

## NATIONAL GUIDELINE CLEARINGHOUSE™ (NGC) GUIDELINE SYNTHESIS

### PREVENTION OF FALLS IN THE ELDERLY

#### Guidelines

1. American Medical Directors Association (AMDA). [Falls and fall risk](#). Columbia (MD): American Medical Directors Association; 2003. 16 p. [1 reference]
2. Health Care Association of New Jersey (HCANJ). [Fall management guideline](#). Hamilton (NJ): Health Care Association of New Jersey; 2006 Sep. 32 p.
3. The John A. Hartford Foundation Institute for Geriatric Nursing (JHF). [Preventing falls in acute care](#). In: Mezey M, Fulmer T, Abraham I, Zwicker DA, editor(s). Geriatric nursing protocols for best practice. 2nd ed. New York (NY): Springer Publishing Company, Inc.; 2003. p. 141-64. [25 references]
4. National Collaborating Centre for Nursing and Supportive Care, National Institute for Clinical Excellence (NCCNSC/NICE). [Clinical practice guideline for the assessment and prevention of falls in older people](#). London (UK): National Institute for Clinical Excellence; 2004 Jun. 185 p.
5. Registered Nurses Association of Ontario (RNAO). [Prevention of falls and fall injuries in the older adult](#). Toronto (ON): Registered Nurses Association of Ontario; 2005 Mar. 56 p. [77 references]
6. University of Iowa Gerontological Nursing Interventions Research Center (UIGN). [Fall prevention for older adults](#). Iowa City (IA): University of Iowa Gerontological Nursing Interventions Research Center, Research Dissemination Core; 2004 Feb. 60 p. [104 references]

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## INTRODUCTION:

A direct comparison of recommendations for prevention of falls in the elderly is provided in the tables below. The guidelines compared were developed by the American Medical Directors Association (AMDA); the Health Care Association of New Jersey (HCANJ); the John A. Hartford Foundation Institute for Geriatric Nursing (JHF); the National Collaborating Centre for Nursing and Supportive Care, National Institute for Clinical Excellence (NCCNSC/NICE); the Registered Nurses Association of Ontario (RNAO); and the University of Iowa Gerontological Nursing Interventions Research Center (UIGN).

The six guidelines differ somewhat in scope. While the AMDA, HCANJ, and JHF guidelines each focus on falls prevention in a single health care setting, the NCCNSC/NICE, RNAO, and UIGN guidelines address falls prevention in two or three settings. Prevention of falls in community-dwelling older adults is addressed by NCCNSC/NICE, and UIGN. Prevention of falls in acute care settings is addressed by HCANJ, JHF, RNAO, and UIGN. Prevention of falls in extended care settings, such as skilled nursing and assisted living facilities, is addressed by AMDA, HCANJ, NCCNSC/NICE, RNAO, and UIGN. NCCNSC/NICE also considers primary and secondary care after a fall. AMDA, HCANJ, NCCNSC/NICE, and RNAO address health systems and organizational policy issues, and NCCNSC/NICE considers research needs related to falls prevention; these topics, however, are beyond the scope of this synthesis. In formulating their recommendations, NICE and UIGN reviewed the conclusions drawn by the American Geriatric Society, British Geriatrics Society, American Academy of Orthopaedic Surgeons (AGS/BGS/AAOS). Guideline for the prevention of falls in older persons. *J Am Geriatr Soc* 2001 May;49(5):664-72. [93 references] (now archived on the NGC Web site).

[Table 1](#) compares the scope of each of the guidelines. [Table 2](#) compares recommendations for assessment of fall risk, post-fall assessment, and fall prevention interventions. [Table 3](#) compares the potential benefits associated with the implementation of each guideline.

The level of evidence supporting the major recommendations is also identified, with the definitions of the rating schemes used by NCCNSC/NICE, RNAO, and UIGN included in [Table 4](#). References supporting selected recommendations of the UIGN guidelines are also provided in this table.

Following the content comparison tables, the areas of agreement and differences among the guidelines are identified.

## Abbreviations:

- AMDA, American Medical Directors Association
- HCANJ, Health Care Association of New Jersey
- JHF, John A. Hartford Foundation Institute for Geriatric Nursing
- MDS, Minimum Data Set
- NCCNSC/NICE, National Collaborating Centre for Nursing and Supportive Care, National Institute for Clinical Excellence
- RAP, Resident Assessment Protocol
- RNAO, Registered Nurses Association of Ontario

- UIGN, University of Iowa Gerontological Nursing Interventions Research Center

<b>TABLE 1: COMPARISON OF SCOPE AND CONTENT</b>	
<b>Objective And Scope</b>	
<b>AMDA (2003)</b>	<ul style="list-style-type: none"> <li>• To improve the quality of care delivered to patients in long-term care facilities who have a recent history of falls or who are at risk of falling</li> <li>• To guide care decisions and to define roles and responsibilities of appropriate care staff</li> </ul>
<b>HCANJ (2006)</b>	<ul style="list-style-type: none"> <li>• To limit and/or prevent the occurrence of falls within the parameters that can be controlled through structured program interventions</li> <li>• To minimize the severity of injuries sustained by an elderly individual resulting from a fall</li> <li>• To provide the professional staff with standards of practice that will enable them to perform effectively</li> <li>• To educate the resident, family, and staff</li> <li>• To limit the liability and financial risk to the facility</li> </ul>
<b>JHF (2003)</b>	To provide nurses in the acute care setting with an easy and effective way to implement a falls prevention program and raise the level of care provided to older patients in the acute care setting
<b>NCCNSC/NICE (2004)</b>	<ul style="list-style-type: none"> <li>• To evaluate and summarize the evidence for assessing and preventing falls in older people</li> <li>• To highlight gaps in the research evidence</li> <li>• To formulate evidence-based and, where possible, clinical practice recommendations on the assessment of older people and prevention of falls in older people based on the best evidence available to the Guideline Development Group</li> <li>• To provide audit criteria to assist in the implementation of the recommendations</li> </ul>
<b>RNAO (2005)</b>	<ul style="list-style-type: none"> <li>• To present nursing best practice guidelines for the prevention of falls and fall injuries in the older adult</li> <li>• To increase all nurses' confidence, knowledge, skills, and abilities in the identification of adults within health care facilities at risk of falling and to define interventions for</li> </ul>

	prevention of falling
<b>UIGN (2004)</b>	<ul style="list-style-type: none"> <li>• To reduce the number of falls among elderly patients</li> <li>• To reduce injuries sustained during falls</li> </ul>
<b>Target Population</b>	
<b>AMDA (2003)</b>	<ul style="list-style-type: none"> <li>• United States</li> <li>• Elderly residents of long-term care facilities</li> </ul>
<b>HCANJ (2006)</b>	<ul style="list-style-type: none"> <li>• United States</li> <li>• Elderly residents of long-term care facilities, including skilled nursing facilities, subacute care, and assisted living facilities</li> </ul>
<b>JHF (2003)</b>	<ul style="list-style-type: none"> <li>• United States</li> <li>• Hospitalized older adults</li> </ul>
<b>NCCNSC/NICE (2004)</b>	<ul style="list-style-type: none"> <li>• United Kingdom</li> <li>• Older people (aged 65 and over) in the community or extended care who are at risk of falling or who have fallen</li> <li>• Older people who attend primary or secondary care settings following a fall</li> </ul> <p><b>Note:</b> The guideline does not cover hospitalised patients who sustain a fall while in hospital or who may be at risk of falling during hospitalisation or people who are confined to bed for the long term.</p>
<b>RNAO (2005)</b>	<ul style="list-style-type: none"> <li>• Canada</li> <li>• Older adults in acute care and long-term care settings at risk of falls and fall injuries</li> </ul> <p><i>These guidelines are <u>not</u> intended for use in older adults living in community settings.</i></p>
<b>UIGN (2004)</b>	<ul style="list-style-type: none"> <li>• United States</li> <li>• Older adults</li> </ul>
<b>Intended Users</b>	
<b>AMDA (2003)</b>	Advanced Practice Nurses Allied Health Personnel Dietitians

	Health Care Providers Nurses Occupational Therapists Pharmacists Physical Therapists Physician Assistants Physicians Social Workers Speech-Language Pathologists
<b>HCANJ (2006)</b>	Advanced Practice Nurses Health Care Providers Nurses Occupational Therapists Pharmacists Physical Therapists Physician Assistants Physicians Public Health Departments
<b>JHF (2003)</b>	Nurses
<b>NCCNSC/NICE (2004)</b>	Advanced Practice Nurses Allied Health Personnel Emergency Medical Technicians/Paramedics Health Care Providers Hospitals Nurses Patients Physician Assistants Physicians Psychologists/Non-physician Behavioral Health Clinicians Public Health Departments
<b>RNAO (2005)</b>	Advanced Practice Nurses Nurses
<b>UIGN (2004)</b>	Advanced Practice Nurses Nurses
<b>Interventions And Practices Considered</b>	
<b>AMDA (2003)</b>	<p><b>Assessment/Evaluation</b></p> <ol style="list-style-type: none"> <li>1. Fall risk assessment</li> <li>2. Post-fall evaluation</li> </ol> <p><b>Intervention/Prevention</b></p>

	<ol style="list-style-type: none"> <li>1. Treatment planning</li> <li>2. Medication review/modification</li> <li>3. Gait, exercise, and balance training</li> <li>4. Environmental modification</li> <li>5. Hip protectors</li> <li>6. Osteoporosis management</li> <li>7. Alarms and assistive devices</li> </ol>
<b>HCANJ (2006)</b>	<p><b>Assessment/Evaluation</b></p> <ol style="list-style-type: none"> <li>1. Fall risk assessment</li> <li>2. Rehabilitation assessment</li> <li>3. Post-fall evaluation</li> </ol> <p><b>Intervention/Prevention</b></p> <ol style="list-style-type: none"> <li>1. Dynamic treatment planning</li> <li>2. Medication use</li> <li>3. Assessment of physical and cognitive limitations and appropriate interventions</li> <li>4. Environmental modification</li> <li>5. Assistive and protective devices</li> </ol> <p><b>Education</b></p> <ol style="list-style-type: none"> <li>1. Resident and family education</li> <li>2. Staff education, including falls program in-service</li> </ol>
<b>JHF (2003)</b>	<p><b>Assessment/Evaluation</b></p> <ol style="list-style-type: none"> <li>1. Fall risk assessment</li> <li>2. Gait and balance assessment</li> <li>3. Post-fall evaluation</li> </ol> <p><b>Intervention/Prevention</b></p> <ol style="list-style-type: none"> <li>1. Patient fall prevention planning</li> <li>2. Medication review and adjustment</li> <li>3. Functional activities and exercise</li> <li>4. Environment assessment and modification</li> <li>5. Use of hip protector and other assistive devices, including alarms</li> <li>6. Address primary medical concerns</li> <li>7. Address bowel and bladder incontinence</li> <li>8. Address cognitive impairment, mood, and fear of falling</li> </ol>

	<p><b>Education</b></p> <ol style="list-style-type: none"> <li>1. Information for patient, family, and carers</li> </ol>
<b>NCCNSC/NICE (2004)</b>	<p><b>Assessment</b></p> <ol style="list-style-type: none"> <li>1. Fall risk assessment</li> </ol> <p><b>Intervention/Prevention</b></p> <ol style="list-style-type: none"> <li>1. Medication review/modification</li> <li>2. Strength, balance, and exercise programs</li> <li>3. Home assessment and environmental modification</li> <li>4. Cardiac pacing</li> <li>5. Vision referral</li> </ol> <p><b>Education</b></p> <ol style="list-style-type: none"> <li>1. Falls prevention programs</li> <li>2. Information for patients and carers</li> <li>3. Maintenance of basic professional competence in falls assessment and prevention</li> </ol>
<b>RNAO (2005)</b>	<p><b>Assessment/Evaluation</b></p> <ol style="list-style-type: none"> <li>1. Fall risk assessment</li> <li>2. Post-fall evaluation</li> </ol> <p><b>Intervention/Prevention</b></p> <ol style="list-style-type: none"> <li>1. Multifactorial fall prevention interventions</li> <li>2. Medication review and modification</li> <li>3. Exercise and balance training (strength training and Tai chi)</li> <li>4. Environmental modification</li> <li>5. Hip protectors</li> <li>6. Policy of least restraint</li> <li>7. Osteoporosis prevention to reduce fracture risk</li> </ol> <p><b>Education</b></p> <ol style="list-style-type: none"> <li>1. Patient education</li> <li>2. Nursing education</li> </ol>

<b>UIGN (2004)</b>	<p><b>Assessment/Evaluation</b></p> <ol style="list-style-type: none"> <li>1. Fall risk assessment</li> <li>2. Comprehensive fall evaluation</li> </ol> <p><b>Intervention/Prevention</b></p> <ol style="list-style-type: none"> <li>1. Medication review and modification</li> <li>2. Exercise and balance therapy, gait training</li> <li>3. Environmental modification</li> <li>4. Use of assistive devices</li> <li>5. Treatment of postural hypotension, cardiovascular disorders, and visual problems</li> <li>6. Urinary continence promotion</li> <li>7. Restraint reduction programs</li> </ol> <p><b>Education</b></p> <ol style="list-style-type: none"> <li>1. Staff education programs</li> </ol>
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<b>TABLE 2: COMPARISON OF RECOMMENDATIONS FOR PREVENTION OF FALLS IN THE ELDERLY</b>	
<b>ASSESSMENT</b>	
<b>Assessment of Fall Risk</b>	
<b>AMDA (2003)</b>	<p><b>Recognition</b></p> <p><i>Does the patient have a history of falls?</i></p> <ul style="list-style-type: none"> <li>• Review the patient's record for evidence of previous falls.</li> <li>• Ask the patient and the patient's caregiver or family if the patient has a history of falling.</li> <li>• A history of one or more recent falls (within 90 days) should be listed as a problem in the patient's record.</li> <li>• The potential for falling should be addressed in the patient's care plan.</li> </ul> <p><i>Is the patient at risk of falling?</i></p> <ul style="list-style-type: none"> <li>• Document risk factors for falling in the patient's record and discuss the patient's fall risk in care conferences.</li> <li>• It is important to rapidly identify prominent risk factors and minimize immediate risks without resorting to the use of</li> </ul>



physical restraints (see Table 3 in original guideline document for items to review when assessing a patient's fall risk or performing a post-fall evaluation).

- Define the nature, frequency, and causes of a patient's falls. It is insufficient to say simply that a patient has a fall risk or a problem with falling. After an observed or probable fall, or after a fall risk has been identified, a more detailed analysis of the patient's falling or fall risk should occur.

