



## Montana Geriatric Education Center

# Instructions on Completing the Module Fall Prevention for Community Dwelling Older Adults

*\*The results of the assessments and evaluations are confidential,  
and the data is used to meet requirements of our federally funded grant.*

Please make sure to turn in Pre-Test, Post-Test, and Module Evaluation.

1. **Before** reading the module, and without looking at it, complete the Pre-Test. Record your answers on the examination form marked Pre-Test. *(Found at the start of the module.)* Keep the completed answer form to turn in at the completion of the module.

2. Complete the module as outlined.

3. **After** reading the module, please complete the Post-Test. Use the questions in Appendix C and record your answers on the examination form marked Post-Test. *(Found at the end of Appendix E.)* Keep the completed answer form to return with the pre-test at the completion of the module.

Complete the Module Evaluation. *(Found after the post-test.)* Keep the completed module evaluation form to return with the pre-test and post-test at the completion of the module.

**4. To obtain credit for the module you must:**

- a. Complete [online](#) or return the MTGEC Participant Profile
- b. Return the Pre-Test, Post-Test, and Module Evaluation
- c. Obtain a score of 70% or better on the Post-Test

**MTGEC/IPHARM**

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## **Pre-test: *Fall Prevention for Community Dwelling Older Adults***

### **Record responses on examination form.**

1. According to the CDC,
  - a. 1 in 3 adults aged 65+ report a fall each year
  - b. Fall risk decreases with advancing age over 75+
  - c. Fall related deaths in older adults decreased in the past decade
  - d. Falls only occur in frail and weak older adults
  
2. Fall risk factors that are INTRINSIC refer to such things as
  - a. Home environment being accessible to the user
  - b. Age, gender, history of falls, etc.
  - c. Access to health care, transportation, meals, social activities, etc.
  - d. Community environment factors such as sidewalks cross walks, etc.
  
3. Once fall risks are identified, the best intervention may be a(n)
  - a. Evidence-based fall prevention program
  - b. Medication review
  - c. Home assessment
  - d. All of the above
  
4. All of the following are EXTRINSIC fall risk factors EXCEPT:
  - a. Home environment being accessible to the user
  - b. Access to health care, transportation, meals, social activities, etc.
  - c. Community environment factors such as sidewalks, crosswalks, etc.
  - d. Depression, fear, lack of self-efficacy
  
5. The STEADI includes three standard measures of balance as part of its screening process. These may legally be performed by
  - a. Only a licensed PT by referral from the Primary Care Provider (PCP)
  - b. Only a licensed PT employed by the PCP
  - c. Only the PCP
  - d. Anyone trained to perform the balance tests
  
6. The TUG test allows the evaluator to assess all of the following EXCEPT:
  - a. Ability to stand up from sitting with or without use of arms
  - b. Ability to walk and turn around with or without assistive device
  - c. Ability to stand up from sitting without using arms (arms crossed on chest)
  - d. Ability to follow directions

7. A person who completes 4 stand-ups during the 30-second chair stand assessment
  - a. Has a normal score
  - b. Probably has lower extremity weakness
  - c. Does not have heightened fall risk
  - d. May have a normal score, depending upon his or her age
  
8. A healthy 60-year old who is unable to stand in tandem stance independently for 5 seconds, should be referred to
  - a. An evidence based fall prevention program
  - b. OT for a home assessment
  - c. PT for a balance evaluation
  - d. Audiologist for vertigo
  
9. An older adult patient completing the fall risk self-assessment identifies that she has fallen once in the last 6 months and takes medication that makes her sleepy or improves her mood resulting in a risk score of 3. This patient:
  - a. Has no risk for future falls
  - b. Has moderate to high risk for future falls
  - c. Requires further evaluation to determine her risk for falls
  - d. Should immediately be referred to an evidence based fall prevention program
  
10. Mr. Ying has limited vision and experiences nocturia 3 – 4 times a night. He complains of dizziness when he changes position and reports feeling unsteady when he walks. His self-assessment for fall risk includes answering yes to the need for an assistive device, feeling unsteady with walking, and a fear of falling. The fall prevention intervention that will best address extrinsic factors for falls for this patient is:
  - a. Use of night lights
  - b. Referral to a vision specialist for vision exam
  - c. Referral to occupational therapist for home safety evaluation
  - d. Referral to physical therapist for gait and balance exercises

# PRE-TEST: Examination Form

## Screening for Cognitive Impairment

### Participant Information

1. Name: \_\_\_\_\_
2. Mailing address: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
3. Date exam completed \_\_\_\_\_

### Questions: (Please circle one response per question)

1	A	B	C	D
2	A	B	C	D
3	A	B	C	D
4	A	B	C	D
5	A	B	C	D
6	A	B	C	D
7	A	B	C	D
8	A	B	C	D
9	A	B	C	D
10	A	B	C	D

For credit, please return this completed page to:

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**Montana Geriatric Education Center**

**Fall Prevention for Community-Dwelling Older Adults**

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A 2-hour Health Issues Module from the

**Montana Geriatric Workforce Enhancement Program**

A Consortium of:

The University of Montana, Missoula

Mountain Pacific Health, Helena

RiverStone Health, Billings

St. Vincent Healthcare, Billings

[Montana Geriatric Education Center Website](#)

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Montana Geriatric Education Center

**Montana Geriatric Education Center (MTGEC)**  
**Fall Prevention in Community-Dwelling Older Adults**  
**Disclosures**

**Montana Geriatric Workforce Enhancement Program Goals/Purpose**

The purpose of the MTGEC is to improve health outcomes for older adults in rural Montana via increased knowledge of older adult care and treatment of health problems by health professionals.

**Successful completion of this continuing education activity includes:**

- Completion of the Pre-Test
- Reading of text
- Watch instructional videos and complete case studies from the Centers for Disease Control & Prevention STEADI Took Kit for Health Care Professionals as directed within the module
- Completion of the Post-Test with at least 70% accuracy
- Completion of the module evaluation

**Contact Hours: 2**

**Montana Nurses Association (MNA)**

The Montana Geriatric Education Center is an approved provider of continuing nursing education by the Montana Nurses Association, an accredited approver by the American Nurses Credentialing Center's Commission on Accreditation.

**MNA Continuing Nursing Education Expiration Date: 8/1/2018**

**Conflicts of Interest**

The planners and presenters of the CE activity have disclosed no relevant financial relationship with any commercial companies pertaining to this activity.

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The Montana Geriatric Workforce Enhancement Program is supported by the Health Resources and Services Administration (HRSA) of the U.S. Department of Health and Human Services (HHS) under grant number U1QHP28733, Geriatric Workforce Enhancement Program (GWEP); the total award is \$2,143,140 and supports the program 100%. This information or content and conclusions are those of the author and should not be construed as the official position or policy of, nor should any endorsements be inferred by HRSA, HHS or the U.S. Government.

