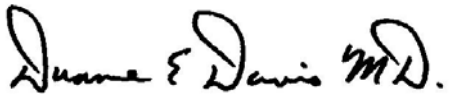
Fall and Fall Prevention Guideline

These clinical guidelines are designed to assist clinicians by providing an analytical framework for the evaluation and treatment of patients. They are not intended to replace a clinician's judgment or to establish a protocol for all patients with a particular condition. A guideline will rarely establish the only approach to a problem.

GUIDELINE HISTORY and APPROVAL

ACTION	SEED GUIDELINE and/or MAIN INFORMATION & GROUP SOURCE(S)	DATE	ORGANIZATION
Guideline devised	1. Lyon SS. Fall prevention for older adults. University of Iowa Gerontological Nursing Interventions Research Center, Research Dissemination Core; Feb. 2004 2. American Geriatrics Association, Guideline for the Prevention of Falls in Older Persons. JAGS May 2001;49(5):664-672 3. American Medical Directors Association. Falls and Fall Risk Clinical Practice Guideline. 2003	Sept 17 – Oct 8, 2007	Geisinger Health Plan Clinical Guidelines Committee
Guideline reviewed and approved	Same as above	Dec. 17-21, 2007	Geisinger Health Plan Medical Directors
Guideline approved	Same as above	Jan. 7, 2008	Geisinger Health Plan/Medical Management Committee
Guideline approved	Same as above	Jan. 23, 2008	Geisinger Health Plan, Quality Improvement Committee
Guideline reviewed	Same as above	Sep. 21-Nov 16, 2009	Geisinger Health Plan Clinical Guidelines Committee
Guideline reviewed and approved	Same as above	Dec. 15-21, 2009	Geisinger Health Plan Medical Directors
Guideline approved	Same as above	Dec. 21, 2009	Geisinger Health Plan/Medical Management Committee
Guideline approved	Same as above	Jan, 27, 2010	Geisinger Health Plan, Quality Improvement Committee



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OVERVIEW

Falls are the leading cause of nonfatal injuries in the U.S. Over 70% of deaths due to falls occur in persons aged 65 and over, making falls the leading cause of unintentional injury death in this age group. The death rate due to falls in the general population is 5.1 per 100,000 persons. In the elderly, in whom complications such as hip fracture can be severe, the death rate per 100,000 increases with age, from 10.2 for those aged 65-74, to 147.0 for persons aged 85 and over.

SEED GUIDELINE(S)

Lyon SS. Fall prevention for older adults. University of Iowa Gerontological Nursing Interventions Research Center, Research Dissemination Core; Feb. 2004

American Geriatrics Association, Guideline for the Prevention of Falls in Older Persons. JAGS May 2001;49(5):664-672

American Medical Directors Association. Falls and Fall Risk Clinical Practice Guideline. 2003.

FAST FACTS

- Physiological changes and environmental agents are the principal risk factors for falls in older persons.
- Falls are the leading cause of nonfatal injuries in the U.S.
- Since 2001, the rate of fall related deaths has increased from 4.6% to 6.6% in 2004.
- Of all fall-related fractures, hip fractures are the most serious and lead to the greatest number of health problems and deaths.
- Of those who fall, 20% to 30% suffer moderate to severe injuries that reduce mobility and independence, and increase the risk of premature death.
- Costs associated with these injuries and fatalities totaled more than $13.5 billion in 2001.

RECOMMENDATIONS

Physiological changes and environmental agents are the principal risk factors for falls in older persons. Physiological risk factors include postural instability, gait disturbances, diminished muscle strength and proprioception, poor vision, and medications. Environmental risk factors include stairs, pavement irregularities, slippery surfaces, inadequate lighting, unexpected objects, low chairs and incorrect footwear. Hard surfaces such as concrete increase the risk of fracture when a fall occurs. These risk factors serve as the basis for recommended interventions to prevent falls: exercise to enhance muscle strength, monitoring of medications, balance and gait training, and counseling to correct environmental hazards. The efficacy of these measures has not been fully evaluated. There is evidence, however, that some interventions can reduce fall rates in the institutional setting.

Step 1: Fall History

Detecting a history of falls is a critical component of this approach.

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 (go to 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).
4. If the older adult is admitted to a nursing home, complete a comprehensive fall evaluation upon initial admission, upon return following a hospital stay, and at least quarterly throughout their nursing home stay. (Step 3).

Step 2: Fall Potential

A fall potential assessment completed by a healthcare provider or interdisciplinary team, includes a review of the circumstances surrounding the previous fall (if they have fallen) and a brief assessment of gait and balance. 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.