*Has the patient just fallen?*

- Provide staff with a clear, written procedure that describes what to do when a patient falls.
- When a patient has just fallen, or is found on the floor without a witness to the fall, a nurse should record vital signs and evaluate the patient for possible injuries to the head, neck, spine, and extremities. If there is evidence of a significant injury such as a fracture or bleeding, provide appropriate first aid.
- Once an assessment rules out significant injury, help the patient up and try to restore his or her dignity.
- Describe the situation accurately and in as much detail as possible, but distinguish facts from speculation. If the patient was found on the floor without a witness to preceding events, describe the fall accordingly.
- Notify the patient's attending physician and family in an appropriate time frame. For falls that do not result in significant injury or a condition change, the practitioner may be notified routinely (e.g., by fax or by phone the next office day) instead of immediately.
- Because of the known incidence of delayed complications of falls, including fractures, observe all patients for about 48 hours after an observed or suspected fall. Document relevant post-fall clinical findings such as vital signs, pain, swelling, bruising, and decreased mobility in the patient's record. It is also desirable to note the absence of such significant findings (so-called "pertinent negatives") to demonstrate that the patient is being monitored appropriately.

**Assessment**

*Define the nature, frequency, and causes of a patient's falls.*

- After an observed or probable fall, or after a fall risk has been identified, a more detailed analysis of the patient's falling or fall risk should occur.
- If possible, begin the identification of possible causes within 24 hours of a fall. Review the chain of events that preceded the fall.

	<ul style="list-style-type: none"> <li>• Identification of the causes of falling should be based on patient-specific evidence that includes adequate details.</li> <li>• Also look for patterns and trends in fall incidents in individuals and among those sharing common characteristics—for example, those residing on the same unit or having the same attending physician or direct care staff.</li> </ul> <p><i>Define the patient's actual and potential complications of falls.</i></p> <ul style="list-style-type: none"> <li>• Some falls may result in significant complications. It is important to define complications of falls and significant potential complications of falling for each patient.</li> </ul>
<p><b>HCANJ (2006)</b></p>	<p><b>Clinical Assessment</b></p> <ul style="list-style-type: none"> <li>• Assessment form - recommend rating scale</li> <li>• Completed by registered nurse</li> <li>• Time of completion <ul style="list-style-type: none"> <li>• Admission fall risk assessment completed within 24 to 48 hours of admission</li> <li>• If indicated, comprehensive fall risk assessment within 14 to 21 days after admission</li> </ul> </li> <li>• Frequency of reassessment <ul style="list-style-type: none"> <li>• Upon a fall</li> <li>• Significant change likely to increase fall prediction factors</li> <li>• Quarterly for skilled nursing facilities and nursing facilities</li> <li>• Semi-annually for assisted living facilities</li> </ul> </li> </ul> <p><b>Rehabilitation Assessment</b></p> <ul style="list-style-type: none"> <li>• Completed by physical therapist (PT) or occupation therapist (OT)</li> <li>• Form: (i.e., Tinetti Gait and Balance Tool or Berg Balance Scale)</li> <li>• Transfer evaluation</li> <li>• Time of completion (recommend 24 to 48 hours after referral)</li> <li>• Frequency of re-evaluation</li> </ul> <p><b>Continence Protocol</b></p> <ul style="list-style-type: none"> <li>• Toilet schedule</li> <li>• Bladder training, as indicated</li> </ul> <p><b>Mental Status Assessment</b></p>

	<ul style="list-style-type: none"> <li>• Recall</li> <li>• Judgment (safety awareness)</li> <li>• Complete mini-mental status assessment</li> </ul> <p><b>Pharmacological Assessment</b></p> <ul style="list-style-type: none"> <li>• Completed by pharmacy consultant or physician</li> <li>• Review of medication profile as needed</li> <li>• Evaluate risk for osteoporosis and recommend treatment as necessary</li> <li>• Evaluate need for Vitamin D and/or calcium supplements</li> </ul> <p><b>Environment</b></p> <ul style="list-style-type: none"> <li>• Physical room lay out</li> <li>• Equipment and assistive devices</li> <li>• Lighting</li> <li>• Other</li> </ul> <p><b>Analysis/Assess Level of Risk</b></p> <ul style="list-style-type: none"> <li>• Identify level of risk based on collective assessments and professional judgment</li> </ul>
<b>JHF (2003)</b>	<p><b>Assessment</b></p> <p><b>Identifying Risk Factors for Falling</b></p> <ul style="list-style-type: none"> <li>• There are many known risk factors associated with falls in the older adult (see Table 1 below). These risks can range from a prior history of a fall to a current acute medical problem, medications given, or use of restraints. Each of these risk factors must be carefully considered and entered into the risk assessment tool to help determine the degree of risk the individual has related to falling (see Table 2, "Fall Risk Assessment", in original guideline document).</li> <li>• Risk factors for significant injury from falls should be considered during the risk assessment. These risk factors include current use of anticoagulants such as coumadin, Plavix, and/or aspirin. Use of these agents puts the older adult at increased risk of bleeding following a fall. Patients who have a history of osteoporosis, in particular, are at increased risk of fracture following a fall, with the most common sites being the hip, wrist and spine. Older adults who have muscle and fat malnutrition are likewise at increased risk of trauma post fall due to the lack of tissue to help absorb the impact of the falls. Hip protectors, such as Safehip™, should be recommended to individuals who are significantly at risk not only for a fall but also for a</li> </ul>

	<p>possible injury post fall.</p> <p><b>Table 1: Assessment of Risk Factors Associated with Falls</b></p> <ul style="list-style-type: none"> <li>• History of falls</li> <li>• Fear of falling</li> <li>• Bowel and bladder incontinence</li> <li>• Cognitive impairment</li> <li>• Mood</li> <li>• Dizziness</li> <li>• Functional impairment</li> <li>• Medications</li> <li>• Medical problems</li> <li>• Environmental risks</li> </ul>
<b>NCCNSC/NICE (2004)</b>	<p><b>Case/Risk Identification</b></p> <p><b>C</b> - Older people in the care of healthcare professionals should be asked routinely whether they have fallen in the last year and asked about the frequency, context, and characteristics of the fall.</p> <p><b>C</b> - Older people reporting a fall or considered at risk of falling should be observed for balance and gait deficits and considered for their ability to benefit from interventions to improve balance and mobility. (Tests of balance and gait commonly used in the UK are detailed in the original guideline document.)</p> <p><b>Multifactorial Falls Risk Assessment</b></p> <p><b>C</b> - Older people who present for medical attention because of a fall, or report recurrent falls in the past year, or demonstrate abnormalities of gait and/or balance should be offered a multifactorial falls assessment of risk. This assessment should be performed by a healthcare professional or professionals with appropriate skills and experience, normally in the setting of a specialist falls service. This assessment should be part of an individualised, multifactorial intervention.</p> <p><b>C</b> - Multifactorial assessment may include the following:</p> <ul style="list-style-type: none"> <li>• Identification of falls history</li> <li>• Assessment of gait, balance and mobility, and muscle weakness</li> <li>• Assessment of osteoporosis risk</li> <li>• Assessment of the older person's perceived functional ability and fear relating to falling</li> <li>• Assessment of visual impairment</li> </ul>

	<ul style="list-style-type: none"> <li>• Assessment of cognitive impairment and neurological examination</li> <li>• Assessment of urinary incontinence</li> <li>• Assessment of home hazards</li> <li>• Cardiovascular examination and medication review</li> </ul>
<b>RNAO (2005)</b>	<p><b>Assessment</b></p> <p>Assess fall risk on admission.</p> <p><i>(Level of Evidence = Ib; Grade of Recommendation = B)</i></p> <p>Fall risk assessment is important as it provides direction for the multiple interventions which have been shown to reduce a person's risk of falling. Commonly identified fall risk factors for elderly patients in health care settings include confusion, tranquilizer use, hearing deficits, cognitive impairment, previous stroke, previous falls, confusion/delirium, acute diseases, and/or side effects of drugs. Risk screening is an effective method for identifying fall-prone individuals. A systematic review of fall screening tools concluded that since all residents of long term care (LTC) were likely to be at high risk of falls, universal fall prevention maneuvers should be administered in this setting, and that various tools such as the Morse Fall Scale, the STRATIFY risk assessment tool, and the Hendrich II Fall Risk Model© could be used. Assessment for fall risk is the key. The tool used must be appropriate for the setting and for the specific client population. Therefore, it is essential to assess the patient population in order to select a tool most appropriate for the setting. Appendix C in the original guideline document contains information on how to access the tools discussed above.</p> <p><b>Medications</b></p> <p>Nurses, in consultation with the health care team, conduct periodic medication reviews to prevent falls among the elderly in health care settings. Clients taking benzodiazepines, tricyclic antidepressants, selective serotonin-reuptake inhibitors, trazodone, or more than five medications should be identified as high risk. There is fair evidence that medication review be conducted periodically throughout the institutional stay.</p> <p><i>(Level of Evidence = IIb; Grade of Recommendation = B)</i></p>
<b>UIGN (2004)</b>	<p><b>Note from the National Guideline Clearinghouse (NGC):</b> A five-step algorithm for fall prevention for older adults is presented in the original guideline document. Steps 1, 2, and 3 review the multidimensional falls assessment, Step 4</p>

summarizes falls interventions, and Step 5 outlines falls evaluation.

## **Multidimensional Falls Assessment**

### **Fall History (Step 1)**

Detecting a history of falls is a crucial component of this protocol. ALL older adults presenting to ANY health care facility or provider are asked about their recent fall history ("Guideline for the prevention of falls," 2001. Evidence Grade = A). This recommendation includes older adults who are patients in primary care, acute care, and home health care settings as well as residents of long-term care and assisted living facilities.

1. Ask all older adults and/or their caregiver about the occurrence of falls during the past year.
2. If the older adult and/or their caregiver REPORTS NO FALL OR A SINGLE FALL in the past year, assess their fall potential (Step 2).
3. If the older adult and/or their caregiver REPORTS RECURRENT FALLS in the past year, or if the older adult PRESENTS FOLLOWING A FALL, complete a COMPREHENSIVE FALL EVALUATION (Step 3).

For residents of long-term care facilities, the MDS can be used to determine an individual's fall history if the resident has had no fall in the past 180 days or only a single fall in the past 30 days (MDS Item J4a) or past 31 to 180 days (MDS item J4b)

### **Fall Potential (Step 2)**

For persons who are at relatively low risk for falling (reports no fall or single fall in the past year in Step 1), determination of the person's fall potential is recommended ("Guideline for the prevention of falls," 2001. Evidence Grade = A).

A fall potential assessment includes a review of the circumstances surrounding the previous fall (if they have fallen) and a brief assessment of gait and balance using a tool such as the Timed "Up & Go" Test (Podsiadlo & Richardson, 1991) found in Appendix C in the original guideline document.

For older adults and/or their caregivers who report no fall or a single fall in the past year, determine the older adult's fall potential using the **Falls Screening Tool** in Appendix B in the original guideline document.

Identify the circumstances surrounding any fall that occurred during the past year. This assessment includes the location of

fall, activity prior to fall, loss of consciousness, use of walking aids (e.g., cane, walker) and/or protective devices (e.g., hip protectors, helmet), environmental conditions (e.g., snow, ice), and injuries that resulted from the fall. If another person witnessed the fall, his or her account of the fall is included.

Information for assessing fall circumstances in long-term care residents using the MDS is included in the **Fall Circumstances in Long-term Care Residents** (See Appendix D in the original guideline document).

Screen for gait and balance problems using the Timed "Up & Go" Test (Podsiadlo & Richardson, 1991) or similar gait and balance assessment tool (Mathias, Nayak, & Isaacs, 1986). Instructions for the Timed "Up & Go" Test are included in Appendix C in the original guideline document.

If no gait or balance problem is identified on the Timed "Up & Go" Test or other brief screening tool, NO FURTHER ASSESSMENT OR INTERVENTION IS REQUIRED. A review of individual fall risk factors (See Appendix A: **Fall Risk Factors Checklist** in the original guideline document) may be considered for older adults with a low to moderate risk (Score 19 or less). Offer information about fall prevention strategies. Reassess fall history and fall potential in one year or if a fall occurs.

If a gait or balance problem is identified (Score  $\geq 20$ ), complete the Comprehensive Fall Evaluation (Step 3).

For residents of long-term care facilities, the gait and balance testing procedures are slightly different. The MDS 2.0 User's Manual (Morris, Murphy & Nonemaker, 1995; Brown et al., 2000) offers detailed testing alternatives. See the MDS 2.0 User's Manual pages 3-91 to 3-95 for more information on balance testing and RAP 11 Falls, page 3 for gait testing.

### **Comprehensive Fall Evaluation (Step 3)**

- For older adults who report recurrent falls in the past year, who present to the health care provider/facility following a fall, or who are identified as having gait or balance problems on the Timed "Up & Go" Test (Score  $\geq 20$ ) (Podsiadlo & Richardson, 1991), conduct a comprehensive fall evaluation. The purpose of the comprehensive fall evaluation is to describe the circumstances surrounding recent falls, identify fall risk factors, delineate modifiable and non-modifiable risk factors, assess functional status, and target fall prevention strategies ("Guideline for the prevention of falls," 2001. Evidence Grade = A).

