



The Assessment and Prevention of Falls in Older People Clinical Practice Guideline MedStar Health

“These guidelines are provided to assist physicians and other clinicians in making decisions regarding the care of their patients. They are not a substitute for individual judgment brought to each clinical situation by the patient’s primary care provider-in collaboration with the patient. As with all clinical reference resources, they reflect the best understanding of the science of medicine at the time of publication but should be used with the clear understanding that continued research may result in new knowledge and recommendations”.

General Principles: Falls are among the most serious health concerns facing older patients. From 30 to 40 percent of community dwelling adults older than 65 years fall each year. Rates are higher in nursing home residents and hospitalized patients. The incidence of falls rises steadily from middle age and peaks in persons older than 80 years. Between 20 and 30 percent of older adults who fall suffer serious injuries such as hip fractures and head trauma. Recovery from falls often is complicated by poor quality of life caused by restricted mobility, functional decline, and is a predictor for nursing home placement. Fear of falling or “post fall anxiety syndrome” may affect 50% of people who sustain hip fractures and leads to activity restriction in up to three fourths of patients. Direct medical costs associated with falls are estimated to total \$50 billion annually. This clinical practice guideline should assist primary care clinicians by providing an evidence-based analytical framework for the assessment and prevention of falls in community dwelling adult older than 65 years. It is not intended to substitute for clinical judgment or to establish a protocol for all patients.

Risk factors for Falls: Risk factors for falls can be considered as intrinsic to the individual (some of which are modifiable) or extrinsic (and therefore more easily modifiable).

Intrinsic and Extrinsic Risk Factors for Falls (adapted from In The Clinic: Fall Prevention in Community-Dwelling Older Adults 2018)	
Intrinsic	
Ocular (decreased visual acuity, macular degeneration, glaucoma, cataracts, retinopathy, reduced depth perception)	
Cardiovascular (bradycardia, tachyarrhythmias, orthostatic hypotension, decompensated heart failure)	
Neurologic (cognitive impairment and dementia, Parkinson disease, CVA, other movement disorders, peripheral neuropathy)	
Urologic (any type of incontinence, nocturia)	
Psychological (insomnia, sleep deprivation, depression)	
Musculoskeletal (OA or inflammatory arthritis, pain, leg weakness, reduced flexibility)	
Extrinsic	
Medications (anticholinergics, antidepressants, antipsychotics, sedative-hypnotics, benzodiazepines, opiates, anti-hypertensives, anti-arrhythmics, use of more than 4 medications). In general, medications that act on the central nervous system increase the risk of fall by about 50%. Anti-hypertensives increase the risk of falls by about 25%. Fall risk may be increased at the time of dose change.	
Footwear (backless shoes and slippers, high heels, shoes lacking dorsum, arch or heel supports; shoes with heavy soles or a narrow toe box)	
Environment (wet or slippery surfaces, lack of grab bars, uneven flooring, floor rugs, poor lighting, lack of handrails for steps, cords or other walkway hazards)	

Initial Evaluation: 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 strength, gait and balance. The algorithm below from the AGS/BGS guideline can be used to evaluate the need for a more comprehensive evaluation.

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Fall History: Adults 65 years of age or older should be asked at least annually whether they have fallen in the past year and asked about the frequency, context and characteristics of the fall/s.

1. All adults, including those with no reported falls, should be evaluated periodically for the risk of falling.
2. Ask all older adults and/or their caregiver about the occurrence of falls during the past one year.
 - a. If the older adult and/or their caregiver reports A SINGLE FALL in the past year, assess their gait and balance and hence their fall potential using a standardized tool such as the “Get Up and Go Test” described below.
 - b. If the older adult and/or their caregiver reports RECURRENT FALLS in the past one year, or if the older adult PRESENTS FOLLOWING A FALL, a Comprehensive Falls Risk Assessment is recommended.
3. If at any visit, the patient seems to have an unsteady gait or is using an assistive device in order to ambulate, a Comprehensive Falls Risk Assessment is recommended.