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## **Description of Module**

### **Content:**

This module will present a/an:

1. Overview of the incidence and prevalence of falls in community-dwelling older adults.
2. Review of the risk factors for falls in community-dwelling older adults.
3. Discussion of the STEADI (**ST**opping **E**lderly **A**ccidents, **D**eaths, & **I**njuries) and screening tests used to identify fall risk in community-dwelling older adults.
4. Summary of fall prevention strategies based upon individualized risk factors for community-dwelling older adults.

### **Module Purpose:**

The learner will demonstrate the ability to apply knowledge of falls prevention in community-dwelling older adults in the professional and/or community setting.

### **Learning Objectives:**

Specifically, participants will be able to:

1. Discuss the epidemiology of falls in older adults.
2. Describe the procedure for conducting the STEADI test, an evidence-based fall risk screening, including the three balance screenings associated with the STEADI test.
3. Summarize the referral and treatment options for older adults with increased fall risk based upon their individualized fall risk screening results.

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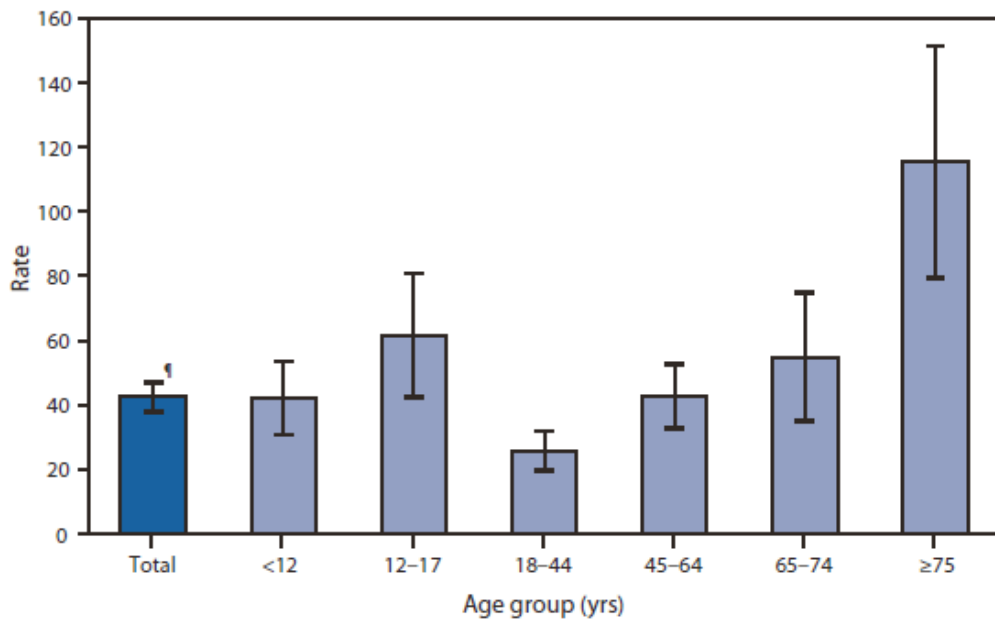
## I. Incidence and Prevalence of Falls in Older Adults

Falls are a major health problem in community-dwelling older adults; however, questions regarding incidence, risk factors, and provider response to falls exist (Shumway-Cook A, 2009). One out of three older adults (aged 65 or older) falls each year but less than half talk to their healthcare providers about it (Tromp et al., 2001). Falls are the leading cause of both fatal and nonfatal injuries in older adults (Stevens, Corso, Finkelstein, & Miller, 2006). Falls can cause moderate to severe injuries, such as hip fracture and head trauma, and can increase the risk of early death. Out of the older adults who fall yearly, 20-30% suffer moderate to severe injuries that make it hard for them to get around or live independently and increase their risk of early death (Stevens et al., 2006).

The risk of falling increases with each decade of life. In 2010, about 21,700 older adults died from injuries sustained during an unintentional fall (Centers for Disease Control & Prevention [CDC], 2014a). Every 29 minutes an older adult dies from a fall (Stevens et al., 2006). People age 75 and older who fall are four to five times more likely to be admitted to a long-term care facility for a year or longer than those age 65-74 (Scott, 1990). A Dutch study of fall-related injuries for those 65 and older demonstrated almost double the rate of long term facility admissions for those 75 – 84 years of age over those 65 – 74 years of age, rising significantly with age greater than 85 (Hartholt et al., 2011). In the U.S. the average cost of one year in a private room in a long-term care facility is over \$80,000 (Genworth, 2014). Fortunately, falls are largely preventable.

In 2010, the overall rate of nonfatal fall injury episodes for which a health-care professional was contacted was 43 per 1,000 population and persons aged 75+ years had the highest rate of 115 per 1,000. See Table 1. (MMWR Quickstats, 2012).

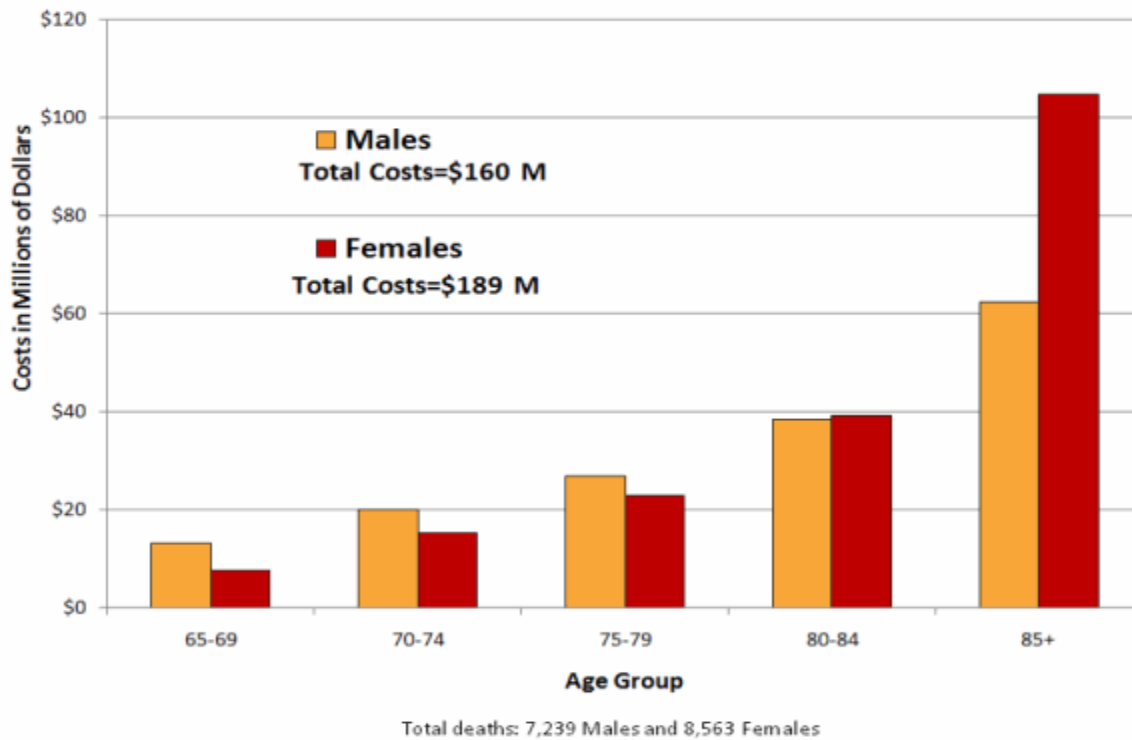
**Table 1: Rate of Nonfatal, Medically Consulted Fall Injury Episodes, by Age Group** Rate per 1,000 population. (MMWR Quickstats, 2012)