	<ul style="list-style-type: none"> <li>Referral to a specialist (e.g., gerontological nurse practitioner, clinical nurse specialist, geriatrician, physical therapist, occupational therapist, cardiologist, eye doctor) for a comprehensive fall evaluation or for particular components of the evaluation may be required ("Guideline for the prevention of falls," 2001. Evidence Grade = A).</li> </ul> <p>The comprehensive falls evaluation is discussed in detail in the original guideline document. A registered nurse or advanced practice nurse may complete the comprehensive falls evaluation. Components of this assessment that may require advanced diagnostic training are noted. Briefly, the comprehensive falls evaluation includes the following components:</p> <ul style="list-style-type: none"> <li>Fall History, Fall Circumstances, and Fall Risk Factors Assessment</li> <li>Health History and Functional Assessment</li> <li>Medications and Alcohol Consumption Review</li> <li>Vital Signs and Pain Assessment</li> <li>Vision Screening</li> <li>Gait and Balance Screening and Assessment</li> <li>Musculoskeletal and Foot Assessment</li> <li>Continence Assessment</li> <li>Cardiovascular Assessment</li> <li>Neurological Assessment</li> <li>Depression Screening</li> <li>Walking Aids, Assistive Technologies, &amp; Protective Devices Assessment</li> <li>Environmental Assessment</li> <li>Falls Assessment in Long-Term Care: RAP Triggers</li> </ul>
<b>Post-Fall Assessment/Evaluation</b>	
<b>AMDA (2003)</b>	<p><b>Assessment</b></p> <p><i>Has the patient just fallen?</i></p> <ul style="list-style-type: none"> <li>When a patient has just fallen, or is found on the floor without a witness to the fall, a nurse should record vital signs and evaluate the patient for possible injuries to the head, neck, spine, and extremities. If there is evidence of a significant injury such as a fracture or bleeding, provide appropriate first aid.</li> <li>Once an assessment rules out significant injury, help the patient up and try to restore his or her dignity.</li> <li>Describe the situation accurately and in as much detail as possible, but distinguish facts from speculation. If the patient was found on the floor without a witness to</li> </ul>



	<p>preceding events, describe the fall accordingly.</p> <ul style="list-style-type: none"> <li>• Notify the patient's attending physician and family in an appropriate time frame. For falls that do not result in significant injury or a condition change, the practitioner may be notified routinely (e.g., by fax or by phone the next office day) instead of immediately.</li> <li>• Because of the known incidence of delayed complications of falls, including fractures, observe all patients for about 48 hours after an observed or suspected fall.</li> <li>• Document relevant post-fall clinical findings such as vital signs, pain, swelling, bruising, and decreased mobility in the patient's record. It is also desirable to note the absence of such significant findings (so-called "pertinent negatives") to demonstrate that the patient is being monitored appropriately.</li> </ul> <p><i>Define the nature, frequency, and causes of a patient's falls.</i></p> <ul style="list-style-type: none"> <li>• After an observed or probable fall, or after a fall risk has been identified, a more detailed analysis of the patient's falling or fall risk should occur.</li> <li>• If possible, begin the identification of possible causes within 24 hours of a fall. Review the chain of events that preceded the fall.</li> <li>• Look for patterns and trends in fall incidents in individuals and among those sharing common characteristics—for example, those residing on the same unit or having the same attending physician or direct care staff.</li> <li>• Assessment instruments such as the RAPs accompanying the MDS may provide clues to possible causes of falls. However, such instruments cannot and do not help to decide exactly what is causing a fall or a fall risk in a specific individual.</li> <li>• After a first fall, at a minimum, review the patient's current medications and watch the patient rise from a chair without using his or her arms, walk several paces, and return to sitting.</li> <li>• If the cause of a fall is unclear, if the fall may have a significant medical cause such as a stroke or an adverse drug reaction, or if the patient continues to fall despite attempted interventions, a review by a trained practitioner may be necessary.</li> <li>• If the causes of a fall cannot be readily identified and if the fall is accompanied by other signs and symptoms (e.g., confusion or lethargy), consider whether the fall might be a symptom of an underlying acute process or a change in a chronic condition.</li> </ul> <p><i>Define the patient's actual and potential complications of falls.</i></p> <ul style="list-style-type: none"> <li>• Some falls may result in significant complications. It is</li> </ul>
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	important to define complications of falls and significant potential complications of falling for each patient.
<b>HCANJ (2006)</b>	<p><b>Post-fall Evaluation</b></p> <ul style="list-style-type: none"> <li>• Fall Management Investigation or Post Fall Assessment Tool</li> <li>• Physical assessment</li> <li>• Contributing factors to fall</li> </ul> <p><b>Reporting Mechanism/Tracking of Falls Within the Facility</b></p> <ul style="list-style-type: none"> <li>• Facility Fall Summary/Analysis</li> <li>• Action of the interdisciplinary team <ul style="list-style-type: none"> <li>• Timely modifications to the treatment plan</li> <li>• Family/resident conferences</li> <li>• Physical adaptation to room, wheelchair, and/or walking device</li> </ul> </li> <li>• Collective review identification, and analysis of trends in resident falls throughout the facility</li> </ul> <p>Facility protocol may include falls management review and analysis by the safety committee, falls committee, interdisciplinary care (IDC) plan committee, quality improvement committee, or other established interdisciplinary group.</p> <p><b>Quality Improvement</b></p> <ul style="list-style-type: none"> <li>• Collect falls data (including near miss data) <ul style="list-style-type: none"> <li>• Post fall tool</li> <li>• Falls summary report <ul style="list-style-type: none"> <li>• Conduct interdisciplinary analysis of information to gain helpful knowledge.</li> <li>• Review and revise policies and procedures as appropriate <ul style="list-style-type: none"> <li>• Retrain staff on new policies and procedures</li> </ul> </li> </ul> </li> </ul> </li> <li>• Complete Facility Falls Data summary document <ul style="list-style-type: none"> <li>• Analyze information</li> <li>• Revise policies and procedures as appropriate <ul style="list-style-type: none"> <li>• Retrain staff on new policies and procedures</li> </ul> </li> </ul> </li> </ul>
<b>JHF (2003)</b>	<p><b>Intervention/Care Strategies</b></p> <p><b>Comprehensive Evaluation of Falls</b></p>

	<p>Once a patient in the acute care setting has fallen, a comprehensive evaluation should be done to establish harm and the cause of the fall. Table 3 in the original guideline document provides a guideline for what to evaluate at the time of fall, and Table 7, also in the original guideline document, provides a guideline for a more comprehensive assessment of the patient at the time of the fall to help identify cause. Table 8 in the original guideline document provides a guide for evaluating the patient and determining the contributing factors to the fall. This guide helps to identify not only the consequences of the fall but also the potential contributing factors. While management of the acute problem post fall is essential, it is also important to make sure that the initial evaluation of the fall risk and implementation of the plan of care to prevent falls is revised based on the findings from the fall.</p> <p><b>Revision of the Initial Plan of Care for Falls Prevention</b></p> <p>Based on the information gleaned from the fall, revisions in the care plan should be made. Older patients are at increased risk for a subsequent fall just based on the fact that they have sustained a fall. Aggressive interventions should be implemented to decrease future falls (see Table 6 in the original guideline document and in the "Intervention Planning" section of this synthesis).</p>
<b>NCCNSC/NICE (2004)</b>	<p><b>A</b> - Following treatment for an injurious fall, older people should be offered an assessment to identify and address future risk and individualised intervention aimed at promoting independence and improving physical and psychological function.</p>
<b>RNAO (2005)</b>	<p><b>Assessment</b></p> <p>Assess fall risk after a fall.</p> <p><i>(Level of Evidence = Ib; Grade of Recommendation = B)</i></p> <p>A fall in an elderly person is often a presentation of a disease (sentinel fall), and a previous fall triples the odds of a client experiencing a future fall. A randomized controlled trial (RCT) in an American long-term care (LTC) facility has shown that resident assessment within seven days of a fall was effective at preventing subsequent hospitalization and reduced hospital days although it did not reduce fall rate.</p>
<b>UIGN (2004)</b>	<p><b>Note from the National Guideline Clearinghouse (NGC):</b> A five-step algorithm for fall prevention for older adults is presented in the original guideline document. Steps 1, 2, and 3</p>

review the multidimensional falls assessment, Step 4 summarizes falls interventions, and Step 5 outlines falls evaluation.

### **Comprehensive Fall Evaluation (Step 3)**

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- Referral to a specialist (e.g., gerontological nurse practitioner, clinical nurse specialist, geriatrician, physical therapist, occupational therapist, cardiologist, eye doctor) for a comprehensive fall evaluation or for particular components of the evaluation may be required ("Guideline for the prevention of falls," 2001. Evidence Grade = A).

The comprehensive falls evaluation is discussed in detail below. A registered nurse or advanced practice nurse may complete the comprehensive falls evaluation. Components of this assessment that may require advanced diagnostic training are noted. Briefly, the comprehensive falls evaluation includes the following components:

- Fall History, Fall Circumstances, and Fall Risk Factors Assessment
- Health History and Functional Assessment
- Medications and Alcohol Consumption Review
- Vital Signs and Pain Assessment
- Vision Screening
- Gait and Balance Screening and Assessment
- Musculoskeletal and Foot Assessment
- Continence Assessment
- Cardiovascular Assessment
- Neurological Assessment
- Depression Screening
- Walking Aids, Assistive Technologies, & Protective Devices Assessment
- Environmental Assessment
- Falls Assessment in Long-Term Care: RAP Triggers

## **FALL PREVENTION INTERVENTIONS**

Intervention Planning	
AMDA (2003)	<p><b>Treatment</b></p> <p><i>Develop a plan for managing falls and fall risks.</i></p> <ul style="list-style-type: none"> <li>• Use a clear, consistent approach to select interventions to manage and prevent falling in individual patients.</li> <li>• It is appropriate to prioritize approaches to managing fall risk and falling. That is, if a systematic evaluation of a patient's fall risk identifies several possible interventions, it is reasonable to choose one of these interventions to try first.</li> <li>• If falling recurs despite the initial intervention, additional or different interventions may be needed.</li> <li>• Adjust the patient's care plan as necessary to reflect the implementation of new or modified interventions to try to minimize the risk of falling and fall-related injuries.</li> <li>• Briefly document the rationale for specific interventions to show that causes of the problem are being sought.</li> </ul> <p><i>Manage the causes of falling.</i></p> <ul style="list-style-type: none"> <li>• Address underlying causes and implement restorative or rehabilitative care to try to improve strength, balance, gait, and transferring ability</li> <li>• Advise patients with orthostatic hypotension to first rise to a sitting position after lying down and then to stand slowly.</li> <li>• Evaluate the patient's drug regimen carefully to identify medications that may be precipitating falls.</li> </ul> <p><i>Implement relevant general measures to address falling and fall risks.</i></p> <p>Coordinate clinical initiatives to prevent and manage falls with initiatives of the facility safety committee, review of falls by the quality improvement committee, and with efforts to ensure a safe environment for wanderers.</p> <ul style="list-style-type: none"> <li>• <u>Exercise and balance training.</u> Individuals with recurrent falls may benefit from exercise programs and balance training. The optimal type, duration, and intensity of exercise remain unclear at present.</li> <li>• <u>Use of physical restraints.</u> The indiscriminate use of physical restraints is no longer an accepted standard of care in long-term care facilities. Federal regulations provide clear guidelines for the use of physical restraints, which stress the need to try less restrictive approaches first and to use restraints only to try to maintain or improve—not reduce—a patient's function.</li> </ul>

- Falls associated with getting out of bed. Lowering a standard bed or using a low bed may help to address falls that occur while or immediately after getting out of bed or may reduce the risk of serious injury when falls occur. The use of full-length side rails is not recommended because their presence may result in injury to patients who try to climb over them, get caught in them, or try to climb out at the bottom of the bed.
- Use of alarms. Bed and chair alarms may facilitate the remote detection of a patient's arising from a bed or chair and may allow caregivers to reach the patient before he or she falls.
- Environmental modifications. Night lights, bedside tables, and quad canes or walkers may help those with peripheral neuropathies and visual impairments to orient themselves in space and to support themselves while getting out of bed. Signs and other memory trigger devices can be used to remind stroke victims to get up slowly and carefully. Try to accommodate patient preferences and needs—for example, by assisting patients who need help with toileting during evening and night shifts.

*Manage factors that may cause serious consequences of falling.*

Some of the physical, functional, and environmental factors that predispose patients to falling also increase the risk of serious consequences of these falls. Many members of the interdisciplinary care team, as well as staff in support services such as housekeeping and maintenance, can help to address these risk factors.

Interventions that may decrease falls and fall-related injuries include ensuring that patients wear appropriate footwear and using fall mats, transfer bars, and wheelchair anti-tipping attachments. Patients at risk of falling should be assessed for osteoporosis and managed accordingly (see AMDA's 2003 clinical practice guideline on osteoporosis). However, medications used to treat or prevent osteoporosis do not reduce fall rates. Consider using hip protectors in patients who are at risk of sustaining a hip fracture.

### **Monitoring**

*Monitor falling in individuals with a fall risk or fall history.*

Monitor and document the patient's response to interventions intended to reduce falling or the risks of falling. If interventions have been successful in preventing falling, continue with current approaches or reconsider whether these measures are still needed if the problem that required the intervention (e.g.,

	<p>dizziness, joint pain) has been resolved or been corrected.</p> <p>If the patient continues to fall, re-evaluate the situation and reconsider current interventions. Amend the care plan as necessary to reflect the addition of new interventions and the need for continued monitoring.</p> <p>Document the presence of irreversible risk factors. Also, consider relevant interventions to try to minimize fall-related injuries (e.g., using hip protectors, treating osteoporosis).</p> <p>If falls continue despite initial interventions, the reason could be that different or additional causes exist, that the underlying causes are not readily correctable, that the cause cannot be identified, or that the interventions are insufficient. Consider other possible reasons for the patient's falling besides those that have already been identified, or document why a further search for causes is unlikely to be helpful.</p> <p>Some consequences of falling, such as fractures and symptomatic intracranial bleeding, may become clinically apparent days to weeks after a fall. Be aware of, and ensure that staff respond to, delayed consequences of falling. Consider the possibility of late consequences if the patient has a significant change in function, mental status, or level of consciousness within several weeks of a fall.</p> <p><i>Conduct quality improvement activities related to falls.</i></p> <p>Include analysis of falls in the facility's quality improvement studies. Track accidents and falls by (at a minimum) time, location, and identified categories of causes.</p> <p>Relate this data to care processes to ensure that everything reasonable is being done to identify risk factors for falling and take appropriate preventive measures.</p> <p>Use the information collected about falls to evaluate and adjust the prevention and management program. Assign members of the interdisciplinary care team to clearly defined roles in evaluating and preventing falls.</p> <p>Care plans should address the status of conditions that predispose the patient to falling, specific fall prevention efforts, and the patient's response to each intervention.</p> <p>The medical director plays a pivotal role in fall prevention and management, including but not limited to:</p> <ul style="list-style-type: none"> <li>• Helping to develop and use appropriate policies and</li> </ul>
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	<p>procedures</p> <ul style="list-style-type: none"> <li>• Providing education and information about medical causes of falling</li> <li>• Ensuring appropriate, timely practitioner assessment and intervention when medications or medical conditions may be causing or contributing to falls</li> </ul>
<b>HCANJ (2006)</b>	<p><b>Dynamic Treatment Plan</b></p> <p>Specific interventions based on fall assessment results and resident preferences all interdisciplinary team members must address:</p> <ul style="list-style-type: none"> <li>• Resident, staff, and family teaching</li> <li>• Room modifications</li> <li>• Resident's daily routines</li> <li>• Mental status/behaviors</li> <li>• Physical limitations <ul style="list-style-type: none"> <li>• Activities of daily living (ADL) skills</li> <li>• Continence</li> </ul> </li> <li>• Pain</li> <li>• Medication use</li> <li>• Consistent and proper uses of assistive or protective devices based on assessments</li> </ul> <p>Updated information consistently communicated to the staff, resident, and family:</p> <ul style="list-style-type: none"> <li>• Staff <ul style="list-style-type: none"> <li>• General classification system identifying resident's potential to fall and staff response</li> <li>• Summary of assessments/changes in plan of care</li> <li>• Verbal and written report</li> </ul> </li> <li>• Residents <ul style="list-style-type: none"> <li>• One-to-one education and review</li> </ul> </li> <li>• Families <ul style="list-style-type: none"> <li>• Care conferences</li> </ul> </li> </ul> <p><b>Post Fall Evaluation</b></p> <ul style="list-style-type: none"> <li>• Fall Management Investigation or Post Fall Assessment Tool</li> <li>• Physical assessment</li> <li>• Contributing factors to fall</li> </ul> <p><b>Reporting Mechanism/Tracking of Falls Within the Facility</b></p> <ul style="list-style-type: none"> <li>• Facility Fall Summary/Analysis</li> </ul>



	<ul style="list-style-type: none"> <li>Action of the interdisciplinary team <ul style="list-style-type: none"> <li>Timely modifications to the treatment plan</li> <li>Family/resident conferences</li> <li>Physical adaptation to room, wheelchair, and/or walking devices</li> </ul> </li> <li>Collective review of resident falls throughout the facility</li> </ul> <p>Facility protocol may include falls management review and analysis by the safety committee, falls committee, interdisciplinary care (IDC) plan committee, quality improvement committee, or other established interdisciplinary group.</p>
<b>JHF (2003)</b>	<p><b>Intervention/Care Strategies</b></p> <p><b>Development of an Individualized Falls Prevention Intervention</b></p> <p>Prevention of falls should be considered as part of routine care for all older adults in the acute care setting. The list below, describes ideal routine fall prevention care. The interventions should focus on areas of risk for the individual (see <b>Risk Factors and Interventions to Decrease Risk for Fall</b>, below), such as environmental challenges, functional limitations, or drug related problems such as orthostatic hypotension related to a medication or delirium caused by the addition of a sleeping pill.</p> <p><b>Standard Fall Prevention for All Older Adults</b></p> <ol style="list-style-type: none"> <li>1. Familiarize patient with environment (i.e., identify call light, bathroom and may need to label).</li> <li>2. Maintain call bell in reach and have patient demonstrate ability to call for the nurse.</li> <li>3. Place bed in low position with brakes locked.</li> <li>4. Ensure footwear are fitted, non-slip, and used properly.</li> <li>5. Determine appropriate use of side rails based on cognitive and functional status.</li> <li>6. Utilize night light.</li> <li>7. Keep floor surfaces clean and dry.</li> <li>8. Keep room uncluttered and make sure that furniture is in optimal condition.</li> <li>9. Make sure patient knows where personal possessions are and that he/she can safely access them.</li> <li>10. Ensure adequate handrails in bathroom, room, and hallway.</li> <li>11. Establish a plan of care to maintain bowel and bladder function.</li> <li>12. Evaluate effects of medications that increase the individual's risk of falling.</li> <li>13. Encourage participation in functional activities and exercise</li> </ol>

- at patient's highest possible level and refer to physical therapy as appropriate.
14. Monitor patient regularly.
  15. Educate patient and family regarding fall prevention strategies.

