Falls Assessment

Framework

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Recommendation 3 of *Managing Osteoporosis: A Nova Scotia Approach* identified the development of a Falls Assessment program for the province. The above working group was established under the Nova Scotia Provincial Osteoporosis Project to complete this work.

Falls Assessment Feedback Sheet

Suggestions on how to improve the Falls Assessment Framework may be mailed, e-mailed, or faxed to the following address:

Executive Director, Acute Care
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Please identify the section you are commenting on:	
Section	**Pages**

Introduction

Department of Health statistics show that falls cause about 61 per cent of injury-related hospital stays for older adults in Nova Scotia, and this costs the province millions of dollars each year. Since falls are one of the most preventable and predictable risks for injury to seniors, it was critical that the province and stakeholders work together to improve the situation.

Under the auspices of the Provincial Osteoporosis Project, the Falls Assessment Working Group was established in 2004 to develop an evidence-based falls assessment framework that would be easy to use across the continuum of care.

Working on the Falls Prevention Framework for the province of Nova Scotia over the past year has proven to be a busy and rewarding endeavour. Members of the group came from a wide spectrum of perspectives on the subject to work on a common goal. This rich experience has resulted in a comprehensive, yet adaptable framework for the province.

It is hoped that facilities and health practitioners will embrace this framework and work together on the development of falls prevention programs to suit their needs. Readers are also encouraged to provide feedback on this document to the Department of Health and share their programs and experience with colleagues across the province.

Ron Savoie
Chair, Falls Assessment Working Group

Background

Osteoporosis is a common bone disease. The Department of Health estimates that it affects 60,000 people in Nova Scotia, many of whom remain undiagnosed. Older adults with osteoporosis are at an especially high risk for fractures if they fall. Department of Health statistics show that falls cause about 61 per cent of injury-related hospital stays for older adults in Nova Scotia, and this costs the province approximately $160 million each year. It has been determined that falls are one of the most preventable and predictable risks for injury to seniors.

With an aging population and the complications of falls for older adults, it was agreed that fall prevention required considerable attention. The report of the Provincial Osteoporosis Committee, *Managing Osteoporosis: A Nova Scotia Approach*, was released in June 2002. Twelve recommendations were made at that time. These recommendations, as viewed by the Provincial Osteoporosis Committee, would result in an overall reduction in the rate of insufficiency fractures in Nova Scotia.

Shortly after the release of the report, the Department of Health established a Project Management Team to oversee the implementation of the report's recommendations. The recommendations were grouped and prioritized, and five working groups were established to plan the implementation.

The Long Term Care Working Group was established to complete Recommendation 3, which states: "The long term care sector establishes a preventative and outcome measurement program that assesses and implement supplementation of resident's nutrition with calcium and Vitamin D. In addition, and in collaboration with the District Health Authorities, a fall assessment program that includes the appropriate use of hip protectors be considered to reduce the risk of fractures."

The Falls Assessment Working Group was established under the auspices of the Long Term Care Working Group. Its strategic direction for the group was to research and develop a standardized risk and fall assessment framework for use within long-term care, acute care, and home care across Nova Scotia.

Falls prevention in the care environment was also cited as a key initiative in the *Nova Scotia Healthcare Safety Working Group: Final Report*, which was released on November 22, 2004.

Literature Review

The first task of the working group was to research and review existing literature to establish common risk factors, best practices, and a range of risk and falls assessment tools already in use. The purpose of this extensive review was to ensure that Nova Scotia adopted the most useful and appropriate frameworks based on the evidence.

As a result of an extensive review process, the group determined that two main documents would be used to support the establishment of a Nova Scotia falls assessment framework. These documents are:

- National Institute for Clinical Excellence (NICE). (November 2004). *Clinical Guideline 21: Falls: The assessment and prevention of falls in older people*. London, UK: National Institute for Clinical Excellence.

- Registered Nurses Association of Ontario (RNAO). (January 2002). *Nursing best practice guidelines: Prevention of falls and fall injuries in the older adult*. Toronto: Registered Nurses Association of Ontario.

Numerous other primary and secondary source documents were reviewed by the group to support the findings of these two documents. A complete list of the literature reviewed can be found in the Bibliography section of this report.

Using This Document

As previously stated, falls account for 61 per cent of injury-related hospital stays for older adults in Nova Scotia and cost the province approximately $160 million each year. The costs to seniors' health and independence, as well as the financial burden to the province, will continue to grow if nothing is done to change the situation.

Falls prevention involves the identification of risk factors associated with falling and the implementation of strategies to help decrease or eliminate those factors.

The intent of this framework is to raise the awareness of falls and falls prevention and to give the user the information necessary to create individualized, practical falls assessment tools and programs tailored to their situation and environment.

The framework has relevance in home care, acute care, and long-term care. It can be used to build on existing falls prevention programs or to assist in developing new falls prevention programs. However, no two organizational settings are the same, nor are the needs in acute care the same as those in home care or long-term care. As a result, this document does not provide a cookbook or one-size-fits-all approach to falls assessment. In fact, the literature review did not support the use of a single assessment tool across the sectors (See: Queensland Health, 2003; RNAO, 2002.)

Users of this document will normally be those persons who develop new programs and policies that affect the quality of care for older and at-risk adults, and those who train others in implementing and using new procedures and tools.

This document will define falls, outline the risk factors associated with falling, provide intervention strategies based on the risk factors, provide guidelines for monitoring and evaluation, and provide sample materials and links to materials to help in developing a program tailored to individual needs.

Working together, everyone can help reduce falls, and falls-related injuries, across Nova Scotia.

Defining Falls

For the purposes of this document, a fall has been defined as follows:

- A sudden unexplained change in position that results in an individual coming to rest unintentionally on the ground or lower level (Rubenstein, Robbins, Josephson, Schulman, & Osterweil, 1990). This would include
    1. unwitnessed falls whereby the resident is unable to explain the events and there is evidence to support that a fall has occurred
    2. near falls (resident eased to the floor by staff) (Wagner, Richards, & Oliver, 2003).

The following three classifications best describe all types of falls according to Morse (2002):

1. **Accidental Falls:** These occur when a resident slips (e.g., on water, bathrobe tie, and so on). Approximately 14 per cent of falls in the hospitalized population are in this category. Fall prevention strategies are implemented to address these types of falls. Improving flooring or lighting may be two such strategies.