### A. Costs Associated with Falls

Among community dwelling older adults, fall-related injury is one of the most expensive medical conditions (Jager, Weiss, Coben & Pepe, 2000). In 2010, falls among older adults cost the United States healthcare system \$30 billion in direct medical costs (CDC, 2014). The number of older adult fatal falls is projected to reach 100,000 per year by 2030 with an associated cost of \$100 billion (Houry, 2016). Further, these costs do NOT account for physician fees, the additional costs of disability, dependence on others, lost time from work and household duties, and reduced quality of life (CDC, 2014b). With the population aging, both the number of falls and the costs to treat fall injuries are increasing rapidly. See Table 2 for cost of fall injuries in older adults.

**Table 2: Cost of Fall Injuries in Older Persons in the United States, 2005**



Total Lifetime Medical Costs of Unintentional Fatal Fall-Related Injuries in People 65 Years and Older By Sex and Age, United States, 2005 (CDC, 2012)

By 2020, the annual direct and indirect cost of fall injuries is expected to reach \$67.7 billion (in 2012 dollars) (CDC, 2014). Approximately 78% of these costs are covered by Medicare (Jager et al., 2000). In a more recent longitudinal study of health care costs associated with older adults who experienced a fall requiring medical treatment, costs associated with fall related treatment of those individuals requiring hospitalization was \$35,144 versus \$3,408 for those not hospitalized (Bohl et al., 2010). Hospitalized patients who experienced a fall-related injury during their hospital stay incurred \$13,316 in additional costs and increased their length of stay by 6.3 days (Wong et al., 2011). Healthy People 2020 has identified a need to reduce emergency room (ER) visits due to falls among older adults as a national health objective. Unfortunately the trend for ER visits due to falls in older adults has been increasing from an age adjusted 5,235.1 falls per 100,000 persons in 2005 to 6,893.5 per 100,000 in 2011 (Healthy People 2020, 2014).

Fall statistics differ between men and women. Women are more than twice as likely to suffer a fall-related fracture as men (Orces, 2013). Costs of both fatal and nonfatal falls are higher for women than for men (Heinrich, Rapp, Rissmann, Becker & König, 2009). Men are more likely to

die from a fall. After taking age into account, the fall death rate in 2010 was 40% higher for men than for women (CDC, 2014a). The reasons for gender differences in falls between men and women are not well understood.

Falls also differ between race and ethnicity. Older white adults are 2.4 times more likely to die from falls compared to older black adults (CDC, 2014a). White women have significantly higher hip fracture rates than black women (CDC, 2014c). Older non-Hispanics have higher fall rates than Hispanics (Stevens & Dellinger, 2002).

The personal and financial cost associated with falls in older adults is staggering. As our population ages, with 10,000 Baby Boomers turning 65 each day, we must begin to focus upon prevention of the first fall rather than management of the injuries and losses.

## **II. Risk Factors for Falls in Community-Dwelling Older Adults**

### **A. What is a fall?**

**A fall is defined as any event that leads to an unplanned, unexpected contact with a supporting surface (including furniture), that is not the result of an outside force or medical event.** (Shumway-Cook et al., 1997). When questioning a patient about their history of falls, a healthcare provider must be careful to educate each patient on the definition of a fall. Falls are not a normal part of aging and many things can be done to decrease an individual's risk of falling.

### **B. Risk factors for falls**

Risk factors include those that are intrinsic to the individual and those that are extrinsic in the environment. Some factors can be modified while many are not modifiable. Factors that are known to increase an individual's risk of falling include, but are not limited to:

- history of falling in the past
- poor balance
- complaints of dizziness
- decreased leg strength
- advanced age
- certain medications and/or polypharmacy
- difficulty with gait
- fear of falling and/or depression
- improper use of assistive devices

- physical inactivity
- social isolation
- gender and ethnic background
- environmental risks such as stairs, poor lighting, clutter, etc.

Although a history of falling is clearly the biggest risk factor, it is difficult to rank the other risk factors. However, the greater the number of risk factors, the greater one's fall risk.

People with certain chronic medical conditions are at higher risk for falling. These conditions include arthritis, cardiac conditions that affect heart rate and/or rhythm, depression, cognitive impairment/dementia, diabetes, stroke, Parkinson's disease, incontinence, and foot problems. (CDC, 2014d).

To prevent falls, providers should first focus on modifiable risk factors including:

- Lower body weakness
- Difficulties with gait or balance
- Medications: psychoactive medications, cardiopulmonary medications, medications with anticholinergic side effects, and sedating over-the-counter medications (i.e., Benadryl<sup>®</sup>, Tylenol PM<sup>®</sup>)
- Postural hypotension: defined as a decrease in systolic blood pressure of >20 mmHg or in diastolic blood pressure of >10 mmHg or lightheadedness or dizziness when transitioning from lying to standing
- Poor vision: Acuity < 20/40 OR no eye exam in more than one year
- Use of multifocal lenses while walking/ using stairs
- Problems with feet and/or shoes (i.e., diabetic neuropathy, poor sensation, poor fitting shoes)
- Home hazards: lack of stair handrails, poor stair design, lack of bathroom grab bars, dim lighting or glare, obstacles & tripping hazards (i.e., throw rugs), slippery or uneven surfaces
- Depression, social isolation, and/or fear of falling

(CDC, 2014e)

### **III. Validated Screening to Identify Fall Risk in Older Adults: The STEADI Tool Kit**

Falls are a common problem among older adults, yet they are vastly underreported. The belief that falling is a normal part of aging may prevent people from seeking help. Fear of early

institutionalization may also stop elders from reporting a fall. Early detection of fall risk can play an important role in prevention and education.

In 2009, the American Geriatrics Society (AGS) working in concert with the British Geriatrics Society developed and released [fall prevention guidelines for primary care practitioners](#). Although these guidelines were evidence-based, timely, and clinically relevant, they were not user-friendly and/or well disseminated. In response to the need to improve adoption of the AGS/BGS guidelines, the Centers for Disease Control (CDC) recently set out to construct a user-friendly, proactive plan to address fall risk among older adults, and *the Stopping Elderly Accidents, Deaths & Injuries* (STEADI) Tool Kit was developed. The STEADI Tool Kit is a suite of materials created for use by public health and primary health care providers. The STEADI Tool Kit resources can be used to help assess, educate, and refer older adult patients based upon their individual fall risk factors (CDC, 2014e).

### **A. STEADI Tool Kit**

The STEADI Tool Kit is designed to help healthcare providers incorporate fall risk screening and individualized fall prevention interventions into their clinical practice. It also provides tools for linking clinical care with community fall prevention programs, a critical link between medicine and public health (CDC, 2014e).

