

FALLS PREVENTION AND MANAGEMENT

Regional Clinical Practice Guidelines

- *Acute Care Facilities*
- *Personal Care Homes / Long Term Care Facilities*
- *Community Services & Programs*



Winnipeg Regional
Health Authority
Caring for Health

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santé de Winnipeg
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WRHA Regional Clinical Practice Guidelines for Falls Prevention and Management

1. BACKGROUND

Within Manitoba, falls are the most frequent cause of injury-related deaths and hospitalizations for older adults. In fact, falls account for more than \$164 million in health care spending.¹ Hip fractures are one of the serious injuries stemming from falls. Falls account for more than 90% of hip fractures among older adults. Only 50% of these individuals are able to return to their home or live independently again. In-hospital hip fracture rates are higher in Manitoba relative to other Canadian provinces and territories.²

Every year in the Winnipeg Health Region, there are more than 22,500 reported falls in community, hospital and personal care home settings.³ Falls not only account for 54% of all regional critical incidents but are also responsible for 2,000 fall-related hospitalizations each year among adults 65 years of age and over. The average length of stay in a hospital following a fall is 33 days.⁴

The incidence and significance of falls has prompted Accreditation Canada to designate falls prevention and management as a Required Organizational Practice. Specifically, Accreditation Canada now requires all health care teams to “implement and evaluate a fall prevention strategy to minimize the impact of client falls”.⁵

In October 2008, an interprofessional and intersectoral Regional Falls Prevention Leadership Committee was established to facilitate the coordination and consistency of Winnipeg Regional Health Authority’s (WRHA) falls prevention and management initiatives for older adults with the aim of decreasing falls and injuries resulting from falls within the region (refer to Appendix A for a list of committee members). To support this goal, these regional clinical practice guidelines for falls prevention and management were developed.

2. GOALS AND OBJECTIVES OF THE GUIDELINES

The overall goal of this document is to provide evidence informed guidelines to guide falls prevention and management programs across all sectors within the WRHA. Specific objectives include:

- To ensure a consistent approach to falls prevention and management across the region
- To ensure falls assessment and management is prompt, appropriate, and consistent
- To ensure falls assessment and management includes the use of systematic and validated tools
- To identify and address risk factors for falls, decrease the incidence of falls and decrease the incidence of injurious falls

- To provide the foundation upon which falls prevention and management education is based
- To ensure falls prevention and management programs are continually evolving based on critical analysis of key quality indicators and new evidence

3. TARGET POPULATION

These guidelines specifically target adults over the age of 65 years but are applicable to any adult whose condition places them at risk of falling such as those with a history of falls, neurological conditions, cognitive problems, depression, visual impairment or other medical conditions leading to an alteration in functional ability.⁶

4. TARGET AUDIENCE

These guidelines were designed to be used by all health care providers including direct care staff working with older adults, policy makers, educators, and administrators. The guidelines apply equally to all members of the interprofessional team.

5. KEY DEFINITIONS

Fall: Unintentionally coming to rest on the ground, floor or other lower level with or without an injury (Developed by the Canadian Falls Prevention Curriculum and adopted by the Manitoba Falls Prevention Network, October 31, 2008).

Falls Screening Tool: A tool used to identify a person's risk of falling. A screening tool attempts to identify those at highest risk of falling.⁶

Falls Risk Assessment: A detailed and systematic process used to identify a person's risk factors of falling. It is used to help identify which interventions to implement.⁶

Guidelines: Reflect a summary of best available evidence. Levels of evidence within these guidelines are defined as follows:

Level I: Evidence obtained from a systematic review of all relevant randomized controlled trials

Level II: Evidence obtained from at least one properly designed randomized controlled trial

Level III-1: Evidence obtained from well-designed pseudo-randomized controlled trials (alternate allocation or some other method)

Level III-2: Evidence obtained from comparative studies with concurrent controls and allocation not randomized (cohort studies), case-control studies, or interrupted time series with a control group

Level III-3: Evidence obtained from comparative studies with historical control, two or more single arm studies, or interrupted time series without a parallel control group

Level IV: Evidence obtained from case series, either post-test, or pretest and post-test^{6,7}

No Level Stated: Evidence obtained from expert opinion and stakeholder feedback only

Guidelines without a level of evidence cited beside them reflect those based on expert opinion.

Good practice points: Speak to areas without strong research evidence but are deemed important based on clinical experience or expert consensus.⁶

Additional definitions are included in the Glossary (see page 9).

6. GUIDING PRINCIPLES

- The older adult's perspective and individual needs are key considerations in the application of this guideline.
- The principle of maintaining the highest quality of life possible while striving for a safe environment and practices should guide intervention choices. Risk-taking, dignity, autonomy and self-determination are to be supported, respected and considered in the plan of care.
- The older adult, their family / caregivers and the interprofessional team must work collaboratively to prevent falls.
- Successful falls prevention programs require screening and assessment of falls risk. However, multifactorial fall prevention interventions are critical to achieve positive client outcomes.
- Understanding the complex interaction between intrinsic factors (e.g. age-related changes, medication, underlying health conditions, lifestyle, etc.) and extrinsic factors (e.g. icy sidewalks, scatter rugs, poor lighting, etc.) is fundamental to fall prevention and management.
- Leadership commitment to a falls prevention and management program is critical for success.

7. METHODOLOGY

A comprehensive literature review was conducted to identify currently published systematic reviews, meta-analyses, and clinical practice guidelines. From this review, promising guidelines developed by the Australian Commission on Safety and Quality in Health Care (ACSQHC) were identified. These guidelines entitled *“Preventing falls and harm from falls in older people: Best practice guidelines for Australian hospitals, residential care facilities and community care (2009)”*.⁶

- Include the most recently published evidence on falls prevention and management (publication date of December 2009)
- Separate guidelines into three areas: hospital, residential aged care facilities (equivalent to PCH/long term care facilities), and community care
- Provide extensive supporting documentation in a clear, easy to understand manner and include implementation tools and guides
- Represent the second revision of the original guidelines created and piloted in 2005.

In order to objectively assess the quality of the ACSQHC guidelines, the Appraisal of Guidelines for Research and Evaluation (AGREE) Tool was used. The AGREE tool is a reliable and valid instrument designed specifically to provide a framework for assessing the quality of clinical practice guidelines.⁸ Based on the results of the AGREE tool, the Regional Falls Prevention Leadership Committee agreed to adopt the guidelines from ACSQHC (2009). Permission for use was obtained from the ACSQHC.

The ACSQHC guidelines were modified to reflect WRHA terminology and context. Select guidelines around screening, education, evaluation, and sustainability were added. These administrative guidelines pertain equally to all sites, programs, and facilities. Additionally, the existing WRHA clinical practice guidelines for the prevention and management of falls within the Personal Care Home Program were reviewed in July 2010 and embedded into Appendix C of this document.

The draft guidelines were disseminated widely across the WRHA to obtain stakeholder feedback. All stakeholder feedback was reviewed and incorporated at the discretion of the Regional Falls Prevention Leadership Committee based on the congruence of the feedback with the existing evidence.

According to the ACSQHC, the guidelines will be reviewed in 2014 at which time the WRHA will also review and update this document as required.

8. HOW TO USE THESE GUIDELINES

The application of these guidelines “is intended to be in the context of professional judgment, clinical knowledge, competence and experience of health professionals. The guidelines acknowledge that the clinical judgment of informed professionals is best practice in the absence of good-quality published evidence. Some flexibility may therefore be required to adapt these guidelines to specific settings, to local circumstances, and to older adult’s needs, circumstances and wishes” (ACSQHC, p. xv).⁶

9. GUIDELINES

This document represents a summary of the guidelines contained in the full ACSQHC guidelines.⁶

9.1 Administrative Guidelines (Applicable to all sites/programs/facilities)

Screening

- A standardized falls risk screening tool will be used within all sites/programs/facilities.
- Generally, a falls risk screening tool will provide an overall score. However, the focus should not be on the score but on the specific areas of risk identified.

Education for Staff

- All health care providers working with older adults shall be knowledgeable and competent in falls risk assessment, intervention, and prevention.⁹ Specific topics should include:
 - Definition of a fall
 - Falls statistics including frequency, outcomes and costs
 - Risk factors (intrinsic and extrinsic) associated with falls
 - Consequences of falls including the impact on quality of life and autonomy
 - Assessment of falls including documentation and use of falls assessment tools
 - Falls and injury prevention strategies

Education for Older Adults / Family

- Older adults and their family should be offered education regarding risk factors for falling and fall prevention and management strategies.
- Raising awareness of falls prevention among older adults, their family/caregivers, health care providers, policy makers, and the media should be delivered through a population wide information campaign.

Evaluation

- Each sector will monitor falls quality indicators on a regular basis and compare indicators across like programs/units to identify trends, causes and degree of injury. Indicators to be measured include incidence of falls, incidence of falls with injury, completion of a falls risk assessment tool, and presence of falls prevention strategies within the care plan.
- Quality indicator results will be widely disseminated (e.g. leadership/management committees, staff meetings, patient/family/resident councils, community groups and other relevant partners)

Administrative Guidelines (continued)

- Each sector will include falls prevention in their Quality Plans. The effectiveness of the fall prevention program will be evaluated to identify areas for improvement.⁵

Sustainability

- Plans for sustainability should be a focus from the development of the program through implementation and evaluation. Continuing education and knowledge translation must be an ongoing priority.
- Each sector should develop strategies related to:
 - Sustaining the issue: keep falls awareness high on the agenda
 - Sustaining behavior changes: build skills, create supportive physical structures, and modify social environments so they are supportive of healthy behaviors
 - Sustaining programs: establish a falls prevention and management committee or working group, partner with other sites / programs / facilities / communities to integrate initiatives.¹⁰

9.2 Clinical Guidelines and Good Practice Points

Sector specific clinical guidelines and good practice points are contained in the appendices as follows:

Acute Care Facilities – refer to **Appendix B**

Personal Care Homes / Long Term Care Facilities – refer to **Appendix C**

Community Services and Programs – refer to **Appendix D**

Glossary

Balance programs

Exercises/ techniques to improve the ability to correct displacement of the body during its movement through space and to compensate for external disturbances.

Bed / Chair alarms

Devices placed on beds/ chairs that alarm when a person rises

Cognitive impairment

Impairment in one or more domains of normal brain function (eg memory, perception, calculation)⁶

Cognitively intact

Suffering no form of cognitive impairment⁶

Co morbidity

Two or more health conditions or disorders occurring at the same time⁶

Continence

The ability to retain the contents of bladder and /or bowel until conditions are proper for urination / defecation⁶

Delirium

An acute change in cognitive function characterized by fluctuating confusion, impaired concentration and attention⁶

Dementia

Impairment in more than one cognitive domain that impacts on a person's ability to function, and that progresses over time⁶

Extrinsic factors

Factors that relate to a person's environment or their interaction with the environment⁶

Hip protectors

Garments or undergarments with pockets on each side, into which protective pads are inserted. Protective pads may be hard or soft-shelled. In the event of a fall, the pad absorbs or disperses the force away from the hip¹¹

Intrinsic factors

Factors that relate to a person's behavior or condition⁶

Malnutrition

A condition that occurs when an individual is not getting enough nutrients. The condition may result from an inadequate or unbalanced diet, digestive difficulties, absorption problems or other medical conditions.⁶

Mobility assistive devices

Therapist recommended devices such as walkers, canes, wheelchairs, scooters.