Fall Potential:

For persons who are at relatively low risk for falling (reports no fall or a single fall in the past year and no problems with balance or gait), determination of the person’s fall potential is recommended. A fall potential assessment includes a review of the circumstances surrounding the previous fall (if they have fallen), including 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.

TESTS and TOOLS To Assess Fall Risk:

1. ‘Get Up and Go’ test

The ‘Get Up and Go’ test is a composite measure of functional mobility. The test is performed by observing the patient rise from a seated position, walk 10 feet using usual assistive devices, turn, return to the chair and sit back down. While the time it takes for a patient to perform this test can be measured, this information has not been found to be helpful in community dwelling elderly. A meta-analysis published in 2013 of 53 studies with 12,832 participants found that the mean difference between healthy independent living fallers vs non-fallers was 0.63 seconds but was 3.59 seconds for those living in an institutional setting. There was much overlap of “timed up and go” test times between fallers and non-fallers within and between studies. The authors concluded that the diagnostic accuracy of the timed get up and go test was poor to moderate. Observing how a person performs the task rather than measuring the time it takes to perform the task may be more useful.

2. Tinetti Performance Oriented Mobility Assessment tool (POMA)

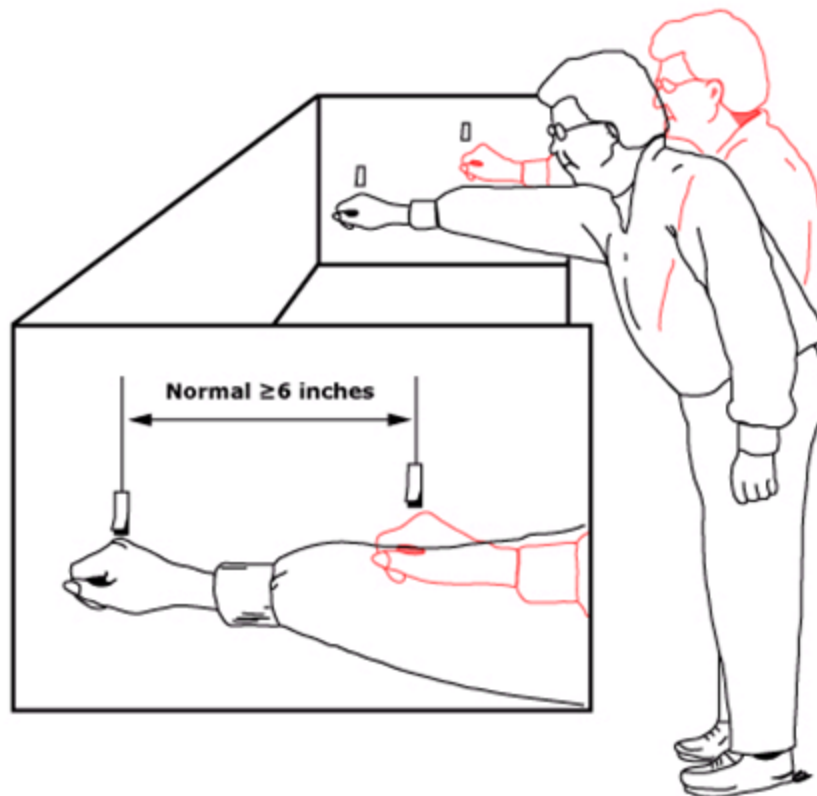
The POMA instrument assesses 9 items related to balance and 7 items related to gait on a zero (severely impaired) to 2 (independent) scale. No cut-point has been shown to reliably predict falls.

3. Functional reach test

The functional reach test measures how far the patient can move his fist along a wall without stepping forward or losing balance

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--	--	---

Diagram of functional reach test to assess balance in elderly persons



Subject stands with fist extended alongside a wall. Subject leans forward as far as possible, moving fist along wall without taking a step or losing stability. Length of fist movement is measured. Distances of less than 6 in (15 cm) indicate an increased risk of falling.

Reproduced with permission from: Fleming KC, Evand JM, Weber DC, Chutka DS. Practical Functional Assessment of Elderly Persons: A Primary-Care Approach [Symposium on Geriatrics-Part III]. Mayo Clinic Proceedings 1995; 70:890. Copyright © 1995 Mayo Foundation.

