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.
   Record your answers on the examination form marked Post-Test. *(Found at the end of the module.)* Keep the completed answer form to turn in 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:**
   b. Turn in the Pre-Test, Post-Test, and Module Evaluation
   c. Obtain a score of 70% or better on the Post-Test
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**

*Fall Prevention for Community Dwelling Older Adults*

**PARTICIPANT INFORMATION:**

1. Name:  

2. Mailing address: 

3. Date exam completed:  

**QUESTIONS: (PLEASE CIRCLE ONE RESPONSE PER QUESTION):**

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*For credit, please return: MTGEC/IPHARM, Skaggs Building, Room 318, University of Montana, 32 Campus Dr., Missoula, MT 59812.*
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:
University of Montana, Missoula
Mountain Pacific Health, Helena
RiverStone Health, Billings

Montana Geriatric Education Center Website

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Montana Geriatric Education Center
Montana Geriatric Workforce Enhancement Program Purpose
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: 3/15/2021

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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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 (STopping Elderly Accidents, Deaths, & Injuries) and screening tests used to identify fall risk in 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 fall risk screenings associated with the STEADI.
3. Identify fall risk in older adults via patient self-assessment and/or objective screening.
4. 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 as evidenced by more than 3 million older adults being treated in emergency rooms and 28,000 older adults dying as a result of falling in 2015 (Stevens & Lee, 2018). Falls result in an average of 9.9 million injuries each year (Verna, 2016). Recent data from the CDC indicates that 12% of community dwelling adults in the U.S. reported a fall in the prior year, resulting in an estimate of 80 million falls (Center for Disease Control [CDC], 2017). It is estimated that one out of three-four older adults (aged 65 or older) falls each year but less than half talk to their healthcare providers about it (Bergen, 2018).

Falls are the leading cause of both fatal and nonfatal injuries in older adults (Ambrose, Pau & Hausdorff, 2013), and cost the U.S. over $30 billion each year for non-fatal falls as of 2015 (Burns, Stevens & Lee, 2016). 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% suffer moderate to severe injuries that make it hard for them to get around or live independently and increase their risk of hospitalization, rehabilitation, and potentially early death (Burns et al., 2016). The medical costs for fatal falls in 2015 is estimated at $754 million (Florence et al, 2018).
The risk of falling increases with each decade of life. In 2012, 24,190 older adults died from injuries sustained during an unintentional fall, with greater risk in the oldest individuals (Burns et al., 2016). 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, 2011). In the U.S. the average cost of one year in a private room in a long-term care facility is over $92,000 (Genworth, 2016).

Fortunately, many risk factors for falls can be addressed, and by addressing just one of seven interventions identified in a literature review between 9,300 and 45,000 falls could be prevented in the older population (Stevens & Lee, 2018). The most effective of these interventions (Tai Chi, Otago, medication management, vitamin D supplementation, expedited first eye cataract surgery, single-vision distance lenses for outdoor activities, and home modifications led by an occupational therapist) were home modifications and vitamin D supplements. The older adult’s visit with a health care provider presents an opportunity to implement such interventions directly or through referral; it is reported that over 90% of older adults will have an annual visit with a health care provider (Stevens & Lee, 2018). Additionally, 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).

MTGEC Fall Prevention in Community-Dwelling Older Adults
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MNA CE expiration date: 3/15/2021
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

By 2050 one if every 5 Americans will be 65 or older as compared to just one in 7 now (Burns, 2016). With the population aging, both the number of falls and the costs to treat fall injuries are increasing rapidly. Among community dwelling older adults, fall-related injury is one of the most expensive medical conditions. Falls among older adults cost the United States healthcare system over $30 billion in direct medical costs (Burns et al., 2016). 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, Florence, Baldwin, Stevens, & McClure, 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.
Combined costs, both direct and indirect, exceeded $50 billion in 2010 (Lohman et al., 2017). 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 (Burns et al., 2016). 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).

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 (Burns, 2016). However, 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, 2017b).