### **Risk Factors and Interventions to Decrease Risk for Falls**

1. History of falls
  - Identify the patient as being at risk for falls: may use sticker on chart or door.
2. Fear of falling
  - Encourage patient to verbalize feelings.
  - Strengthen self-efficacy related to transfers and ambulation by providing verbal encouragement about capabilities and demonstrating to patient his/her ability to perform safely.
3. Bowel and bladder incontinence
  - Set up regular voiding schedule (every 2 hours or as appropriate based on patient need).
  - Monitor bowel function and encourage sufficient fluids and fiber (eight 8-ounce glasses daily and 24 grams of fiber).
  - Utilize laxatives as appropriate.
4. Cognitive impairment
  - Evaluate patient for reversible causes of cognitive impairment/delirium and eliminate causes as relevant.
  - Monitor resident with cognitive impairment at least hourly with relocation of the patient such that nursing staff can observe/monitor regularly.
  - Encourage family member to hire staff or stay with patient continuously.
  - Utilize monitoring devices if accessible (i.e., bed/chair or exit alarms).
5. Mood
  - Encourage verbalization of feelings.
  - Evaluate patient's ability to concentrate and learn new information.
  - Encourage engagement in daily activities.
  - Refer to geriatric psychiatry as appropriate.
6. Dizziness
  - Monitor lying, sitting and standing blood pressures and continually evaluate for factors contributing to dizziness.
  - Encourage adequate fluid intake (eight 8-ounce glasses daily).
  - Set up environment to avoid movements that result in dizziness/vertigo.
  - If diabetic, monitor blood sugars and facilitate interventions to maintain appropriate blood sugars.

	<p>7. Functional impairment</p> <ul style="list-style-type: none"> <li>• Encourage participation in personal care activities at highest level (i.e., if possible encourage ambulation to bathroom rather than use of bedpan).</li> <li>• Refer to physical and occupational therapy as appropriate.</li> <li>• Facilitate adherence to exercise program when indicated.</li> </ul> <p>8. Medications</p> <ul style="list-style-type: none"> <li>• Review medications with primary health care provider in the acute care setting and determine need of each medication.</li> <li>• Ascertain that medications are being used at lowest possible dosages to obtain desired results.</li> </ul> <p>9. Medical problems</p> <ul style="list-style-type: none"> <li>• Working with primary health care provider in acute care settings augment management of primary medical problem such as Parkinson's Disease or congestive heart failure or anemia.</li> <li>• Assure patient that medical problems are not a reason to remain in bed and prevent participation in functional activities.</li> </ul> <p>10. Environmental risks</p> <ul style="list-style-type: none"> <li>• Remove furniture if patient can't sit on it and have his or her feet reach the floor.</li> <li>• Remove clutter.</li> <li>• Make sure furniture and any assistive devices used are in good condition.</li> <li>• Make sure lighting is adequate.</li> <li>• Make sure safety bars are available in bathrooms.</li> </ul>
<b>NCCNSC/NICE (2004)</b>	<p><b>Multifactorial Interventions</b></p> <p><b>A</b> - All older people with recurrent falls or assessed as being at increased risk of falling should be considered for an individualised multifactorial intervention.</p> <p><b>A</b> - In successful multifactorial intervention programmes the following specific components are common (against a background of the general diagnosis and management of causes and recognised risk factors):</p> <ul style="list-style-type: none"> <li>• Strength and balance training</li> <li>• Home hazard assessment and intervention</li> <li>• Vision assessment and referral</li> <li>• Medication review with modification/withdrawal</li> </ul>

**Intervention**

*Tai Chi*

Tai Chi to prevent falls in the elderly is recommended for those clients whose length of stay (LOS) is greater than four months and for those clients with no history of a fall fracture. There is insufficient evidence to recommend Tai Chi to prevent falls for clients with LOS less than four months. (*Level of Evidence — Ib; Grade of Recommendation = B*).

*Exercise*

Nurses can use strength training as a component of multi-factorial fall interventions; however, there is insufficient evidence to recommend it as a stand-alone intervention. (*Level of Evidence — Ib; Grade of Recommendation = I*).

*Multi-factorial*

Nurses, as part of the multidisciplinary team, implement multi-factorial fall prevention interventions to prevent future falls. (*Level of Evidence — Ia; Grade of Recommendation = B*).

*Medications*

Nurses, in consultation with the health care team, conduct periodic medication reviews to prevent falls among the elderly in health care settings. Clients taking benzodiazepines, tricyclic antidepressants, selective serotonin-reuptake inhibitors, trazodone, or more than five medications should be identified as high risk. There is fair evidence that medication review be conducted periodically throughout the institutional stay. (*Level of Evidence — IIb; Grade of Recommendation = B*).

*Hip Protectors*

Nurses could consider the use of hip protectors to reduce hip fractures among those clients considered at high risk of fractures associated with falls; however, there is no evidence to support universal use of hip protectors among the elderly in health care settings. (*Level of Evidence — Ib; Grade of Recommendation = B*).

*Vitamin D*

Nurses provide clients with information on the benefits of vitamin D supplementation in relation to reducing fall risk. In addition, information on dietary, life style, and treatment choice for the prevention of osteoporosis is relevant in relation

	<p>to reducing the risk of fracture. (<i>Level of Evidence — IV</i>).</p> <p><i>Client Education</i></p> <p>All clients who have been assessed as high risk for falling receive education regarding their risk of falling. (<i>Level of Evidence — IV</i>).</p> <p><i>Environment</i></p> <p>Nurses include environmental modifications as a component of fall prevention strategies. (<i>Level of Evidence — Ib</i>).</p> <p><b>Organizational Support</b></p> <p>Organizations create an environment that supports interventions for fall prevention that includes:</p> <ul style="list-style-type: none"> <li>• Fall prevention programs</li> <li>• Staff education</li> <li>• Clinical consultation for risk assessment and intervention</li> <li>• Involvement of multidisciplinary teams in case management</li> <li>• Availability of supplies and equipment such as transfer devices, high low beds, and bed exit alarms</li> </ul> <p>(<i>Level of Evidence = IV</i>)</p>
<p><b>UIGN (2004)</b></p>	<p><b>Description of Interventions</b></p> <p>Fall prevention strategies that are implemented will depend upon the findings of the multidimensional falls assessment, individual fall risk factors, and the resources available to the older adult and/or his or her caregivers. Following the COMPREHENSIVE FALL EVALUATION, the health professional has a rich source of information with which to plan targeted fall prevention strategies that are individualized for each person and based on the presence of fall risk factors. While referring to the completed <b>Falls Risk Factors Checklist</b> (Appendix A in the original guideline document), the health professional can discuss with the older adult and/or caregiver the most likely risk factors contributing to his or her risk of falling and begin planning nursing interventions to prevent falls.</p> <p>Fall prevention programs that combine exercise with risk factor modification and those based upon an interdisciplinary comprehensive falls evaluation appear to be the most effective for reducing falls in older adults (Agostini, Baker, &amp; Bogardus, 2001; Hill-Westmoreland, Soeken, &amp; Spellbring, 2002).</p>

Evidence Grade = A).

#### **Implement Fall Prevention Interventions (Step 4)**

Fall prevention interventions that address modifiable fall risk factors are suggested by specific settings below (Agostini, Baker, & Bogardus, 2001; "Guideline for the prevention of falls," 2001; Oliver, Hopper, & Seed, 2000. Evidence Grade = A). Information is included for older adults living in community settings, residents of long-term care or assisted living facilities, and elders in acute care settings. Following the specific settings information is an overview of specific fall prevention interventions which includes information on 1) comprehensive fall evaluation and treatment of health problems, 2) medication review and modification, 3) improving physical mobility: exercise programs, balance and gait training, and appropriate use of walking aids, 4) environmental management, 5) staff education programs, 6) continence promotion and toileting programs, 7) physical restraint reduction, and 8) preventing fall-related injuries with protective devices.

##### *Interventions For Older Adults Living In The Community*

Fall prevention interventions for persons living in the community focus on three areas: 1) improving physical mobility, 2) decreasing medication side effects, and 3) treating underlying health conditions. Studies conducted with community-dwelling older persons support the following interventions (Agostini, Baker, & Bogardus, 2001; "Guideline for the prevention of falls," 2001. Evidence Grade = A):

- Gait training and advice on the appropriate use of assistive devices (Close et al., 1999; Tinetti et al., 1994. Evidence Grade = B)
- Review and modification of medications, including psychotropic medications
  - a. Reduction in the number and dosages of prescribed medications (Campbell et al., 1999; Close et al., 1999; Tinetti et al., 1994. Evidence Grade = B)
- Exercise and balance training programs (Campbell et al., 1999; Steinberg et al., 2000; Tinetti et al., 1994. Evidence Grade = B)
- Assessment and treatment for any identified health problems (Close et al., 1999. Evidence Grade = B)
  - a. Treatment of postural hypotension (Close et al., 1999; Tinetti, McAvay, & Claus, 1996. Evidence Grade = B)
  - b. Treatment of cardiovascular disorders (Close et al., 1999. Evidence Grade = B)
  - c. Treatment of visual problems (Close et al., 1999.

Evidence Grade = B)

- Modification of environmental hazards (Cumming et al., 1999; Tinetti et al., 1994. Evidence Grade = B)

*Interventions For Older Adults Living In Long-Term Care Or Assisted Living Facilities*

Fall prevention interventions for persons living in long-term care or assisted living facilities focus on five areas: 1) identifying fall risk factors through a comprehensive fall evaluation, 2) improving management of falls through staff education programs, 3) improving physical mobility, 4) decreasing medication side effects, and 5) modifying the physical environment.

Studies of interventions to prevent falls among older persons living in long-term care facilities support the use of the following interventions ("Guideline for the prevention of falls," 2001; Ray et al., 1997; Rubenstein et al., 1990. Evidence Grade = B):

- Comprehensive fall evaluation (Ray et al., 1997; Rubenstein et al., 1990. Evidence Grade = B)
- Improvement in room lighting, flooring, and footwear (Agostini, Baker, & Bogardus, 2001; Ray et al., 1997. Evidence Grade = B)
- Staff education programs (Ray et al., 1997. Evidence Grade = B)
- Wheelchair use and maintenance by an occupational therapist (Ray et al., 1997. Evidence Grade = B)
- Gait training and advice on appropriate use of assistive devices (Ray et al., 1997. Evidence Grade = B)
- Review and modification of medications, including psychotropic medications (Ray et al., 1997. Evidence Grade = B)

*Interventions For Older Adult Patients In Acute Hospital Settings*

Research on multi-component fall prevention programs in the hospitalized setting suffer from small sample sizes and methodological issues (Agostini, Baker, & Bogardus, 2001. Evidence Grade = A). A meta-analysis of hospital-based fall prevention programs revealed that pooling the effects from three controlled trials resulted in no effect — that is no benefit in reducing falls (Oliver, Hopper, & Seed, 2000. Evidence Grade = A). This same meta-analysis demonstrated that pooling the effects from seven prospective studies with historical controls, fall rates declined by about 25% (Oliver, Hopper, & Seed, 2000. Evidence Grade = A). The interventions employed in these studies were heterogeneous and often several

interventions were employed simultaneously (Oliver, Hopper, & Seed, 2000). In studies in hospitalized settings, practices included educational activities for nurse and support staff, patient orientation activities, review of prior falls, and improvement of surrounding environment. Specific environmental components included reducing physical obstacles in rooms, adding supplemental lighting and grab bars in bathrooms, and lowering bedrails and bed height. Other studies have attempted to improve transfer and mobility by scheduled ambulatory and physical therapy activities and provision of better footwear. Studies also incorporated interventions for cognitively impaired patients through education of families, minimizing sedating medications, and locating confused patients close to nursing staff. Because many of these studies used small sample sizes and lacked precise standardization and description of the interventions, the generalizability and reproducibility of findings are limited (Agostini, Baker, & Bogardus, 2001. Evidence Grade = A).

Fall prevention strategies that are commonly used in acute care settings, including wristbands or over-bed stickers to identify persons at high risk for falls, bed alarms, or physical restraints, show little benefit for reducing falls in hospitalized older adults (Oliver, Hopper, & Seed, 2000. Evidence Grade = A). Fall prevention programs that identify an individual's fall history and fall risk with subsequent implementation of targeted modifiable risk factors may help prevent falls in hospitalized older adults ("Guideline for the prevention of falls," 2001; Oliver, Hopper, & Seed, 2000). In addition, ensuring that hospital units are staffed adequately so that nurses and assistive personnel are available to assist older adults with transfers, toileting, and other basic physical needs should be a priority (Blegen, Vaughn, & Goode, 2001. Evidence Grade = C).

Agostini, Baker, & Bogardus (2001) note that in the hospital, several interventions have been employed as part of multiple risk factor intervention studies, but many have been poorly described and standardized. Practices include educational activities for nurse and support staff, patient orientation activities, review of prior falls, and improvement of the surrounding environment.