UpToDate®

Falls in older persons: Risk Factors and patient evaluation. UpToDate Jan. 2021.

Comprehensive falls risk assessment:

Older people who present for medical attention because of a fall, or report recurrent falls in the past year, demonstrate abnormalities of gait and/or balance, or score > 20 on the timed „Up & Go“ test should be offered a comprehensive falls risk assessment. This assessment should be part of an individualized, multifactorial intervention.

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Assessment may include the following:

Physical Exam

1. identification of falls history
2. assessment of osteoporosis risk
3. cardiovascular examination including postural changes and HR and BP changes to carotid sinus stimulation if applicable
4. medication review with a focus on psychoactive medications and polypharmacy
5. examination of feet and footwear
6. assessment of the older person’s perceived functional ability and fear relating to falling
7. assessment of cognitive impairment and a thorough neurological examination
8. assessment of urinary incontinence

Physical Therapy /Occupational Therapy Evaluation:

1. assessment of gait, balance and mobility, and muscle weakness
2. assessment of the older person’s perceived functional ability and fear relating to falling
3. assessment of home hazards

Ophthalmology Evaluation

1. Assessment of visual impairment, especially cataracts

Specific Fall Prevention Interventions:

Multifactorial interventions that may be recommended as fall prevention strategies for older adults include:

1. Comprehensive fall evaluation and assessment & treatment of health problems
 - a. Treatment of postural hypotension
 - b. Treatment of cardiovascular disorders
 - c. Treatment of visual problems
 - d. Vitamin D supplements of at least 800 IU per day should be considered for people with suspected vitamin D deficiency or who are otherwise at increased risk for falls
 - e. Vitamin D supplements of at least 800 IU per day should be provided to older persons with proven vitamin D deficiency.
 - f. Identification of foot problems and appropriate treatment
 - g. Older people should be advised that walking with shoes of low heel height and high surface contact area may reduce the risk of falls.
2. Review *and modification* of medications, including psychotropic medications
 - a. Consider reduction in the number and dosages of prescribed medications, if possible
3. Improving physical mobility: exercise programs (e.g., Tai Chi), balance, strength and gait training, and appropriate use of walking aids
4. Home evaluation and modification of environmental hazards
5. Continence promotion and toileting programs
6. Educating direct care givers who assess fall risk and initiate individualized interventions is an important component of fall reduction.

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--	--	---

The relative effectiveness of these interventions varies, with exercise having the strongest evidence of benefit in reducing falls as well as fall-related injuries. In addition, there is disagreement about the effectiveness of some interventions (particularly vitamin D supplementation in patients without known vitamin D deficiency or osteoporosis) between different guideline writing organizations. Two recent pragmatic cluster-randomized trials published in 2020 evaluating multifactorial strategies to prevent fall injuries did not demonstrate benefit compared to enhanced usual care or advice given by mail.

Interventions for Fall Prevention and Their Evidence Ratings (Adapted from “ In the Clinic: Fall Prevention in Community Dwelling Adults 2018)			
Intervention	USPSTF (2018)	AGS/BGS (2011)	Cochrane Collaboration(2012)
Strength and balance exercise	B	A	Effective (16 trials)
Tai Chi	B	A	Reduced risk for falling (7 trials)
Home modification	I*	A	Effective (6 trials)
Medication—Reduction in psychoactive medications	I*	B	2 positive trials
Medication—Reduction in number or dose	Not addressed	B	Not addressed
Postural hypotension management	Not addressed	C	Not addressed
Vitamin D supplementation for fall prevention	D	B	Not effective overall (13 trials)
Vision screening and management	Not addressed	I	Harmful effect in 1 trial
Hearing screening and management	Not addressed	Not addressed	Not addressed
Foot/shoe screening and management	Not addressed	C	Reduced rate of falls in 2 trials
Education alone	Not addressed	D	1 negative trial
Cardiac pacing for carotid sinus hypersensitivity	Not addressed	B	Reduced rate of falls in 3 trials
First eye cataract surgery	Not addressed	B	1 positive trial
Multifactorial interventions	C	A	Effective in reducing rate of but not risk for falling (19 trials)