2. **Unanticipated Physiological Falls**. These occur when a resident falls for a physiological reason that has not been identified in the Fall Risk Tool. Examples of causes of these falls are, fainting, seizures, a pathological hip fracture. Approximately 8 per cent of all falls in the hospital population are this type of fall. Fall prevention strategies are **protective** and aim to protect the patient from injury should a fall occur.

3. **Anticipated Physiological Falls**. These occur in individuals who have already been flagged as being at risk of falling. They are expected to fall again, because the Fall Risk Tool has identified their high risk (e.g., an individual who has an impaired gait). Approximately 78 per cent of all falls in the hospital population are in this category. Fall prevention strategies are both **protective and preventative**.
    - Protective strategies are *immediate* actions usually done by the nursing staff to protect the individual from injury, for example, providing hip protectors, closer observation.
    - Preventative strategies are more global and involve, for example, ensuring that the individual has a proper walking aid, medical assessment, etc.

Source: Morse, J. (2002). Enhancing the safety of hospitalization by reducing patient falls. *American Journal of Infection Control*, 30 (6), 376–380.

Risk Factors

Falls occur due to many different factors. The following list illustrates some of the primary reasons for falls:

- acute illness
- environmental hazards
- gait/balance disorder
- medication
- orthostatic hypotension
- lower extremity weakness

Other important factors must also be taken into account when developing fall risk assessment tools in the workplace:

1. **Age greater than 80 years**. Literature verifies that age must be taken into account when assessing an older adult for risk of falls. (Gardner, et al., 2000; Robertson, et al., 2001; Rogers, et al., 2003: Skelton & Beyer, 2003)

2. **Fear of falling**. It is very important that the health-care worker check carefully for fear and the effect it has on the person. This is particularly important where there has been a previous fall. Fear of falling may decrease socialization and/or activity levels, which may lead to de-conditioning, which can increase an individual's risk of falling. (Tinetti & Powell, 1993; Nakamura, Holm, & Wilson,1998)

Depending on the setting, the predominance of certain risk factors will vary. For example, in the community setting, environmental hazards are more apparent; whereas in a long-term care setting, medications and gait are most prevalent.

Risk factors also seem to work in an additive way. The more risk factors an individual has, the more likely they are to suffer a fall. Tinetti et al. in 1988 found that the risk of falling increased with the number of risk factors from 8 per cent with no risk factors to 78 per cent with four or more risk factors.

When developing a risk management plan, take into account that there is no single risk factor or single approach solution. The plan must be multidisciplinary and multi-factorial in approach and be tailored to the individual.

The Falls Assessment Working Group identified the above risks along with others that were significant enough to include in this report.

Charts have been developed on each factor to provide more detail around the rationale and possible interventions required in each case.

Factor: Previous falls

Rationale

- Previous falls are predictive of potential further falls particularly related to the causes and complications arising from those falls including a, fear of falling.

Action Plan

- Assess the falls history, including
  - frequency of falls
  - circumstances of the fall (how, when, where)
  - severity of the fall and if injuries occurred
  - time of day
  - patterns surrounding falls
- Assess specific contributing risk factors based on the above findings.
- Design specific interventions that focus on the above findings.
- Inform the individual and family of the findings and teach them what can be done to prevent further falls.

Literature Sources

Ash, McLeod, & Clark, 1998; Ballard, Shaw, Lowery, McKeith, & Keeney, 1999; Bueno-Cavanillas et al., 2001; Cwikel, Fridd, Biderman, & Galinsky, 2001; Kiely, Kiel, Burrows, & Lipsitz, 1998; Mahoney et al., 2000; Rapport, Hanks, Millis, & Deshpande, 1998; Sullivan & Badros, 1999; Tinetti & William, 1997; NICE, 2004.

Factor: Acute illness

(pneumonia, urinary tract infection, gastrointestinal infection, influenza, upper respiratory infections, etc.)

Rationale

- There is potential for an immediate high risk for falls due to potential effects of illness such as fatigue, weakness, and impaired cognition.
- Impaired cognition may lead to increased risk-taking behaviours such as trying to self-toilet when assistance was previously required.
- Side effects of short-term medication used to treat the condition may lead to an increased risk of falling.

Action Plan

- Initiate and/or review assessments completed by physicians, nurses, pharmacists, dietitians, occupational therapists, physiotherapists, recreational therapists, and other specialists as appropriate.
- Provide immediate and appropriate care as per diagnosis.
- Assess for signs and symptoms of delirium.
- Evaluate effects of prescribed medications.
- Monitor for dehydration.
- Evaluate care needs, abilities, effects of treatments, etc., on an ongoing basis.
- Secure a low-risk safe environment (remove obstacles, furniture, etc.).
- Increase monitoring of falls risk.

Literature Sources

Beauchet et al., 2000; Kiely et al., 1998; Maki, 1977; Tinetti, 1986; NICE, 2004; RNAO (2002).

Factor: Chronic illness

(cerebrovascular (stroke, TIAs, vascular dementia), cardiovascular diseases, orthostatic (postural) hypotension, post-prandial hypotension, neuromuscular conditions (MS, Parkinson's, etc.), arthritis, diabetes, depression, insomnia, anxiety, etc.)

Rationale

- Increased falls risk is due to effects of condition and/or medications used, which may include decreased safety awareness, decreased strength, decreased joint range of motion (ROM), decreased balance, and decreased endurance.

Action Plan

- Initiate and/or review assessments completed by physicians, nurses, pharmacists, dietitians, occupational therapists, physiotherapists, recreational therapists, and other specialists as appropriate.
- Review medication and treatments associated with the condition for modification and withdrawal as appropriate.
- Implement physical activity as appropriate to provide strength and balance training.
- Incorporate range of motion into activities of daily living to maintain and restore flexibility.
- Assess for orthostatic hypotension. (See Appendix C: Specific Intervention Recommendations—Orthostatic (Postural) Hypotension.)
- Post-prandial hypotension: Rest after meal for 1/2 hour minimum.

Literature Sources

Beauchet et al., 2000; Grant, 2003; Leipzig et al., 1999A; Lui, Topper, Reeves, Gryfe, & Maki, 1995; National Aging Research Institute, 2000; Ooi, Hossain, & Lipsitz, 2000; Sherrington & Lord, 1998; Tinetti et al., 1998; Tinetti et al., 1996; Ugur, Gucuyener, Uzuner, Okkan, & Ozdemir, 2000; NICE, 2004; RNAO, 2002.