### **Specific Fall Prevention Interventions**

Major interventions that have been recommended as fall prevention strategies for older adults include: 1) comprehensive fall evaluation and treatment of health problems, 2) medication review and modification, 3) improving physical mobility: exercise programs, balance and gait training, and appropriate use of walking aids, 4) environmental modification, and 5) continence promotion and toileting



programs. A brief overview of each intervention, as well as information on physical restraint reduction and preventing fall-related injuries with protective devices, is provided. Educating direct care givers who assess fall risk and initiate individualized interventions is an important component of fall reduction. Educational programs for the staff involved in fall prevention are necessary but not sufficient to reduce falls (Ray et al., 1997).

### **Comprehensive Fall Evaluation and Treatment of Health Problems**

The most important steps in any fall prevention program are to identify persons who have previously experienced a fall, determine the potential for future falls, and outline and reduce individual fall risk factors ("Guideline for the prevention of falls," 2001; Hill-Westmoreland, Soeken, & Spellbring, 2002. Evidence Grade = A). This is accomplished through the baseline fall screening, comprehensive fall evaluation, and ongoing treatment of health problems (Close et al., 1999; Ray et al., 1997; Rubenstein et al., 1990; Tinetti, McAvay, & Claus, 1996; Hill-Westmoreland, Soeken, & Spellbring, 2002. Evidence Grade = B).

Older adults at risk for falls cannot benefit from targeted fall prevention interventions unless underlying health conditions are identified and will not benefit unless these conditions are treated. Common health conditions if left untreated in older adults that contribute to fall risk include postural hypotension (Close et al., 1999; Tinetti, McAvay, & Claus, 1996. Evidence Grade = B), cardiovascular disorders (Close et al., 1999. Evidence Grade = B), visual problems (Close et al., 1999. Evidence Grade = B), and urinary incontinence (Bakarich, McMillan, & Prosser, 1997. Evidence Grade = C).

Identification of high risk patients through bracelets, signs, or tags has been incorporated in multifactorial interventions to prevent falls (Agostini, Baker, & Bogardus, 2001; Oliver, Hopper, & Seed, 2000). A randomized controlled study on use of colored bracelets to identify high-risk inpatients did not demonstrate a statistically significant treatment effect; thus there is no evidence that use of such an identification system reduces falls (Agostini, Baker, & Bogardus, 2001; Oliver, Hopper, & Seed, 2000). Use of such identification systems might, in fact, adversely affect rehabilitation and promotion of functional independence by causing stigma and anxiety among patients and their family members (Oliver, Hopper, & Seed, 2000). Although this strategy is used in fall prevention programs, there is little evidence to demonstrate the effect on reduction of falls (Agostini, Baker, & Bogardus, 2001; Oliver, Hopper, & Seed, 2000. Evidence Grade = A).

<b>Medication Review and Modification</b>	
<b>AMDA (2003)</b>	<p><b>Treatment</b></p> <p><i>Manage the causes of falling.</i></p> <p>Evaluate the patient's drug regimen carefully to identify medications that may be precipitating falls. Falls that start after a change in medication regimen should trigger a review of the patient's entire medication regimen. Long-standing medications that may not have been problematic in the past should be re-evaluated in conjunction with recent acute illnesses or general condition changes.</p> <p>A practitioner should be involved with other direct care staff and the consultant pharmacist in reviewing the patient's drug regimen and identifying and adjusting medications that may be associated with an increased risk of falling.</p> <p>If it is decided not to adjust medications in a patient's regimen that may be associated with falling, document how it was determined that the patient did not have lethargy, dizziness, or postural blood pressure changes that might indicate the medications had played a role in the falls.</p>
<b>HCANJ (2006)</b>	<p>Included in initial clinical risk assessment by nurse</p> <p><b>Pharmacological Assessment</b></p> <ul style="list-style-type: none"> <li>• Completed by pharmacy consultant or physician</li> <li>• Review of medication profile as needed</li> <li>• Evaluate risk for osteoporosis and recommend treatment as necessary</li> <li>• Evaluate need for Vitamin D and/or calcium supplements</li> </ul> <p><b>Dynamic Treatment Plan</b></p> <p>Specific interventions based on fall assessment results, and resident preferences. The interdisciplinary team members must address:</p> <ul style="list-style-type: none"> <li>• Medication use</li> </ul>
<b>JHF (2003)</b>	<p><b>Intervention/Care Strategies</b></p> <p>All medications should be reviewed based on their potential for causing a fall. Attempts should be made to decrease the dosages and/or eliminate these drugs when possible. All</p>

	<p>attempts should be made to manage older adults' symptoms nonpharmacologically rather than initiating a new medication.</p> <ul style="list-style-type: none"> <li>• Evaluate effects of medications that increase the individual's risk of falling.</li> </ul> <p>(From <i>Table 5: Standard Fall Prevention for All Older Adults</i> in the original guideline document.)</p> <p><b>Medications</b></p> <ul style="list-style-type: none"> <li>• Review medications with primary health care provider in the acute care setting and determine need of each medication.</li> <li>• Ascertain that medications are being used at lowest possible dosages to obtain desired results.</li> </ul> <p>(From <i>Table 6: Interventions to Decrease Risk for Falls</i> in original guideline document.)</p>
<b>NCCNSC/NICE (2004)</b>	<p><b>Multifactorial Interventions</b></p> <p><b>A</b> - In successful multifactorial intervention programmes the following specific components are common (against a background of the general diagnosis and management of causes and recognised risk factors):</p> <ul style="list-style-type: none"> <li>• Strength and balance training</li> <li>• Home hazard assessment and intervention</li> <li>• Vision assessment and referral</li> <li>• Medication review with modification/withdrawal</li> </ul> <p><b>Psychotropic Medications</b></p> <p><b>B</b> - Older people on psychotropic medications should have their medication reviewed, with specialist input if appropriate, and discontinued if possible to reduce their risk of falling.</p>
<b>RNAO (2005)</b>	<p><b>Intervention</b></p> <p><b>Medications</b></p> <p>Nurses, in consultation with the health care team, conduct periodic medication reviews to prevent falls among the elderly in health care settings. Clients taking benzodiazepines, tricyclic antidepressants, selective serotonin-reuptake inhibitors, trazodone, or more than five medications should be identified as high risk. There is fair evidence that medication review be</p>

	<p>conducted periodically throughout the institutional stay.</p> <p><i>(Level of Evidence = IIb; Grade of Recommendation = B)</i></p> <p><b>Organization and Policy Recommendations</b></p> <p><b>Medication Review</b></p> <p>Organizations implement processes to effectively manage polypharmacy and psychotropic medications including regular medication reviews and exploration of alternatives to psychotropic medication for sedation.</p> <p><i>(Level Of Evidence = IV)</i></p>
<b>UIGN (2004)</b>	<p><b>Implement Fall Prevention Interventions (Step 4)</b></p> <p><i>Interventions For Older Adults Living In The Community</i></p> <p>Fall prevention interventions for persons living in the community focus on three areas: 1) improving physical mobility, 2) decreasing medication side effects, and 3) treating underlying health conditions. Studies conducted with community-dwelling older persons support the following interventions (Agostini, Baker, &amp; Bogardus, 2001; "Guideline for the prevention of falls," 2001. Evidence Grade = A):</p> <ul style="list-style-type: none"> <li>• Review <u>and modification</u> of medications, including psychotropic medications <ul style="list-style-type: none"> <li>a. Reduction in the number and dosages of prescribed medications (Campbell et al., 1999; Close et al., 1999; Tinetti et al., 1994. Evidence Grade = B)</li> </ul> </li> </ul> <p><i>Interventions For Older Adults Living In Long-Term Care Or Assisted Living Facilities</i></p> <p>Fall prevention interventions for persons living in long-term care or assisted living facilities focus on five areas: 1) identifying fall risk factors through a comprehensive fall evaluation, 2) improving management of falls through staff education programs, 3) improving physical mobility, 4) decreasing medication side effects, and 5) modifying the physical environment.</p> <p>Studies of interventions to prevent falls among older persons living in long-term care facilities support the use of the following interventions ("Guideline for the prevention of falls," 2001; Ray et al., 1997; Rubenstein et al., 1990. Evidence</p>

	<p>Grade = B):</p> <ul style="list-style-type: none"> <li>Review and modification of medications, including psychotropic medications (Ray et al., 1997. Evidence Grade = B)</li> </ul> <p><b>Specific Fall Prevention Interventions</b></p> <p><b>Medication Review and Modification</b></p> <p>Reduction of the number of medications has been a component of many multifactorial fall prevention programs conducted in a variety of settings (Campbell et al., 1999; Close et al., 1999; Tinetti et al., 1994; Ray et al., 1997. Evidence Grade = B). Review of medications without modification appears to be of little benefit ("Guideline for the prevention of falls," 2001. Evidence Grade = A). Older adults who have fallen should have their medications reviewed and altered or stopped as appropriate. Whenever possible, health care providers should consider reducing medications for older adults who take four or more medications and for those who take psychotropic medications (Agostini, Baker, &amp; Bogardus, 2001; "Guideline for the prevention of falls," 2001. Evidence Grade = A).</p>
<b>Gait, Balance, and Exercise Interventions</b>	
<b>AMDA (2003)</b>	<p><b>Treatment</b></p> <p><i>Manage the causes of falling.</i></p> <ul style="list-style-type: none"> <li>Address underlying causes and implement restorative or rehabilitative care to try to improve strength, balance, gait, and transferring ability</li> </ul> <p><i>Implement relevant general measures to address falling and fall risks.</i></p> <ul style="list-style-type: none"> <li><u>Exercise and balance training.</u> Individuals with recurrent falls may benefit from exercise programs and balance training. The optimal type, duration, and intensity of exercise remain unclear at present.</li> </ul>
<b>HCANJ (2006)</b>	<p><b>Rehabilitation Assessment</b></p> <ul style="list-style-type: none"> <li>Form: (e.g., Tinetti Gait and Balance Tool or Berg Balance Scale)</li> </ul>

	<p><b>Dynamic Treatment Plan</b></p> <p>Specific interventions based on fall assessment results, and resident preferences. The interdisciplinary team members must address:</p> <ul style="list-style-type: none"> <li>• Physical limitations</li> <li>• Consistent and proper uses of assistive or protective devices based on assessments</li> </ul>
<b>JHF (2003)</b>	<ul style="list-style-type: none"> <li>• Encourage participation in functional activities and exercise at patient's highest possible level and refer to physical therapy as appropriate.</li> </ul> <p>(From <i>Table 5: Standard Fall Prevention for All Older Adults</i> in the original guideline document.)</p> <p><b>Functional Impairment</b></p> <ul style="list-style-type: none"> <li>• Encourage participation in personal care activities at highest level (i.e., if possible encourage ambulation to bathroom rather than use of bedpan).</li> <li>• Refer to physical and occupational therapy as appropriate.</li> <li>• Facilitate adherence to exercise program when indicated.</li> </ul> <p>(From <i>Table 6: Interventions to Decrease Risk for Falls</i> in original guideline document.)</p>
<b>NCCNSC/NICE (2004)</b>	<p><b>Multifactorial Interventions</b></p> <p><b>A</b> - In successful multifactorial intervention programmes the following specific components are common (against a background of the general diagnosis and management of causes and recognised risk factors):</p> <ul style="list-style-type: none"> <li>• Strength and balance training</li> <li>• Home hazard assessment and intervention</li> <li>• Vision assessment and referral</li> <li>• Medication review with modification/withdrawal</li> </ul> <p><b>Strength and Balance Training</b></p> <p><b>A</b> - Strength and balance training is recommended. Those most likely to benefit are older community-dwelling people with a history of recurrent falls and/or balance and gait deficit. A muscle strengthening and balance programme should be offered. This should be individually prescribed and monitored</p>

	<p>by an appropriately trained professional.</p> <p><b>Exercise in Extended Care Settings</b></p> <p><b>A</b> - Multifactorial interventions with an exercise component are recommended for older people in extended care settings who are at risk of falling.</p>
<b>RNAO (2005)</b>	<p><b>Intervention</b></p> <p><b>Tai Chi</b></p> <p>Tai Chi to prevent falls in the elderly is recommended for those clients whose length of stay (LOS) is greater than four months and for those clients with no history of a fall fracture. There is insufficient evidence to recommend Tai Chi to prevent falls for clients with length of stay less than four months.</p> <p><i>(Level of Evidence = Ib; Grade of Recommendation = B)</i></p> <p><b>Exercise</b></p> <p>Nurses can use strength training as a component of multifactorial fall interventions; however, there is insufficient evidence to recommend it as a stand-alone intervention.</p> <p><i>(Level of Evidence = Ib; Grade of Recommendation = I)</i></p>
<b>UIGN (2004)</b>	<p><b>Implement Fall Prevention Interventions (Step 4)</b></p> <p><i>Interventions For Older Adults Living In The Community</i></p> <p>Fall prevention interventions for persons living in the community focus on three areas: 1) improving physical mobility, 2) decreasing medication side effects, and 3) treating underlying health conditions. Studies conducted with community-dwelling older persons support the following interventions (Agostini, Baker, &amp; Bogardus, 2001; "Guideline for the prevention of falls," 2001. Evidence Grade = A):</p> <ul style="list-style-type: none"> <li>• Gait training and advice on the appropriate use of assistive devices (Close et al., 1999; Tinetti et al., 1994. Evidence Grade = B)</li> <li>• Exercise and balance training programs (Campbell et al., 1999; Steinberg et al., 2000; Tinetti et al., 1994. Evidence Grade = B)</li> </ul> <p><i>Interventions For Older Adults Living In Long-Term Care Or</i></p>

### *Assisted Living Facilities*

Fall prevention interventions for persons living in long-term care or assisted living facilities focus on five areas: 1) identifying fall risk factors through a comprehensive fall evaluation, 2) improving management of falls through staff education programs, 3) improving physical mobility, 4) decreasing medication side effects, and 5) modifying the physical environment.