USPSTF (United States Preventive Services Task Force) recommendations: A=recommended with high certainty of benefit; B=recommended with moderate certainty of benefit; C=selectively offer based on professional judgment and patient preferences; D=recommended against based on moderate or high certainty of no benefit or that harms outweigh the benefit; I=insufficient evidence; I*=evidence report finding of insufficient evidence/not part of summary recommendation. AGS/BGS (American Geriatrics Society/British Geriatrics Society): A= strongly recommended; B=recommended; C=no recommendation; D=recommended against; I-insufficient evidence

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Educational Resources for Patients

Stay Independent: Prevent Falls (Brochure – CDC)

https://www.cdc.gov/steady/pdf/steady_olderadultfactsheet-a.pdf

What YOU Can Do To Prevent Falls (Brochure- CDC)

<https://www.cdc.gov/steady/pdf/STEADI-Brochure-WhatYouCanDo-508.pdf>

Check For Safety: A Home Fall Prevention Checklist for Older Adults (Brochure- CDC)

<https://www.cdc.gov/steady/pdf/STEADI-Brochure-CheckForSafety-508.pdf>

Hypotension brochure (Brochure – CDC)

<https://www.cdc.gov/steady/pdf/STEADI-Brochure-Postural-Hypotension-508.pdf>

Falls Prevention Center of Excellence, (online resources). Stop Falls.org

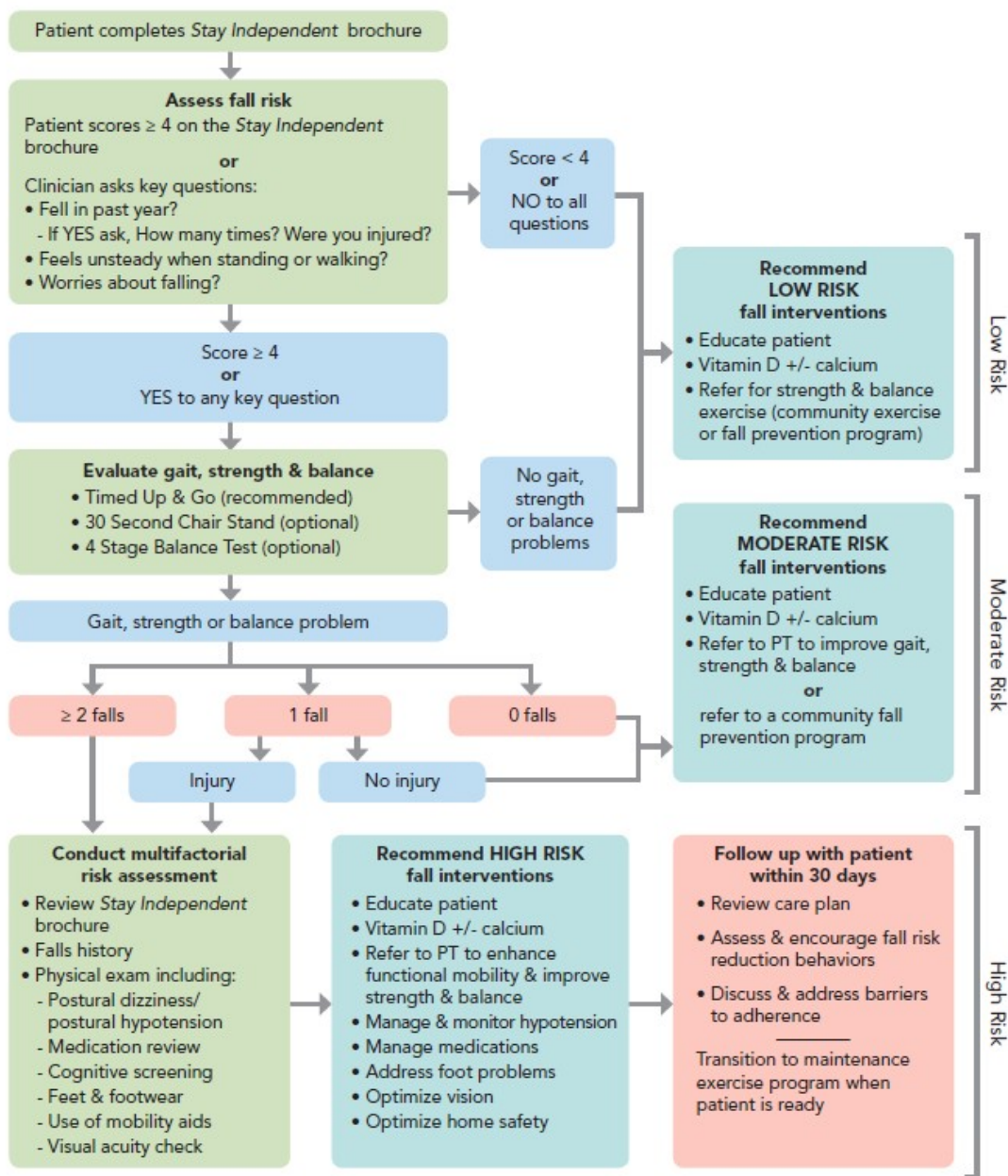
<http://stopfalls.org/>

Chair Rise Exercise (Brochure CDC)

<https://www.cdc.gov/steady/pdf/STEADI-Brochure-ChairRiseEx-508.pdf>

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Algorithm for Fall Risk Assessment & Interventions



Centers for Disease Control and Prevention
National Center for Injury Prevention and Control

STEADI Stopping Elderly Accidents, Deaths & Injuries

CDC - Retrieved from

http://www.cdc.gov/HomeandRecreationalSafety/pdf/steady/algorithm_fall_risk_assessment.pdf

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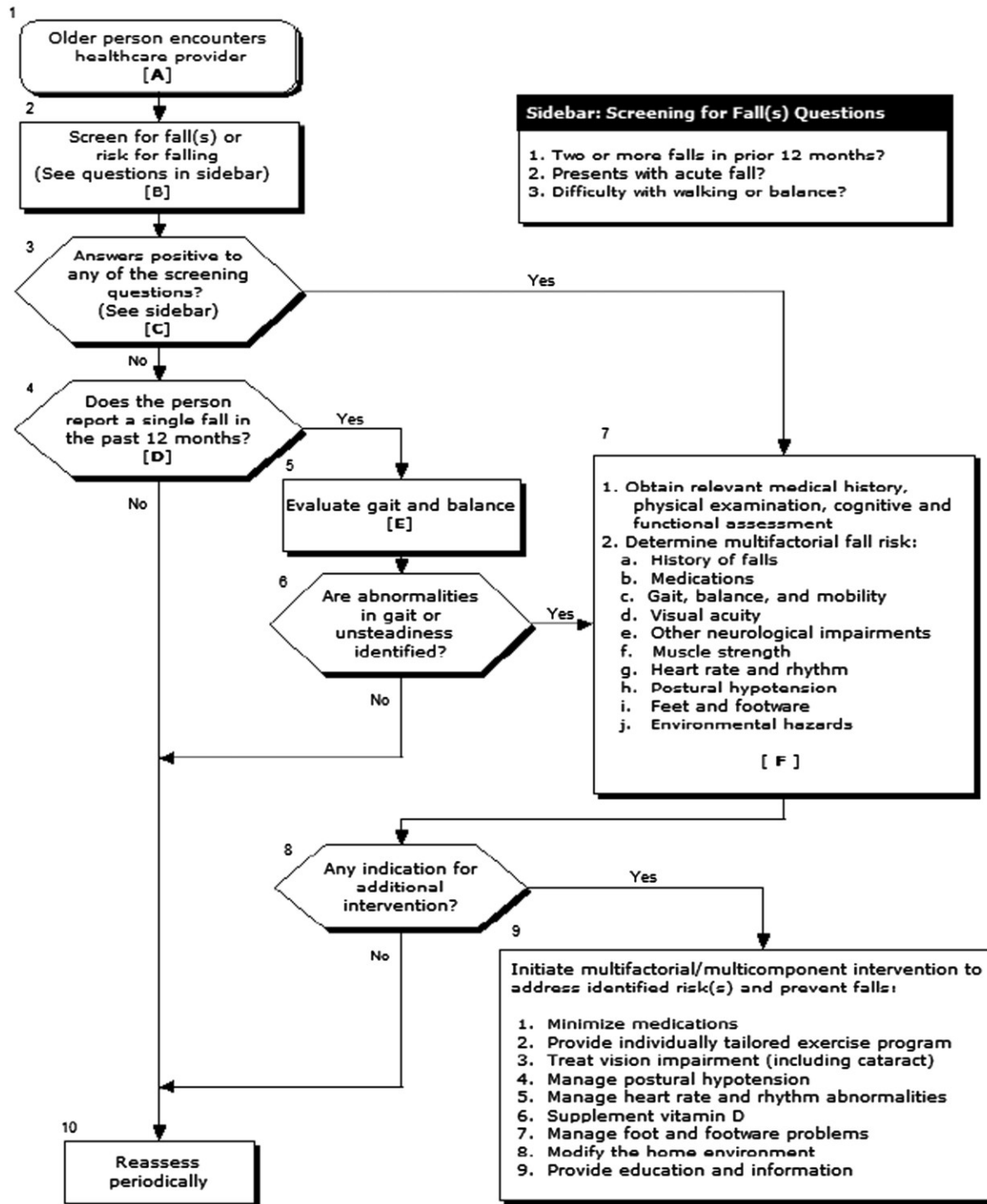
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Prevention of Falls in Older Persons Living in the Community