Factor: Osteoporosis

Rationale

- Increased risk of fracture associated with falls is due to decreased strength of bone resulting in an increased risk for spontaneous fractures and fractures related to low energy trauma.

Action Plan

- See Nova Scotia osteoporosis guidelines.
- Initiate and/or review assessments completed by physicians, nurses, pharmacists, dietitians, occupational therapists, physiotherapists, recreational therapists, and other specialists as appropriate.
- Implement the following:
  - appropriate medical treatment
  - nutritional care plan as developed by the dietitian
  - calcium and vitamin D regimes as per recommendation from the Provincial Osteoporosis Committee
  - individualized exercise program as developed by the physiotherapist that incorporates weight-bearing activities (e.g., walking)
- Conduct bone density studies if required.

Literature Sources

Kannus et al., 1999; Province of Nova Scotia, 2002; NICE, 2004; RNAO 2002.

Factor: Cognitive impairment

(Alzheimer's disease, delirium, brain injury, other dementias, etc.)

Rationale

- Poor insight into physical limitations may lead to increased risk-taking behaviours, leading to an increased risk for falls.
- Individuals with Lewy Body dementia are at higher risk for falls.

Action Plan

- Implement a behavioural approach to manage (e.g., Alzheimer's Disease and Other Related Dementias Care Course, P.I.E.C.E.S.™ learning program).
- Identify risk factors that trigger unsettling behaviours such as agitation.
- Minimize relocation.
- Request assistance from families to sit with their relative.
- Maintain consistency in assignment of caregivers and schedule of activities.
- Provide aids for orientation in the environment, such as clocks and calendars.
- Ensure a safe environment for pacing, walking, rocking, and wandering when individual has need to diffuse energy; provide rest stops for fatigue.
- Use non-pharmacological approaches and environmental assessments.
- Consult with specialist in the area of cognitive impairment as required (e.g., psychologists, seniors' mental health, geriatric psychiatry, geriatricians, neurologists).

Literature Sources

Ballard, Shaw, Lowery, McKeith, & Kenny, 1999; Dawson, Wells, & Kline, 1993; Leipzig, Cumming, & Tinetti, 1999a; Shaw, 2003.

Factor: Impaired strength and balance

Rationale

- Generalized weakness, especially lower extremity weakness, and/or decreased balance lead to difficulties in transfers and walking, placing individuals at increased risk of falling.
- Individuals who lack exercise are two times as likely to fall as those who participate in regular exercise

Action Plan

- Initiate and/or review assessments completed by occupational therapists, physiotherapists, recreational therapists, physicians, nurses and other specialists as appropriate.
- Use muscle strengthening and balance training as part of a multi-factorial intervention strategy based on the functional ability of the individual. Individualized exercise programs, designed by the physiotherapist or occupational therapist, should be based on the following:
    1. supervised by a qualified person
    2. individualized within a group or 1:1
    3. target the affected area
    4. strengthening exercises should be resistive in nature
    5. regular and sustained
- Use approved and safe assistive devices.
- Develop a transfer plan. Assess an individual's ability to transfer from varying surfaces. Provide education on proper and safe techniques for transferring as appropriate. Ensure that the environment around the transfer locations is safe and that equipment (walkers, grab bars) used or the space transferred to (bed, chair, wheelchair) is safe. Ensure that those who do not transfer independently are adequately assisted.
- Evaluate exercise plan and transfer plan as functional status changes.

Literature Sources

American Geriatric Society, 2001; Campbell et al., 1997; Close & Glucksman, 2000; Connelly & Vandervoort, 1999; Gillespie et al., 2000; Kiely et al., 1998; Korokany et al., 1995; Lee & Kerrigan, 1999; Mahoney et al., 2000; National Aging Research Institute, 2000; Oliver et al., 2000; Province et al., 1995; Rubenstein et al., 2000; RNAO, 2002.

Factor: Hearing and vision impairment

Rationale

- Hearing and/or vision impairment may affect balance and/or safety, increasing the risk of falling. Hearing and vision assessment and referrals have been a component of successful multi-factorial falls prevention programs.

Action Plan

- Initiate hearing and vision referral and assessment by qualified professionals.
- Use assistive devices, corrective treatments, and other interventions (e.g., hearing aids, glasses, cataract surgeries, etc.) where possible.
- Check for programs that support the client and their families/caregivers (e.g., CNIB).
- Assess and refer regularly to monitor for change.

Literature Sources

Kerse et al., 2004; Perrell et al., 2001; NICE, 2004; RNAO, 2002.

Factor: Urinary/bowel—urgency and frequency

Rationale

- Urinary urgency, and urinary frequency combined with reduced mobility, balance, and/or upper extremity dexterity, has been shown to be associated with increased risk of falling.
- Constipation combined with reduced mobility and balance may lead to restlessness, discomfort, and agitation, with a possible increased risk of falls.
- Bowel urgency, and bowel frequency combined with reduced mobility, balance, and/or upper dexterity, may be associated with increased risk of falling.

Action Plan

- Assess for urinary and bowel management care needs.
- Establish an individualized toileting routine.
- Assess for toileting transfers and self-care abilities.
- Initiate a natural bowel management program on admission and provide follow-up assessment.
- Review medication for urinary and bowel implications, with modification and withdrawal as appropriate.
- Promote optimal daily intake of food and fluids.
- Encourage daily physical activity.
- Refer to RNAO best practice guidelines: *Promoting Continence Using Prompted Voiding and Prevention of Constipation in the Older Adult Population* (on the website at www.rnao.org).

Literature Sources

National Aging Research Institute, 2000; Oliver et al., 2004; Stevenson, Mills, Welin, & Beal, 1998; Sullivan & Badros, 1999; RNAO, 2002.

Factor: Poor nutrition and poor hydration

Rationale

- Poor nutrition and poor hydration lead to increased weakness and possible cognitive impairment in older and at-risk adults, which may contribute to the risk of falls.
- These factors are related to osteoporosis and other chronic illnesses (see related risk factor charts).

Action Plan

- Initiate and/or review assessments completed by dietitians, physicians, nurses, home care coordinators, and other specialists as appropriate.
- Assess current nutrition risk and health status.
- Evaluate factors that may affect hydration and nutritional intake (sensory, environmental, medications, psychological, physiological, etc.).
- Develop, implement, and evaluate regularly an individualized nutrition care plan with the overall goal to maintain or improve nutrition and hydration status to reduce nutrition risk.