Step 3: Comprehensive Fall Evaluation

For older adults who report recurrent falls in the past year, who present to the health care provider/facility following a fall, who are identified as having gait or balance problems, or who are admitted, readmitted, or returns to a nursing home following a hospital stay (or quarterly throughout a prolonged nursing home stay), a comprehensive fall evaluation should be conducted. The purpose of the 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.

Referral to a healthcare team member such, as but not limited to a physical therapist, occupational therapist, cardiologist, eye doctor for particular components of the evaluation may be required.

An appropriate healthcare team member may complete the comprehensive falls evaluation. Components of this assessment that may require advanced diagnostic training are noted. The comprehensive falls evaluation includes the following components [Certain components may be accomplished as part of a Minimum Data Set (MDS) evaluation]:

- Fall History, Fall Circumstances, and Fall Risk Factors Assessment

- Health History and Functional Assessment
- Medications Review
- Vital Signs and Pain Assessment
- Vision Screening
- Gait and Balance Screening and Assessment
- Musculoskeletal and Foot Assessment
- Continence Assessment
- Cognitive Assessment
- Cardiovascular Assessment
- Neurological Assessment
- Depression Screening
- Walking Aids, Assistive Technologies, & Protective Devices Assessment
- Environmental Assessment

COMPONENTS OF A COMPREHENSIVE FALL EVALUATION

1. **Fall History, Fall Circumstances, and Fall Risk Factors Assessment**

   Information about fall history, fall circumstances, and fall risk factors can help determine a person's potential for falling and identify modifiable risk factors such as medications, uncorrected sensory impairments, or poorly fitted shoes from those which cannot be altered.

   - Ask about the occurrence of falls during the past year.
   - Identify the circumstances surrounding any fall(s) that occurred during the past year. For individuals who are experiencing recurrent falls a fall diary may be useful for identifying fall patterns.
   - Document history of falls or tripping.
   - Identify anxiety or fear of falling.
   - Document the number of fall risk factors
   - Determine whether a fall risk factor is modifiable or non-modifiable in order to individualize prevention strategies

2. **Health History and Functional Assessment**

Information about past health history and functional status can help health professionals determine the appropriateness of fall prevention interventions.

- Acute illness
- Chronic health problems including:
    1. Sleep problems
    2. Sensory deficits (i.e., visual, auditory, vestibular)
    3. Neuropathies
- Advanced age
- Gender: higher prevalence in females
    1. Female gender: Medication use (total number of drugs, psychotropic drugs, and drugs liable to cause postural hypotension), standing systolic blood pressure of less than 110 mmHg, and evidence of muscle weakness.
    2. Male gender: Decreased levels of physical activity, stroke, arthritis of the knees, gait impairment, and increased body sway.
- Functional dependence
    - Functional status using a functional assessment tool (e.g., Katz Index of Independence in Activities of Living Scale http://www.annalsoflongtermcare.com/altc/attachments/6412.pdf), the Tinetti Gait and Balance Assessment Scale, MDS ect.)
    - Assess ability to transfer safely

3. **Medications and Alcohol Consumption Review**

Some medications increase the chance of a fall.

- Review current prescription medications.
- Review over-the-counter medications, dietary supplements, and recreational drug use.
- Review alcohol consumption, including amount, frequency, and any relationship between alcohol consumption and falls (if applicable).
- Monitor for recent changes in medication regimen.
- Monitor for drug side effects, such as drowsiness, dizziness, daytime sedation, changes in bladder or bowel function, impaired balance and reaction time, or hypotension .
- Monitor for polypharmacy: Taking 5 medications or more a day is an increased risk for falls.

- If the individual is taking medications from any of the following drug classifications, he or she is at an increased risk for falls:

    a. Any central nervous system/psychotropic drug

        - Sedatives/hypnotics
        - Antidepressants
            - Tricyclic antidepressants
            - Selective serotonin-reuptake inhibitors
        - Antipsychotics/neuroleptic agents
        - Benzodiazapines
            - No difference in short/long acting drugs
            - Higher risk in very short/short acting drugs

    b. Cardiovascular drugs

        - Diuretics
        - Antiarrhythmics
        - Antihypertensives
        - Cardiac glycosides

    c. Antidiabetic agents

4. **Vital Signs & Pain Assessment**

    Alterations in a person's vital signs, including the presence of pain, may indicate an acute illness, injury, or inflammatory process, any of which may make an older adult more vulnerable to falling.