Studies of interventions to prevent falls among older persons living in long-term care facilities support the use of the following interventions ("Guideline for the prevention of falls," 2001; Ray et al., 1997; Rubenstein et al., 1990. Evidence Grade = B):

- Gait training and advice on appropriate use of assistive devices (Ray et al., 1997. Evidence Grade = B)

### **Specific Fall Prevention Interventions**

#### **Improving Physical Mobility: Exercise Programs, Balance Training, Gait Training, and Appropriate Use of Walking Aids**

- Exercise programs, gait and balance training, and appropriate use of assistive devices and walking aids have been shown to be important strategies to prevent falls for older adults ("Guideline for the prevention of falls," 2001; Campbell, Borrie, & Spears, 1989; Gardner, Robertson, & Campbell, 2000; Gillespie et al., 2002; Hill-Westmoreland, Soeken, & Spellbring, 2002; Province et al., 1995. Evidence Grade = A).
- The benefits of improving physical mobility and endurance through any of these interventions alone as a fall prevention intervention, without concurrent reduction of other fall risk factors, has not been supported (Agostini, Baker, & Bogardus, 2001; "Guideline for the prevention of falls," 2001. Evidence Grade = A).
- Exercise programs that have been offered as fall prevention strategies in older adults include walking, balance training, resistance/strength training, aerobics, stationary cycling, and Tai Chi Chuan.
- Exercise programs that have a minimum duration of at least 10 weeks are more successful than shorter programs ("Guideline for the prevention of falls," 2001. Evidence Grade = A). Exercise programs must be sustained for sustained benefits ("Guideline for the prevention of falls," 2001. Evidence Grade = A).
- Minimization of bed rest in hospitalized elders is a practical, real-world intervention that has implications for prevention



	<p>of falls as well as other hospital-acquired complications (Agostini, Baker, &amp; Bogardus, 2001).</p> <ul style="list-style-type: none"> <li>To learn more about exercise programs for older adults, please see the Gerontological Nursing Interventions Research Centers Research Dissemination Core Evidence-Based Protocols: "Exercise Promotion: Walking in Elders," by Jitramontree (2001) and "Progressive Resistance Training" by Mobily and Mobily (2002) or the National Institute on Aging (1998) for an educational program entitled <i>Exercise: A Guide From the National Institute on Aging</i>.</li> </ul>
<b>Environmental Modification</b>	
<b>AMDA (2003)</b>	<p><i>Implement relevant general measures to address falling and fall risks.</i></p> <p><u>Environmental modifications.</u> Night lights, bedside tables, and quad canes or walkers may help those with peripheral neuropathies and visual impairments to orient themselves in space and to support themselves while getting out of bed. Signs and other memory trigger devices can be used to remind stroke victims to get up slowly and carefully. Try to accommodate patient preferences and needs—for example, by assisting patients who need help with toileting during evening and night shifts.</p>
<b>HCANJ (2006)</b>	<p><b>Assessments</b></p> <p><b>Environment</b></p> <ul style="list-style-type: none"> <li>Physical room lay out</li> <li>Equipment and assistive devices</li> <li>Lighting</li> <li>Other</li> </ul> <p><b>Dynamic Treatment Plan</b></p> <p>Specific interventions based on fall assessment results, and resident preferences all interdisciplinary team members must address:</p> <ul style="list-style-type: none"> <li>Room modifications</li> </ul>
<b>JHF (2003)</b>	<ul style="list-style-type: none"> <li>Familiarize patient with environment (i.e., identify call light, bathroom, and may need to label).</li> <li>Maintain call bell in reach and have patient demonstrate ability to call for the nurse.</li> </ul>

	<ul style="list-style-type: none"> <li>• Place bed in low position with brakes locked.</li> <li>• Utilize night light.</li> <li>• Keep floor surfaces clean and dry.</li> <li>• Make sure patient knows where personal possessions are and that he/she can safely access them.</li> <li>• Ensure adequate handrails in bathroom, room, and hallway.</li> </ul> <p>(From <i>Table 5: Standard Fall Prevention for All Older Adults</i> in the original guideline document.)</p> <p><b>Dizziness</b></p> <ul style="list-style-type: none"> <li>• Set up environment to avoid movements that result in dizziness/vertigo.</li> </ul> <p><b>Environmental Risks</b></p> <ul style="list-style-type: none"> <li>• Remove furniture if patient can't sit on it and have his or her feet reach the floor.</li> <li>• Remove clutter.</li> <li>• Make sure furniture and any assistive devices used are in good condition.</li> <li>• Make sure lighting is adequate.</li> <li>• Make sure safety bars are available in bathrooms.</li> </ul> <p>(From <i>Table 6: Interventions to Decrease Risk for Falls</i> in original guideline document.)</p>
<p><b>NCCNSC/NICE (2004)</b></p>	<p><b>Multifactorial Interventions</b></p> <p><b>A</b> - In successful multifactorial intervention programmes the following specific components are common (against a background of the general diagnosis and management of causes and recognised risk factors):</p> <ul style="list-style-type: none"> <li>• Strength and balance training</li> <li>• Home hazard assessment and intervention</li> <li>• Vision assessment and referral</li> <li>• Medication review with modification/withdrawal</li> </ul> <p><b>Home Hazard and Safety Intervention</b></p> <p><b>A</b> - Older people discharged from hospital following a fall should be offered a home hazard assessment and safety intervention/modifications by a suitably trained healthcare professional. This should normally be part of discharge planning and be carried out within a timescale agreed by the patient or carer and appropriate members of the healthcare team.</p>

	<p><b>A</b> - Home hazard assessment is shown to be effective only in conjunction with follow-up and intervention, not in isolation.</p>
<p><b>RNAO (2005)</b></p>	<p><b>Environment</b></p> <p>Nurses include environmental modifications as a component of fall prevention strategies.</p> <p><i>(Level of Evidence = Ib)</i></p>
<p><b>UIGN (2004)</b></p>	<p><b>Implement Fall Prevention Interventions (Step 4)</b></p> <p><i>Interventions For Older Adults Living in the Community</i></p> <p>Studies conducted with community-dwelling older persons support the following interventions (Agostini, Baker, &amp; Bogardus, 2001; "Guideline for the prevention of falls," 2001. Evidence Grade = A):</p> <ul style="list-style-type: none"> <li>• Modification of environmental hazards (Cumming et al., 1999; Tinetti et al., 1994. Evidence Grade = B)</li> </ul> <p><i>Interventions for Older Adults Living in Long-Term Care or Assisted Living Facilities</i></p> <p>Fall prevention interventions for persons living in long-term care or assisted living facilities focus on five areas: 1) identifying fall risk factors through a comprehensive fall evaluation, 2) improving management of falls through staff education programs, 3) improving physical mobility, 4) decreasing medication side effects, and 5) modifying the physical environment.</p> <p>Studies of interventions to prevent falls among older persons living in long-term care facilities support the use of the following interventions ("Guideline for the prevention of falls," 2001; Ray et al., 1997; Rubenstein et al., 1990. Evidence Grade = B):</p> <ul style="list-style-type: none"> <li>• Improvement in room lighting, flooring, and footwear (Agostini et al., 2001; Ray et al., 1997. Evidence Grade = B).</li> </ul> <p><i>Interventions for Older Adult Patients in Acute Hospital Settings</i></p> <p>In studies in hospitalized settings, practices included educational activities for nurse and support staff, patient orientation activities, review of prior falls, and improvement of surrounding environment. Specific environmental components</p>

	<p>included reducing physical obstacles in rooms, adding supplemental lighting and grab bars in bathrooms, and lowering bedrails and bed height.</p> <p>Because many of these studies used small sample sizes, and lacked precise standardization and description of the interventions, the generalizability and reproducibility of findings are limited (Agostini, Baker, &amp; Bogardus, 2001. Evidence Grade = A).</p> <p><b>Specific Fall Prevention Interventions</b></p> <p><b>Environmental Modification</b></p> <p>Assessment and modification of environmental hazards is often suggested as a fall prevention strategy. Unfortunately, research studies of environmental hazard modification have had small samples and insignificant statistical results (Abreu et al., 1998; El-Faizy &amp; Reinsch, 1994. Evidence Grade = C). Larger studies have failed to support environmental modification alone as a fall prevention strategy (Peel, Steinberg, &amp; Williams, 2000; Sattin et al., 1998; van Haastregt et al., 2000. Evidence Grade = B), although as a component of multifactorial fall prevention intervention, environmental modification may help decrease fall risk in some older adults (Cumming et al., 1999; Gillespie et al., 2002; Ray et al., 1997; Steinberg et al., 2000. Evidence Grade = B).</p>
<b>Assistive Devices, Hip Protectors, and Restraints</b>	
<b>AMDA (2003)</b>	<p><b>Treatment</b></p> <p><i>Implement relevant general measures to address falling and fall risks</i></p> <ul style="list-style-type: none"> <li>• <u>Use of physical restraints</u>. The indiscriminate use of physical restraints is no longer an accepted standard of care in long-term care facilities. Federal regulations provide clear guidelines for the use of physical restraints, which stress the need to try less restrictive approaches first and to use restraints only to try to maintain or improve—not reduce—a patient's function.</li> <li>• <u>Falls associated with getting out of bed</u>. The use of full-length side rails is not recommended because their presence may result in injury to patients who try to climb over them, get caught in them or try to climb out at the bottom of the bed.</li> <li>• <u>Use of alarms</u>. Bed and chair alarms may facilitate the remote detection of a patient's arising from a bed or chair and may allow caregivers to reach the patient before he or</li> </ul>

	<p>she falls.</p> <p><i>Manage factors that may cause serious consequences of falling</i></p> <ul style="list-style-type: none"> <li>Interventions that may decrease falls and fall-related injuries include ensuring that patients wear appropriate footwear and using fall mats, transfer bars, and wheel-chair anti-tipping attachments.</li> <li>Consider using hip protectors in patients who are at risk of sustaining a hip fracture.</li> </ul>
<b>HCANJ (2006)</b>	<p><b>Assessments</b></p> <p><b>Environment</b></p> <ul style="list-style-type: none"> <li>Equipment and assistive devices</li> </ul> <p><b>Dynamic Treatment Plan</b></p> <p>Specific interventions based on fall assessment results and resident preferences. The interdisciplinary team members must address:</p> <ul style="list-style-type: none"> <li>Consistent and proper uses of assistive or protective devices based on assessments</li> </ul>
<b>JHF (2003)</b>	<p>Hip protectors, such as Safehip™, should be recommended to individuals who are significantly at risk not only for a fall but also for a possible injury post fall.</p> <p>Electronic warning devices such as bed and chair alarms are suggested as an intervention to prevent falls. Alarm systems are designed to alert nursing staff that a patient is getting up from the bed or a chair and for this reason is potentially at risk for falls. Indications for alarm systems include those patients with a history of falls, unsafe bed mobility, cognitive deficits, confusion, those who are alone in the room and/or those who are unable to use the call bell. The efficacy of an alarm system depends on effective technology and the response time of nursing staff. Examples of particular devices and how to obtain them are provided in Tables 10 and 11 of the original guideline document.</p> <p>From <i>Table 10: Devices for Fall Prevention</i> in original guideline document</p> <p><b>Tab Alarms:</b> Simplest and least expensive device that is</p>

	<p>triggered by tugging on a magnetic connection.</p> <p><b>Motion Detectors:</b> Used to detect motion in one part of a room, unit or facility and alert caregivers.</p> <p><b>Visitor Chimes:</b> Used to sound a chime when there is inappropriate motion or activity in a room, on a unit</p> <p><b>Pressure Release Alarms:</b> Pads, mats or other devices that go under a mattress or chair and they alarm when there is a change.</p> <p><b>Distance Devices:</b> Most sophisticated of devices as they detect if an individual exceeds a certain distance from their bed or chair.</p>
<b>NCCNSC/NICE (2004)</b>	<p><b>Interventions that cannot be recommended because of insufficient evidence</b></p> <p><i>Hip Protectors</i></p> <p>Reported trials that have used individual patient randomization have provided no evidence for the effectiveness of hip protectors to prevent fractures when offered to older people living in extended care settings or in their own homes. Data from cluster randomized trials provide some evidence that hip protectors are effective in the prevention of hip fractures in older people living in extended care settings who are considered at high risk.</p>
<b>RNAO (2005)</b>	<p><b>Hip Protectors</b></p> <p>Nurses could consider the use of hip protectors to reduce hip fractures among those clients considered at high risk of fractures associated with falls; however, there is no evidence to support universal use of hip protectors among the elderly in health care settings.</p> <p><i>(Level of Evidence = Ib; Grade of Recommendation = B)</i></p> <p><b>Least Restraint</b></p> <p>Nurses should not use side rails for the prevention of falls or recurrent falls for clients receiving care in health care facilities; however, other client factors may influence decision-making around the use of side rails.</p> <p><i>(Level of Evidence = III; Grade of Recommendation = I)</i></p>

	<p>Organizations establish a corporate policy for least restraint that includes components of physical and chemical restraints.</p> <p><i>(Level of Evidence = IV)</i></p>
<b>UIGN (2004)</b>	<p><b>Implement Fall Prevention Interventions (Step 4)</b></p> <p><i>Interventions For Older Adults Living In Long-Term Care Or Assisted Living Facilities</i></p> <p>Studies of interventions to prevent falls among older persons living in long-term care facilities support the use of the following interventions ("Guideline for the prevention of falls," 2001; Ray et al., 1997; Rubenstein et al., 1990. Evidence Grade = B):</p> <ul style="list-style-type: none"> <li>• Wheelchair use and maintenance by an occupational therapist (Ray et al., 1997. Evidence Grade = B)</li> </ul> <p><b>Preventing Fall-Related Injuries with Protective Devices (Hip Protectors, Alarms)</b></p> <ul style="list-style-type: none"> <li>• Use of hip protectors does not seem to reduce the risk of falling, but there is strong evidence to support the ability of hip protectors to prevent hip fractures in persons 65 years of age and older, in nonhospitalized settings, who fall (Agostini, Baker, &amp; Bogardus, 2001; "Guideline for the prevention of falls," 2001; Parker, Gillespie, &amp; Gillespie, 2002. Evidence Grade = A).</li> <li>• There is insufficient evidence to recommend use of bed alarms as a fall prevention strategy for hospitalized older adults (Agostini, Baker, &amp; Bogardus, 2001; "Guideline for the prevention of falls," 2001; Oliver, Hopper, &amp; Seed, 2000. Evidence Grade = A).</li> </ul> <p><b>Physical Restraints and Falls in Older Adults</b></p> <ul style="list-style-type: none"> <li>• <i>There is no scientific evidence that supports the use of physical restraints as a fall prevention strategy for older adults</i> (Agostini, Baker, &amp; Bogardus, 2001; "Guideline for the prevention of falls," 2001. Evidence Grade = A).</li> <li>• Older adults who are restrained are more likely to experience a fall than those who are not restrained (Capezuti et al., 1996. Evidence Grade = C).</li> <li>• Restraint reduction programs do not seem to cause a significant increase in the total number of falls and may reduce the number and/or seriousness of injuries sustained during a fall (Agostini, Baker &amp; Bogardus, 2001; Hanger, Ball, &amp; Wood, 1999; Neufeld et al., 1999; Tinetti, Liu, &amp; Ginter, 1992. Evidence Grade = C).</li> </ul>

	<ul style="list-style-type: none"> <li>In addition, some restraints, such as bedrails, have been implicated in serious entrapment injuries or deaths (Parker &amp; Miles, 1997. Evidence Grade = C).</li> </ul>
<b>Other Interventions</b>	
<b>AMDA (2003)</b>	<p><b>Treatment</b></p> <p><i>Manage factors that may cause serious consequences of falling</i></p> <p>Patients at risk of falling should be assessed for osteoporosis and managed accordingly. However, medications used to treat or prevent osteoporosis do not reduce fall rates.</p>
<b>HCANJ (2006)</b>	No additional recommendations offered.
<b>JHF (2003)</b>	No additional recommendations offered.
<b>NCCNSC/NICE (2004)</b>	<p><b>Cardiac Pacing</b></p> <p><b>B</b> - Cardiac pacing should be considered for older people with cardioinhibitory carotid sinus hypersensitivity who have experienced unexplained falls.</p> <p><b>Encouraging the Participation of Older People in Falls Prevention</b></p> <p><b>D</b> - To promote the participation of older people in falls prevention programmes the following should be considered:</p> <ul style="list-style-type: none"> <li>Healthcare professionals involved in the assessment and prevention of falls discussing which changes a person is willing to make to prevent falls.</li> <li>Information should be relevant and available in languages other than English.</li> <li>Falls prevention programmes should also address potential barriers such as low self-efficacy and fear of falling and encourage activity change as negotiated with the participant.</li> </ul> <p><b>D</b> - Practitioners who are involved in developing falls prevention programmes should ensure that such programmes are flexible enough to accommodate participant's different needs and preferences and should promote the social value of such programmes.</p>