Health care professionals play an important role in caring for older adults and can help reduce these devastating injuries. The STEADI Tool Kit contains resources and tools that will help make fall prevention an integral part of the health care provider's clinical practice and /or community service and outreach (CDC, 2014e).

#### **Becoming familiar with the STEADI**

It is important to practice using the STEADI screening tools prior to implementation. Being familiar with the *Stay Independent* self-risk assessment questionnaire and balance tests will make the screening go smoothly and quickly. In addition to this module, online training resources can be found at [STEADI \(Stopping Elderly Accidents, Deaths & Injuries\) Tool Kit for Health Care Providers](#).

Please take time now as part of the module requirement to review the following sections of the STEADI website:

- View [STEADI Webinar for Health Care Providers](#) , a 45 minute archived webinar, where you will learn many strategies to using STEADI. Which of these suggestions could you implement in your practice setting?
- [Read Case Study #1](#) (select tab for 'Case Studies') and review the Fall Prevention Recommendations; would you suggest anything different? What resources would be available in your community to fulfill these recommendations?
- [Read Case Study #2](#). How is this case similar or different from case #1? What other recommendations might you have for this patient?
- [Read Case #3](#). In order to follow some of the recommendations, who would you refer the patient to for further evaluation or medication checks?
- Check out the [What YOU Can Do to Prevent Falls](#) page (open your Adobe Reader program first) and brochure that you can give to patients to help them check their risk of falling.

Later in the module, you will be directed to watch the videos in the [Use Validated Tests to Assess Your Patients' Fall Risk Factors](#) section (select tab for 'Tests').

#### **Tips for practicing the STEADI:**

- Understand the importance of establishing good rapport with the client. Be an active listener and be ready to discuss or answer any questions your client may have during the assessment.
- Be aware that you may have to slow down the rate of your speech while talking to a client or while reading the *Stay Independent* brochure if assistance is needed.
- Practice reading the questions so that you feel comfortable saying them in a clear and easily understood way.
- Think of questions a client may ask during the screening process and how you would answer.
- Know where and how to refer clients to other health care providers and evidence-based fall prevention programs in your area after discussing their results from the STEADI. Have accurate referral lists readily available.
- Practice with a partner.

Validated Assessment Tools used to assess your patient's fall risk factors include:

*Stay Independent* brochure for self-risk assessment

The Timed Up and Go (TUG) Test

The 30-Second Chair Stand Test

The 4-Stage Balance Test

Measuring Orthostatic Blood Pressure

## STEADI's: *Stay Independent* Brochure (CDC, 2014e)

**Purpose:** The [Stay Independent](#) Brochure (open your Adobe Reader to activate the link) is an easy way for an older adult to complete a validated self-risk checklist. Directions for scoring are at the bottom of the questionnaire.

**Results:** If the older adult circles 'yes' to multiple items, scoring > 4 points, they are at higher risk for falling. The brochure can then be used by the primary care practitioner (PCP) to identify the patient's specific risk factors and institute individualized fall prevention measures.

**The Brochure includes the following 12 "yes/no" questions related to increased fall risk and associated facts relating to why the question is asked. Each question is worth one point in calculating the score.**

Question	Why It Matters
<ul style="list-style-type: none"> <li>I have fallen in the last 6 months.</li> </ul>	<ul style="list-style-type: none"> <li>People who have fallen once are likely to fall again.</li> </ul>
<ul style="list-style-type: none"> <li>I use or have been advised to use a cane or walker to get around safely.</li> </ul>	<ul style="list-style-type: none"> <li>People who have been advised to use a cane or walker may already be more likely to fall.</li> </ul>
<ul style="list-style-type: none"> <li>Sometimes I feel unsteady when I am walking.</li> </ul>	<ul style="list-style-type: none"> <li>Unsteadiness or needing support while walking are signs of poor balance.</li> </ul>
<ul style="list-style-type: none"> <li>I steady myself by holding onto furniture when walking at home.</li> </ul>	<ul style="list-style-type: none"> <li>This is also a sign of poor balance</li> </ul>
<ul style="list-style-type: none"> <li>I am worried about falling.</li> </ul>	<ul style="list-style-type: none"> <li>People who are worried about falling are more likely to fall.</li> </ul>
<ul style="list-style-type: none"> <li>I need to push with my hands to stand up from a chair.</li> </ul>	<ul style="list-style-type: none"> <li>This is a sign of weak leg muscles, a major reason for falling.</li> </ul>
<ul style="list-style-type: none"> <li>I have trouble stepping up onto a curb.</li> </ul>	<ul style="list-style-type: none"> <li>This is also a sign of weak leg muscles</li> </ul>
<ul style="list-style-type: none"> <li>I often have to rush to the toilet.</li> </ul>	<ul style="list-style-type: none"> <li>Rushing to the bathroom, especially at night, increases your chance of falling.</li> </ul>
<ul style="list-style-type: none"> <li>I have lost some feeling in my feet.</li> </ul>	<ul style="list-style-type: none"> <li>Numbness in your feet can cause stumbles and lead to falls.</li> </ul>
<ul style="list-style-type: none"> <li>I take medicine that sometimes makes me feel light-headed or more tired than usual.</li> </ul>	<ul style="list-style-type: none"> <li>Side effects from medicines can sometimes increase your chance of falling.</li> </ul>
<ul style="list-style-type: none"> <li>I take medicine to help me sleep or improve my mood.</li> </ul>	<ul style="list-style-type: none"> <li>These medicines can sometimes increase your chance of falling.</li> </ul>
<ul style="list-style-type: none"> <li>I often feel sad or depressed.</li> </ul>	<ul style="list-style-type: none"> <li>Symptoms of depression, such as not feeling well or feeling slowed down, are linked to falls.</li> </ul>



## The Timed Up and Go (TUG) Test (CDC, 2014e)

### **Purpose:**

To assess mobility, gait, balance, and the ability to follow directions.

### **Equipment:**

A stopwatch, chair with arms, tape measure, tape to mark the floor.

### **Directions:**

Patients wear their regular footwear and can use their usual walking aid if needed. Begin by having the patient sit back in a standard arm chair and identify a line 3 meters or 10 feet away on the floor.

### **Instructions to the patient:**

When I say “Go,” I want you to:

1. Stand up from the chair
2. Walk to the line on the floor at your normal pace
3. Turn
4. Walk back to the chair at your normal pace
5. Sit down again

On the word “Go” begin timing. Stop timing after patient has sat back down and record.

Time: \_\_\_\_\_seconds

**Community-dwelling older adults who takes  $\geq 14$  seconds to complete the TUG are at a higher risk for falling.** *Other cut-off scores have been validated for special populations.*

During the TUG, observe the patient’s postural stability, gait, stride length, and sway.

Circle all that apply:

Slow tentative pace	Loss of balance	Short strides	Little or no arm swing
Steady self on walls	Shuffling	En bloc turning*	Not using assistive device properly

\*En bloc turning is turning as a unit or all together rather than segmentally.