Multifactorial interventions

Where people receive multiple interventions, but the combination of these interventions is tailored to the individual, based on an individual assessment.⁶

Multiple interventions

Where everyone receives the same, fixed combination of interventions.⁶

Orthostatic hypotension

A difference in systolic blood pressure of greater than or equal to 20 mmHg between lying to standing / sitting after one minute. It can be acquired or idiopathic, transient or chronic, and may occur alone or secondary to a disorder of the central nervous system. It is associated with dizziness, blurred vision, and sometimes syncope, occurring upon standing. Orthostatic hypotension is more clinically significant if there is a large drop in systolic blood pressure, a low standing BP (e.g. below 90 mmHg) or if there are associated symptoms.

Pharmacodynamics

The study of the biochemical and physiological effects that medications have on the body.⁶

Pharmacokinetics

The study of the way in which the body handles medications, including the processes of absorption, distribution, excretion and localisation in tissues and chemical breakdown.⁶

Psychoactive medication

A medication that affects the mental state. Psychoactive medications include anti-depressants, anticonvulsants, antipsychotics, mood stabilizers, anxiolytics, hypnotics, antiparkinsonian medications, psychostimulants and dementia medications.⁶

Single interventions

Interventions targeted at single risk factors.⁶

Syncope

A temporary loss of consciousness with spontaneous recovery, which occurs when there is a transient decrease in cerebral blood flow.⁶

References

1. IMPACT, Manitoba Health. Preventing falls and fall-related injuries in Manitoba. Winnipeg, MB: Manitoba Healthy Living, Youth and Seniors; 2006. 49p. <http://www.gov.mb.ca/healthyliving/injury/bestpractices.html>.
2. Canadian Institute for Health Information (CIHI). Health indicators 2009. ISBN 978-1-904752-35-6. Ottawa, ON: CIHI; June 2009. 138p. <https://secure.cihi.ca/estore/productbrowse.htm?locale=en&Lang=en-US>; <https://secure.cihi.ca/estore/productFamily.htm?pf=PFC1347&lang=en&media=0>.
3. Manager, Audit & Quality Analysis - Patient Safety unit. Fall occurrences indicator summary Jan 1 - Dec 31, 2009. Winnipeg, MB: Winnipeg Regional Health Authority (WRHA); 2010.
4. Winnipeg Regional Health Authority (WRHA). Injury data report. Winnipeg, MB: Winnipeg Regional Health Authority (WRHA); 2007. 159p. http://www.wrha.mb.ca/healthinfo/preventinj/files/IDR_080131.pdf.
5. Accreditation Canada. Falls prevention strategy. In: Required Organizational Practices. Ottawa, ON: Accreditation Canada; 2010:47.
6. Australian Commission on Safety and Quality in Health Care. Preventing falls and harm from falls in older people: Best practice guidelines for Australian hospitals, residential aged care facilities and community care 2009. <http://www.safetyandquality.gov.au/internet/safety/publishing.nsf/Content/FallsGuidelines>. Accessed 11/03, 2010.
7. National Health and Medical Research Council. A guide to the development, implementation and evaluation of clinical practice guidelines. CP30. Canberra: Australian Government; 1999. 88p. <http://www.nhmrc.gov.au/publications/synopses/cp30syn.htm>; http://www.nhmrc.gov.au/files_nhmrc/file/publications/synopses/cp30.pdf.
8. The AGREE Collaboration. Appraisal of guidelines for research & evaluation (AGREE) instrument. ISBN 1 8981 8321 X. London: The AGREE Collaboration; 2001. <http://www.agreecollaboration.org/instrument/>.
9. National Institute of Clinical Excellence (NICE). Clinical practice guideline for the assessment and prevention of falls in older people. Clinical Practice Guidelines London: Royal College of Nursing; 2004. 284p. <http://www.nice.org.uk/nicemedia/pdf/CG021fullguideline.pdf>.
10. Canadian Association of Occupational Therapists (CAOT), Occupational Therapy Program, University of Ottawa. Stable, able and strong program manual. Ottawa, ON: CAOT Publications ACE; April 2008. 59p. <http://www.otworks.ca/sas/programmanual.pdf>.
11. Canadian Agency for Drugs and Technologies in Health (CADTH). Policy guidance on hip protectors in long-term care. Ottawa, ON: Canadian Agency for Drugs and Technologies in Health (CADTH); 2010. 3p. http://www.cadth.ca/media/pdf/CADTH_Hip_Protectors_Policy_Guidance_e.pdf.
12. Cameron Ian D, Murray Geoff R, Gillespie Lesley D, et al. Interventions for preventing falls in older people in nursing care facilities and hospitals. Chichester, UK: John Wiley & Sons, Ltd; 2010.
13. Oliver D, Connelly JB, Victor CR, et al. Strategies to prevent falls and fractures in hospitals and care homes and effect of cognitive impairment: Systematic review and meta-analyses. *BMJ*. 2007;334(7584):82.
14. Healey F, Monro A, Cockram A, Adams V, Heseltine D. Using targeted risk factor reduction to prevent falls in older in-patients: A randomised controlled trial. *Age Ageing*. 2004;33(4):390-395.
15. Stenvall M, Olofsson B, Lundstrom M, et al. A multidisciplinary, multifactorial intervention program reduces postoperative falls and injuries after femoral neck fracture. *Osteoporos Int*. 2007;18(2):167-175.
16. Haines TP, Bennell KL, Osborne RH, Hill KD. Effectiveness of targeted falls prevention programme in subacute hospital setting: Randomised controlled trial. *BMJ*. 2004;328(7441):676.
17. Clemson L, Mackenzie L, Ballinger C, Close JC, Cumming RG. Environmental interventions to prevent falls in community-dwelling older people: A meta-analysis of randomized trials. *J Aging Health*. 2008;20(8):954-971.
18. Cumming RG, Thomas M, Szonyi G, et al. Home visits by an occupational therapist for assessment and modification of environmental hazards: A randomized trial of falls prevention. *J Am Geriatr Soc*. 1999;47(12):1397-1402.
19. Inouye SK, van Dyck CH, Alessi CA, Balkin S, Siegal AP, Horwitz RI. Clarifying confusion: The confusion assessment method. A new method for detection of delirium. *Ann Intern Med*. 1990;113(12):941-948.

20. Schuurmans MJ, Deschamps PI, Markham SW, Shortridge-Baggett LM, Duursma SA. The measurement of delirium: Review of scales. *Res Theory Nurs Pract.* 2003;17(3):207-224.
21. Wei LA, Fearing MA, Sternberg EJ, Inouye SK. The confusion assessment method: A systematic review of current usage. *J Am Geriatr Soc.* 2008;56(5):823-830.
22. Fonda D, Cook J, Sandler V, Bailey M. Sustained reduction in serious fall-related injuries in older people in hospital. *Med J Aust.* 2006;184(8):379-382.
23. Bakarich A, McMillan V, Prosser R. The effect of a nursing intervention on the incidence of older patient falls. *Aust J Adv Nurs.* 1997;15(1):26-31.
24. Australian Commission on Safety and Quality in Healthcare. Appendix 4: Safety shoe checklist. In: *Preventing Falls and Harm from Falls in Older People: Best Practice Guidelines for Australian Residential Aged Care Facilities.* Queensland Health; 2009:145p.
25. Cadario B, BC Injury Research and Prevention Unit. Drugs and the risk of falling. http://www.injuryresearch.bc.ca/admin/DocUpload/3_20100407_105321FINAL%20-%20Drugs%20and%20the%20Risk%20of%20Falling_August_2009.pdf. Accessed 01/19, 2011.
26. Campbell AJ, Robertson MC, Gardner MM, Norton RN, Buchner DM. Psychotropic medication withdrawal and a home-based exercise program to prevent falls: A randomized, controlled trial. *J Am Geriatr Soc.* 1999;47(7):850-853.
27. Focus on Falls Prevention Project. Vision screening kit. Winnipeg, MB: Misericordia Health Centre - Winnipeg Regional Health Authority (WRHA); 2011. Available from: <http://www.misericordia.mb.ca/AboutUs/VisionScreening.html>. Accessed January 17, 2011.
28. Winnipeg Regional Health Authority (WRHA). Staying on your feet. http://www.wrha.mb.ca/healthinfo/preventinj/prevent_falls.php. Accessed 01/19, 2011.
29. Dyck D, Hamonic M. Falls prevention literature review: Equipment and environmental strategies. Literature Review Winnipeg, MB: Winnipeg Regional Health Authority (WRHA); 2010. 11p. <http://home.wrha.mb.ca/prog/clinicalinitiatives/falls/files/LiteratureReview.pdf>.
30. Bed-exit alarms. A component (but only a component) of fall prevention. *Health Devices.* 2004;33(5):157-168.
31. Evans D, Wood J, Lambert L. Patient injury and physical restraint devices: A systematic review. *J Adv Nurs.* 2003;41(3):274-282.
32. Evans D, Wood J, Lambert L, Fitzgerald M. Physical Restraint in Acute and Residential Care: A Systematic Review. Vol 00. Adelaide, South Australia: The Joanna Briggs Institute; 2002.
33. Frengley JD, Mion LC. Physical restraints in the acute care setting: Issues and future direction. *Clin Geriatr Med.* 1998;14(4):727-743.
34. Cassel CK, ed. *Geriatric Medicine: An Evidence-Based Approach.* 4th ed. New York: Springer; 2003.
35. Oliver D. Bed falls and bedrails--what should we do? *Age Ageing.* 2002;31(5):415-418.
36. Park M. Changing the Practice of Physical Restraint use in Acute Care. Rev ed. Iowa City: University of Iowa, Gerontological Nursing Interventions Research Center, Research Translation and Dissemination Core; 2005.
37. Lamont L. Restraints minimization – acute care facilities (adult). Policy 110.000.025. Winnipeg, MB: Winnipeg Regional Health Authority (WRHA); 2011. 6p. <http://home.wrha.mb.ca/corp/policy/files/110.000.025.pdf>.
38. Meyer G, Warnke A, Bender R, Muhlhauser I. Effect on hip fractures of increased use of hip protectors in nursing homes: Cluster randomised controlled trial. *BMJ.* 2003;326(7380):76.
39. Gillespie William J, Gillespie Lesley D, Parker Martyn J. *Hip protectors for preventing hip fractures in older people.* Chichester, UK: John Wiley & Sons, Ltd; 2010.
40. Smith K, Begg L. Falls prevention and nutrition in long-term care (LTC). Practice Issue Evidence Summary Winnipeg, MB: Nutrition and Food Service - Winnipeg Regional Health Authority (WRHA); 2010. 1-9. Available from: NFS Clinical Nutrition Sharepoint.
41. Papaioannou A, Morin S, Cheung AM, et al. 2010 clinical practice guidelines for the diagnosis and management of osteoporosis in canada: Summary. *CMAJ.* 2010;182(17):1864-1873.