<b>RNAO (2005)</b>	<p><b>Vitamin D</b></p> <p>Nurses provide clients with information on the benefits of vitamin D supplementation in relation to reducing fall risk. In addition, information on dietary, life style, and treatment choice for the prevention of osteoporosis is relevant in relation to reducing the risk of fracture.</p> <p><i>(Level of Evidence = IV)</i></p>
<b>UIGN (2004)</b>	<p><b>Implement Fall Prevention Interventions (Step 4)</b></p> <p><i>Interventions For Older Adults Living In The Community</i></p> <p>Studies conducted with community-dwelling older persons support the following interventions (Agostini, Baker, &amp; Bogardus, 2001; "Guideline for the prevention of falls," 2001. Evidence Grade = A):</p> <ul style="list-style-type: none"> <li>• Assessment and treatment for any identified health problems (Close et al., 1999. Evidence Grade = B) <ul style="list-style-type: none"> <li>a. Treatment of postural hypotension (Close et al., 1999; Tinetti, McAvay, &amp; Claus, 1996. Evidence Grade = B)</li> <li>b. Treatment of cardiovascular disorders (Close et al., 1999. Evidence Grade = B)</li> <li>c. Treatment of visual problems (Close et al., 1999. Evidence Grade = B)</li> </ul> </li> </ul> <p><b>Specific Fall Prevention Interventions</b></p> <p><b>Continence Promotion and Toileting Programs</b></p> <p>A continence assessment to determine type and severity of urinary incontinence and/or fecal incontinence and type-specific treatment of any incontinence is a suggested component of a fall prevention program for older adults. Older adults in acute care settings may benefit from a toileting program (Bakarich, McMillan, &amp; Prosser, 1997. Evidence Grade = B) as may older adults with functional and/or cognitive challenges. For further information about prompted voiding programs for older adults, please see the Evidence-Based Protocol "Prompted Voiding for Persons with Urinary Incontinence" (Lyons &amp; Specht, 1999).</p>
<b>Patient, Carer, and Professional Education</b>	
<b>AMDA (2003)</b>	<ul style="list-style-type: none"> <li>• Patient information about safe sitting and standing</li> <li>• Staff education about fall risks and potentially helpful interventions</li> </ul>

	<p>(From <i>Table 6: Examples of Facility Approaches to Try to Reduce Falls or Consequences of Falls</i> in original guideline document)</p> <p>Conduct quality improvement activities related to falls.</p> <p>The medical director plays a pivotal role in fall prevention and management, including but not limited to:</p> <ul style="list-style-type: none"> <li>• Providing education and information about medical causes of falling.</li> </ul>
<b>HCANJ (2006)</b>	<p><b>Education/Awareness</b></p> <p>Falls Program In-Service</p> <ul style="list-style-type: none"> <li>• Staff members <ul style="list-style-type: none"> <li>• Intervals for review of Fall Management Program: <ul style="list-style-type: none"> <li>• Upon orientation</li> <li>• Semiannual</li> <li>• Post fall evaluation as necessary</li> </ul> </li> <li>• Contents of review: <ul style="list-style-type: none"> <li>• Policies and procedures</li> <li>• Documentation expectations</li> </ul> </li> </ul> </li> <li>• Resident <ul style="list-style-type: none"> <li>• Intervals for review of Fall/Safety Information: <ul style="list-style-type: none"> <li>• Admission</li> <li>• Care plan meetings</li> <li>• Quarterly resident population education on falls management</li> <li>• After a fall</li> </ul> </li> <li>• Contents of review: <ul style="list-style-type: none"> <li>• Instructions and information concerning safety awareness</li> <li>• Proper use of call bells, walking devices, wheelchairs, and other assistive devices</li> </ul> </li> </ul> </li> <li>• Family <ul style="list-style-type: none"> <li>• Intervals for review of Fall/Safety Information: <ul style="list-style-type: none"> <li>• Upon admission of the resident</li> <li>• Address with family as resident presents need to discuss</li> <li>• Upon discharge of resident</li> </ul> </li> <li>• Contents of review: <ul style="list-style-type: none"> <li>• Reasonable expectations from the facility</li> <li>• How they can assist</li> </ul> </li> </ul> </li> <li>• Department of Health and Senior Services (DHSS) <ul style="list-style-type: none"> <li>• Inform the Department of Health and Senior Services staff about the facility's Fall Program and</li> </ul> </li> </ul>

	what is the level of implementation
<b>JHF (2003)</b>	<ul style="list-style-type: none"> <li>• Educate patient and family regarding fall prevention strategies</li> <li>• (From <i>Table 5: Standard Fall Prevention for All Older Adults</i> in original guideline document.)</li> <li>• The prevention of falls on an acute care unit should include all members of the health care team as well as the patient and his or her family. Patients and their families and/or caregivers are the core of the team, therefore they should be provided with information on fall-prevention strategies on the unit and what is being done to prevent falls. A simple handout, for example, can explain why a wrist band is a certain color or why the bedrails just go halfway down the bed. The philosophy of care on the unit should also be given to patients, families, and caregivers. Ideally the philosophy should focus on encouraging patients to participate in functional activities at their highest possible level. (See <i>Table 9: Fall Prevention Information for Patient and Family</i> in original guideline document).</li> </ul>
<b>NCCNSC/NICE (2004)</b>	<p><b>Education and Information Giving</b></p> <p><b>D</b> - Healthcare professionals involved in falls prevention should be educated about falls assessment and prevention.</p> <p><b>D</b> - Individuals at risk of falling and their carers should be offered information orally and in writing about:</p> <ul style="list-style-type: none"> <li>• What measures they can take to prevent further falls</li> <li>• How to stay motivated if referred for falls prevention strategies that include exercise or strength and balancing components</li> <li>• The preventable nature of some falls</li> <li>• The physical and psychological benefits of modifying falls risk</li> <li>• Where they can seek further advice and assistance</li> <li>• How to cope if they have a fall, including how to summon help and how to avoid a long lie</li> </ul>
<b>RNAO (2005)</b>	<p><b>Client Education</b></p> <p>All clients who have been assessed as high risk for falling</p>

	<p>receive education regarding their risk of falling.</p> <p><i>(Level of Evidence = IV)</i></p> <p><b>Nursing Education</b></p> <p>Education on the prevention of falls and fall injuries should be included in nursing curricula and on-going education with specific attention to:</p> <ul style="list-style-type: none"> <li>• Promoting safe mobility</li> <li>• Risk assessment</li> <li>• Multidisciplinary strategies</li> <li>• Risk management including post-fall follow-up</li> <li>• Alternatives to restraints and/or other restricted devices</li> </ul> <p><i>(Level of Evidence = IV)</i></p> <p><b>Organizational Support</b></p> <ul style="list-style-type: none"> <li>• Staff education</li> </ul> <p><i>(Level of Evidence = IV)</i></p>
<b>UIGN (2004)</b>	<p><b>Implement Fall Prevention Interventions (Step 4)</b></p> <p><i>Interventions For Older Adults Living In Long-Term Care Or Assisted Living Facilities</i></p> <p>Studies of interventions to prevent falls among older persons living in long-term care facilities support the use of the following interventions ("Guideline for the prevention of falls," 2001; Ray et al., 1997; Rubenstein et al., 1990. Evidence Grade = B):</p> <ul style="list-style-type: none"> <li>• Staff education programs (Ray et al., 1997. Evidence Grade = B)</li> </ul>

<b>TABLE 3: BENEFITS AND HARMS</b>	
<b>Benefits</b>	
<b>AMDA (2003)</b>	<ul style="list-style-type: none"> <li>• Guideline implementation is intended to minimize fall risk and risk of fall-related injuries while maximizing individual dignity, freedom, and quality of life.</li> </ul>

	<ul style="list-style-type: none"> <li>Although no specific efforts or combinations of interventions have been shown to prevent all falls or injuries associated with falling, it is often possible to reduce the frequency of falls and the severity of injuries associated with falling.</li> </ul>
<b>HCANJ (2006)</b>	<ul style="list-style-type: none"> <li>Prevention of falls, reduced injury, and ultimately improved quality of life of residents</li> <li>Limited liability and financial risk to the facility</li> </ul>
<b>JHF (2003)</b>	<ul style="list-style-type: none"> <li>Prevention of falls and fall-related injuries</li> <li>Provision of nursing care that focuses on improving and maintaining the functional ability of older patients. The step approach presented in this guideline provides nurses in the acute care setting with an easy and effective way to implement a falls prevention program and raise the level of care provided to older patients in the acute care setting.</li> </ul>
<b>NCCNSC/NICE (2004)</b>	Implementation of the recommendations may ensure that older people at risk from falls receive consistent management and care to prevent the occurrence of falls, improve outcomes, and minimize recurrence of injury due to falls.
<b>RNAO (2005)</b>	<p><b>Overall Benefits</b></p> <ul style="list-style-type: none"> <li>Increased nurses' confidence, knowledge, skills, and abilities in the identification of adults at risk of falling and the ability to define interventions to prevent falls</li> <li>Decreased falls in older adults</li> <li>Decreased morbidity, mortality, and hospitalization rates related to falls</li> </ul> <p>Nurses, other health care professionals, and administrators who are leading and facilitating practice changes will find this document valuable for the development of policies, procedures, protocols, educational programs, assessment and documentation tools, etc.</p>
<b>UIGN (2004)</b>	Prevention of falls among elderly patients while maintaining autonomy and independence

**TABLE 4: EVIDENCE RATING SCHEMES AND REFERENCES**

<b>AMDA (2003)</b>	Not applicable
<b>HCANJ (2006)</b>	Not applicable
<b>JHF (2003)</b>	Not applicable
<b>NCCNSC/NICE (2004)</b>	<p><b>Evidence Categories</b></p> <p><b>I:</b> Evidence from meta-analysis of randomised controlled trials or at least one randomised controlled trial</p> <p><b>II:</b> Evidence from at least one controlled trial without randomization or at least one other type of quasi-experimental study</p> <p><b>III:</b> Evidence from non-experimental descriptive studies, such as comparative studies, correlation studies, and case-control studies</p> <p><b>IV:</b> Evidence from expert committee reports or opinions and/or clinical experience of respected authorities</p> <p><b>Recommendation Grades</b></p> <p><b>Grade A</b> - Directly based on category I evidence</p> <p><b>Grade B</b> - Directly based on category II evidence or extrapolated recommendation from category I evidence</p> <p><b>Grade C</b> - Directly based on category III evidence or extrapolated recommendation from category I or II evidence</p> <p><b>Grade D</b> - Directly based on category IV evidence or extrapolated recommendation from category I, II, or III evidence</p> <p><b>Good Practice Point (GPP)</b> - Recommended good practice based on the clinical experience of the Guideline Development Group (GDG)</p>
<b>RNAO (2005)</b>	<p><b>Levels of Evidence</b></p> <p><b>Level Ia:</b> Evidence obtained from meta-analysis or systematic review of randomized controlled trials</p> <p><b>Level Ib:</b> Evidence obtained from at least one randomized</p>

	<p>controlled trial</p> <p><b>Level IIa:</b> Evidence obtained from at least one well-designed controlled study without randomization</p> <p><b>Level IIb:</b> Evidence obtained from at least one other type of well-designed quasi-experimental study.</p> <p><b>Level III:</b> Evidence obtained from well-designed non-experimental descriptive studies, such as comparative studies, correlation studies, and case studies</p> <p><b>Level IV:</b> Evidence obtained from expert committee reports or opinions and/or clinical experiences of respected authorities</p> <p><b>Grades of Recommendations</b></p> <p><b>A:</b> There is good evidence to recommend the clinical preventive action.</p> <p><b>B:</b> There is fair evidence to recommend the clinical preventive action.</p> <p><b>C:</b> The existing evidence is conflicting and does not allow making a recommendation for or against use of the clinical preventive action; however other factors may influence decision-making.</p> <p><b>D:</b> There is fair evidence to recommend against the clinical preventive action.</p> <p><b>E:</b> There is good evidence to recommend against the clinical preventive action.</p> <p><b>I:</b> There is insufficient evidence (in quantity and/or quality) to make a recommendation, however other factors may influence decision-making.</p>
<b>UIGN (2004)</b>	<p><b>Rating Scheme for Strength of Recommendations</b></p> <p>A = Evidence from well-designed meta-analysis, or well-done synthesis reports such as those from the Agency for Healthcare Policy and Research (AHRQ), or the American Geriatric Society (AGS)</p> <p>B = Evidence from well-designed controlled trials, both randomized and nonrandomized, with results that consistently support a specific action (e.g., assessment, intervention or</p>

treatment)

C = Evidence from observational studies (e.g., correlational descriptive studies) or controlled trials with inconsistent results

D = Evidence from expert opinion or multiple case reports

### **References Supporting The Recommendations**

Abreu N, Hutchins J, Matson J, Polizzi N, Seymour CJ. Effect of group versus home visit safety education and prevention strategies for falling in community-dwelling elderly persons. *Home Health Care Manag Pract* 1998;10(4):57-65.

Agostini JV, Baker DI, Bogardus ST Jr. Prevention of falls in hospitalized and institutionalized older people. In: Markowitz AJ, Shojania KG, Duncan BW, McDonald KM, Wachter RM, editor(s). *Making health care safer: a critical analysis of patient safety practices*. Rockville (MD): Agency for Healthcare Research and Quality, U.S. Department of Health and Human Services; 2001. p. 281-99.

Bakarich A, McMillan V, Prosser R. The effect of a nursing intervention on the incidence of older patient falls. *Aust J Adv Nurs* 1997 Sep-Nov;15(1):26-31. [PubMed](#)

Blegen MA, Vaughn TE, Goode CJ. Nurse experience and education: effect on quality of care. *J Nurs Adm* 2001 Jan;31(1):33-9. [PubMed](#)

Brown JS, Vittinghoff E, Wyman JF, Stone KL, Nevitt MC, Ensrud KE, Grady D. Urinary incontinence: does it increase risk for falls and fractures? Study of Osteoporotic Fractures Research Group. *J Am Geriatr Soc* 2000 Jul;48(7):721-5. [PubMed](#)

Campbell AJ, Borrie MJ, Spears GF. Risk factors for falls in a community-based prospective study of people 70 years and older. *J Gerontol* 1989 Jul;44(4):M112-7. [PubMed](#)

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 Jul;47(7):850-3. [PubMed](#)

Capezuti E, Evans L, Strumpf N, Maislin G. Physical restraint use and falls in nursing home residents. *J Am Geriatr Soc* 1996 Jun;44(6):627-33. [PubMed](#)

Close J, Ellis M, Hooper R, Glucksman E, Jackson S, Swift C.



