

## ORIGINAL RESEARCH &amp; CONTRIBUTIONS

Special Report

## Preventing Falls in the Geriatric Population

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<http://dx.doi.org/10.7812/TPP/12-119>**Introduction**

The word “fall” does not usually strike fear in the hearts of most people. But it should. Falls are all too common in the geriatric population, and they have devastating consequences. They are the leading cause of injury and death by injury in adults over the age of 65 years.<sup>1</sup> One of 3 community-dwelling older adults falls each year, with 24% of those who fall sustaining serious injuries and 6% sustaining fractures.<sup>2</sup> In the year 2000, falls cost the US health care system more than \$19 billion, a number that is expected to increase to \$54.9 billion by 2020.<sup>3</sup> A person who falls may subsequently experience pain, hospitalization, surgical intervention, admission to a nursing home, decreased overall functional ability, poorer quality of life, or a fear of falling.

**Risk Factors for Falls<sup>a</sup>**

- **previous falls**
- **decreased strength**
- **gait/balance impairments**
- **use of psychoactive medications**
- visual impairment
- polypharmacy
- depression
- dizziness
- orthostasis
- functional limitations
- age > 80 years
- female sex
- low body mass index
- urinary incontinence
- cognitive impairment
- arthritis
- diabetes
- undertreated pain

<sup>a</sup> Risk factors in bold indicate strongest independent risk factor.

**Fear of Falling**

Fear of falling is a defined geriatric syndrome that may contribute to further functional decline in an already frail patient. When people experience something unpleasant, their natural response is an aversion to that experience. People may begin to limit their activities after a fall or as they become weaker and less agile with increasing age. This leads to a more sedentary lifestyle and physical atrophy, which further predisposes them to falls. Successful encouragement to maintain or increase physical activity may promote the ability to avoid falling or to catch oneself before a fall.

**Why Patients Fall**

Normal gait and balance requires freely moving joints; muscles contracting at the right time with the appropriate strength; and accurate visual, vibratory, and proprioceptive input. As patients age, they may experience stiffened joints, decreased muscle strength, and impaired neurologic feedback. These changes, in combination with other risk factors, increase the likelihood of falls. The strongest independent risk factors for falls are previous falls, weakness, gait and balance impairments, and use of psychoactive medications. The risk of falling increases with the number of risk factors present (see Sidebar: Risk Factors for Falls). One study showed that a patient with 4 risk factors has a 78% chance of falling.<sup>4</sup>

**Screening for Falls**

The most important first step that clinicians can take in preventing falls is to ask about history of falls. In 2010, the American and British geriatrics societies released

**Actions to be Taken for Patients at High Risk for Falls**

1. Ask about history of falls and patient's assessment of his/her functional ability.
2. Review medications and medical history.
3. Perform gait assessment; physical examination (especially neurologic, cardiac); assessment of orthostatic vital signs; visual acuity examination; cognitive evaluation; examination of feet and footwear; home safety evaluation.

updated clinical practice guidelines for fall prevention in older adults. The guidelines state that all patients age 65 years or older should be asked yearly about previous falls.<sup>5</sup> Patients who report a fall or gait and balance difficulties should undergo an in-office assessment such as the Timed Up and Go test (Figure 1).

**Timed Up and Go Test**

This is a quick and easy test that can be performed by a trained health care team member in ambulatory care settings within a few minutes. The patient should wear regular footwear, use their usual walking aid if needed, and start by sitting back in a chair with armrests. The patient is timed while s/he rises from the chair, walks three meters, turns around, walks back to the chair, and sits back down. Postural stability, gait, stride length, sway, and stepage should be observed. Kaiser Permanente uses the operational value of 14 seconds or less. (The normal value is 10 seconds or less; and 20 seconds or more is considered abnormal.) If the result of the

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**Preventing Falls in the Geriatric Population: Physician Pocket Reference**

<b>Risk Factors for Falls</b>		
<b>Previous falls</b> <b>Decreased strength</b> <b>Gait/balance impairments</b> <b>Use of psychoactive medications</b> Visual impairment Polypharmacy	Depression Dizziness Orthostasis Functional limitations Age > 80 years Female sex	Low body mass index Urinary incontinence Cognitive impairment Arthritis Diabetes Undertreated pain
<b>Screening for Falls</b>		
<ul style="list-style-type: none"> <li>Ask about a fall history every year.</li> <li>If a patient reports a fall or gait and balance problems, perform an in-office gait evaluation such as the Timed Up and Go test.</li> </ul>		
<b>Timed Up and Go Test</b>		
<ul style="list-style-type: none"> <li>Observe postural stability, gait, stride length, sway, and stepage.</li> <li>A normal time is 14 seconds or less.</li> </ul>		
Ask the patient to:		
<ol style="list-style-type: none"> <li>rise from the chair</li> <li>walk three meters</li> <li>turn around</li> <li>walk back to the chair</li> <li>sit back down</li> </ol>		
<b>Risk Assessment</b>		
Ask about history of falls patient's assessment of his/her functional ability	Perform gait assessment physical exam (esp neurologic, cardiac) assessment of orthostatic vital signs visual acuity exam cognitive evaluation examination of feet and footwear home safety evaluation	
Review medications medical history		
<b>Ambulatory Interventions</b>		
<ol style="list-style-type: none"> <li>Exercise/physical therapy programs aimed at improving balance, gait, and strength</li> <li>Withdrawal or minimization of use of psychoactive medications</li> <li>Management of postural hypotension</li> <li>Management of foot problems</li> <li>Changes in footwear</li> </ol>	<ol style="list-style-type: none"> <li>Modification of home environment</li> <li>Patient and caregiver education</li> <li>Vitamin D supplementation in deficient or high fall risk patients</li> <li>Expedited cataract surgery (selected patients)</li> <li>Dual chamber cardiac pacing (selected patients)</li> </ol>	
<b>Hospital Interventions (based on Schmid Fall Risk Assessment)</b>		
<ol style="list-style-type: none"> <li>Appropriate reorientation strategies</li> <li>Access to patient's hearing aids or glasses</li> <li>Call bell</li> <li>Access to patient's personal items</li> <li>Use of patient's walking aids</li> <li>Frequent comfort rounds</li> </ol>	<ol style="list-style-type: none"> <li>Patient and family education about fall risk</li> <li>Early and frequent mobilization</li> <li>Nonslip footwear</li> <li>Elimination of barriers to transfer or ambulation</li> <li>Minimization of use of restraints</li> <li>Use of bed alarm when necessary</li> </ol>	