Sidebar: Screening for Fall(s) Questions

1. Two or more falls in prior 12 months?
2. Presents with acute fall?
3. Difficulty with walking or balance?

[F]

1. Obtain relevant medical history, physical examination, cognitive and functional assessment
2. Determine multifactorial fall risk:
 - a. History of falls
 - b. Medications
 - c. Gait, balance, and mobility
 - d. Visual acuity
 - e. Other neurological impairments
 - f. Muscle strength
 - g. Heart rate and rhythm
 - h. Postural hypotension
 - i. Feet and footwear
 - j. Environmental hazards

[9]

Initiate multifactorial/multicomponent intervention to address identified risk(s) and prevent falls:

1. Minimize medications
2. Provide individually tailored exercise program
3. Treat vision impairment (including cataract)
4. Manage postural hypotension
5. Manage heart rate and rhythm abnormalities
6. Supplement vitamin D
7. Manage foot and footwear problems
8. Modify the home environment
9. Provide education and information

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FALLS

Medications



Linked to Falls

Review medications with all patients 65 and older. Medication management can reduce interactions and side effects that may lead to falls.

- **STOP** medications when possible.
- **SWITCH** to safer alternatives.
- **REDUCE** medications to the lowest effective dose.

Check for psychoactive medications, such as:

- Anticonvulsants
- Antidepressants*
- Antipsychotics
- Benzodiazepines
- Opioids
- Sedatives-hypnotics*

Review prescription drugs, over-the-counter medications, and herbal supplements which can cause dizziness, sedation, confusion, blurred vision, or orthostatic hypotension. These include:

- Anticholinergics
- Antihistamines
- Medications affecting blood pressure
- Muscle relaxants

Develop a patient plan that includes medication changes and a monitoring plan for potential side effects. Implement other strategies, including non-pharmacologic options, to manage conditions, address patient barriers, and reduce fall risk.

*Antidepressants include TCAs and SSRIs. Sedative-hypnotics include eszopiclone, zaleplon, and zolpidem.

For information on the SAFE Medication Review Framework, visit www.cdc.gov/steady

For information on the American Geriatrics Society 2015 Beers criteria, visit www.ncbi.nlm.nih.gov/pubmed/26446832



Centers for Disease
Control and Prevention
National Center for Injury
Prevention and Control

2016

STEADI Stopping Elderly
Accidents, Deaths & Injuries

CS259944H

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