42. Health Canada. Vitamin D and calcium: Updated dietary reference intakes. <http://www.hc-sc.gc.ca/fn-an/nutrition/vitamin/vita-d-eng.php>. Accessed 01/17, 2011.
43. Vagianos K. Vitamin D supplementation of acute care. Practice Issue Evidence Summary Winnipeg, MB: Nutrition and Food Services - Winnipeg Regional Health Authority (WRHA); 2008. 1-8. Available from: NFS Clinical Nutrition Sharepoint.
44. Martin D. Hip fracture - vitamin D and calcium supplementation. Practice Issue Evidence Summary Winnipeg, MB: Nutrition and Food Services - Winnipeg Regional Health Authority (WRHA); 2010. 1-8. Available from: NFS Clinical Nutrition Sharepoint.
45. Cranney A, Guyatt G, Griffith L, et al. Meta-analyses of therapies for postmenopausal osteoporosis. IX: Summary of meta-analyses of therapies for postmenopausal osteoporosis. *Endocr Rev.* 2002;23(4):570-578.
46. Klotzbuecher CM, Ross PD, Landsman PB, Abbott TA, 3rd, Berger M. Patients with prior fractures have an increased risk of future fractures: A summary of the literature and statistical synthesis. *J Bone Miner Res.* 2000;15(4):721-739.
47. Jensen J, Lundin-Olsson L, Nyberg L, Gustafson Y. Fall and injury prevention in older people living in residential care facilities. A cluster randomized trial. *Ann Intern Med.* 2002;136(10):733-741.
48. Bouwen A, De Lepeleire J, Buntinx F. Rate of accidental falls in institutionalised older people with and without cognitive impairment halved as a result of a staff-oriented intervention. *Age Ageing.* 2008;37(3):306-310.
49. Personal Care Homes (PCH) Program - Winnipeg Regional Health Authority (WRHA). Falls prevention: WRHA PCH program education resources. <http://home.wrha.mb.ca/prog/clinicalinitiatives/falls/resources.php>. Accessed 01/19, 2011.
50. Chen JS, Sambrook PN, Simpson JM, et al. Risk factors for hip fracture among institutionalised older people. *Age Ageing.* 2009;38(4):429-434.
51. Sherrington C, Whitney JC, Lord SR, Herbert RD, Cumming RG, Close JC. Effective exercise for the prevention of falls: A systematic review and meta-analysis. *J Am Geriatr Soc.* 2008;56(12):2234-2243.
52. Lord SR, Castell S, Corcoran J, et al. The effect of group exercise on physical functioning and falls in frail older people living in retirement villages: A randomized, controlled trial. *J Am Geriatr Soc.* 2003;51(12):1685-1692.
53. Schnelle JF, Kapur K, Alessi C, et al. Does an exercise and incontinence intervention save healthcare costs in a nursing home population? *J Am Geriatr Soc.* 2003;51(2):161-168.
54. Department of Veterans Affairs - US Government. Falls policy attachment A: Equipment safety checklist. Washington, DC: Department of Veterans Affairs - US Government; 2004:43. Available from: http://www.patientsafety.gov/safetytopics/fallstoolkit/notebook/05_fallspolicy.pdf; <http://www.patientsafety.gov/safetytopics/fallstoolkit/index.html#notebook>. Accessed January 19, 2011.
55. Lord SR. Falls in Older People: Risk Factors and Strategies for Prevention. 2nd ed. Cambridge, UK; New York: Cambridge University Press; 2007.
56. Gillespie Lesley D, Robertson MC, Gillespie William J, et al. Interventions for preventing falls in older people living in the community. Chichester, UK: John Wiley & Sons, Ltd; 2009.
57. Baranzini F, Diurni M, Cecon F, et al. Fall-related injuries in a nursing home setting: Is polypharmacy a risk factor? *BMC Health Serv Res.* 2009;9:228.
58. Ray WA, Taylor JA, Meador KG, et al. A randomized trial of a consultation service to reduce falls in nursing homes. *JAMA.* 1997;278(7):557-562.
59. Sorock GS, Quigley PA, Rutledge MK, et al. Central nervous system medication changes and falls in nursing home residents. *Geriatr Nurs.* 2009;30(5):334-340.
60. Harwood RH, Foss AJ, Osborn F, Gregson RM, Zaman A, Masud T. Falls and health status in elderly women following first eye cataract surgery: A randomised controlled trial. *Br J Ophthalmol.* 2005;89(1):53-59.
61. Campbell AJ, Robertson MC, La Grow SJ, et al. Randomised controlled trial of prevention of falls in people aged > or =75 with severe visual impairment: The VIP trial. *BMJ.* 2005;331(7520):817.
62. Cumming RG, Ivers R, Clemson L, et al. Improving vision to prevent falls in frail older people: A randomized trial. *J Am Geriatr Soc.* 2007;55(2):175-181.

63. Lord SR, Dayhew J, Howland A. Multifocal glasses impair edge-contrast sensitivity and depth perception and increase the risk of falls in older people. *J Am Geriatr Soc.* 2002;50(11):1760-1766.
64. Hawranik P, Bell S. The effectiveness of a vision care services project on falls and fractures in personal care home residents. *J Safety Res.* [In Press].
65. Kerse N, Butler M, Robinson E, Todd M. Fall prevention in residential care: A cluster, randomized, controlled trial. *J Am Geriatr Soc.* 2004;52(4):524-531.
66. Butler M, Kerse N, Todd M. Circumstances and consequences of falls in residential care: The New Zealand story. *N Z Med J.* 2004;117(1202):U1076.
67. Trinidad G, WRHA PCH Program. Restraints and protective devices in personal care homes (use of). Policy 110.130.050. Winnipeg, MB: Winnipeg Regional Health Authority (WRHA); 2009. 7p. <http://home.wrha.mb.ca/corp/policy/files/110.130.050.pdf>.
68. Tilly J, Reed P. Falls, wandering, and physical restraints: A review of interventions for individuals with dementia in assisted living and nursing homes. *Alzheimer's Care Today.* 2008;9(1):45-50 10.1097/01.ALCAT.0000309015.85457.f5. Available from: http://journals.lww.com/actjournalonline/Fulltext/2008/01000/Falls,_Wandering,_and_Physical_Restraints_A.7.aspx.
69. Helps J, Garroni H, Gislason J, et al. Long term care. In: *Nutrition and Food Services - Winnipeg Regional Health Authority (WRHA), ed. Nutrition and Food Services Executive Summaries for 2008 Adult and Pediatric Diet Compendiums.* Winnipeg, MB: Winnipeg Regional Health Authority (WRHA); 2007: 7p.
70. Strang D, Murray P, Helps J. Vitamin D supplementation in long-term care (LTC). Guideline Winnipeg, MB: Personal Care Homes (PCH) Program - Winnipeg Regional Health Authority (WRHA); 2008. 2p. Available from: NFS Clinical Nutrition Sharepoint.
71. Personal Care Homes (PCH) Program - Winnipeg Regional Health Authority (WRHA). Managing a fall: Post fall assessment and management algorithm. Winnipeg, MB: Winnipeg Regional Health Authority (WRHA); 2010:1p. Available from: http://home.wrha.mb.ca/prog/clinicalinitiatives/falls/files/PCH_ManagingFallAlgorithm.doc; <http://home.wrha.mb.ca/prog/clinicalinitiatives/falls/resources.php>. Accessed January 19, 2011.
72. Foss AJ, Harwood RH, Osborn F, Gregson RM, Zaman A, Masud T. Falls and health status in elderly women following second eye cataract surgery: A randomised controlled trial. *Age Ageing.* 2006;35(1):66-71.
73. La Grow SJ, Robertson MC, Campbell AJ, Clarke GA, Kerse NM. Reducing hazard related falls in people 75 years and older with significant visual impairment: How did a successful program work? *Inj Prev.* 2006;12(5):296-301.
74. Kenny RA, Richardson DA, Steen N, Bexton RS, Shaw FE, Bond J. Carotid sinus syndrome: A modifiable risk factor for nonaccidental falls in older adults (SAFE PACE). *J Am Coll Cardiol.* 2001;38(5):1491-1496.
75. Pit SW, Byles JE, Henry DA, Holt L, Hansen V, Bowman DA. A quality use of medicines program for general practitioners and older people: A cluster randomised controlled trial. *Med J Aust.* 2007;187(1):23-30.
76. Menant JC, Steele JR, Menz HB, Munro BJ, Lord SR. Optimizing footwear for older people at risk of falls. *J Rehabil Res Dev.* 2008;45(8):1167-1181.
77. Menz HB, Lord SR. Foot problems, functional impairment, and falls in older people. *J Am Podiatr Med Assoc.* 1999;89(9):458-467.
78. Koepsell TD, Wolf ME, Buchner DM, et al. Footwear style and risk of falls in older adults. *J Am Geriatr Soc.* 2004;52(9):1495-1501.
79. Staying On Your Feet - Winnipeg Regional Health Authority (WRHA). Your home safety checklist: A few simple steps can make your home safer and help prevent you from falling. http://www.wrha.mb.ca/healthinfo/preventinj/files/SOYF_HomeSafetyChecklist.pdf. Accessed 01/24, 2011.
80. Health Canada. Eating well with Canada's food guide. <http://www.hc-sc.gc.ca/fn-an/food-guide-aliment/index-eng.php>. Accessed 01/24, 2011.
81. World Health Organization. Ageing and Life Course Unit. WHO Global Report on Falls Prevention in Older Age. Geneva, Switzerland: World Health Organization; 2008.
82. Bolland MJ, Avenell A, Baron JA, Greg A, MacLennan GS, Gamble GD, Reid IR. Effect of calcium supplements on risk of myocardial infarction and cardiovascular events: meta-analysis. *BMJ* 2010;341:C3691.

Appendix A

REGIONAL FALLS PREVENTION LEADERSHIP COMMITTEE

Lori Lamont, Vice President and Chief Nursing Officer, WRHA (Chair)
Andrea Bedard, Fitness Consultant, Victoria General Hospital
Betty Frost, Patient Care Improvement Coordinator, Concordia Hospital
Bev Friesen, Orthopedic Wait List Coordinator, WRHA Surgery Program
Carole Hamel, Clinical Nurse Specialist, Riverview Health Centre
Cathy Rippin-Sisler, Regional Director of Clinical Education & Continuing Professional Development, WRHA
Christine Johnson, Clinical Nurse Specialist, Rehabilitation and Geriatrics, Health Sciences Centre
Colleen Bytheway, Clinical Project Manager, Grace Hospital
Colleen Orton, Regional Utilization Resource Nurse, WRHA
Daria McLean, Manager, OESH, Health Sciences Centre
Daryl Dyck, Clinical Nurse Specialist, Deer Lodge Centre
Donna Romaniuk, Director of Medicine and Oncology, Victoria General Hospital
Elaine Pelletier, Leader, Patient Safety Complexity and Analysis, WRHA
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Jacque Habing, Manager, IMPACT Injury Prevention Program, WRHA
Jennifer Hodkinson, Orthopedic Waitlist Coordinator, WRHA Surgery Program
Jennifer Moran, Continuing Education Instructor, St. Boniface Hospital
Jennifer Vigfusson, Clinical Education, Concordia Hospital
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Kathleen Klaasen, Manager of Nursing Initiatives, WRHA
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Laura Morrison, Consultant, Manitoba Healthy Living, Youth and Seniors
Leslie Dryburgh, Clinical Nurse Specialist, Grace Hospital
Linda Dando, Regional Director of Home Care, WRHA
Louis Sorin, Community Area Director, Downtown Point Douglas, WRHA
Linda Rigaux, Osteoporosis Manitoba
Luana Whitbread, Clinical Nurse Specialist, Personal Care Home Program, WRHA
Madeline Kohut, Community Development and Seniors Specialist, WRHA
Marilyn Kilpatrick, Director of Operations Patient Safety, WRHA
Marlene Stern, Regional Director Occupational Therapy, WRHA
Neil Machutchon, Regional Director Physiotherapy, WRHA
Sande Harlos, Medical Officer of Health, WRHA
Sandra Mann, Quality Improvement Specialist, WRHA
Sandy Bell, Director Risk Management, Quality, Patient Safety & Education Services, Misericordia Health Centre
Suzanne Dyck, Musculoskeletal Injury Prevention Specialist, Victoria General Hospital
Wendy French, Injury Prevention Coordinator, WRHA

Appendix B

Clinical Guidelines and Good Practice Points:

Acute Care Facilities

FALLS PREVENTION INTERVENTIONS

Guidelines

- A multifactorial approach to preventing falls should be part of routine care for all older adults in hospitals (Level I)^{12, 13}
- Supervised exercise interventions have been shown to reduce the risk of falling in hospital settings (Level 1)¹²
- Develop and implement a targeted and individualized falls prevention plan of care based on the findings of a falls screen or assessment (Level II)¹⁴⁻¹⁶
- Older adults considered to be at higher risk of falling should be referred to an occupational therapist and physiotherapist for needs and training specific to the home environment and equipment, to maximize safety and continuity from hospital to home (Level I)¹⁷
- As part of discharge planning, when required, organize an occupational therapy home visit for older adults with a history of falls, to establish safety at home (Level II)¹⁸

Good practice points

- Interventions should systemically address the risk factors identified, either during the admission or, if this is not possible, through discharge planning and referral to community services.
- Screen older adults for falls risk and functional ability, and ensure that referrals for follow-up falls prevention interventions are in place.
- Managing many of the risk factors for falls (e.g. delirium or balance problems) will have wider benefits beyond falls prevention.

