)
- Krauss et al. (2008)
- Lange et al. (2009)
- MOS (2005)
- Rask et al. (2007)
- Wagner, Capezuti, Clark, Parmelee, & Ouslander (2008)
- Wagner, Capezuti, Taylor, Sattin, & Ouslander (2005)
- Wagner, Clark, Parmelee, Capezuti, & Ouslander (2005)
- Wang & Moyle (2005)



<h2>Medication Review</h2> <p>5.1 Organizations implement processes to effectively manage polypharmacy and psychotropic medications including regular medication reviews and exploration of alternatives to psychotropic medication for sedation.</p> <p style="text-align: right;">(Level of evidence = IV)</p>	✓
<p><i>The discussion of evidence for this recommendation found on page 33 of the guideline has been revised to reflect the additional literature support:</i></p> <h3>Discussion of Evidence</h3> <p>Every organization should take a proactive organization wide approach to medication review which should include but not be limited to:</p> <ul style="list-style-type: none"> • review of client’s medications on admission to any healthcare setting, during internal transfers, periodically during stay, on change in client condition, post fall incident and upon discharge (Accreditation Canada, 2010; SHN, 2010), • involve the client/family in medication reviews (ACSQHC, 2009 a, b), • older adults should have their medication modified appropriately to reduce the risk of falling (ACSQHC), • clients on psychoactive medication should have their medication reviewed, and if possible, gradually discontinued (ACSQHC; AGS, 2010; ICSI, 2010). 	+
<p>Additional Literature Support</p> <p>Agashivala & Wu (2009)</p> <p>Avidan et al. (2005)</p> <p>Chen et al. (2009)</p> <p>Corsinovi et al. (2009)</p> <p>Fonad et al. (2008)</p> <p>Hien Le et al. (2005)</p> <p>Kamble Chen, Sherer, & Aparasu (2008)</p> <p>Krauss et al. (2005)</p> <p>MOS (2005)</p> <p>Sorock et al. (2009)</p> <p>Sterke et al. (2008)</p>	+
<h2>RNAO Toolkit</h2> <p>6.0 Nursing best practice guidelines can be successfully implemented only where there are adequate planning, resources, organizational and administrative support, as well as appropriate facilitation. Organizations may wish to develop a plan for implementation that includes:</p> <ul style="list-style-type: none"> • An assessment of organizational readiness and barriers to education. • Involvement of all members (whether in a direct or indirect supportive function) who will contribute to the implementation process. • Dedication of a qualified individual to provide the support needed for the education and implementation process. • Ongoing opportunities for discussion and education to reinforce the importance of best practices. • Opportunities for reflection on personal and organizational experience in implementing guidelines. 	✓

<p>In this regard, RNAO (through a panel of nurses, researchers and administrators) has developed the Toolkit: Implementation of Clinical Practice Guidelines based on available evidence, theoretical perspectives and consensus. The Toolkit is recommended for guiding the implementation of the RNAO guideline Prevention of Falls and Fall Injuries in the Older Adult.</p> <p style="text-align: right;">(Level of evidence = IV)</p>	
<p>Website RNAO, Falls Prevention Toolkit Available at: http://tctoolkit.rnao.ca/resources/falls#Planning-Implementation-Tools</p> <p>SHN. (2010). Reducing Falls and Injuries From Falls, Getting Started Kit. Available at: http://www.saferhealth-carenow.ca/EN/Interventions/Falls/Pages/default.aspx</p>	+

The Review Panel has identified the following updates **in bold** as follows to:

- Definition of Terms: **Added Typical and Atypical Antipsychotic, Client and Interprofessional.**
- Table 3: Risk Factors and Associated Odds of Falling: **Changed for Risk Factor: Balance and gait – hospital.**
- Appendix C: Tools for Risk Assessment and Appendix E: Resources and Useful Websites: **Added website links to additional resources.**