Literature Sources

Kannus et al., 1999; National Aging Research Institute, 2000; Province of Nova Scotia, June 2002; RNAO, 2002.

Factor: Polypharmacy

(use of four or more medications), anesthetics, pre- and post-op medications, over-the-counter drugs, and substance abuse (medication use, alcohol and/or other illicit substances)

Rationale

- Literature clearly links many medications to an increased risk of falls, with the highest risk occurring with sedatives, anti-psychotics, and anti-depressants.
- A change in the type or dosage of any medication may increase the risk of falls.

Action Plan

- Review medications with physicians, nurses, pharmacists, home care coordinators, and other specialists, with modification and withdrawal as appropriate.
- Minimize the number of medications required, including all over-the-counter drugs and herbal remedies.
- Limit or eliminate any sedatives, anti-depressants, and anti-psychotics if possible.
- Monitor and educate client and family on possible side effects of medications.
- Monitor proper use of medications.
- Watch for possible substance abuse and support elimination and/or safe practice.
- Seek alternative solutions such as diet counselling, relaxation techniques, etc.
- Implement regular medication reviews.

Literature Sources

Kerse et al., 2004; Leipzig et al., 1999a; Mosely et al., 1998; Oliver et al., 2004; Perell, 2001; Rogers et al., 2003; Shanley, 2003; Smith 2004; NICE, 2004; RNAO, 2002.

Factor: Physical restraints

Rationale

- Restraints causing immobility may lead to increased confusion, increased agitation, decreased joint range of motion (ROM), and decreased strength, leading to impairments in transfers and gait, thus increasing the risk for falls.
- There is no evidence that use/removal of physical restraints will reduce falls; however, more serious injuries are associated with the use of physical restraints.
- A retrospective case control study by Ash et al. (1998) demonstrated that first-time fallers who were restrained were 14 times more likely to fall then those who were not.

Action Plan

- Least physical restraint is best practice.
- Always look for alternatives to physical restraint (e.g., bed and chair alarm systems, low beds, moving the person closer to the nursing station, increased monitoring of resident, regular toileting, assistance from family, etc.).
- Use a behavioural approach before considering the use of physical restraints.
- Establish policies and guidelines for the use of physical restraint based on best practices, which include obtaining consent, implementing documentation, and monitoring standards.
- Ensure that guidelines and policies on the use of physical restraints are followed.
- Assess user tolerance and functioning level.
- Provide strengthening and ROM activities to reduce the risk of complications of inactivity such as muscle atrophy (weakness) and muscle contractures (shortening).
- Encourage psycho-social interactions.

Literature Sources

American Geriatrics Society, 2001; Ash et al., 1998; Capezuti et al., 1996; Evans et al., 1997; Mahoney, 1995; Miles & Irvine, 1992; National Aging Research Institute 2000; Tideiksaar, Feiner, & Maby, 1993; Tinetti, Liu, & Ginter, 1992; RNAO, 2002.

Factor: Environmental hazards

Environmental hazards such as

- limited/poor equipment maintenance
- poor lighting
- improper bed height
- improper chair height and armrests
- clutter and pathway obstacles
- loose carpets, tiles
- lack of bathroom safety aids
- high-gloss floors and slippery surfaces
- moving from room to room and other transfer points
- space modification (renovations, rearrangement of furniture, etc.)
- presence of IV equipment
- improper use of medical and assistive devices, etc.
- poorly maintained, unmarked, or unsafe building entries, exits, and stairways (signage, door and stair markings, handrails, etc.)

Rationale

- Trips, slips, and loss of balance resulting in a fall are more likely to occur in unsafe environments or with equipment that is not properly maintained.

Action Plan

- Conduct, preferably by an occupational therapist or physiotherapist, an environmental assessment that includes equipment used.
- Identify hazards such as loose carpets, tubs without handles, unsafe stairs.
- Modify the environment and equipment such as elimination of clutter, lower beds, etc.
- Educate and support the client and their families/caregivers to create safer environments.
- Perform ongoing reassessments.
- See Appendix C: Specific Intervention Recommendations—Equipment/Environmental Fall Intervention.

Literature Sources

American Geriatric Society, 2001; American Medical Directors Association, 1998; Aminzadeh & Edwards, 1997; Arbesman & Wright, 1999; Connel & Wolf, 1997; Cummings et al., 1999; Gillespie et al., 2000; Heslin et al., 1992; Kiely et al., 1988; Lord & Dayhew, 2001; Mosley et al., 1998; National Aging Research Institute, 2000; Ray et al., 1998; Sullivan et al., 1999; The University of York, 1966; NICE, 2004; RNAO, 2002.

Factor: Clothing and footwear

(inappropriate, no support/ill-fitting)

Rationale

- Possibility of tripping or slipping is increased.

Action Plan

- Use elastic waistbands and Velcro fasteners rather than zippers or buttons.
- Use low-heeled, properly fitting footwear with non-slip soles.
- Consider anti-slip socks.
- Ensure that clothing is at the appropriate length.
- Consider open-back clothing.
- See Appendix C: Specific Intervention Recommendations—Equipment/Environmental Fall Intervention.

Literature Sources

Mosley et al., 1998; Shanley, 2003; RNAO, 2002.

Organizational Risk Factors

Factors at this level are often outside the control of the individual caregiver and need to be addressed at all levels in an organization. Below are some of the factors an organization needs to take into account when developing a Falls Assessment Program.

- staffing levels and patterns
- safe work practices (e.g., proper lifting, etc.)
- appropriate use of restraints
- comprehensive data collection
- implementation of fall prevention interventions and policies
- falls prevention education and awareness
- management support for falls programming

Source: Shanley, Chris. (2003). Falls and injury reduction in residential aged care: Translating research into practice. *Contemporary Nurse,* 15(1/2), 81–93.

Monitoring and Evaluation

Once a Falls Assessment Program is developed and put into place, it needs to be monitored on a continual basis. This will allow for process improvements and tracking of the changes brought about by the program.

Key Indicators

- fall rate (number of falls/number of bed days x 100)
- number of admissions to hospital related to falls
- number of fractures as a result of falls
- number of Falls Prevention Programs in place by sector
- cost of fall-related fractures in those 60 years and older

Facilities, community agencies, and others can track other data, procedures, etc., to meet their own specific needs and for information necessary to monitor for internal quality process improvement.