FALLS RISK SCREENING AND ASSESSMENT

Guidelines

- Use falls risk screening and/or assessment tools that have good predictive accuracy, and have been evaluated and validated across different hospital settings.
- As part of a multifactorial program for older adults with increased falls risk in hospital, conduct a systematic and comprehensive interprofessional falls risk assessment to inform the development of an individualized plan of care to prevent falls.
- When falls risk screens and assessments are introduced, they need to be supported by education for staff and intermittent reviews to ensure appropriate and consistent use.

Good practice points

Falls risk screening

- Screening tools are particularly beneficial because they can form part of routine clinical management and inform further assessment and care for all older adults.
- All older adults who are admitted to hospital should be screened for their falls risk, and this screening should be done as soon as practical after they are admitted.
- The emergency department represents a good opportunity to screen older adults for their falls risk.
- A falls risk screen should be undertaken when a change in health or functional status is evident, or when the older adult's environment changes.

Falls risk assessment

- A falls risk assessment should be done for those older adults who exceed the threshold of the falls risk screen tool, who are admitted for falls, or who are from a setting in which most adults are considered to have a high risk of falls (e.g. a stroke rehabilitation unit, personal care home).
- For older adults who have fallen more than once, undertake a full falls risk assessment (approx. 50% of falls are in older adults who have already fallen).
- Interventions delivered as a result of the assessment provide benefit, rather than the assessment itself; therefore, it is essential that interventions systematically address the risk factors identified

BALANCE AND MOBILITY LIMITATIONS

Guidelines

- Supervised exercise interventions have been shown to reduce the risk of falling in hospital settings (Level 1)¹²
- Use a multifactorial falls prevention program that includes exercise and assessment of the need for mobility assistive devices to prevent falls in sub acute hospital settings. (Level II)¹⁶

Good practice points

- Refer older adults with ongoing balance and mobility problems to a post-hospital falls prevention balance and exercise program when they leave hospital. This should include liaison with the older adult's family physician or nurse practitioner.
- To assess balance, mobility and strength, use an assessment tool to:
 - quantify the extent of balance and mobility limitations and muscle weakness
 - guide exercise prescription
 - measure improvements in balance, mobility and strength
 - assess whether older adults have a high risk of falling.

COGNITIVE IMPAIRMENT

Guidelines

- Older adults with cognitive impairment should have their risk factors for falls assessed.
- Identified falls risk factors should be addressed as part of a multifactorial falls prevention program, and injury minimization strategies (such as using hip protectors or vitamin D and calcium supplementation) should be considered. (Level II)¹⁴⁻¹⁶

Good practice points

- Older adults presenting to a hospital with an acute change in cognitive function should be assessed for delirium and the underlying cause of this change. For example, see the Confusion Assessment Method (CAM) Instrument.¹⁹⁻²¹
- Older adults with gradual onset, progressive cognitive impairment should undergo detailed assessment to determine diagnosis and, where possible, reversible causes of the cognitive decline.
- Older adults with delirium should receive evidence based interventions to manage the delirium.
- If an older adult with cognitive impairment does fall, reassess their cognitive status, including presence of delirium (e.g. using the Confusion Assessment Method Instrument).¹⁹⁻²¹
- Where possible and appropriate, involve family and caregivers in decisions about which interventions to use, and how to use them. Family and caregivers know the older adult and may be able to suggest ways to support them.
- Interventions shown to work in cognitively intact populations should not be withheld from cognitively impaired populations; however, interventions for older adults with cognitive impairment may need to be modified and supervised, as appropriate.

CONTINENCE

Guidelines

- Managing problems with urinary tract function is effective as part of a multifactorial approach to care. (Level II)¹⁴
- As part of multifactorial intervention, toileting protocols and practices should be in place for older adults at risk of falling. (Level III-2)^{22, 23}

Good practice point

- Incontinence should be screened in hospital as part of a falls risk assessment.

FEET AND FOOTWEAR

Guidelines

- In addition to using standard falls risk assessments, screen older adults for ill-fitting or inappropriate footwear (e.g. slippers with no heel counter), foot pain or other foot problems upon admission to hospital.
- Include an assessment of footwear and foot problems as part of an individualized, multifactorial intervention for preventing falls in older adult in hospital. (Level II)¹⁴
- Hospital staff should educate older adults and provide information about footwear features that may reduce the risk of falls. (Level II) ¹⁴ See the Shoe Safety Checklist.²⁴

Good practice points

- Encourage older adults to wear proper fitting footwear when mobilizing in hospital. Use hospital issued slippers judiciously.
- As part of discharge planning, refer older adults to professionals with expertise in foot care, if needed.

ORTHOSTATIC HYPOTENSION

Good practice points

- Studies have indicated that orthostatic hypotension may not be the primary cause of falls. Orthostatic hypotension does, however, increase the potential to fall if the older adult is already a fall risk.
- Assess orthostatic hypotension by monitoring lying and sitting / standing (depending on older adult) blood pressure on admission and as required.
 - Have the older adult lie down for 15 minutes and then take the older adult's blood pressure while they are lying down.
 - Then, if the older adult is able to stand, have him / her stand up, and after one minute, take a standing blood pressure. If the older adult is only able to sit up, then take a sitting blood pressure after one minute of sitting with legs dependent.
- If orthostatic hypotension is evident:
 - Determine underlying cause such as medications, infection, dehydration, underlying disease (e.g. Diabetes, Parkinson's, Cardiovascular disease, stroke, adrenal insufficiency), and other deficiencies (e.g. B12 or folate). Treat underlying cause as appropriate. If medications are the cause, discontinue, decrease or switch as appropriate.
 - If possible, instruct the older adult to change position slowly, sit at edge of bed prior to getting up and sit down immediately if feeling dizzy.
 - Ensure adequate fluid intake.
 - Eat small, frequent meals.
 - Elevate head of bed. It may help to tilt the head of the bed up to 20 degrees at night.

SYNCOPE

Guidelines

- Older adults who report unexplained falls or episodes of collapse should be assessed for the underlying cause.
- Assessment and management of postural hypotension and review of medications, including medications associated with presyncope and syncope, should form part of a multifactorial assessment and management plan for falls prevention in hospitalized older adult (this can also be part of discharge planning). (Level I)¹²

DIZZINESS AND VERTIGO

Guidelines

- Vestibular dysfunction as a cause of dizziness, vertigo and imbalance needs to be identified in the hospital setting.

Note: there is no evidence from randomized controlled trials that treating vestibular disorders will reduce the rate of falls.

Good practice points

- Use vestibular rehabilitation to treat dizziness and balance problems, where indicated and available.
- Screen older adults reporting dizziness for gait and balance problems, as well as for postural hypotension. Older adults who report 'dizziness' may have pre-syncope, postural disequilibrium, or gait or balance disorders.

MEDICATIONS

Guidelines

- Using the WRHA regional medication reconciliation process, older adults admitted to hospital should have their medications (prescribed and non-prescribed) reviewed and modified appropriately (particularly in cases of multiple drug use) as a component of a multifactorial approach to reduce the risk of falls in a hospital setting. (Level I)¹² See [Drugs and the Risk of Falling](#).²⁵
- As part of a multifactorial intervention, older adults on psychoactive medication should have their medication reviewed and, where possible, discontinued gradually to minimize side effects and to reduce their risk of falling. (Level II-*)^{14, 26}
- Due to the increased risk of bleeding post-fall, those older adults on anticoagulant therapy should have regular monitoring of their International Normalized Ratio (INR).

VISION

Guidelines

- Use hospitalization as an opportunity to screen for visual problems that can have an effect both in the hospital setting and after discharge. Use a validated screening tool such as the Misericordia Health Centre Focus on Falls Vision Screening Tool.²⁷
- When a previously undiagnosed visual problem is identified, refer the older adult to an optometrist or ophthalmologist for further evaluation (this also forms part of discharge planning). (Level II)¹⁴
- Provide adequate lighting, contrast and other environmental factors to help maximize visual cues; for example, prevent falls by using night lights, luminous commode seats / toilet signs. (Level III-3)²²

Note: there have not been enough studies to form strong, evidence based guidelines about correcting and / or treating visual impairment to prevent falls in any setting (community, hospital, personal care homes/long term care facilities), particularly when used as single interventions. Considerable research, however, has linked falls with visual impairment in the community setting, and these results may also apply to the hospital setting.

Good practice points

- If an older adult wears glasses, make sure that he / she wears them for the proper task, and that the glasses are clean (use a soft, clean cloth), unscratched and fitted correctly. If the older adult has a pair of glasses for reading and a pair for distance, make sure they are labeled accordingly, and that distance glasses are worn when mobilizing.
- Encourage older adults with impaired vision to seek help when moving away from their beds and ambulating in unfamiliar settings.

ENVIRONMENTAL CONSIDERATIONS

Guidelines

- Regular environmental reviews are advisable; procedures should be in place to document environmental causes of falls; and staff should be educated in environmental risk factors for falls in hospitals.
- Environmental modifications should be included as part of a multifactorial intervention (Level II)^{14, 15}
- As part of a multifactorial intervention, falls can be reduced by using luminous toilet signs and night lights. (Level III-3)²²
- Older adults considered to be at higher risk of falling should be assessed by an occupational therapist for specific environmental or equipment needs and training to maximize safety as required.

Good practice points

- Make sure that the older adult's personal belongings and equipment are easy and safe for them to access.
- Check all aspects of the environment and modify as necessary to reduce the risk of falls (e.g. furniture, lighting, floor surfaces, clutter and spills, and mobilization aids).
- Consider combining environmental reviews with occupational health and safety reviews.
- Consider use of falls mats as means of minimizing fall related injuries. Some types of falls mats may not be appropriate for ambulatory older adults.
- Orient patients to their room and /or unit as the first few days in a new setting can be overwhelming and disorienting.

INDIVIDUAL SURVEILLANCE AND MONITORING

Guidelines

- Falls risk alert cards and symbols can be used to flag high-risk older adults as part of a multifactorial falls prevention program, as long as they are followed up with appropriate interventions. (Level II) ¹⁶
- Include individual observation and monitoring as components of a multifactorial falls prevention program but take care not to infringe on the older adult's privacy. (Level III-2) ²²

Good practice points

- Most falls in hospitals are unwitnessed. Therefore, the key to reducing falls is to raise awareness among staff regarding the older adult's individual risk factors, and reasons why improved surveillance may reduce the risk of falling.
- If appropriate, hospital staff should discuss with caregivers, family or friends the older adult's risk of falling and their need for close monitoring.
- Family members or caregivers can be given information about falls prevention. For example see WRHA's [Staying on Your Feet](#). ²⁸
- As indicated, encourage family members or caregivers to spend time sitting with the older adult, particularly in waking hours, and encourage them to notify staff if the older adult requires assistance.
- A range of alarm systems and alert devices are available, including motion sensors, video surveillance and pressure sensors. See WRHA [Falls Prevention Literature Review: Equipment and Environmental Strategies](#). ²⁹
- Monitoring alarms and devices do not replace the need for safety checks or regular monitoring by staff.
- Older adults who have a high risk of falling should be checked regularly. Preliminary evidence from a project at Victoria General Hospital supports the use of hourly rounds to prevent falls in hospitals.
- A staff member should monitor the older adult with cognitive impairment and a high risk of falls while the older adult is in the bathroom.