Figure 1. Physician Pocket Reference.

This pocket reference is available to download and print at: [www.thepermanentejournal.org/files/Fall2013/PreventingFallsPhysicianPocketReference.pdf](http://www.thepermanentejournal.org/files/Fall2013/PreventingFallsPhysicianPocketReference.pdf).

Timed Up and Go test is abnormal, targeted interventions selected from Table 1 and a comprehensive risk assessment may be warranted.

**Risk Assessment and Interventions**

In community-dwelling adults, use of multifactorial assessments and interventions has led to a decrease in fall rates by 25% to 40%.<sup>4,6</sup> (see Sidebar: Actions to be Taken for Patients at High Risk for

Falls.) Depending on the results of this risk assessment, appropriate multifactorial interventions for preventing ambulatory falls may include any or all of the following (Figure 1):

1. exercise/physical therapy programs aimed at improving balance, gait, and strength
2. withdrawing or minimizing psychoactive medications
3. management of orthostatic hypotension
4. management of foot problems

5. changes in footwear
6. modification of home environment
7. patient and caregiver education
8. vitamin D supplementation in patients with vitamin D deficiency or high risk of fall
9. expedited cataract surgery (selected patients)
10. dual chamber cardiac pacing (selected patients).

There is insufficient evidence to support use of these interventions in the long-term-care setting or for patients with dementia.<sup>5</sup> To reduce the risk of fall-related fractures, patients should be screened for osteoporosis at the appropriate age and the relevant medications should be prescribed if necessary.

**Fall Prevention in Hospitals**

Physicians and other health care team members should be aware that in hospitals, nurses perform fall prevention assessments for every patient using standardized tools. Tools for assessing risk for falls include: the Morse Fall Scale, the Hendrich II Fall Risk Model, the Briggs Risk Assessment Form, and the Conley Risk Assessment Tool, among others. Kaiser Permanente uses the Schmid Fall Assessment Tool. It involves evaluation of the patient's mobility, mentation, toileting, fall history, and use of psychoactive medications. A score of three

Table 1. Interventions for abnormal results of the Timed Up and Go test		
Observation	Significance	Intervention
Difficulty rising from chair	Proximal muscle weakness	PT referral for lower extremity strengthening
Staggering or reported dizziness upon rising	Possible orthostasis	Check orthostatic vital signs; review medications that may contribute to orthostasis
Pill-rolling tremor, stooped posture, shuffling/festinating gait	Possible parkinsonism	Consider neurology referral
Increased sway, magnetic gait	Possible normal pressure hydrocephalus	Ask about urinary incontinence and memory issues. If these are highly suspected, consider head CT
Path deviation	Possible peripheral neuropathy, cerebrovascular disease	Consider neuropathy workup, examination of feet, PT referral for assistive device
Slow, antalgic gait	Pain from osteoarthritis, peripheral neuropathy, podiatric disorders	Pain control, examination of feet

CT = computed tomography; PT = physical therapy.

or more indicates an increased risk for falls requiring the following interventions:

1. appropriate reorientation strategies
2. access to patient's hearing aids or glasses
3. call bell
4. access to patient's personal items
5. use of patient's walking aids
6. frequent comfort rounds
7. patient and family education about fall risk
8. early and frequent mobilization
9. nonslip footwear
10. elimination of barriers to transfer or ambulation
11. minimization of use of restraints
12. use of bed alarm when necessary.

### Conclusion

Given the devastating effects falls have on patients and the increased burden on family members and the health care system, screening and assessment for fall risk are paramount priorities. Screening may be easily performed in the ambulatory and hospital settings, with simple interventions producing meaningful results. Physicians should coordinate with other health care team members to provide effective multifactorial interventions to their patients (see Sidebar: Online Resources for More Information). With each fall that is prevented, the patient, their family members, the health care team, and the health care system all benefit. ❖

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The author(s) have no conflicts of interest to disclose.

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### Online Resources for More Information

#### For patients and their families:

NIHSeniorHealth is a Web site that provides aging-related health information in an easy-to-understand format. It was developed by the National Institute on Aging (NIA) and the National Library of Medicine (NLM). <http://nihseniorhealth.gov/falls/aboutfalls/01.html>.

#### For clinicians:

American Geriatrics Society, British Geriatrics Society Clinical Practice Guideline. [www.americangeriatrics.org/health\\_care\\_professionals/clinical\\_practice/clinical\\_guidelines\\_recommendations/prevention\\_of\\_falls\\_summary\\_of\\_recommendations](http://www.americangeriatrics.org/health_care_professionals/clinical_practice/clinical_guidelines_recommendations/prevention_of_falls_summary_of_recommendations).

## Sympathy

The most effective therapeutic weapon at the disposal of a physician in the care of the aged is sympathy.

— Richard A Kern, MD, 1891-1982, Allergist and Professor of Medicine at Temple University