Sample Indicator Lists

Department of Health

Number of admissions to hospital
Number of facilities with programs in place
Costs of care related to falls

Facility

Number of falls
Number of fractures
Time of day fall occurred
Cause of fall
Use of hip protectors at time of fall

Frequency of Reports

1. In first two years, every six months
2. After that, annual reports

Recommendations for Program Development

Hip Protectors

The use of hip protectors as a means of preventing hip fractures in adults who fall is being widely implemented as more and more health-care providers are becoming aware of the serious consequences associated with falls. Hip protectors are constructed and worn by an individual as an undergarment. Each garment has either sewn-in or removable hip shields. There are many different types of hip protectors (soft shelled and hard shelled), which are manufactured by different companies. Depending on the health-care insurance coverage that an individual has, the hip protector cost may be covered by their insurance.

One of the biggest challenges in using hip protectors is to ensure that the individual feels comfortable when wearing them. Because they are not always comfortable or seem impractical to the user, wear compliance may be an issue.

Research data has been mixed in proving the efficacy of hip protectors in hip fracture prevention. Parker, Gillespie and Gillespie (2004) state that "there is no evidence of effectiveness of hip protectors from studies in which randomization was by individual patient within an institution or for those living in their own homes." However, there is some evidence that "for those living in institutional care with a high background incidence of hip fracture, a programme of providing hip protectors appears to reduce the incidence of hip fractures."

Since the evidence on the use of hip protectors is not clear, their use needs to be given careful consideration based on the results of a full individual patient assessment profile.

Source: Parker, M., Gillespie, L., & Gillespie, W. (2005). Hip protectors for preventing hip fractures in the elderly. *The Cochrane Database of Systematic Reviews*, 2.

Facility or Program Management

- Adhere to the standard definition of what constitutes a fall.
- Provide access to professional staff including physiotherapists, occupational therapists, recreation therapists, dietitians, registered nurses, and other necessary health-care professionals in a timely manner.
- Ensure that adequate staffing resources are in place.
- Utilize the interdisciplinary team to develop falls prevention and recovery programs tailored to the environment, community, and clientele.
- Seek means to provide access to equipment to support fall prevention initiatives such as low beds, bed alarms, appropriate lighting, etc.
- Set and implement policy for the assessment of a person's risk for falling.
- Since unfamiliar surroundings may also contribute to a fall, set and implement policy to minimize relocation of residents.
- Ensure that information related to falls risk is transferred when a person is relocated.
- Track quality indicators on falls and share this information with staff for quality improvement purposes.
- Provide educational opportunities regarding falls risk, prevention, and assessment to staff, clients, families, and communities.

Care Providers

- Educate all direct caregivers on the risk factors for falls and strategies to help prevent falls.
- Recognize that unfamiliar surroundings may contribute to a fall and seek all avenues to minimize relocation of residents.
- Conduct an assessment of a person's risk for falls upon admission to a nursing home, hospital, initial home visit, or other point of contact with a health-care professional.
- Develop and implement a plan of care to prevent an individual from falling.
- Support a post-fall follow-up process that looks at the circumstances surrounding the fall and try to identify what may have contributed to the fall and what can be done to prevent further falls.
- Ensure that information related to falls risk is transferred when a person is moved.
- Provide enhanced awareness of local Falls Clinics and other programs and how to access the service. Individuals who have sustained a fall with injury should receive a referral to the service (Community Care).
- Educate the individual and family about falls risk and prevention.

Appendix A: Quick Reference Guide

Falls Assessment and Prevention (adapted form NICE)

Key Program Implementation Priorities

- Form an interdisciplinary falls management team to review current practices.
- Develop a program based on risk factor assessment and post-fall assessment tools specific to your population and environment.
- Discuss and implement generic intervention strategies that may help to reduce the risk for falls.
- Establish indicators and timelines for reviewing indicators.
- Educate stakeholders and staff on the program and fall prevention in general.
- Implement the program. Start small and build on your successes.
- Monitor the progress of the program. Provide frequent updates to stakeholders and staff to let them know how the program is going and make changes as needed.

Key Assessment Priorities

- All persons at risk should be asked about their fall history by health-care providers. This history should include frequency, how, when, where, and if injuries were sustained. An individualized fall prevention treatment plan should be offered and encouraged.
- All those living in the community with a diagnosis of osteoporosis should be assessed for their risk for falls even if they do not have a history of falls.
- All long-term care residents should be considered at risk for falling. A multi-factorial falls risk assessment and comprehensive past fall assessment should be completed upon admission. Interventions strategies to address identified key risk factors should be implemented.

Key Risk Factors for Falls	Key Intervention Strategies for Individuals At Risk
Age over 80 years	
Fear of falls	
History of previous falls	Address causes based on past fall assessment
Acute illness (pneumonia, urinary tract infection, etc.)	Treat acute condition and reevaluate risk factors
Chronic illness (CVA, postural hypotension, depression, etc.)	Treat chronic condition and reevaluate risk factors
Osteoporosis	Implement calcium and vitamin D regimes with an exercise program that incorporates weight bearing
Cognitive impairment (Alzheimer's disease, brain injury, etc.)	Implement a behavioural approach to manage impaired cognition (e.g., Alzheimer's program, PIECES, ARDCC)
Impaired strength and balance	Provide strength and balance training
Hearing and vision impairment	Provide hearing and vision assessment and referral
Urinary/bowel, incontinence, urgency and frequency	Implement individualized bladder/bowel management programs
Poor nutrition and poor hydration	Ensure adequate nutrition and hydration
Polypharmacy	Carry out medication review with modification and removal as appropriate
Physical Restraints	Institute a least-restraint policy
Environmental hazards	Modify environment; remove environmental hazards
Clothing and footwear (inappropriate, no support/ill-fitting)	Ensure that clothing and shoes are appropriate and fit properly

Appendix B: Test and Assessment Reference Materials

Sample Fall Risk Tools

Morse Scale (Acute care): Morse, J. (1997). *Preventing patient falls*. Thousand Islands, CA: Sage. (Validated)

Veterans Services Fall Risk Scale: Revised but based on Theodos, P., 2004. Oak Brook Healthcare Center, 2013 Midwest Road, Oak Brook, Illinois 60521. (Not validated). For more information, contact Veterans Services Falls Management Program, Capital District Health Authority, Halifax, NS.