RESTRAINTS

Guidelines

- Before restraint use is considered, causes of agitation, wandering and other behaviors should be investigated, and reversible causes of these behaviors (e.g. delirium) should be treated. Note: there is no evidence that physical restraints reduce the incidence of falls or serious injuries in older adult.³⁰⁻³³ There is evidence that restraints can cause death, injury or infringement of autonomy.^{34,35} Therefore, restraints should be considered the last option for older adults who are at risk of falling.³⁶
See the [WRHA Policy on Restraint Minimization in Acute Care Facilities](#).³⁷

Good practice points

- The focus of caring for older adults with behavioral issues should be on responding to the older adult's behavior and understanding its cause, rather than attempting to control it.
- All alternatives to restraint should be considered and trialed for older adults with cognitive impairment, including delirium.
- If all alternatives are exhausted, the rationale for using restraints must be documented and an anticipated duration agreed on by the health care team.
- If medications are used specifically to restrain an older adult, the minimal dose should be used and the older adult should be reviewed and monitored to ensure his / her safety. Chemical restraint must not be a substitute for quality care.
- Any restraint use should be agreed on by the health care team, and discussed with the older adult, family or caregivers.

HIP PROTECTORS

Guidelines

- When assessing an older adult's need for hip protectors in hospital, staff should consider the older adult's recent falls history, age, mobility and steadiness of gait, disability status, and whether he/she has osteoporosis or a low body mass index.
- Assessing the older adult's cognition and independence in activities of daily living skills (e.g. dexterity in dressing) may also help determine whether the older adult will be able to use hip protectors.
- Occupational Therapy should be consulted when considering hip protectors.
- When using hip protectors as part of a falls prevention strategy, hospital staff should check regularly that the older adult is wearing protectors, that the hip protectors are comfortable and that the older adult can put them on easily. (Level I-*)³⁹
- Since hip protectors must be worn correctly for any protective effect, the hospital should introduce education and training for staff in the correct application of hip protectors. (Level II-*)³⁸

Good practice points

- Although there is no evidence of the effectiveness of hip protectors in the hospital setting, their use can be considered in individual cases where the older adult is able to tolerate wearing them, and has a high risk of injurious falls.
- If hip protectors are to be used, they must be fitted correctly and worn at all times.
- Adequate numbers of hip protectors need to be available to allow for consistent use (compensating for laundering requirements, breakage or damage or other factors).¹¹
- Hip protectors are a personal garment and should not be shared between older adults.
- Review manufacturer's instructions for replacement recommendations.

NUTRITION AND HYDRATION

Guidelines

- Malnutrition and its potential effects such as frailty, impaired mobility, immune disorders, and cognitive impairment can increase the risk for falls. It is recommended that patients are screened for risks and evidence of malnutrition and treated appropriately.⁴⁰

Good practice points

- 48% of WRHA acute care inpatients are at risk for malnutrition.
- Dehydration can cause hypotension, confusion, and disorientation and these in turn can increase the risk for falls.⁴⁰

VITAMIN D AND CALCIUM SUPPLEMENTATION

Guidelines

- Vitamin D and calcium supplementation are recommended as an intervention strategy to prevent falls in older adults. Benefits from supplementation are most likely to be seen in older adults who have vitamin D insufficiency or deficiency, comply with the medication, and respond biochemically to supplementation. (Level I-*)¹²
- Diagnostic Services of Manitoba (DSM) currently uses the following cut off values to define vitamin D deficiency:

25-hydroxy-vitamin D level	Definition
Less than 25 nmol/L	Deficiency
25-75 nmol/L	Insufficiency
75-250 nmol/L	Optimal
>250 nmol/L	Adverse effects

- Supplementation of 1000 IU Vitamin D per day is warranted for optimizing vitamin D levels and for disease prevention. For adults over age 50 at moderate risk of vitamin D deficiency, supplementation with 800 to 1000 IU vitamin D daily is recommended. To achieve optimal vitamin D status, daily supplementation with more than 1000 IU may be required.⁴¹ Tolerable upper intake level is 4000 IU per day as per Health Canada's Dietary Reference Intake.⁴² On admission, obtaining serum levels of 25-hydroxy-vitamin D may be beneficial but are cost prohibitive.⁴³
- Routine supplementation of (elemental) calcium 500 mg/day as calcium carbonate or calcium citrate (as hospital diet provides ~1000 mg/day) is recommended. Calcium supplementation may be altered as required, depending on dietary calcium intake, to a maximum of 1200 mg/d (elemental calcium) for males and females based on assessment by a registered dietitian.^{41,44} Dietary reference intake for calcium is 1000 to 1200 mg for adults over age 51.⁴²
- There is evidence that calcium supplementation of 1000 mg if taken without Vitamin D may increase mortality and is, therefore, not recommended.⁸²

Good Practice Points:

- In view of the high prevalence of vitamin D deficiency among inpatients in addition to the *outpatient* Canadian data, one can assume that adults admitted to WRHA hospitals are at risk for vitamin D deficiency and may be deficient at the time of admission.⁴³
- It is unlikely that benefits from vitamin D and calcium supplementation will be seen in hospital (particularly in acute care or short stays), but there is evidence both from the community and personal care home settings to support dietary supplementation, particularly in adults who are deficient in vitamin D. On discharge, patients should be encouraged to continue supplementation.
- Calcium supplementation without concurrent vitamin D supplementation is not recommended.

OSTEOPOROSIS MANAGEMENT

Guidelines

- Older adults with a history of recurrent falls should be referred for a bone health check. Also, older adults who sustain a minimal-trauma fracture should be assessed for their risk of falls.
- Older adults with diagnosed osteoporosis or a history of low-trauma fracture should be offered treatment for which there is evidence of benefit. (Level I)⁴⁵
- Hospitals should establish protocols to increase the rate of osteoporosis treatment in older adults who have sustained their first osteoporotic fracture. (Level IV)⁴⁶

Good practice points

- The health care team should consider strategies for minimizing unnecessary bed rest (to maintain bone mineral density), protecting bones, improving environmental safety and vitamin D prescription. This information should be included in discharge guidelines.
- When using osteoporosis treatments, older adults should be prescribed vitamin D (800-2000 IU) with calcium (as above)⁴¹

POST-FALL MANAGEMENT

Good practice points

- Hospital staff should report and document all falls as per policy.
- Staff should follow the hospital protocol or guidelines for managing older adults immediately after a fall.
- After the immediate follow-up of a fall, determine how and why a fall may have occurred, and implement actions to reduce the risk of another fall.
- Analyzing falls is one of the key ways to prevent future falls. Organizational learning from this analysis can be used to inform practice and policies, and to prevent future falls.
- A post fall analysis should lead to an interprofessional care plan to reduce the risk of future falls and injuries, and address any identified co-morbidities or falls risk factors.
- An in-depth analysis of the fall event (e.g. a critical incident review) is required if there has been a serious injury following a fall, or if there has been a death from a fall.
- It is advisable to ask an older adult whether they remember the sensation of falling or whether they think that they blacked out, because many older adults who have syncope are unsure whether they blacked out.

Appendix C

Clinical Guidelines and Good Practice Points:

Personal Care Homes / Long Term Care Facilities

FALLS PREVENTION INTERVENTIONS

Guidelines

- A multifactorial approach using standard falls prevention interventions and provided by an interprofessional team should be routine care for all residents of personal care homes / long term care facilities. (Level I)¹²
- In addition to a multifactorial approach using standard falls prevention interventions, develop and implement a targeted and individualized falls prevention plan of care based on the findings of a falls screen or assessment. (Level II)⁴⁷

FALLS RISK SCREENING AND ASSESSMENT

Guidelines

- On admission, review the older adult's pre-admission documentation. This could include a Home Care Minimum Data Set (MDS) Assessment, where an older adult at risk for falls is identified according to the Client Assessment Protocol (CAP) or other documentation from the referring facility.
- All residents should be assessed using the Falls Risk Assessment Tool (FRAT) or equivalent within 24 to 48 hours of admission, when the Falls Client Assessment Protocol (CAP) on the quarterly or annual MDS Assessment is triggered and with any significant change in status or decline in function / mobility.
- For residents assessed as being at risk for falls, the base care plan will include care planning around this risk. This plan should be completed and communicated to all staff within 24 hours of admission.
- With a quarterly or annual assessment, care planning should be reviewed / revised but a falls risk assessment does not need to be repeated if a resident has been previously assessed as high risk.
- Falls prevention and management programs need to be supported with education for staff.⁴⁸ Intermittent reviews of how to use the FRAT should occur to ensure appropriate and consistent use. See the [WRHA Personal Care Home Falls Assessment and Management Education modules](#).⁴⁹

Good practice points

- If a resident is identified as being 'at risk' for any item on a multiple risk factor screen, interventions should be considered for that risk factor even if the person has a low falls risk score overall.
- Interventions delivered as a result of the assessment provide benefit; therefore, it is essential that interventions systematically address the identified risk factors.⁵⁰

BALANCE AND MOBILITY LIMITATIONS

Guidelines

- Involve occupational therapy and/or physiotherapy to develop supervised and individualized balance and gait exercises as part of a multifactorial intervention to reduce the risk of falls and fractures in personal care home residents. (Level II)⁵¹
- Consider using gait, balance and functional coordination exercises as single interventions. (Level II)^{52, 53}

Good practice points

- Exercise should be supervised and delivered by appropriately trained individuals.
- Assess the resident's ability to use mobility aids including walkers, wheelchairs, etc.
- Assess chairs, wheelchair and seating systems to ensure that they are appropriate for the resident's needs.
- Ensure assistive devices are an appropriate height for resident and within easy reach.
- Ensure all assistive devices are in good working order. See the VA National Centre for [Patient Safety 2004 Falls Toolkit: Equipment Safety Check List](#).⁵⁴
- Review education on safety with mobility aids with the resident and caregivers if applicable.
- Ensure that the proper transfer method/logo for the resident is assessed, communicated and consistently applied. For residents requiring total assistance, ensure appropriate sling, correct sling size, integrity of sling and transfer logo.

COGNITIVE IMPAIRMENT

Guidelines

- Residents with cognitive impairment should have other falls risk factors assessed.
- Address identified falls risk factors as part of a multifactorial falls prevention program, and consider injury minimization strategies such as hip protectors or vitamin D and calcium supplementation. (Level I)¹²

Good practice points

- Address all reversible causes of acute or progressive cognitive decline.
- Residents presenting with an acute change in cognitive function should be assessed for delirium and the underlying cause of this change. For example see the Confusion Assessment Method (CAM) instrument.¹⁹⁻²¹
- Residents with gradual-onset, progressive cognitive impairment should undergo detailed assessment to determine diagnosis and, where possible, reversible causes of the cognitive decline. Reversible causes of acute or progressive cognitive decline should be treated.
- If a resident with cognitive impairment does fall, reassess his/her cognitive status, including presence of delirium.
- Interventions shown to work in cognitively intact populations should not be withheld from cognitively impaired populations; however, interventions for adults with cognitive impairment may need to be modified and supervised as appropriate.