Falls also differ between race and ethnicity. The CDC reports that fall rates are higher in the population of older whites and American Indian/Alaska Natives when compared to blacks and Asian/Pacific Islanders. Consequences of falls also differ based on ethnicity, with older white adults being 2.4 times more likely to die from falls compared to older black adults, and white women have significantly higher hip fracture rates than black women. (CDC, 2017b)

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, Baldwin, Polissar & Gruber, 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, 2017c).

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®, Tylenol PM®)
- 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, poorly 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, 2017c)

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 response to the need to improve adoption of current evidence based guidelines from the American Geriatrics Society/British Geriatrics Society (2014), the Centers for Disease Control (CDC) has developed a user-friendly, proactive plan to address fall risk among older adults with the Stopping Elderly Accidents, Deaths & Injuries (STEADI) Tool Kit (CDC, 2017d). 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.

A. STEADI Tool Kit

Health care professionals play an important role in caring for older adults and can help reduce these devastating injuries. 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 and resources for linking clinical care with community fall prevention programs, a critical link between medicine and public health.
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 for using STEADI. Which of these suggestions could you implement in your practice setting?
- Read Case Study #1 (select tab for ‘Clinical Tools’ and scroll to bottom) 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 assess 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 ‘Functional Assessments’).

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 (CDC, 2017) 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

**Purpose:** The *Stay Independent* Brochure (open your Adobe Reader to activate the link)(CDC,2017) 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 the associated facts relating to why the question is asked.

<table>
<thead>
<tr>
<th>Question</th>
<th>Why It Matters</th>
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<tbody>
<tr>
<td>• I have fallen in the last 6 months. Yes (2 pts)</td>
<td>• People who have fallen once are likely to fall again.</td>
</tr>
<tr>
<td>• I use or have been advised to use a cane or walker to get around safely. Yes (2 pts)</td>
<td>• People who have been advised to use a cane or walker may already be more likely to fall.</td>
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<tr>
<td>• Sometimes I feel unsteady when I am walking. Yes (1 pt)</td>
<td>• Unsteadiness or needing support while walking are signs of poor balance.</td>
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<tr>
<td>• I steady myself by holding onto furniture when walking at home. Yes (1 pt)</td>
<td>• This is also a sign of poor balance</td>
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<tr>
<td>• I am worried about falling. Yes (1 pt)</td>
<td>• People who are worried about falling are more likely to fall.</td>
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<tr>
<td>• I need to push with my hands to stand up from a chair. Yes (1 pt)</td>
<td>• This is a sign of weak leg muscles, a major reason for falling.</td>
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<td>• I have trouble stepping up onto a curb. Yes (1 pt)</td>
<td>• This is also a sign of weak leg muscles</td>
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<td>• I often have to rush to the toilet. Yes (1 pt)</td>
<td>• Rushing to the bathroom, especially at night, increases your chance of falling.</td>
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<td>• I have lost some feeling in my feet. Yes (1 pt)</td>
<td>• Numbness in your feet can cause stumbles and lead to falls.</td>
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<td>• I take medicine that sometimes makes me feel light-headed or more tired than usual. Yes (1 pt)</td>
<td>• Side effects from medicines can sometimes increase your chance of falling.</td>
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<tr>
<td>• I take medicine to help me sleep or improve my mood. Yes (1 pt)</td>
<td>• These medicines can sometimes increase your chance of falling.</td>
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<tr>
<td>• I often feel sad or depressed. Yes (1 pt)</td>
<td>• Symptoms of depression, such as not feeling well or feeling slowed down, are linked to falls.</td>
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The Timed Up and Go (TUG) Test (CDC, 2017)

**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 take ≥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:

<table>
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<tr>
<th>Slow tentative pace</th>
<th>Loss of balance</th>
<th>Short strides</th>
<th>Little or no arm swing</th>
</tr>
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<tr>
<td>Steady self on walls</td>
<td>Shuffling</td>
<td>En bloc turning*</td>
<td>Not using assistive device properly</td>
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*En bloc turning is turning as a unit or all together rather than segmentally.
The 30-Second Chair Stand Test  (CDC, 2017)

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

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The 4-Stage Balance Test (CDC, 2017)

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, 2017)

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 ≥20 mm Hg, or in diastolic BP of ≥10 mm Hg, &/or experiencing lightheadedness or dizziness is considered abnormal.**

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*If you have not already done so, please stop here and follow this link to watch the brief training videos for all 3 tests.* Select tab for ‘Functional Assessments’, then you will see the videos for the 30-Second Chair Test, 4-Stage Balance Test and Timed Up and Go (Tug) Test. This will take about 10 minutes.
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 ‘Annual Wellness 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.