## The 30-Second Chair Stand Test (CDC, 2014e)

### **Purpose:**

To test leg strength and endurance

### **Equipment:**

A chair with a straight back without arm rests (seat 17" high)  
(Ensure the chair is stable by placing the back against a wall.)  
A stopwatch



### **Instructions to the patient:**

1. Sit in the middle of the chair.
2. Place your hands on the opposite shoulder crossed at the wrists.
3. Keep your feet flat on the floor.
4. Keep your back straight and keep your arms against your chest.
5. On **“Go,”** rise to a full standing position and then sit back down again.
6. Repeat this for 30 seconds.

On **“Go,”** begin timing.

If the patient must use his/her arms to stand, stop the test. Record **“0”** for the number and score.

Count the number of times the patient comes to a full standing position in 30 seconds. This is the patient’s score.

If the patient is over halfway to a standing position when 30 seconds have elapsed, count it as a stand.

Record the number of times the patient stands in 30 seconds.

Number: \_\_\_\_\_ Score: \_\_\_\_\_

A below average score indicates a high risk for falls.

### **Chair Stand – Below Average Scores**

Age	Men	Women
60-64	< 14	< 12
65-69	< 12	< 11
70-74	< 12	< 10
75-79	< 11	< 10
80-84	< 10	< 9
85-89	< 8	< 8
90-94	< 7	< 4

## The 4-Stage Balance Test (CDC, 2014e)

### **Purpose:**

To assess static balance

### **Equipment:**

A stopwatch, a safe area to perform balance testing free of furniture.

### **Directions:**

There are four progressively more challenging positions. Patients should not use an assistive device (cane or walker) and should be instructed to keep their eyes open.

Describe and demonstrate each position. Stand next to the patient, hold his/her arm and help them assume the correct foot position.

When the patient is steady, let go, but remain ready to catch the patient if he/she should lose their balance. Use of a gait belt and two people is highly recommended.

**If the patient can hold a position for 10 seconds without moving his/her feet or needing support, go on to the next position. If not, stop the test.**

### **Instructions to the patient:**

"I'm going to show you four positions. Try to stand in each position for 10 seconds. You can hold your arms out or move your body to help keep your balance but don't move your feet. Hold this position until I tell you to stop."

For each stage, say "**Ready, begin**" and begin timing. After 10 seconds, say "**Stop.**"

Instructions to the patient:



1. Stand with your feet side by side. Time: \_\_\_\_\_ seconds



2. Place the instep of one foot so it is touching the big toe of the other foot (Semi-tandem stand). Time: \_\_\_\_\_ seconds



3. Place one foot in front of the other, heel touching toe (Tandem stance). Time: \_\_\_\_\_ seconds







4. Stand on one foot. Time: \_\_\_\_\_ seconds

**An older adult who cannot hold the tandem stance (#3) for at least 10 seconds is at increased risk of falling.**

## Measuring Orthostatic Blood Pressure (CDC, 2014e)

1. Have the patient lie down for 5 minutes. (If the option to lie down is not available, patients may sit for 5 minutes with both feet flat on floor.)
2. Measure blood pressure (BP) and pulse rate in the lying position or sitting position if lying down is not an option.
3. Have the patient stand.
4. Repeat blood pressure and pulse rate measurements after standing at 1 and 3 minutes.

**A drop in systolic BP of  $\geq 20$  mm Hg, or in diastolic BP of  $\geq 10$  mm Hg, &/or experiencing lightheadedness or dizziness is considered abnormal.**

Position		Time	BP	Associated Signs and Symptoms
Laying Down  OR sitting (circle one)	  	5 Minutes	BP:  HR:	
Standing		1 Minute	BP:  HR:	
Standing		3 Minutes	BP:  HR:	

**[If you have not already done so, please stop here and follow this link to watch the brief training videos for all 3 tests.](#)**

This will take about 10 minutes. HINT: The videos work well in Firefox, Chrome or Internet Explorer.

## IV. Types of Referrals and Referral Sources for Patients at Risk for Falls

As part of a patient's ['Welcome to Medicare'](#) and/or [Medicare's 'Annual Prevention visit'](#), primary care providers (PCPs) should screen and assess older adults for fall risk based upon their responses on the STEADI's *Stay Independent* questionnaire and balance tests. PCPs should note that fall risk screening and fall prevention are two of the measures on the [Physician Quality Reporting System \(PQRS\)](#) program that can improve practitioner reimbursement from Medicare.

Working together, healthcare, public health, and aging service professionals can recognize and manage patients with risk factors associated with falling. Providers can reduce falls by screening all older persons annually for previous falls and/or balance problems. For individuals who screen positive, making proactive changes and referring to the appropriate healthcare provider or evidence-based fall prevention program is critical.

**At a minimum, every time you see an adult aged 65+, ask if they have had a fall!**

Strategies used to reduce the risk of falls should include a thorough assessment and proper management of all identified risk factors which may include:

- Exercise prescription from a [PT for balance, strength, and gait](#) training including assistive device prescription and/or update and [Otago Exercise Program](#) at discharge
- Analysis and modification or adaptation of the [home environment](#)
- Review of prescription [medications](#), OTC's and supplements
- Management of [orthostatic hypotension](#). Also see: [depressive symptoms and orthostatic hypertension](#) (Menant 2016).
- Management of [foot problems and footwear](#)
- Identification and/or management of [visual impairments](#)

(American Geriatrics Society, 2014)

Community health fairs, workshops or special community events may offer free fall risk screenings. These screenings may be administered by trained aging service providers, public health officials, supervised health professional students &/or community health care professionals. The individual being screened should receive a copy of the screening results and educational pamphlets, and if indicated, a referral to any of the following professionals listed below should be made immediately. Patients should be encouraged to share the results of the screening with their PCP.

**Professionals who assess and/or treat fall risk in older adults include:**

- **Primary Care Practitioners (PCPs)** including Physician's Assistants (PA), Nurse Practitioners (FNP), Family Practice or Internal Medicine Physicians (MD), Doctors of Osteopathy (DO), etc. They may already have some relationship with the patient, as well

as have access to their medical history. The PCPs are able to assess a patient's physical symptoms and conditions, prescribe medication and make further referrals as needed. Review and modification of the medication regimen by a PCP and/or pharmacist may minimize side effects that may lead to risk of falling.