CONTINENCE

Guidelines

- Review bowel and bladder continence status to check for problems that can be modified or prevented.
- Regular, individualized toileting should be in place for residents at risk of falling, as part of multifactorial intervention. (Level II)⁵³
- Managing problems associated with urinary tract function is effective as part of a multifactorial approach to care. (Level II-*)¹⁴

Note: although there is observational evidence of an association between incontinence and falls, there is no direct evidence that interventions to manage incontinence affect the rate of falls.⁵⁵

Good practice point

- Individualized toileting programs may include having a commode at the bedside, assisting the resident to the bathroom at set intervals (e.g. every one to two hours), keeping the light on in the bathroom, etc.

FEET AND FOOTWEAR

Guidelines

- In addition to using standard falls risk assessments, screen older adults for ill-fitting or inappropriate footwear (e.g. slippers with no heel counter), foot pain or other foot problems.
- As part of a multifactorial intervention program, prevent falls by making sure residents have fitted footwear. (Level II)⁴⁷

Good practice points

- Refer residents to professionals with expertise in foot care for assessment and treatment of foot conditions as needed.
- Educate resident and family on safe footwear characteristics including:
 - ✦ *Soles:* shoes with thinner, firmer soles appear to improve foot position sense; a tread sole may further prevent slips on slippery surfaces
 - ✦ *Heels:* a low, square heel improves stability
 - ✦ *Heel Counter:* shoes with a supporting heel counter improve stability.
 - ✦ See the [Shoe Safety Checklist](#)²⁴

ORTHOSTATIC HYPOTENSION

Good practice points

- Studies have indicated that orthostatic hypotension may not be the primary cause of falls. However, orthostatic hypotension does increase the potential to fall if the resident is already a fall risk.
- Assess orthostatic hypotension by monitoring lying and sitting / standing (depending on resident) blood pressure on admission and as required.
 - Have resident lie down for 15 minutes and then take the resident's blood pressure while they are lying down.
 - Then, if the resident is able to stand, have him / her stand up, and after one minute, take a standing blood pressure. If resident is only able to sit up, then take a sitting blood pressure after one minute of sitting with legs dependent.
- If orthostatic hypotension is evident:
 - Determine underlying cause such as medications, infection, dehydration, underlying disease (e.g. diabetes, Parkinson's, cardiovascular disease, stroke, adrenal insufficiency), and other deficiencies (e.g. B12 or folate). Treat underlying cause as appropriate. If medications are the cause, discontinue, decrease or switch as appropriate.
 - If possible, instruct resident to change position slowly, sit at edge of bed prior to getting up and sit down immediately if feeling dizzy.
 - Ensure adequate fluid intake.
 - Eat small, frequent meals. Liberalization of sodium content of the diet (of 4 to 6 grams daily) in the long term care setting is recommended.
 - Elevate head of bed (reverse trendelenberg position).

SYNCOPE

Guidelines

- Residents who report unexplained falls or episodes of collapse should be assessed for the underlying cause.
- Assessment and management of presyncope, syncope and postural hypotension, and review of medications (including medications associated with presyncope and syncope) should form part of a multifactorial assessment and management plan for preventing falls in residents. (Level I-*)⁵⁶

Note: there is no evidence derived specifically from the personal care home setting relating to syncope and falls prevention. Guidelines have been inferred from community and hospital populations.

DIZZINESS AND VERTIGO

Guidelines

- Vestibular dysfunction as a cause of dizziness, vertigo and imbalance needs to be identified in residents in the personal care home setting.

Note: there is no evidence from randomized controlled trials that treating vestibular disorders will reduce the rate of falls.

Good practice points

- Use vestibular rehabilitation to treat dizziness and balance problems where indicated and available.
- Screen residents reporting of dizziness for gait and balance problems, as well as for postural hypotension. Residents who report 'dizziness' may have pre-syncope, postural disequilibrium, or gait or balance disorders.

MEDICATIONS

Guidelines

- Residents should have their medications (prescribed and non-prescribed) reviewed on admission, after a fall, after initiation or a change in dosage of medication, or if they are on five or more medications. A physician, pharmacist and nurse should review the medications at least quarterly.⁵⁷ See [Drugs and the Risk of Falling](#).²⁵
- As part of a multifactorial intervention, or as a single intervention, residents taking psychoactive medication should have their medication reviewed by a pharmacist, physician, and nurse. Where possible, medications should be discontinued gradually to minimize side effects and to reduce their risk of falling. (Level II)^{22, 58}
- Limit multiple drug use to reduce side effects and interactions. (Level II-*)⁵⁸
- Due to the increased risk of bleeding post-fall, those older adults on anticoagulant therapy should have regular monitoring of their International Normalized Ratio (INR).

Good practice points

- Stopping or reducing the dosages of as many of the medications as possible should be the goal; the impact of any changes should be monitored on a regular basis.
- The short-term risk of falls is significantly elevated within 3 days of any change in a psychoactive medication. This includes initiation of a medication, an increase in dosage, a decrease in dosage, and an as needed dose.⁵⁹

VISION

Guidelines

- On admission, screen for visual problems. Use a validated screening tool such as the Misericordia Health Centre Focus on Falls Vision Screening Tool.²⁷
- If a vision screening tool indicates normal vision, arrange regular eye examinations (every two years) for residents in personal care homes / long term care facilities to reduce the incidence of visual impairment, which is associated with an increased risk of falls.
- Residents with visual impairment related to cataracts should have cataract surgery as soon as practical. (Level II-*)^{22, 60}
- Environmental assessment and modification should be undertaken for residents with severe visual impairments (visual acuity worse than 20/80). (Level II-*)⁶¹
- When correcting other visual impairment (e.g. prescription of new glasses), explain to the resident and their caregivers that extra care is needed while the resident gets used to the new visual information. Falls may increase as a result of visual acuity correction. (Level II-*)⁶²
- Advise residents with a history of falls or an increased risk of falls to avoid bifocals, trifocals, or progressives and to use single-lens distance glasses when walking — especially when negotiating steps or walking in unfamiliar surroundings. (Level III-2-*)⁶³

Note: there have not been enough studies to form strong, evidence based guidelines about correcting visual impairment to prevent falls in any setting (community, hospital, personal care home), particularly when used as a single intervention. One unpublished study showed that falls could be reduced by improving vision in older adults living in personal care homes / long term care facilities.⁶⁴ One trial, set in the community, showed an increase in falls as a result of visual acuity assessment and correction.⁶² However, correcting visual impairment may improve the health of the older person in other ways (e.g. by increasing independence). Considerable research has linked falls with visual impairment in the community setting, although no trials have reduced falls by correcting visual impairment. These results may also apply to the personal care home setting.

Good practice points

- As part of a multidisciplinary intervention for reducing falls, provide adequate lighting, contrast and other environmental factors to help maximize visual cues; for example, prevent falls by using night lights, luminous commode seats / toilet signs.
- If an older adult wears glasses, make sure that he / she wears them for the proper task, and that the glasses are clean (use a soft, clean cloth), unscratched and fitted correctly. If the older adult has a pair of glasses for reading and a pair for distance, make sure the glasses are labeled accordingly, and that distance glasses are worn when mobilizing.

ENVIRONMENTAL CONSIDERATIONS

Guidelines

- Residents considered to be at a higher risk of falling should be assessed by an occupational therapist and/or physiotherapist for specific environmental or equipment needs and education to maximize safety as required.
- Environmental review and modification should be considered as part of a multifactorial approach in a falls prevention program. (Level I)¹²

Good practice points

- Personal care home staff should discuss with residents their preferred arrangement for personal belongings and furniture. They should also determine the resident's preferred sleeping arrangements.
- Make sure residents' personal belongings, call system and equipment are easy and safe for them to access.
- Check all aspects of the environment and modify as necessary to reduce the risk of falls (e.g. furniture, adequate lighting, non-slip floor surfaces free of scatter rugs / clutter / spills / loose cords, and mobility aids, etc.). See the [VA National Centre for Patient Safety 2004 Falls Toolkit: Equipment Safety Check List](#).⁵⁴
- Consider combining environmental reviews with workplace health and safety audits.
- Ensure bed is at the lowest height appropriate for the safety of the resident and in locked position i.e. the resident can sit and touch the floor with legs at 90°. Some residents may benefit from a bed designed to lower within inches of the floor.
- Consider use of falls mats as means of minimizing fall related injuries. Some types of falls mats may not be appropriate for ambulatory residents.
- Ensure properly positioned handrails are next to the toilet, bath and shower. Provide raised toilet seats or commodes as applicable. Ensure that toilets have appropriate equipment to provide supports for residents getting on / off toilet as required.
- For new residents or upon a room change, provide orientation to the new room and/or unit as the first few days in a new setting can be overwhelming and disorienting.

INDIVIDUAL OBSERVATION AND MONITORING

Guidelines

- Falls alerts used on their own are ineffective. (Level II)⁶⁵
- Falls risk alert cards and symbols can be used to flag high-risk residents as part of a multifactorial falls prevention program, as long as appropriate interventions are used as follow-up. (Level II-*)¹⁶
- Include individual observation and monitoring as components of a multifactorial falls prevention program, but take care not to infringe on residents' privacy. (Level III-2-*)²²
- Residents with dementia should be observed more frequently for their risk of falling, because severe cognitive impairment is predictive of lying on the floor for a long time after a fall. (Level III-2-*)²²

Note: most falls in personal care homes / long term care facilities are unwitnessed.⁶⁶ Therefore, as is done in the hospital setting, the key to reducing falls is to improve surveillance, particularly for residents with a high risk of falling.²²

Good practice points

- Individual observation and monitoring are likely to prevent falls. Many falls happen in the immediate bed or bedside area, or are associated with restlessness, agitation, attempts to transfer and stand, lack of awareness or wandering in adults with dementia.
- Residents who have a high risk of falling should be identified and checked regularly.
- A staff member should stay with at-risk residents while they are in the bathroom.
- Although many residents are frail, not all are at a high risk of falling; therefore, surveillance interventions can be targeted to those residents who have the highest risk.
- A range of alarm systems and alert devices are commercially available, including motion sensors, video surveillance and pressure sensors. They should be tested for suitability before purchase, and appropriate training and response mechanisms should be offered to staff. There is no evidence that their use in personal care homes / long term care facilities reduces falls or improves safety. In order to achieve an optimal effect, staff must respond in a timely manner.
- Monitoring alarms and devices do not replace the need for safety checks or regular monitoring by staff.

RESTRAINTS

Guidelines

- Causes of agitation, wandering or other behaviors should be investigated, and reversible causes of these behaviors (e.g. delirium) should be treated before the use of restraint is considered.

Note: physical restraints (including side rails) should be considered the last option for residents who are at risk of falling because there is no evidence that their use reduces incidents of falls or serious injuries in older adults.³⁰⁻³³ There is evidence that physical restraints can cause death, injury, or infringement of autonomy.^{34,35} Side rails have been shown to cause entrapment, serious injury, and death.

- See the [WRHA Policy on Restraints and Protective Devices in Personal Care Home](#).⁶⁷

Good practice points

- The focus of caring for residents with behavioral issues should be on responding to the resident's behavior and understanding its cause, rather than attempting to control it.⁶⁸
- All alternatives to restraints should be considered, discussed with family and caregivers, and trialed. Examples of restraint alternatives include: individualizing resident's routine-sleep patterns, activity patterns, toileting routines, and rehabilitation and exercise programs; companionship; and environmental considerations. See the [WRHA Policy on Restraints and Protective Devices in Personal Care Home](#).⁶⁷
- If all alternatives are exhausted, the rationale for using restraint must be documented and an anticipated duration agreed on by the health care team, in consultation with family and caregivers, and reviewed quarterly.
- If medications are used specifically to restrain a resident, the minimal dose should be used and the resident reviewed and monitored to ensure his / her safety. Chemical restraint must not be a substitute for quality care.