    - Presence of pain, assessed with a standardized pain assessment tool tested for use with older adults, such as a verbal descriptor scale, numeric rating scale, or faces pain scale
    - Change in temperature indicative of signs of infection or inflammation
    - Change in respiratory rate and rhythm suggestive of infection or inflammation
    - Abnormal heart rate and rhythm that may suggest cardiac dysfunction
    - Orthostatic hypotension. Assess pulse and blood pressure in the lying, sitting, and standing positions.

        a. Note presence of orthostatic hypotension (an immediate drop of $\geq$20 mm of systolic blood pressure after moving from a supine to a sitting position or standing position).

5. **Vision Screening**

Visual problems contribute to an individual's fall risk

- Note eye problems including cataracts, glaucoma, diabetic retinopathy, or macular degeneration.
- Note history of and/or current problems with poor visual acuity, reduced visual field, impaired contrast sensitivity, depth perception, or distant-edge-contrast sensitivity.
- Note date and results of most recent eye examination.
- Note whether vision correction devices are clean, well-fitted, regularly and appropriately worn.
- Assess visual acuity, particularly near vision acuity

6. **Gait & Balance Screening & Assessment**

A simple gait and balance screening can identify individuals who would benefit from the comprehensive fall evaluation.

7. **Musculoskeletal and Foot Assessment**

Individuals with musculoskeletal changes or foot problems may have difficulty walking, which in turn can lead to problems with falling.

- Note presence of osteoarthritis, especially of the knees
- Note presence of diabetic neuropathy
- Note presence of lower extremity amputation
- Note presence of foot problems (corn, calluses, bunion)
- Note presence of skeletal/joint deformities or fractures.
- Assess disability of lower extremities, including reduced strength, sensation, or balance.
- Assess lower limb joints, including range of motion.

8. **Continence Assessment**

Persons with urinary or fecal incontinence and other kinds of urinary tract symptoms may be at increased risk of falling.

- Note presence or history of any type of urinary incontinence and/or fecal incontinence.
- Note diagnosis of urge incontinence or overactive bladder.
- Note presence of symptoms such as urinary frequency, urgency, or rushing to the toilet.
- Note presence of nocturia.

- Note current use of medication for the treatment of incontinence or overactive bladder.
- Note current use of diuretics

9. **Cardiovascular Assessment**

   Several cardiovascular conditions, referenced below, are found more often in older adults who have experienced a fall

   - Note history of cardiovascular disease and/or cardiac dysfunction (e.g., arrhythmias, valve disease, myocardial infarction, heart blocks, etc.).
   - Note current use of cardiovascular drugs including diuretics, antiarrhythmic agents, and/or cardiac glycosides/digoxin
   - Note reports of syncope, faintness, dizziness, or blackouts.
   - Note reports of drop attacks and/or diagnoses associated with drop attacks (cardioinhibitory carotid sinus syndrome (CSS), mixed CSS, vasodepressor CSS, orthostatic hypotension, or vasovagal syncope)
   - Note reports of postprandial hypotension
   - Assess for cardiac arrhythmias, carotid bruits, or heart murmurs.
   - Assess heart rate and blood pressure responses to carotid sinus stimulation, as appropriate. (**Note: Requires advanced diagnostic training**)

10. **Neurological Assessment**

    Neurological conditions, especially those that cause alterations in an individual's gait, balance, level of consciousness, or cognitive status are commonly associated with falls

    - Note history of cerebrovascular accident/stroke
    - Note history of transient ischemic attacks (TIA).
    - Note history of epilepsy/seizure disorder.
    - Note history of neurological diseases associated with gait disorders (Parkinson's disease, muscular dystrophy, multiple sclerosis, normal pressure hydrocephalus).
    - Note history of other neurologic disorders (cervical or lumbar spondylosis, cerebellar disease, brain lesions, peripheral neuropathy).
    - Note history of dementia, impaired cognition, or impaired mental status.
    - Note history or presence of vestibular dysfunction (vertigo, dizziness).
    - Note presence of muscle rigidity, spasticity, tremors, or involuntary movements.
    - Assess peripheral innervation (sensitivity to light touch, pain, temperature, vibration).
    - Assess proprioception/cerebellar function [may be accomplished as part of a Minimum Data Set (MDS) evaluation]

- Romberg test: able to stand with eyes closed and feet together without swaying for 5 seconds
- Heel-to-shin: able to run heel of each foot down the opposite shin

- Assess grip strength of dominant and non-dominant hand.
    a. Reduced grip strength in dominant hand
- Conduct a cognitive status screening using the Mini-Mental State Exam (MMSE) or MDS.

11. **Depression Screening**

Antidepressant medications have been noted to increase the risk of falling in older adults

- Note history or current diagnoses of depression.
- Note current use of antidepressant medications.
    - Tricyclic antidepressants
    - Selective serotonin-reuptake inhibitors
- Conduct depression screening.