- **Physical Therapists (PT)** can perform comprehensive fall risk assessments, analyze risk factors, institute targeted treatment interventions, and manage fall risk programs. Evaluation of assistive device and footwear use and care, home evaluations, management of vertigo, and further referrals can all be managed by the PT.
- **Occupational Therapists (OT)** conduct environmental assessments, assess how the older adult interacts with their home environment, and suggest adaptations or modifications that can help older adults to prevent falls and live independently, especially those with limited physical function or low vision.
- **Podiatrists and orthotists** can identify and treat foot problems and can prescribe corrective footwear and orthotics.
- **Optometrists and ophthalmologists** examine people's eyes to diagnose vision problems and eye diseases, test patients' visual acuity, depth, and color perception, and test their ability to focus and coordinate their eyes. They prescribe eyeglasses and contact lenses and provide vision therapy and low vision rehabilitation. It should be noted that multifocal lenses and/or progressive lenses have been associated with higher fall risk. Older adults should be cautioned about walking while wearing these lenses (American Geriatrics Society, 2014).
- **Pharmacists** will conduct a medication review to identify drug side effects that can contribute to falling including blurred vision, hypotension leading to dizziness and lightheadedness, sedation, decreased alertness, confusion and impaired judgment, delirium, compromised neuromuscular function, and anxiety. Pharmacists will consult with the prescribing practitioner(s) to address interactions and potential problems (CDC, 2014e).

## V. Overview of Treatment for Fall Risk in Community Dwelling Older Adults

Falls and resulting injuries are not part of normal aging. Many falls occur due to personal or lifestyle factors that can be changed. Healthcare, public health and aging services providers can

assess an individual's risk of falling and suggest interventions that may prevent a fall from occurring.

Research shows that a progressive exercise program consisting of balance exercises that are moderate to high-intensity appears to be one of the most effective interventions for preventing falls in community-dwelling older adults. The **minimum** dose of physical activity and exercise to protect an older adult against falls is 50 hours over each six month period, or about 2-2 ½ hours/week. Exercises must be continually advanced as appropriate to be effective. (Sherrington, 2011)

The most effective fall prevention programs are evidence-based and multifactorial, addressing all of an individual's impairments. The first step to prevent falls is educating the individual about their risk factors and how these risks can lead to falls. Medical professionals, public health and aging services providers can help identify these risk factors and develop an intervention plan to decrease an individual's risk for falling.

Evidence-based fall prevention programs commonly available include [Stepping On](#)<sup>®</sup>, [Otago Exercise Program](#), [Matter of Balance](#) and [T'ai Chi](#). EBFPs are shown to decrease fall risk significantly while being very cost effective. (Carande-Kulis, 2015). These results are presented in an [infographic on the NCOA website](#).

Physical activity that incorporates strengthening and balance exercise, such as T'ai Chi or the Otago exercise program, can reduce an individual's fall risk by increasing strength, balance and mobility skills. Home modifications such as removing or taping down throw rugs, adequate lighting at night, and grab bars in the bathroom can eliminate safety hazards in the home so individuals can complete activities of daily living safely. While this is not a comprehensive list of treatments and interventions associated with fall risk, it is a good place to start (Fall Prevention Center of Excellence, 2014):

- Patient Education includes brochures on preventing falls, managing postural hypotension and instructions for a basic leg strengthening exercise.
- Strengthening and Balance Exercises: Refer to physical therapists or community-based programs to improve functional mobility, gait, strength and/or balance.
  - The Otago exercise program is an evidence-based fall prevention program implemented by a licensed physical therapist. It is a home based, individually tailored balance and strength program aimed at reducing falls and injuries in older adults living in the community. The program consists of a minimum of 7

home visits and 7 phone calls by the physical therapist over a 12 month period (Shubert, 2011; Otago Medical School, 2003).

- Older adults living in the community who are able to walk independently with or without a walking aid and who have fallen in the past year are most likely to benefit from the Otago training. A meta-analysis of 1,016 individuals aged 65-97 categorized as high risk for falling underwent Otago training and showed improved balance and strength at 6 months and had a 35% decrease of falls and injuries (Robertson, Campbell, Gardner, & Devlin, 2002).
- Identify community exercise and fall prevention programs
  - There are a variety of evidence based fall prevention programs with both education and exercise components including Otago Exercise Program, Stepping On, Matter of Balance and T'ai Chi: Moving for Better Balance. These community exercise and fall prevention programs address multiple risk factors including improving safety in the home and community, strengthening and balance activities, and recommendations for medical and visual screenings as well as medication reviews to address any risk factors that place an individual at risk for falling. For more information about community fall prevention programs please contact your local public health department, hospital outpatient and community programs, senior centers, or Area Agencies on Aging (CDC, 2014e).
- Medication Review: Refer individuals to their primary healthcare provider or local pharmacist for information about high-risk medications, interactions with over-the-counter drugs, supplements and all side effects.
- Vision Checkup: Suggest annual vision evaluation &/or referral to a specialist if indicated. Discourage walking while wearing multifocal glasses as this increases fall risk.
- Choosing Safe Footwear: Refer individuals to a knowledgeable shoe store, podiatrist, orthotist/pedorthist or PT.
- Home Modification Interventions: Recommend a home safety check by an occupational therapist or by following a screening using the [CDC Check for Safety](#) home checklist (CDC, 2014f).



## VI. Summary

Falls are a major health problem for older adults and a significant public health problem for communities. Falls in older adults result in increased health care costs, diminished quality of life, and in some instances, early institutionalization or death. As the number of older adults continues to rise in the U.S., the rate of falls is increasing as well becoming a significant public health problem. Risks for falls in older adults are multifactorial and require multifactorial interventions that address modifiable factors in the older adult and his or her environment.

Fall prevention begins with early identification of risk factors through a fall risk screening. Primary health care providers can incorporate fall risk screening into their practice through implementation of the STEADI Tool Kit, beginning with having patients  $\geq 65$  years of age complete a fall risk self-appraisal checklist. Additional validated assessment tools to determine patient fall risk include the Timed Up and Go (TUG) Test, the 30-Second Chair Stand Test, the 4-Stage Balance Test and Measuring Orthostatic Blood Pressure Tests. Risk assessments can also occur in the community via health fairs.

Interventions should address individual patient risk factors and may include referrals to other health care team members such as physical therapists, occupational therapists, vision specialists, pharmacists, podiatrists and community exercise and evidence-based fall prevention programs. Interventions that have proven effective include strength and balance exercises, patient education, vision correction, safe footwear, medication review, and home modification. The [STEADI Tool Kit](#) on the CDC website provides health care providers with the tools and information they need to assess and address their older patients' fall risk.

## VII. Glossary

- Assessment - An evaluation or appraisal of a condition.
- Chronic - Chronic diseases are diseases of long duration and generally slow progression.
- En block turning- Turning as a unit or all together rather than segmentally.
- Evidence-based practice - is the integration of clinical expertise, patient values, and the best research evidence into the decision making process for patient care.
- Evidence-based program (EBP) - A specific program designed to address one problem in one population that has been found to be valid, reliable, effective, and reproducible.
- Fall - any event that leads to an unplanned, unexpected contact with a supporting surface and is not the result of an outside force or medical event.
- Mobility - The ability to move in one's environment with ease, safety and without restriction.
- Modifiable risk factor - Factors that can be changed to reduce risk.
- Older adult - person aged 65 or older
- Orthostatic Hypotension - A form of low blood pressure that occurs upon standing up from sitting or lying down. Orthostatic hypotension can make one feel dizzy or lightheaded, and maybe even faint.
- Otago Exercise Program (OEP) - A home-based, individually tailored balance and strength program aimed at reducing falls and injuries in older adults living in the community delivered as part of a physical therapy program.
- Rehabilitation - Rehabilitation is a treatment or treatments designed to facilitate the process of recovery from injury, illness, or disease to as normal a condition as possible.
- STEADI - **S**topping **E**lderly **A**ccidents, **D**eaths, & **I**njury. The STEADI Tool Kit contains resources and tools that will help make fall risk detection and prevention an integral part of clinical practice.