HIP PROTECTORS

Guidelines

- The use of hip protectors has been shown to reduce the risk of fractures for residents in personal care homes / long term care facilities. (Level I)^{11,39}
- Hip protectors benefit some personal care residents more than others. Specific criteria should be applied to determine which residents would benefit most.¹¹
- When assessing a resident's need for hip protectors in a personal care home, staff should consider the resident's recent falls history, age, mobility and steadiness of gait, disability status, and whether they have osteoporosis or a low body mass index.
- When using hip protectors as part of a falls prevention strategy, personal care home staff should check regularly that the resident is wearing their protectors, that the hip protectors are in the correct position, and that they are comfortable and the resident can put them on easily. (Level I)³⁹
- Assessing the resident's cognition and independence in activities of daily living skills (e.g. dexterity in dressing) may also help determine whether they will be able to use hip protectors.
- Occupational Therapy should be consulted when considering hip protectors.
- Hip protectors must be worn correctly for any protective effect, and the personal care home should educate and train staff in the correct application and care of hip protectors. (Level II)³⁸

Good practice points

- If hip protectors are to be used, they must be fitted correctly and worn at all times.
- Adequate numbers of hip protectors need to be available to allow for consistent use (compensating for laundering requirements, breakage or damage or other factors).¹¹
- Hip protectors are a personal garment and should not be shared among residents.
- Review manufacturer's instructions for replacement.

NUTRITION AND HYDRATION

Guidelines

- Malnutrition and its potential effects such as frailty, impaired mobility, immune disorders, and cognitive impairment can increase the risk for falls. It is recommended that dietitians assess for risks and evidence of malnutrition and treat appropriately.⁴⁰
- Dietary Reference Intakes (DRI) fluid guidelines are 2.7 L for females and 3.7 L for adult males. Within the average mixed diet food provides 20% of fluid needs. 2.2 L (~8.6 cups) fluid per day consisting of all beverages including water and caffeinated beverages is recommended. Males may require additional fluid as per individual assessment.⁶⁹

Good practice points

- 65% of residents in long term care experience unintended weight loss and malnutrition.⁴⁰
- The prevalence of dehydration in long term care facilities has been estimated at 31%.⁴⁰
- Dehydration can cause hypotension, confusion, and disorientation and these in turn can increase the risk for falls.⁴⁰

VITAMIN D AND CALCIUM SUPPLEMENTATION

Guidelines

- Vitamin D and calcium supplementation are recommended as an intervention strategy to prevent falls in residents of personal care homes / long term care facilities. (Level I)¹²
- Benefits from supplementation are most likely to be seen in older adults who have vitamin D insufficiency or deficiency, comply with the medication, and respond biochemically to supplementation. (Level I*)¹²
- Diagnostic Services of Manitoba (DSM) currently uses the following cut off values to define vitamin D deficiency:

25-hydroxy-vitamin D level	Definition
Less than 25 nmol/L	Deficiency
25-75 nmol/L	Insufficiency
75-250 nmol/L	Optimal
>250 nmol/L	Adverse effects

- Supplementation of a minimum of 800 to 1000 IU Vitamin D per day is warranted for optimizing vitamin D levels for residents in LTC at risk of falls.⁴¹ It is recommended that the facility Falls Risk Assessment Tool be reviewed as a guide to assess risk, and that fall risk be re-assessed on an ongoing basis.⁷⁰ On admission, obtaining serum levels of 25-hydroxy-vitamin D may be beneficial but are cost prohibitive. Tolerable upper intake level is 4000 IU per day as per Health Canada's Dietary Reference Intake⁴²
- Need for calcium supplementation / fortification should be evaluated individually based on the dietitian's assessment of resident requirements and calcium consumption.
- There is evidence that calcium supplementation of 1000 mg if taken without Vitamin D may increase mortality and is, therefore, not recommended.⁸²
- Calcium intake to a maximum of 1200 mg / d (elemental calcium) for males and females (Level 1)^{41,42}

Good practice points:

- 1000 IU of Vitamin D is recommended for those requiring a supplement of 800 IU, as only one versus two pills would need to be taken.⁷⁰
- Calcium supplementation without concurrent Vitamin D supplementation is not recommended.

OSTEOPOROSIS MANAGEMENT

Guidelines

- Residents with a history of recurrent falls should be considered for a bone health check. Also, residents who sustain a minimal-trauma fracture should be assessed for their risk of falls.
- Residents with diagnosed osteoporosis or a history of low-trauma fracture should be offered treatment for which there is evidence of benefit. (Level I)⁴⁵
- Personal care homes / long term care facilities should establish protocols to increase the rate of osteoporosis treatment in residents who have sustained their first osteoporotic fracture. (Level IV)⁴⁶

Good practice points

- Strengthening and protecting bones will reduce the risk of injurious falls.
- In the case of residents with recurrent falls and those sustaining low-trauma fractures, the health care team should consider strategies for optimizing function, minimizing a long lie on the floor, protecting bones, improving environmental safety and prescribing vitamin D.
- When using osteoporosis treatments, older adults should be prescribed vitamin D (800-2000 IU) with calcium (up to 1200 mg).⁴¹

POST-FALL MANAGEMENT

Guideline

- Fall risk factors and care plan interventions should be reviewed / revised after a fall.

Good practice points

- Personal care home staff should report and document all falls as per policy.
- Immediate post fall response includes assessment for environmental risk (e.g. wet floors, electrical cords, obstructions)
- Staff should follow the post-fall assessment and management algorithm for managing residents immediately after a fall. See [WRHA PCH Program Post Fall Assessment and Management Algorithm](#).⁷¹
- When a resident falls, he / she is at greater risk to fall again. After the immediate follow-up of a fall, review the fall. This should include trying to determine how and why a fall may have occurred, and implementing actions to reduce the risk of another fall, including referrals to other interdisciplinary team members as appropriate.
- If a resident continues to fall, review medications and the overall care plan.
- It is better to ask a resident whether he / she remembers the sensation of falling rather than whether he / she thinks that they blacked out, because many older adults who have syncope are unsure whether they have blacked out.
- An in-depth analysis of the fall event (e.g. a critical incident review) is required if there has been a serious injury following a fall, or if there has been a death from a fall.

Appendix D

Clinical Guidelines and Good Practice Points:

Community Services and Programs

FALLS PREVENTION INTERVENTIONS

Guidelines

Single interventions

- Older adults should be encouraged to exercise to prevent falls. Group exercise or home-based programs that combine two or more types of exercise and include balance training have been shown to be effective. (Level I)^{51,56}
- When conducted as a single intervention, home environment interventions are effective for reducing falls in high-risk older adults. (Level I)¹⁷
- Vitamin D and calcium supplementation should be recommended as an intervention strategy to prevent falls in older adults who live in the community. Benefits from supplementation are most likely to be seen in adult who have vitamin D insufficiency. (Level I)⁷² (Level I-*)¹²
- Older adults with visual impairment primarily related to cataracts should undergo cataract surgery as soon as practical. (Level II)^{60,72}
- Adults with severe visual impairment should receive a home safety assessment and modification program specifically designed to prevent falls. (Level II)^{61,73}
- Use cardiac pacing in older adults who live in the community, and who have carotid sinus hypersensitivity and a history of syncope or falls, to reduce the rate of falls. (Level II)⁷⁴
- Collaborative review and modification of medication by family physicians and pharmacists, in conjunction with individual older adults, is recommended to prevent falls. (Level II)⁷⁵
- Gradual and supervised withdrawal of psychoactive medications should be considered to prevent falls. (Level II)^{26,56}

Multifactorial interventions

- In older adults at risk of falls, individualized assessment leading directly to tailored interventions is recommended. (Level I)⁵⁶
- The combination of exercise targeting strength and balance, education and home safety intervention is recommended to reduce the rate of falls in older adults who live in the community. (Level I)¹⁷

Good practice points

- All adults at risk of falling and their family and caregivers should be provided individualized falls prevention education. See the [WRHA Staying on Your Feet](#).²⁸
- Managing many of the risk factors for falls (e.g. balance problems, medication) will have wider benefits beyond falls prevention.

FALLS RISK SCREENING AND ASSESSMENT

Guidelines

- Older adults should be asked about falls at least once every year by their family physician, nurse practitioner or other health care provider.
- Older adults with a history of one or more falls in the past year should be assessed using a simple, validated balance test or falls risk screen.
- Older adults who perform poorly on a simple test of balance or gait, or on a falls risk screening tool, should undergo a detailed assessment to identify contributory risk factors.
- Falls risk screening and assessment tools used should be evidence based (meaning that they have demonstrated good predictive accuracy, and have been evaluated in the relevant setting in more than one site).
- Falls prevention interventions may need to be modified to make sure they are suitable for the individual, and often the caregiver(s) and family members will also play important roles in implementing falls prevention actions.

Good practice points

- Falls risk screening should be used to guide more detailed assessment and intervention, and the outcomes of the screen should be documented and discussed with the older adult and their family / caregiver(s).
- When the threshold score of a screening tool is exceeded, a falls risk assessment should be conducted as soon as practical. If the score is not exceeded, standard falls prevention strategies apply.
- To develop an individualized plan for preventing falls, health care professionals need to identify systematically and comprehensively the factors contributing to the older person's increased risk of falling.
- Interventions delivered as a result of the assessment provide benefit rather than the assessment itself; therefore, it is essential that interventions systematically address the risk factors identified.
- Identifying the presence of cognitive impairment should form part of the falls risk assessment process.

BALANCE AND MOBILITY LIMITATIONS

Guidelines

- Use assessment tools to:
 - ✦ quantify the extent of balance and mobility limitations and muscle weaknesses
 - ✦ guide exercise prescription
 - ✦ measure improvements in balance, mobility and strength
 - ✦ assess whether the older adult has a high risk of falling
- Deliver exercise programs to prevent falls in older adults who live in the community (e.g. group exercise classes, strength and balance retraining at home, tai chi classes). (Level I)⁵⁶
- Improve the effectiveness of exercise programs for preventing falls by including challenging balance training and frequent exercise. (Level I)^{51, 56}
- Encourage exercise for falls prevention in all older adults in the community, not only those who have an increased risk. (Level I)^{51, 56}

COGNITIVE IMPAIRMENT

Guidelines

- Older adults with cognitive impairment have an increased risk of falls and should have their falls risk factors assessed.
- Identified falls risk factors should be addressed as part of a multifactorial falls prevention program, and strategies to minimize injuries should be considered (such as using hip protectors or vitamin D and calcium supplementation). (Level I-*)¹²

Note: there is no evidence that falls can be reduced in older adults with cognitive impairment living in the community.⁵⁶

Good practice points

- Older adults presenting with an acute change in cognitive function should be assessed for delirium and the underlying cause of this change.
- Older adults with gradual onset, progressive cognitive impairment should undergo detailed assessment to determine diagnosis, and where possible, reversible causes of the cognitive decline. Reversible causes of acute or progressive cognitive decline should be addressed and treated.
- If an older person with cognitive impairment does fall, reassess their cognitive status, including presence of delirium. For example see the Confusion Assessment Method instrument.¹⁹⁻²¹
- Interventions shown to work in cognitively intact populations should not be withheld from cognitively impaired populations; however, interventions for older adult with cognitive impairment may need to be modified and supervised, as appropriate.

CONTINENCE

Guidelines

- Older adults should be offered a continence assessment to check for problems that can be modified or prevented.
- Manage problems associated with urinary tract function as part of a multifactorial approach to care. (Level I-*)¹²

Note: there is no evidence that assessing or treating incontinence will prevent falls in older adults living in the community.⁵⁶

Good practice point

- Check the height of the toilet(s) and the need for rails / raised toilet seats to assist the older person sitting and standing from the toilet(s) in the home.