Prevention of falls in the elderly trial (PROFET): a randomised controlled trial. Lancet 1999 Jan 9;353(9147):93-7. [PubMed](#)

Cumming RG, Thomas M, Szonyi G, Salkeld G, O'Neill E, Westbury C, Frampton G. Home visits by an occupational therapist for assessment and modification of environmental hazards: a randomized trial of falls prevention. J Am Geriatr Soc 1999 Dec;47(12):1397-402. [PubMed](#)

El-Faizy M, Reinsch S. Home safety intervention for the prevention of falls. Phys Occup Ther Geriatr 1994;12(3):33-49.

Gardner MM, Robertson MC, Campbell AJ. Exercise in preventing falls and fall related injuries in older people: a review of randomised controlled trials. Br J Sports Med 2000 Feb;34(1):7-17. [38 references] [PubMed](#)

Gillespie LD, Gillespie WJ, Robertson MC, Lamb SE, Cumming RG, Rowe BH. Interventions for preventing falls in elderly people. Cochrane Database Syst Rev 2002;(2):CD000340. [182 references] [PubMed](#)

Guideline for the prevention of falls in older persons. American Geriatrics Society, British Geriatrics Society, and American Academy of Orthopaedic Surgeons Panel on Falls Prevention. J Am Geriatr Soc 2001 May;49(5):664-72. [PubMed](#)

Hanger HC, Ball MC, Wood LA. An analysis of falls in the hospital: can we do without bedrails. J Am Geriatr Soc 1999 May;47(5):529-31. [PubMed](#)

Hill-Westmoreland EE, Soeken K, Spellbring AM. A meta-analysis of fall prevention programs for the elderly: how effective are they. Nurs Res 2002 Jan-Feb;51(1):1-8. [PubMed](#)

Jitramontree N. Exercise promotion: walking in elders evidence-based protocol. In: Titler MG, editor(s). Series on evidence-based practice for older adults. Iowa City (IA): University of Iowa Gerontological Nursing Interventions Research Center, Research Dissemination Core; 2001.

Lyons SS, Specht JKP. Prompted voiding for persons with urinary incontinence. In: Titler MG, editor(s). Series on evidence-based practice for older adults. Iowa City (IA): University of Iowa Gerontological Nursing Interventions Research Center, Research Dissemination Core; 1999. p. 47. [57 references]

Mathias S, Nayak US, Isaacs B. Balance in elderly patients: the "get-up and go" test. Arch Phys Med Rehabil 1986

Jun;67(6):387-9. [PubMed](#)

Mobily K, Mobily P. Progressive resistance training evidence-based protocol. In: Titler MG, editor(s). Series on evidence-based practice for older adults. Iowa City (IA): University of Iowa Gerontological Nursing Interventions Research Center, Research Dissemination Core; 2002.

Morris JN, Murphy K, Nonemaker S. MDS 2.0 user's manual. Updated by Brown, D.L. (2000). Des Moines (IA): Briggs Corporation; 1995.

National Institute on Aging. Exercise: a guide from the national institute on aging. Publication No. NIH 99-4258. Washington (DC): National Institutes of Health (NIH); 1998.

Neufeld RR, Libow LS, Foley WJ, Dunbar JM, Cohen C, Breuer B. Restraint reduction reduces serious injuries among nursing home residents. J Am Geriatr Soc 1999 Oct;47(10):1202-7. [PubMed](#)

Oliver D, Hopper A, Seed P. Do hospital fall prevention programs work? A systematic review. J Am Geriatr Soc 2000 Dec;48(12):1679-89. [93 references] [PubMed](#)

Parker K, Miles SH. Deaths caused by bedrails. J Am Geriatr Soc 1997 Jul;45(7):797-802. [PubMed](#)

Parker MJ, Gillespie LD, Gillespie WJ. Hip protectors for preventing hip fractures in the elderly. Cochrane Database Syst Rev 2002;(2):CD001255. [31 references] [PubMed](#)

Peel N, Steinberg M, Williams G. Home safety assessment in the prevention of falls among older people. Aust N Z J Public Health 2000 Oct;24(5):536-9. [PubMed](#)

Podsiadlo D, Richardson S. The timed "Up & Go": a test of basic functional mobility for frail elderly persons. J Am Geriatr Soc 1991 Feb;39(2):142-8. [PubMed](#)

Province MA, Hadley EC, Hornbrook MC, Lipsitz LA, Miller JP, Mulrow CD, Ory MG, Sattin RW, Tinetti ME, Wolf SL. The effects of exercise on falls in elderly patients. A preplanned meta-analysis of the FICSIT Trials. Frailty and Injuries: Cooperative Studies of Intervention Techniques. JAMA 1995 May 3;273(17):1341-7. [PubMed](#)

Ray WA, Taylor JA, Meador KG, Thapa PB, Brown AK, Kajihara HK, Davis C, Gideon P, Griffin MR. A randomized trial of a consultation service to reduce falls in nursing homes. JAMA

	<p>1997 Aug 20;278(7):557-62. <a href="#">PubMed</a></p> <p>Rubenstein LZ, Robbins AS, Josephson KR, Schulman BL, Osterweil D. The value of assessing falls in an elderly population. A randomized clinical trial. Ann Intern Med 1990 Aug 15;113(4):308-16. <a href="#">PubMed</a></p> <p>Sattin RW, Rodriguez JG, DeVito CA, Wingo PA. Home environmental hazards and the risk of fall injury events among community-dwelling older persons. Study to Assess Falls Among the Elderly (SAFE) Group. J Am Geriatr Soc 1998 Jun;46(6):669-76. <a href="#">PubMed</a></p> <p>Steinberg M, Cartwright C, Peel N, Williams G. A sustainable programme to prevent falls and near falls in community dwelling older people: results of a randomised trial. J Epidemiol Community Health 2000 Mar;54(3):227-32. <a href="#">PubMed</a></p> <p>Tinetti ME, Baker DI, McAvay G, Claus EB, Garrett P, Gottschalk M, Koch ML, Trainor K, Horwitz RI. A multifactorial intervention to reduce the risk of falling among elderly people living in the community. N Engl J Med 1994 Sep 29;331(13):821-7. <a href="#">PubMed</a></p> <p>Tinetti ME, Liu WL, Ginter SF. Mechanical restraint use and fall-related injuries among residents of skilled nursing facilities. Ann Intern Med 1992 Mar 1;116(5):369-74. <a href="#">PubMed</a></p> <p>Tinetti ME, McAvay G, Claus E. Does multiple risk factor reduction explain the reduction in fall rate in the Yale FICSIT Trial? Frailty and Injuries Cooperative Studies of Intervention Techniques. Am J Epidemiol 1996 Aug 15;144(4):389-99. <a href="#">PubMed</a></p> <p>van Haastregt JC, Diederiks JP, van Rossum E, de Witte LP, Voorhoeve PM, Crebolder HF. Effects of a programme of multifactorial home visits on falls and mobility impairments in elderly people at risk: randomised controlled trial. BMJ 2000 Oct 21;321(7267):994-8. <a href="#">PubMed</a></p>
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## **GUIDELINE CONTENT COMPARISON**

The American Medical Directors Association (AMDA), the Health Care Association of New Jersey (HCANJ), the John A. Hartford Foundation Institute for Geriatric Nursing (JHF), the National Collaborating Centre for Nursing and Supportive Care, National Institute for Clinical Excellence (NCCNSC/NICE), the Registered Nurses Association of Ontario (RNAO), and the University of Iowa Gerontological Nursing Interventions Research Center (UIGN) present recommendations for prevention of falls in the elderly. NCCNSC/NICE, RNAO, JHF, and UIGN provide explicit

reasoning behind their judgments, ranking the level of evidence for each major recommendation; AMDA does not provide explicit reasoning or referenced citations, but offers a bibliography; HCANJ provides its recommendations in outline form along with recommended tools and forms, and a bibliography, but does not provide its reasoning in narrative form and does not provide evidence ranking or bibliographical references. JHF provides its recommendations in narrative form along with referenced citations and recommended tools and forms, but does not provide evidence ranking.

The guidelines address fall prevention in different health care settings. Prevention of falls in community-dwelling older adults is addressed by NCCNSC/NICE and UIGN. Prevention of falls in acute care settings is addressed by JHF, RNAO, and UIGN. Prevention of falls in extended care settings, such as skilled nursing and assisted living facilities, is addressed by AMDA, HCANJ, NCCNSC/NICE, RNAO, and UIGN. NCCNSC/NICE also addresses primary and secondary medical care following a fall.

Some guidelines are broader in scope than others. All six guidelines, however, address both fall risk assessment and interventions to prevent falls, the two areas that are the focus of this synthesis. With the exception of NCCNSC/NICE, the guidelines specifically address post-fall evaluation as well, and AMDA includes guidance to nurses on evaluating a patient who has just fallen or is found on the floor. HCANJ, NCCNSC/NICE, RNAO, and UIGN also consider patient and staff education, AMDA, RNAO, and HCANJ address organizational-level approaches to fall prevention (such as tracking and reporting of falls, staff communication, and continuing quality improvement), and NCCNSC/NICE considers research needs related to prevention of falls. The differences in content are due in part to differences in the specific audiences for which the guidelines were developed. While the JHF, RNAO, and UIGN guidelines were developed for nurses, the AMDA, HCANJ, and NCCNSC/NICE guidelines were developed for both management staff and health care providers.

## **Areas of Agreement**

### *Fall Risk Assessment*

Although the guidelines consider older adults in different settings, including the community, acute care, and long term care, they all agree that older persons should undergo assessment of their risk for falling. NCCNSC/NICE and UIGN recommend a two-stage approach to fall risk assessment in which an initial limited fall risk assessment is performed for all older persons, followed by a more complete evaluation for persons found to be at higher risk. A more extensive initial assessment for all older persons is recommended by AMDA, HCANJ, JHF, and RNAO (these four guidelines address prevention in extended and/or acute care rather than community settings).

In the extended and/or acute care setting, RNAO recommends assessment upon admission and HCANJ recommends initial assessment within 24 to 48 hours of admission and a comprehensive assessment within 14 to 21 days; no time-frame for initial or comprehensive assessment is specified by the other guidelines.

The NCCNSC/NICE and UIGN guidelines are in agreement that the limited initial risk assessment should include asking the older person about falls and performing a gait and balance assessment (e.g., "Up and Go" test). Older persons identified as being at increased risk for falls should then undergo an in-depth evaluation. In the HCANJ and JHF guidelines, evaluations that go beyond the components of the initial assessment described above are indicated for all older persons.

AMDA, NCCNSC/NICE, and UIGN recommend a complete fall evaluation (multifactorial fall risk assessment) in all older persons at risk for falling (i.e., those with a history of multiple falls, those who perform poorly on a gait and balance test, and those with other risks for falls). RNAO, without addressing which subgroups should undergo a limited versus comprehensive fall risk evaluation, states that risk screening is an effective method for identifying fall-prone individuals and that the risk assessment tool used must be appropriate for the setting and the specific client population. With one exception, the guidelines agree that after a fall, an analysis of the fall and/or complete fall risk evaluation should be performed (UIGN does not address immediate post-fall evaluation but instead offers a comprehensive fall evaluation for examining falls from the past year).

There is general agreement on the risk factors that are most important to assess as part of a complete fall risk evaluation. These include history of fall circumstances, medications, existing medical problems, gait and balance, neurological status, and cardiovascular status. Other risk factors to assess that are included in some but not all guidelines are fear of falls, vision, incontinence, joint function, assistive devices, pain, and foot assessment.

### *Fall Prevention Interventions*

#### Multifactorial Interventions

All the guidelines recommend multifactorial interventions, with the interventions differing somewhat depending on the patient population addressed by the guideline. Interventions frequently recommended include gait and balance training, review and modification of medications, treatment of postural hypotension and cardiovascular disorders (including cardiac arrhythmias), exercise programs, use of walking aids, vision assessment/referral, and environmental modifications to reduce hazards in home, acute care, and extended care settings. UIGN and HCANJ also recommend continence promotion and toileting programs. RNAO recommends vitamin D therapy to help prevent osteoporotic fractures in the event of a fall.

#### Exercise

Five of the guidelines include exercise (strength and balance training) as a beneficial intervention. AMDA notes that although exercise has many proven benefits, the optimal type, duration and intensity of exercise for falls prevention remain unclear. JHF encourages participation in functional activities and exercise at the patient's highest level and urges health care providers to facilitate patient adherence to exercise programs, when indicated. According to NCCNSC/NICE, those most likely to benefit are older community-dwelling people with a history of recurrent falls and/or balance and gait deficit. UIGN states that the benefit of exercise as an isolated intervention is not supported by the research; rather,

exercise needs to be part of a multifactorial approach. RNAO recommends Tai Chi for clients whose length of stay is greater than four months and those with no history of fall fracture.

#### Assistive Devices, Hip Protectors and Restraints

The three guidelines that address the issue of physical restraints (AMDA, RNAO, and UIGN) are in agreement that there is no evidence that they prevent falls. RNAO points out that physical restraints may increase risk of falls and recommends that organizations establish a policy for least restraint. Four guidelines (AMDA, JHF, RNAO, and UIGN) address the use of hip protectors and agree that, although they do not prevent falls, they may decrease fall-related injuries. NCCNSC/NICE cites hip protectors as an intervention that cannot be recommended because of insufficient evidence. AMDA and RNAO indicate that use of bed side rails to prevent falls may result in injury to patients who try to climb over them or get caught in them; RNAO adds, however, that other client factors may influence decision-making around the use of side rails.

#### Patient and Carer Education

HCANJ, JHF, NCCNSC/NICE, and RNAO recommend that older adults and their families and carers receive information and education regarding fall prevention strategies. AMDA and UIGN do not address the issue of patient and carer education.

### **Areas of Differences**

#### *Fall Risk Assessment*

The NCCNSC/NICE and UIGN guidelines agree that persons seen in the community setting who are at relatively low risk for falling should be assessed with a gait and balance test. There are some differences, however, in how the guidelines define the low risk population. For instance, UIGN recommends the test for those reporting a single fall or no fall, and NCCNSC/NICE recommends the test for persons reporting a single fall and those otherwise considered at risk of falling.

#### *Fall Prevention Interventions*

There is some disagreement concerning the use of alarms. UIGN states there is insufficient evidence to recommend use of bed alarms as a fall prevention strategy for hospitalized older adults. AMDA, states, however, that bed and chair alarms may facilitate the remote detection of a patient's arising from a bed or chair and may allow caregivers to reach the patient before he or she falls. JHF suggests bed and chair alarms as an intervention to prevent falls, but notes that the efficacy of an alarm system depends on effective technology and the response time of nursing staff.

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JHF on September 29, 2006. The most current version of this Synthesis removes the American Geriatric Society, British Geriatrics Society, and American Academy of Orthopaedic Surgeons (AGS/BGS/AAOS) guideline, which has now been archived.

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