Patient Assessment (acute care): Hendrich, Ann L., Bender, Patricia S., and Nyhuis, Allen. (2003). Validation of the Hendrich II Fall Risk Model: A large concurrent case/control study of hospitalized patients. *Applied Nursing Research*, 16(1), 9–21. See also: http://ahendrichinc.com (Validated)

Also see sample tools provided here.

Fall Risk Factor Information

Catano, Janis Wood. (2003). *Preventing falls together: A population health took kit*. Dartmouth, NS: Community Links

Krueger, P., Brazil, K., & Loffield, L. (2001). Risk factors for falls and injuries in a long term care facility in Ontario. *Canadian Journal of Public Health*, 92(2), 117–120.

Lord, S., March, L., Cameron, I., Cumming, R., Schwartz, J., Zochling, J., Chen, J., Makaroff, J., Sitoh, Y., Lau, T., Brnabic, A., & Sambrook, P. (2003). Differing risk factors for falls in nursing homes and intermediate care residents who can and cannot stand alone. *Journal of American Geriatrics Society, 51*, 1645–1650

National Institute of Clinical Excellence (NICE). *Clinical guideline 21: Falls: The assessment and Prevention of Falls in Older People*. London, UK: National Institute for Clinical Excellence, November 2004.

P.I.E.C.E.S.TM Consultation Team. *Putting the P.I.E.C.E.S.™… Together—A learning program for professionals providing long-term care to older adults with cognitive/mental health needs" resource guide* (5th ed.). http://www.PIECES.cabhru.com

Registered Nurses Association of Ontario (RNAO). (2002). *Nursing best practice guidelines: Prevention of falls and fall injuries in the older adult*. Toronto: Registered Nurses Association of Ontario.

Shaw, F. Falls and older people with dementia. (2003). *Geriatrics and Aging*, 6(7), 37–40.
Tinetti, M.E. (2003). Preventing falls in elderly persons. New England Journal of Medicine, 348(1), 42–49.

Also see useful material developed in Queensland, Australia:

Queensland Health. (2003.) *Falls prevention best practice guidelines for public hospitals and state government residential aged care facilities incorporating a community integration supplement*. http://www.health.qld.gov.au/fallsprevention/best_practice/falls_best_practice.pdf

Queensland Government Health and Housing. (2002). One step ahead: *Preventing falls—A guide for older people*. http://www.health.qld.gov.au/phs/Documents/shpu/15820.pdf

Northwood Long Term Care Fall Risk Assessment Tool and Fall Surveillance Report

NORTHWOOD
Long Term Care

FALL RISK ASSESSMENT TOOL

If Resident is immobile (does not move independently at any time) resident is considered to be low risk & does not require completion of Fall Risk Assessment Tool.

NAME:	DATE:

SCORE	INFORMATION
___/2	**AGE:** ❒ 80 or less years (1) ❒ Greater than 80 years (2) **REASON FOR COMPLETION:** ❒ New Admission ❒ Physiological, Functional or Cognitive Change ❒ Discharge from hospital ❒ Experienced a fall & has not had previous fall in the last 90 days.
___/2	**MEDICAL HISTORY**: ❒ Cardiac History ❒ Hypertension/Hypotension/Orthostatic Hypotension ❒ PVD ❒ CVD ❒ Diabetes ❒ Acute illness (ie pneumonia, UTI) ❒ Neurological Disorder (Parkinsonism, MS, Huntington's, Seizures, Syncope/Vertigo) ❒ Alzheimers/ Other Dementias ❒ Osteoporosis ❒ Substance Abuse ❒ Arthritis ❒ Mental health issues (ie depression) ❒ Insomnia None of the above diagnoses (0) 3 or less diagnoses (1) Greater than 3 diagnoses (2)
___/4	**HISTORY OF FALLS**: ❒ No history of falls in past 90 days (0) ❒ 1 fall in past 90 days (2) ❒ 2 or more falls in past 90 days (4)
___/4	**MENTAL STATUS** (Check all applicable): ❒ Oriented (0) ❒ Confused (Chronic) (1) ❒ Delirium (Acute) (1) ❒ Impaired Insight/Judgment/Perception(2)
___/2	**SENSORY PERCEPTION**: Hearing & Vision *(Check one only)* ❒ Normal hearing and vision (0) ❒ Hearing and/or vision corrected with aids (1) ❒ Hearing and/or vision impaired (including residents receiving eye drops or ointment) (2)

___/5	**MEDICATIONS**: Narcotic Analgesics/ NSAID's — ❒ Routine ❒ PRN given within past 48 hours ❒ New med ordered or dosage change within past 48 hours Diuretics — ❒ Routine ❒ stat dose given within past 48 hours ❒ New med ordered or dosage change within past 48 hours Cardiac/ Antihypertensives — ❒ Routine ❒ PRN or stat dose given within past 48 hours ❒ New med ordered or dosage change within past 48 hours Psychotropics — ❒ Routine ❒ PRN given within past 48 hours ❒ New med ordered or dosage change within past 48 hours Sedatives/Hypnotics/ Anxiolytics/Antidepressants — ❒ Routine ❒ PRN given within past 48 hours ❒ New med ordered or dosage change within past 48 hours Muscle relaxants — ❒ Routine ❒ PRN given within past 48 hours ❒ New med ordered or dosage change within past 48 hours Antihistamines/ Antiemetics — ❒ Routine ❒ PRN given within past 48 hours ❒ New med ordered or dosage change within past 48 hours Insulin/hypoglycemics — ❒ Routine ❒ PRN or stat dose given within past 48 hours ❒ New med ordered or dosage change within past 48 hours Alcohol — ❒ Routine ❒ PRN dose given within past 48 hours ❒ New order or dosage change within past 48 hours (0) None of the above medications (2) Routine - Any or all add 2 points (3) Any New/PRN - add 3 points
___/8	___/6 **AMBULATORY STATUS** (Check all applicable): ❒ Stable gait and balance (0) ❒ With assistance (ie: mobility aid/staff assist (1) ❒ Related deformities (ie: foot, knee, hip, spinal) (1) ❒ Unsteady Gait (2) ❒ Impaired Balance (2) ___/2 **TRANSFER STATUS:** (Check one only) ❒ Stable Independent (1) ❒ Assisted (2)
___/2	**NUTRITIONAL / HYDRATION STATUS:** ❒ Generally takes most of food offered (0) ❒ Generally does not drink all fluids offered (1) ❒ Does not drink milk / lacteeze milk or take calcium & Vitamin D supplements (1)
___/1	**ELIMINATION STATUS:** ❒ Continent or effectively managed incontinence (0) ❒ Incontinence ineffectively managed (1)
___/30	**SCORE ANALYSIS** < 10 - Resident at **LOW RISK** ≥ 10 - Resident at **MODERATE RISK** ≥ 20 - Resident at **HIGH RISK**; **Mandatory Multidisciplinary Review**

The Tinetti Assessment

Source: Lewis, Carole. (1993, February 10). Balance, gait test proves simple yet useful. *P.T. Bulletin*.