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## **IX. Web Resources**

[American Geriatric Society's Clinical Practice Guidelines: Prevention of Falls in Older Persons](#)

[American Physical Therapy Association: Balance and Falls Page](#)

[Centers for Disease Control and Prevention: A CDC Compendium of Effective Fall Interventions:](#)

[What Works for Community Dwelling Older Adults](#)

[Center for Disease Control and Prevention: Falls Among Older Adults Overview](#)

[Centers for Disease Control and Prevention: STEADI](#)

[Fall Prevention Center of Excellence](#)

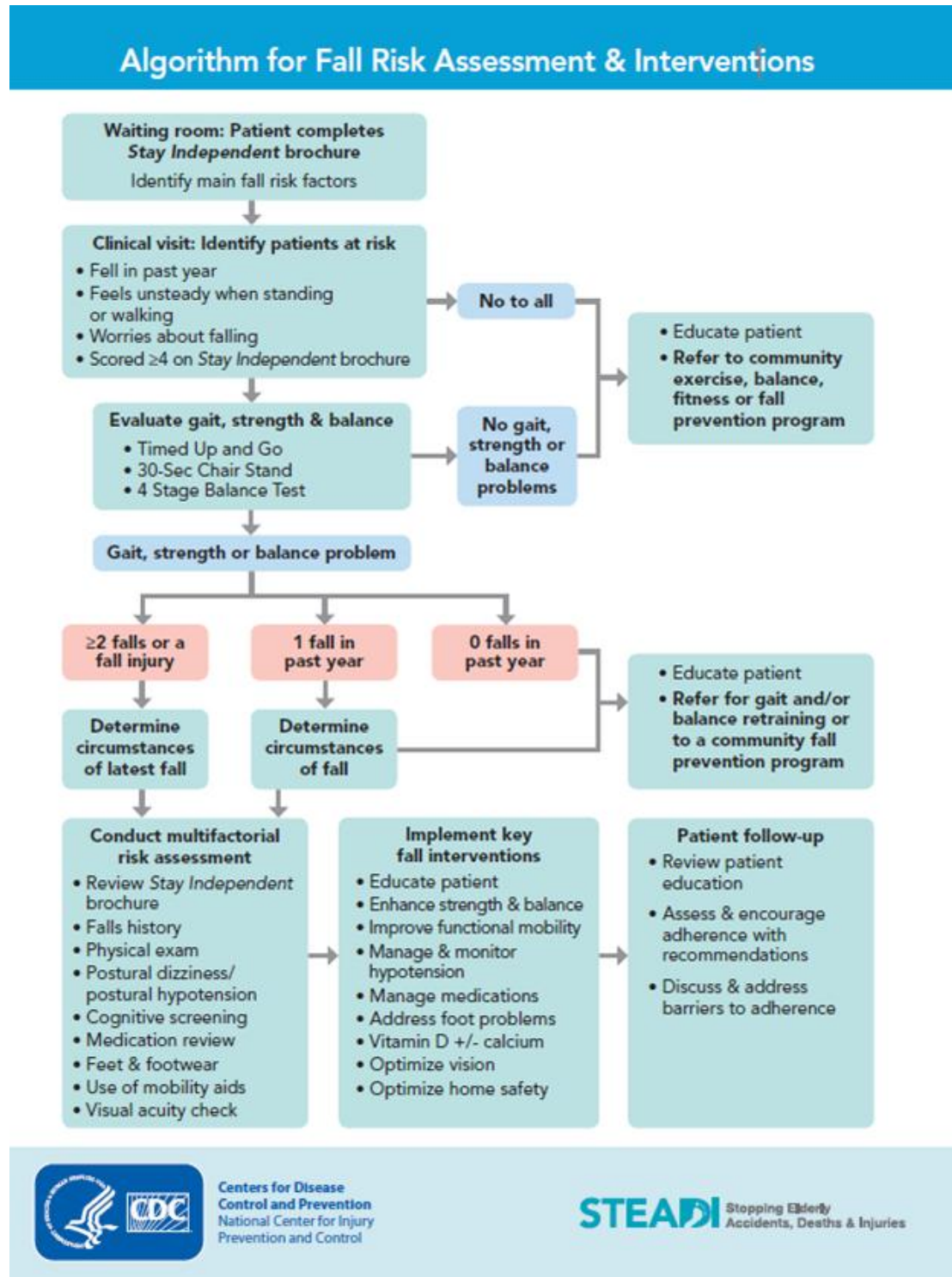
[Journal of Geriatric Physical Therapy: Evidence-Based Exercise Prescription for Balance and Falls](#)

[Prevention: A Current Review of the Literature](#)


[National Council on Aging: Falls Prevention](#)

[National Institute of Health SeniorHealth: Falls and Older Adults](#)

**Appendix A: Algorithm for Fall Risk Assessment & Interventions** (CDC, 2014e)  
 From the STEADI Implementation Guide



## Appendix B: Preventing Falls in older Patients, Provider Pocket Guide (CDC, 2014e)



### Preventing Falls in Older Patients Provider Pocket Guide

**Key Facts about Falls:**

- 1/3 of older adults (age 65+) fall each year.
- Many patients who have fallen do not talk about it.

**This is What You Can Do:**

**RITUAL:**

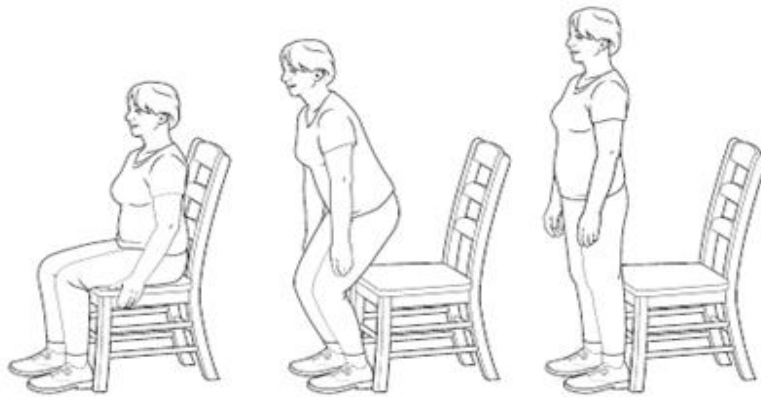
- Review self-assessment brochure
- Identify risk factors
- Test gait & balance
- Undertake multifactorial assessment
- Apply interventions
- Later, follow-up

**STEADI** Stopping Elderly Accidents, Deaths & Injuries

If you hear:	You can say:
<b>Precontemplation Stage</b>	
Falling is just a matter of bad luck.	As we age, falls are more likely for many reasons, including changes in our balance and how we walk.
<b>Contemplation Stage</b>	
My friend down the street fell and ended up in a nursing home.	Preventing falls can prevent broken hips & help you stay independent.
<b>Preparation Stage</b>	
I'm worried about falling. Do you think there's anything I can do to keep from falling?	Let's look at some factors that may make you likely to fall & talk about what you could do about one or two of them.
<b>Action Stage</b>	
I know a fall can be serious. What can I do to keep from falling and stay independent?	I'm going to fill out a referral form for a specialist who can help you improve your balance.