FEET AND FOOTWEAR

Guidelines

- Health care providers should provide education and information about footwear features that may reduce falls risk. (Level III-2)⁷⁸
- Include an assessment of footwear and foot problems as part of an individualized, multifactorial intervention for preventing falls in the community. (Level IV)^{76,77}

Note: there is no evidence that assessing or addressing footwear and foot problems as a single intervention will prevent falls in older adults living in the community.

Good practice points

- Health care providers should educate older adult and provide information on foot problems and foot care, and refer them to a professional with expertise in foot care when necessary.
- Educate older adult and caregiver about safe footwear characteristics including:
 - ✦ *Soles*: shoes with thinner, firmer soles appear to improve foot position sense; a tread sole may further prevent slips on slippery surfaces
 - ✦ *Heels*: a low, square heel improves stability
 - ✦ *Collar*: shoes with a supporting collar improve stability.
 - ✦ See the Shoe Safety Checklist²⁴

ORTHOSTATIC HYPOTENSION

Good practice points

- Studies have indicated that orthostatic hypotension may not be the primary cause of falls. Orthostatic hypotension does, however, increase the potential to fall if the older adult is already a fall risk.
- Assess orthostatic hypotension by monitoring lying and sitting / standing (depending on older adult) blood pressure on admission and as required.
 - Have the older adult lie down for 15 minutes and then take blood pressure while he / she is still lying down.
 - Then, if the older adult is able to stand, have him / her stand up, and after one minute, take a standing blood pressure. If the older adult is only able to sit up, then take a sitting blood pressure after one minute of sitting with legs dependent.
- If orthostatic hypotension is evident:
 - Determine underlying cause such as medications, infection, dehydration, underlying disease (e.g. diabetes, Parkinson's, cardiovascular disease, stroke, adrenal insufficiency), and other deficiencies (e.g. B12 or folate). Treat underlying cause as appropriate. If medications are the cause, discontinue, decrease or switch as appropriate.
 - If possible, instruct the older adult to change position slowly, sit at edge of bed prior to getting up and sit down immediately if feeling dizzy.
 - Ensure adequate fluid intake.
 - Eat small, frequent meals.
 - Elevate head of bed if possible. It may help to tilt the head of the bed up to 20 degrees at night.

SYNCOPE

Guidelines

- Older adults who report unexplained falls or episodes of collapse should be assessed for the underlying cause.
- Assessment and management of potential causes of presyncope and syncope should form part of a multifactorial intervention to reduce rate of falls in older adults. (Level I)⁵⁶
- Use cardiac pacing in older adults who live in the community, and who have carotid sinus hypersensitivity and a history of syncope or falls, to reduce the rate of falls. (Level II)⁷⁴

DIZZINESS AND VERTIGO

Guidelines

- Vestibular disorders as a cause of dizziness, vertigo and imbalance need to be identified in the community setting.

Note: there is no evidence from randomized controlled trials that treating vestibular disorders will prevent falls.

Good practice point

- Use vestibular rehabilitation to treat dizziness and balance problems where indicated and available.

MEDICATIONS

Guidelines

- Older adults living in the community should have their medications (prescribed and nonprescribed) reviewed at least yearly by primary care provider, and for those on four or more medications, at least every six months. See [Drugs and the Risk of Falling](#).²⁵
- Medication review and modification should be undertaken as part of a multifactorial approach to falls prevention. (Level I)⁵⁶
- Gradual and supervised withdrawal of psychoactive medications should be considered to prevent falls. (Level II)²⁶
- Pharmacist-led education on medication and a program of facilitated medication review by family physicians should be encouraged in the community setting. (Level II)⁷⁵
- Due to the increased risk of bleeding post-fall, those older adults on anticoagulant therapy should have regular monitoring of their International Normalized Ratio (INR).

Good practice point

- Consider likely pharmacological changes when prescribing any new medication to an older person and avoid prescribing psychoactive medications if clinically possible.

VISION

Guidelines

- Include vision screening as part of a falls risk assessment. Use a validated screening tool such as the Misericordia Health Centre Focus on Falls Vision Screening Tool.²⁷
- Encourage older adults to have regular eye examinations (every two years) to reduce the incidence of visual impairment, which is associated with an increased risk of falls.
- Older adults with visual impairment primarily related to cataracts should undergo cataract surgery as soon as practical. Surgery for the first eye should be expedited (Level II)^{60,72}
- When correcting other visual impairment (e.g. prescription of new glasses), explain to the older adult and to their family and caregivers (where appropriate) that extra care is needed while the older adult gets used to the new visual information. (Level II)¹⁸
- Older adults with severe visual impairment should receive a home safety assessment and modification program specifically designed to prevent falls. (Level II)^{61,73} See the WRHA Staying on Your Feet [Home Safety Checklist](#).⁷⁹
- Advise older adults who take part in regular outdoor activities to avoid bifocals, trifocals or progressives and to use single-vision distance glasses when walking — especially when negotiating steps or walking in unfamiliar surroundings. (Level III-2)⁶³

Good practice point

- Detailed assessment by an optometrist or ophthalmologist for a fall-specific eye examination should be requested to include:
 - ✦ identification of the presence of eye diseases
 - ✦ calculation of subjective refraction and determine optimum eye glass correction
 - ✦ assessment of contrast visual acuity and contrast sensitivity
 - ✦ assessment of visual fields by means of a full field plot on a Humphrey vision analyzer or equivalent
 - ✦ assessment of stereo acuity as a means of depth perception
- As part of a multidisciplinary intervention for reducing falls, encourage use of adequate lighting, contrast and other environmental factors to help maximize visual cues; for example, prevent falls by using night lights, luminous commode seats / toilet signs.
- If an older adult wears glasses, make sure that they wear them for the proper task, and that the glasses are clean (use a soft, clean cloth), unscratched and fitted correctly. If the older adult has a pair of glasses for reading and a pair for distance, make sure the glasses are labeled accordingly, and that distance glasses are worn when mobilizing.

ENVIRONMENTAL CONSIDERATIONS

Guidelines

- Older adults considered to be at higher risk of falling should be assessed by an occupational therapist for specific environmental or equipment needs and training to maximize safety.
- Environmental review and home hazard modification should be considered as part of a multifactorial approach in a falls prevention program for older adults in the community. (Level I)⁵⁶
- When conducted as a single intervention, home environment interventions are effective for reducing falls in high-risk older adults. (Level I)¹⁷

Good practice points

- It is important to help the older person understand the relevance of any environmental modifications, to improve uptake of such interventions.
- Older adults should be encouraged to assess the safety of their home and make modifications as recommended in See the WRHA Staying on Your Feet [Home Safety Checklist](#).⁷⁹
- If older adults or their family members or caregivers can not assess their home, they can contact Age and Opportunity Safety Aid Program to assist in assessing their home environment (Toll Free: 1-888-333-1808; In Winnipeg call: 956-6440).
- Environmental hazards on public property should be reported to the City of Winnipeg by calling 311

INDIVIDUAL OBSERVATION AND MONITORING

Good practice points

- Bed, chair or foot alarms can alert a caregiver that the person is attempting to mobilize.
- A personal alarm, when worn, can trigger an alert that a person has fallen, and minimize the time they lie on the floor.
- Electronic sensor monitoring systems are being developed and tested, but they are not likely to be available widely for some time.

HIP PROTECTORS

Guidelines

- When assessing an older adult's need for hip protectors, the family physician or other health professional should consider the older adult's recent falls history, age, mobility, disability status, and whether they have osteoporosis or a low body mass index.
- Assess the older adult's cognition and independence in activities of daily living skills (e.g. dexterity in dressing) to help determine whether they will be able to use hip protectors.
- Occupational Therapy should be consulted when considering hip protectors.
- When using hip protectors as part of a falls prevention strategy, the health care team or caregiver should check regularly that the older adult is wearing their protectors, that the hip protectors are in the correct position, and that they have not stopped wearing them because of discomfort, inconvenience or other reasons. (Level I)³⁹
- Occupational therapists or other members of the health care team should teach older adults and their caregivers how to put hip protectors on properly, because their effectiveness is reduced when they are not worn correctly. (Level II)³⁸

Note: hip protectors have not been shown to prevent hip fractures in the community setting.

Good practice points

- Hip protectors should not be relied on to reduce falls-related injuries in the community setting, due to problems with adherence. However, because they offer some protection to older adults in personal care homes / long term care facilities, hip protectors can be considered in community settings as part of a strategy to minimize harm from falls, as long as they are worn properly and their use is monitored.
- If using hip protectors, adequate numbers of hip protectors need to be available to allow for consistent use (compensating for laundering requirements, breakage or damage or other factors).¹¹
- If hip protectors are to be used, they must be fitted correctly and worn at all times.
- Review manufacturer's instructions for replacement recommendations.

NUTRITION AND HYDRATION

Guidelines:

- Eating a healthy balanced diet according to [Health Canada's Eating Well with Canada's Food Guide](#) is recommended for healthy older adults living in the community.⁸⁰

Good practice point

- "Eating a healthy balanced diet is central to healthy ageing. Adequate intake of protein, calcium, essential vitamins and water are essential for optimum health. If deficiencies do exist, it is reasonable to expect that weakness, poor fall recovery and increased risk of injuries will [ensue]."⁸¹

VITAMIN D AND CALCIUM SUPPLEMENTATION

Guidelines

- Consider adequacy of calcium and vitamin D as part of routine assessment of falls risk in older adults living in the community.
- Vitamin D and calcium supplementation should be recommended as an intervention strategy to prevent falls in older adults who live in the community. Benefits from supplementation are most likely to be seen in adults who have vitamin D insufficiency or deficiency. (Level I-*)¹²
- Diagnostic Services of Manitoba (DSM) currently uses the following cut off values for defining vitamin D deficiency:

25-hydroxy-vitamin D level	Definition
Less than 25 nmol/L	Deficiency
25-75 nmol/L	Insufficiency
75-250 nmol/L	Optimal
>250 nmol/L	Adverse effects

- Tolerable upper intake level is 4000 IU per day as per Health Canada's Dietary Reference Intake.⁴²
- There is evidence that calcium supplementation of 1000 mg if taken without Vitamin D may increase mortality and is, therefore, not recommended.⁸²

Good practice points

- Encourage older adults to include high calcium foods in their diet and exclude foods that limit calcium absorption.
- For older adults with cognitive impairment who have problems with medication adherence, consider using a high-dose preparation of vitamin D weekly.
- Calcium supplementation without concurrent Vitamin D supplementation is not recommended.

OSTEOPOROSIS MANAGEMENT

Guidelines

- Older adults with a history of recurrent falls should be considered for a bone health check. Also, older adults who sustain a minimal-trauma fracture should be assessed for their risk of falls.
- Older adults with diagnosed osteoporosis or a history of low-trauma fractures should be offered treatment for which there is evidence of benefit. (Level I)⁴⁵

Good practice point

- When using osteoporosis treatments, older adults should be prescribed vitamin D (800-2000 IU) and calcium (up to 1200 mg).⁴¹

POST-FALL MANAGEMENT

Good practice points

- After the immediate follow-up of a fall, determine how and why a fall may have occurred and implement actions to reduce the risk of another fall.
- It is better to ask an older adult whether he / she remembers the sensation of falling or whether they think that they blacked out, because many older adults who have syncope are unclear whether they blacked out.
- An in-depth analysis of the fall (e.g. critical incident review) may be required if there has been a serious injury following a fall, or if a death from a fall has occurred in the presence of a member of the health care team.
- Staff should follow the program / service protocol or guidelines for managing older adults immediately after a fall.