Tinetti Balance Tests	Score
Initial Instructions: Subject is seated in hard, armless chair. The following maneuvers are tested:	
1. Sitting Balance Leans or slides in chair = 0 Steady, safe = 1	
2. Arises Unable without help = 0 Able, uses arms to help = 1 Able without using arms = 2 _____	
3. Attempts to Rise Unable with help = 0 Able, requires > 1 attempt = 1 Able to rise, 1 attempt = 2	
4. Immediate Standing Balance (first 5 sec.) Unsteady (swaggers, moves feet, trunk sways) = 0 Steady but uses walker or other support = 1 Steady without walker or other support = 2	
5. Standing Balance Unsteady = 0 Steady but wide stance (medial heels>4 in. apart) & uses cane/other support = 1 Narrow stance without support = 2	
6. Nudged (subject at maximum position with feet as close together as possible, examiner pushes lightly on subject's with palm of hand 3 times) Begins to fall = 0 Staggers, grabs, catches self = 1 Steady = 2	
7. Eyes Closed (at maximum position # 6) Unsteady = 0 Steady = 1	
8. Turning 360 degrees Discontinuous steps = 0 Continuous steps = 1 Unsteady (grabs, staggers) = 0 Steady = 1	
9. Sitting Down Unsafe (misjudged distance, falls into chair) = 0 Uses arms or not a smooth motion = 1 Safe, smooth motion	
Balance Score	

Tinetti Gait Tests	Score
Initial Instructions: ubject stands with examiner, walks down hallway or across room, first at usual pace, then back at rapid but safe pace (using usual walking aids)	
10. Initiation of Gait (immediately after told to "go") Any hesitancy or multiple attempts to start = 0 No hesitancy = 1	
11. Step Length and Height a. Right Swing Foot Does not pass left stance foot with step = 0 Passes left stance foot = 1 Right foot does not clear floor with step = 0 Right foot completely clears floor = 1 b. Left Swing Foot Does not pass right stance foot with step = 0 Passes right stance foot = 1 Left foot does not clear floor with step = 0 Left foot completely clears floor = 1	
12. Step Symmetry Right and left step length not equal = 0 Right and left step length appear equal = 1	
13. Step Continuity Stopping or discontinuity between steps = 0 Steps appear continuous = 1	
14. Path (estimated in relation to floor tiles; observe excursion of 1 foot over about 10 ft. of the course) Marked Deviation = 0 Mild/mod deviation or uses walking aid = 1 Straight without walking aid = 2	
15. Trunk Marked sway or uses walking aid = 0 No sway but flexion of knees or back or spread arms out while walking = 1 No sway, no flexion, no use of arms, and no use of walking aid = 2	
16. Walking Stance Heels apart = 0 Heels almost touching while walking = 1	
Gait Score	
Balance and Gait Score	

< 19 = High risk
19–24 = At risk, but not high
25+ = Low risk

Appendix C: Sample Interventions

Sample Fall Intervention Chart

Note: Suggested accountabilities listed here are for illustration purposes only. Accountabilities need to be determined by each individual facility or agency.

Source: Veterans Services Falls Management Program, Capital District Health Authority, Halifax, NS, 2004. This chart was based on the Dr. V. A. Snow Centre, Hampton, NB, Fall Management Program. See: www.snownursing.com.

Cause	Intervention	Suggested Accountability
Environmental	Ensure safe environment by creating a safe path with supports between bed and bathroom by installing handrails where possible	Nursing Housekeeping Engineering Services
	Ensure pathways are free of clutter (goal = have hall cabinets to hold supplies)	All staff
	Provide non-glare and non-slip flooring • Seal all floors with matted non-glare polish • Add non-slip strips to floor, bed, chair, toilet, etc.	Housekeeping
	Orientate and educate individual and family to their environment • Provide Fall Management Program brochures • Provide information on dietary choices for the prevention/management of osteoporosis to reduce the risk of fracture • Explain the individual's risk factors and possible fall prevention strategies	All staff
	Position bed in the lowest position	Nursing Engineering Services
	Use mattress on the floor beside the bed if a special low bed not available.	Nursing
	Use bedrails to prevent rolling out of bed (part of Least Restraint policy) • Reposition bed in room to provide one exit (against wall)	Nursing Housekeeping
	Teach individual and family how to transfer properly (where applicable) • Observe the person's capabilities to transfer/stand independently, with assistance or dependency • Remind the person to call for assistance to transfer • Ensure use of proper walking aid if required	PT/OT Nursing
	Provide comfortable seating and rest periods	OT Nursing
	Make use of warning systems • Install bed/chair alarms after appropriate assessment	Nursing
	Have person put both feet flat on the floor when getting out of bed or chair	All staff Family Volunteers
	Ensure that brakes are on bed at all times and working	Nursing Bed maintenance program
	Ensure that wheelchairs are in proper working condition • Have a regular wheel chair maintenance program	OT
	Fold footrests out of the way when getting people up from or down into wheelchair	All staff Family Volunteers