<p>Definition of Terms:</p>	<p>Antipsychotics:</p>
<p><i>Found on page 18-20 has updated the definitions as follows:</i></p>	<p>Typical Antipsychotic medications are used to treat schizophrenia and schizophrenia-related disorders since the mid-1950’s and are also called conventional “typical” antipsychotics. Some commonly used include:</p> <ul style="list-style-type: none"> • Chlorpromazine (Thorazine) • Haloperidol (Haldol) • Perphenazine (generic only) • Fluphenazine (generic only) <p>In the 1990’s, new antipsychotic medications were developed. These new medications are called second generation, or “atypical” antipsychotics.</p> <p>Atypical antipsychotic medications are sometimes used to treat symptoms of bipolar disorder and are called “atypical” to set them apart from earlier “conventional or first generation antipsychotic medications which are:</p> <ul style="list-style-type: none"> • Olanzapine (Zyprexa), • Aripiprazole (Abilify), • Quetiapine (Seroquel) • Risperidone (Risperdal) • Ziprasidone (Geodon) • Paliperidone (Invega) <p>Retrieved from National Institute of Mental Health http://www.nimh.nih.gov/health/publications/mental-health-medications/what-medications-are-used-to-treat-schizophrenia.shtml</p> <p>Client: Inclusive of individuals (patient, resident, client), families/significant others, groups, communities, and populations (RNAO, rev., 2006, pg. 12).</p> <p>Interprofessional: Refers to the provision of comprehensive health services to clients by multiple health caregivers who work collaboratively to deliver quality care within and across settings (Interprofessional Care Steering Committee, 2007).</p>

Definition of Terms:	Antipsychotics:								
<p>Table 3: Risk Factors and Associated Odds of Falling found on page 23 of original guideline changed as follows in BOLD:</p>	<table border="1"> <thead> <tr> <th data-bbox="452 169 680 234">Risk Factor</th> <th data-bbox="686 169 1044 234">Hospitalized</th> <th data-bbox="1044 169 1378 234">Long Term Care Settings</th> </tr> </thead> <tbody> <tr> <td data-bbox="452 234 680 449">Balance and gait</td> <td data-bbox="686 234 1044 449"> <p>Current evidence suggests that this is a risk factor for hospitalized clients (Chen et al., 2009; Corsinovi et al., 2009; Kobayashi et al., 2009; Krauss et al., 2005)</p> </td> <td data-bbox="1044 234 1378 449"> <p>Unsteady gait (OR, 1.13) Transfer independence (OR, 1.49) Wheelchair independence (OR, 1.39) (RNAO, 2005)</p> </td> </tr> </tbody> </table>	Risk Factor	Hospitalized	Long Term Care Settings	Balance and gait	<p>Current evidence suggests that this is a risk factor for hospitalized clients (Chen et al., 2009; Corsinovi et al., 2009; Kobayashi et al., 2009; Krauss et al., 2005)</p>	<p>Unsteady gait (OR, 1.13) Transfer independence (OR, 1.49) Wheelchair independence (OR, 1.39) (RNAO, 2005)</p>		
Risk Factor	Hospitalized	Long Term Care Settings							
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<p>Appendix C: Tools for Risk Assessment found on page 53 and Appendix E: Resources and Useful Websites found on page 55 has been updated with added links as follows:</p>	<p>Website: SHN. (2010). Reducing Falls and Injuries From Falls, Getting Started Kit. Appendix A: Risk Assessment Tools, pg. 51. Available at: http://www.saferhealthcarenow.ca/EN/Interventions/Falls/Pages/default.aspx</p> <p>British Columbia Injury Research and Prevention Unit (BCIRPU) Library Repository of Tools. Available at: http://www.injuryresearch.bc.ca/categorypages.aspx?catid=3&catname=Library</p> <p>Health Canada (2005). Report on Senior's Falls in Canada. Available at: http://www.phac-aspc.gc.ca/seniors-aines/publications/pro/injury-blessure/falls-chutes/</p> <p>Health Canada (2011). Inventory of Falls Prevention Initiatives in Canada. Available at: http://www.phac-aspc.gc.ca/seniors-aines/publications/pro/injury-blessure/fpi-prevention-rip/</p> <p>Mississauga Halton LHIN (2008). Falls Prevention Resource Guide. Available at: http://www.mississaugahaltonlhin.on.ca/SearchPage.aspx?searchtext=Falls%20Prevention%20Resource</p>								

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