12. **Walking Aids, Assistive Technologies, & Protective Devices Assessment**

Appropriate and correct use of walking aids and other devices is a component of any fall intervention program for older adults

- Note use of walking aids (e.g., canes, walkers, crutches, merry walkers).
- Note use of other assistive technologies.
- Note use of protective devices (e.g., hip protectors, helmets).
- Note use of footwear with respect to slippery soles and how well they fit
- Assess assistive and protective devices for proper fitting and signs of wear or damage.
- Assess correct use of walking aids, assistive technologies, and protective devices.

13. **Environmental Assessment**

Older adults cite tripping and slipping as two of the most common reasons for a fall. Physical hazards are often involved such as:

- Lack of handrails in strategic locations. Consider: height, location, availability, use
- Slippery and glaring floor surfaces
- Snow, ice, cold weather, or slippery outdoor surfaces

- Temporary environmental hazards such as equipment in hallways
- Inadequate lighting
- Uneven flooring
- Loose throw rugs, frayed carpets, cords, and wires
- Cracked and uneven sidewalks
- Facilities (toilets, tubs) and furniture with inappropriate height for transfers

FALL PREVENTION INTERVENTIONS

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:

- Gait training and advice on the appropriate use of assistive devices
- Review and possible modification of medications, including psychotropic medications
    a. Reduction in the number and dosages of prescribed medications
- Exercise and balance training programs
- Assessment and treatment for any identified health problems
    a. Treatment of postural hypotension
    b. Treatment of cardiovascular disorders
    c. Treatment of visual problems
- Modification of environmental hazards

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:

- Comprehensive fall evaluation
- Improvement in room lighting, flooring, and footwear
- Staff education programs

- Wheelchair use and maintenance by an physical/occupational therapist
- Gait training and advice on appropriate use of assistive devices
- Review and modification of medications, including psychotropic medications

RESTRAINTS

Older adults who are admitted to a nursing home have the right to be free from any physical or chemical restraints imposed for the purposes of discipline or convenience, and not required to treat the individual's medical symptoms. The indiscriminant use of physical restraints is no longer an accepted standard of care. The goal is for each person to attain and maintain his/her highest practicable well-being in an environment that prohibits the use of restraints for discipline or convenience and limits use to circumstances in which the individual has medical symptoms that warrant the use of restraints.

Physical restraints include but are not limited to leg or arm restraints, hand mitts, soft ties, vests, lap cushions, and lap trays that the resident cannot remove easily. Facility practices that also meet the definition of a restraint are:

- Tucking in or using Velcro to hold a sheet, fabric or clothing tightly so as to restrict movement;
- Using devices in conjunction with a chair such as trays, tables, bars, or belts that the resident cannot remove easily, and that prevent the resident from rising;
- Placing the resident in a chair that prevents the resident from rising;
- Placing a chair or bed so close to a wall that the wall prevents the resident from rising out of the chair or voluntarily getting out of bed;
- Using side rails that keep a resident from voluntarily getting out of bed.
    - Bed rails may be considered appropriate when they are used for the purposes of:
        - turning and positioning within the bed and providing a hand-hold for getting into or out of bed.

    - Use of bed rails should be based on patients' assessed medical needs and should be documented clearly and approved by the interdisciplinary team. A decision to utilize bed rails for this purpose should be accompanied by a care plan.The care plan should:
        - include educating the individual about possible bed rail danger to enable the individual to make an informed decision; and
        - address options for reducing the risks of the rail use.

Assessment and Care Planning for Restraint Use

There are instances where, after assessment and care planning, a least restrictive restraint may be deemed appropriate for an individual to attain or maintain his or her highest practicable physical and

psychosocial well-being. Before using a device for mobility or transfer, an assessment should include a review of the individual's bed mobility and the ability to transfer between positions (e.g., bed to chair).

The facility is required to design its interventions to minimize or eliminate the medical symptom and to address underlying problems causing the medical symptom. Interventions that a facility might incorporate in the care planning include:

- Providing a trapeze to increase an individual's mobility in bed;
- Placing the bed lower to the floor and surrounding the bed with a soft mat;
- Equipping the individual with a device that monitors attempts to arise;
- Furnishing visual and verbal reminders to use the call bell for individuals who are able to comprehend this information and are able to use the call bell device;
- Provide frequent monitoring with periodic assisted toileting for individuals who attempt to arise to use the bathroom;
- Provide exercise and therapeutic interventions, based on the individuals assessment and care planning, that may assist in achieving proper body position, balance and alignment, without the potential negative effects associated with restraint use.

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Measures

Percentage of SNP members with a completed comprehensive fall evaluation.