## Appendix C: Chair Rise Exercise (CDC, 2014e)



### Chair Rise Exercise

**What it does:** Strengthens the muscles in your thighs & buttocks.

**Goal:** To do this exercise without using your hands as you become stronger.

**How to do it:**

1. Sit toward the front of a sturdy chair with your knees bent & feet flat on the floor, shoulder-width apart.
2. Rest your hands lightly on the seat on either side of you, keeping your back & neck straight & chest slightly forward.
3. Breathe in slowly. Lean forward & feel your weight on the front of your feet.
4. Breathe out & slowly stand up, using your hands as little as possible.
5. Pause for a full breath in & out.
6. Breathe in as you slowly sit down. Do not let yourself collapse back down into the chair. Rather, control your lowering as much as possible.
7. Breathe out.

Repeat 10–15 times. If this number is too hard for you when you first start practicing this exercise, begin with fewer & work up to this number.

Rest for a minute & then do a final set of 10–15.



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

## **Post-test: *Fall Prevention for Community Dwelling Older Adults***

### **Record responses on examination form.**

1. According to the CDC,
  - a. 1 in 3 adults aged 65+ report a fall each year
  - b. Fall risk decreases with advancing age over 75+
  - c. Fall related deaths in older adults decreased in the past decade
  - d. Falls only occur in frail and weak older adults
  
2. Fall risk factors that are INTRINSIC refer to such things as
  - a. Home environment being accessible to the user
  - b. Age, gender, history of falls, etc.
  - c. Access to health care, transportation, meals, social activities, etc.
  - d. Community environment factors such as sidewalks cross walks, etc.
  
3. Once fall risks are identified, the best intervention may be a(n)
  - a. Evidence-based fall prevention program
  - b. Medication review
  - c. Home assessment
  - d. All of the above
  
4. All of the following are EXTRINSIC fall risk factors EXCEPT:
  - a. Home environment being accessible to the user
  - b. Access to health care, transportation, meals, social activities, etc.
  - c. Community environment factors such as sidewalks, crosswalks, etc.
  - d. Depression, fear, lack of self-efficacy
  
5. The STEADI includes three standard measures of balance as part of its screening process. These may legally be performed by
  - a. Only a licensed PT by referral from the Primary Care Provider (PCP)
  - b. Only a licensed PT employed by the PCP
  - c. Only the PCP
  - d. Anyone trained to perform the balance tests
  
6. The TUG test allows the evaluator to assess all of the following EXCEPT:
  - a. Ability to stand up from sitting with or without use of arms
  - b. Ability to walk and turn around with or without assistive device
  - c. Ability to stand up from sitting without using arms (arms crossed on chest)
  - d. Ability to follow directions

7. A person who completes 4 stand-ups during the 30-second chair stand assessment
  - a. Has a normal score
  - b. Probably has lower extremity weakness
  - c. Does not have heightened fall risk
  - d. May have a normal score, depending upon his or her age
  
8. A healthy 60-year old who is unable to stand in tandem stance independently for 5 seconds, should be referred to
  - a. An evidence based fall prevention program
  - b. OT for a home assessment
  - c. PT for a balance evaluation
  - d. Audiologist for vertigo
  
9. An older adult patient completing the fall risk self-assessment identifies that she has fallen once in the last 6 months and takes medication that makes her sleepy or improves her mood resulting in a risk score of 3. This patient:
  - a. Has no risk for future falls
  - b. Has moderate to high risk for future falls
  - c. Requires further evaluation to determine her risk for falls
  - d. Should immediately be referred to an evidence based fall prevention program
  
10. Mr. Ying has limited vision and experiences nocturia 3 – 4 times a night. He complains of dizziness when he changes position and reports feeling unsteady when he walks. His self-assessment for fall risk includes answering yes to the need for an assistive device, feeling unsteady with walking, and a fear of falling. The fall prevention intervention that will best address extrinsic factors for falls for this patient is:
  - a. Use of night lights
  - b. Referral to a vision specialist for vision exam
  - c. Referral to occupational therapist for home safety evaluation
  - d. Referral to physical therapist for gait and balance exercises

# POST-TEST: Examination Form

## Screening for Cognitive Impairment

### Participant Information

1. Name: \_\_\_\_\_
2. Mailing address: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
3. Date exam completed \_\_\_\_\_

### Questions: (Please circle one response per question)

1	A	B	C	D
2	A	B	C	D
3	A	B	C	D
4	A	B	C	D
5	A	B	C	D
6	A	B	C	D
7	A	B	C	D
8	A	B	C	D
9	A	B	C	D
10	A	B	C	D

For credit, please return this completed page to:

**MTGEC/IPHARM**  
 Skaggs Building Room 318  
 University of Montana  
 32 Campus Drive  
 Missoula MT, 59812-1522  
 Phone (406) 243-2339 & Fax (406) 243-4353

## Appendix D: Evaluation: Fall Prevention

Please indicate your major										
				Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Don't Know	
<b>1. Based on the module description and stated objectives, this module met my expectations of the content it would deliver.</b>				○	○	○	○	○	○	
<b>2. How effective were the following in helping you understand the material?</b>				Very Effective	Effective	Neutral	Somewhat Effective	Not Effective	Not Applicable	
Pre-test				○	○	○	○	○	○	
Written Text				○	○	○	○	○	○	
Videos/Photos				○	○	○	○	○	○	
Websites/Web Links				○	○	○	○	○	○	
References				○	○	○	○	○	○	
Case Studies				○	○	○	○	○	○	
				Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Don't Know	
<b>3. I learned something I can use in my practice/employment or personal setting.</b>				○	○	○	○	○	○	
				Provide new information to patients/clients	Adjust practices with geriatric patients/clients	New program development or program enhancement	Provide new information to family/friends/co-workers	Train staff or provider	Other implementation*	

4. How do you plan to implement the information from this module to strengthen your practice, employment or personal goals? (check any that apply)	0	0	0	0	0	0			
	* Describe 'other' implementation plan here:								
				<1 hour	1-2 hours	2-3 hours	3-4 hours	4-5 hours	>5 hours
5. How long did it take you to complete the module? (including pre-test, module review, post-test and evaluation)	0	0	0	0	0	0			
			Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree		Don't Know
6. The test questions were relevant to the module content.									
7. Please provide suggestions to improve the online learning experience to meet your needs.									
8. Please offer ideas or suggestions for new modules.									

For credit, please return this completed page to:

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