Cause	Intervention	Suggested Accountability
Environmental	Ensure that brakes are always on wheelchair and other equipment when transfers occur	Residents Staff Family Volunteers
	Teach and remind individuals to always use brakes when transferring independently	All staff
	Use anti-tip devices on wheelchair (as appropriate)	OT/PT
	Ensure that call bell is within reach	Nursing
	Ensure that assistive devices are in good working order	All staff
	Use raised toilet seats • Make sure proper bathroom safety aids are in place • Offer to toilet every 2–3 hours during the day	Nursing Family OT
	Wipe up spills immediately	All staff
	Provide chairs with armrests. Easy lift chairs are okay, easy chairs too low	Veterans' Affairs
	Use cushion to raise height of low chairs	PT/OT
	Place personal items within person's reach	Nursing
	Ensure that proper footwear, appropriate clothing, and other aids are available • Make sure the person's clothes are not too long • Use elastic waistbands rather than buttons and zippers • Provide anti-slip socks • Ensure that hearing/vision aids are in good working order and used	Nursing Family
	Ensure adequate lighting. Night lighting is bright enough for individual to see when they wake up and get up – bright lights that shine into a room from a bathroom or hallway may be so bright as to interfere with sleep or may temporarily blind resident upon waking.	Nursing Engineering services
	Use transfer devices (e.g., lifts, belts)	Nursing, PT
	Monitor medication use and effects • Minimize use of benzodiazepines, the number of medications required, and the use of medications at high risk for adverse side effects • Limit alcohol intake	Nursing Physician
	Maintain proper dietary and fluid routines • Offer nourishment and fluids throughout the day in addition to meal times • Decrease fluid intake in the evening	Dietician Nursing Family
	With a history of previous falls, take measures to reduce fear and risk of new falls • Provide appropriate intervention to deal with fear of falling • Increase frequency of observation checks • Move resident to a room closer to nursing desk • Provide hip protectors if appropriate • Adopt a bedside "logo" program to identify those at risk	All staff

Cause	Intervention	Suggested Accountability
Environmental	Use **temporary** restraints as determined appropriate (see Least Restraint policy) **Alternative Interventions to the Use of Restraints** • Behaviour assessment: Try to determine why individual is restless/agitated. Are they cold, need to toilet, dehydrated, lonely, in pain, frightened, constipated, have an infection, started on a new medication etc.? Do they have delirium? • Individualized care plan to address the unique *unmet* needs. Be specific in care plan. Everyone (all staff) must buy into the care plan. • Interdisciplinary approach • Family involvement • Organizational staffing • Caregiver approach • Communication techniques (calm, simple directions, not too much information at once etc.) • Environmental changes	Physician RN

Orthostatic (Postural) Hypotension

The definition of orthostatic hypotension is that an individual's systolic blood pressure value has decreased by 20 mmHg or more OR an individual's diastolic blood pressure value has decreased by 10 mmhg within three minutes after rising from a lying position to either a sitting or standing (preferred) position. Prevalence of orthostatic hypotension varies from 5–33 per cent in the general older adult population to about 50 per cent in frail older adults who reside in long-term care facilities (Grant, 2003).

Accurate Measurement Method

Blood pressure is best assessed by asking the individual to rest in the supine position for five minutes. Their pressure is first checked in this position and then rechecked at one- and three-minute intervals after the individual comes to a sitting or standing position.

Interventions for Orthostatic Hypotension

- Sit on the side of the bed for a few minutes when first rising in the morning. Dangle the feet over the side of the bed.
- Perform ankle-pumping exercises.
- Ask the individual to rise from the sitting to standing position slowly.
- Use the armrests or edge of bed for support when rising.
- Sit down immediately if feeling dizzy. Call nurse for assistance if it does not pass.
- Rest after meals if experiencing post-prandial hypotension.

Source: Veterans Services Falls Management Program, Capital District Health Authority, Halifax 2004.

Original sources: Brady, Chester, Pierce, Salter, & Radziewicz, 1993; Grant, 2003; Registered Nurses Association of Ontario (RNAO), 2002.

Post-prandial Hypotension

The intestines require a large amount of blood for digestion. When blood flows to the intestines after a meal, the heart rate increases and blood vessels in other parts of the body constrict to help maintain blood pressure. However, in some older people, such mechanisms may be inadequate. Blood flows normally to the intestines, but the heart rate does not increase adequately and blood vessels do not constrict enough to maintain blood pressure. As a result, blood pressure falls. Post-prandial hypotension can cause dizziness, light-headedness, faintness, and falls. If an older person experiences these symptoms after eating, measure blood pressure before and after meals to determine if post-prandial hypotension is the cause.

People who have symptoms of post-prandial hypotension should not take antihypertensive drugs before meals and should lie down after meals. Taking a smaller dose of the antihypertensive drugs and eating small, low-carbohydrate meals more frequently may help reduce the effects of this disorder. For some people, walking after a meal helps improve blood flow, but blood pressure may fall when they stop walking.

Taking certain drugs before a meal may help. For example, nonsteroidal anti-inflammatory drugs (NSAIDs) cause salt to be retained and thus increase blood volume. Some reduce the amount of blood flowing to the intestines. Caffeine causes blood vessels to constrict. Caffeine should be taken only before breakfast so that sleep is not affected and the person does not become tolerant of caffeine's effects.

Source: Abrams, Beers, & Berkow. (1995). The Merck manual of geriatrics (2nd ed.). Whitehouse Station, NJ: Merck & Co. Ltd.

Recommended Calcium Intakes for Individuals

Life Stage Group	Calcium (mg)	Vitamin D (IU)
Birth–6 months	210	200
7–12 months	270	200
1–3 years	500	200
4–8 years	800	200
9–18 years	1300	200
19–50 years	1000	400**
51–70 years	1500	800**
70 years +	1500	800**

Pregnancy and Lactation		
≤18 years (or younger)	1300	200
19–50 years	1000	400**

Quick Guide to Calculating Dietary Calcium Intake

300 mg for each serving for the following:

- 1 cup of milk (any milk, including skim, chocolate, powdered)
- 2 cheese slices
- 1 cup of soya milk
- 3/4 cup yogurt
- 1 cup of calcium-fortified orange or grapefruit juice
- 1 chunk of cheese (size of a half deck of cards)
- 3/4 cup milk with 35% more calcium

Add 300 mg for the calcium contained in the rest of the diet (provided the patient is eating an average, well-balanced diet).

If unable to consume correct amounts, consider suggesting calcium and vitamin D supplements.

Supplements should have a drug identification number (DIN).

Calcium Supplements

- are best absorbed in frequent small quantities
- are best absorbed when taken with food

Vitamin D Sources/Supplements

- milk 1 cup: 100 international units (IU)
- halibut liver oil: 400 IU
- multi-vitamin: 400 IU
- pure vitamin D: 400 and 1000 IU
- no more than 5000 IU of vitamin A should be taken daily (Fish oils such as halibut liver oil are high in vitamin A.)

Source: Province of Nova Scotia. *Managing Osteoporosis: A Nova Scotia Approach: Guidelines*. Halifax, NS, December 2003.

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