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 the person 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. Current evidence provides support that fall risk reduction needs to be multifactorial, and that there is no one best way to reduce fall risk for all individuals (Hopewell et al., 2018). Examples of fall reduction strategies are:

- Exercise prescription from a PT for balance, strength, and gait training including assistive device prescription (Karinkanta, 2010)
- Analysis and modification or adaptation of the home environment to address many of the common extrinsic risk factors associated with mobility and performance of activities of daily living. (Stevens & Lee, 2018)
- Review of prescription medications, OTC’s and supplements using updated Beers criteria (AGS, 2019)
- Management of orthostatic hypotension. (Menant et al., 2016)
- Management of foot problems and footwear (Menant et al., 2008)
- Identification and/or management of visual impairments (Saftari and Kwon, 2018)

Community health fairs, workshops or special community events often offer free fall risk screenings. These screenings may be administered by trained aging service providers, public health officials, supervised health professional students, and/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 also 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 (NP), Family Practice or Internal Medicine Physicians (MD), Doctors of Osteopathy (DO), etc. They may already have a 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 increase the 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 the home environment, and suggest adaptations or modifications that can help older adults 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, 2017c).
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 (Eckstrom et al., 2016). 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. Screening tools such as the STEADI have been validated in the literature, and implementing such a tool into clinical practice and community venues is evidence based (Lohman et al., 2017).

Research shows that a progressive exercise program consisting of balance exercises that are moderate to high-intensity appears to be an effective strategy 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, Tiedemann, Fairhall, Close & Lord, 2011).

The most effective fall prevention programs are evidence-based and multifactorial, addressing all identified fall risk factors. The first step to prevent falls is educating individuals about their risk factors and how these risks can lead to falls (Lohman et al., 2017). 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 (EBFP) programs commonly available include Stepping On, Otago Exercise Program, Matter of Balance and T’ai Chi. EBFP programs are shown to decrease fall risk significantly while being very cost effective (Carande-Kulis, Stevens, Florence, Beattie & Arias, 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. It is also necessary to ensure assistive devices such as walkers or canes are correctly fit to the individual and used appropriately. 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.

• 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 center, or Area Agency on Aging.

• Medication Review: Refer individuals to their primary healthcare provider or local pharmacist for information about high-risk medications, interactions with over-the-counter drugs and supplements, and all side effects.

• Vision Checkup: Suggest annual vision evaluation and/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/prosthetist, or PT.

• Home Modification Assessment and Fall Risk Reduction: Recommend a home safety assessment by an occupational or physical therapist, screen your patient’s home safety with some type of home evaluation recommended by an occupational therapist or use a form recommended by a reputable organization. If these assessments cannot be completed by yourself or through referral to another health care professional then at the very least have your patient self-assess with something such as this CDC Check for Safety (CDC, 2017e).
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 as 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 and can effectively be minimized with an interprofessional approach with medical providers, social work, rehabilitation therapies, nursing and others (Eckstrom2016). All health care providers can efficiently and effectively incorporate fall risk screening into their practice through implementation of the STEADI Tool Kit. A good place to start, without taking additional time for face to face patient appointments, is by having patients over 65 years of age complete a fall risk self-appraisal checklist prior to the scheduled visit with a health care provider. 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 through venues such as health fairs by trained health care students and professionals.

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

- **A Matter of Balance** - A program designed to reduce the fear of falling and increase activity levels among older adults.
- **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** - 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 cause one to 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 when 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** - STopping Elderly Accidents, Deaths, & Injury. The STEADI Tool Kit contains resources and tools that will help make fall risk detection and prevention an integral part of clinical practice.
- **Stepping On** - The Stepping On program offers older people information, strategies and exercises to reduce falls and increase self-confidence in situations where they are at risk of falling.
- **Tai Chi** - No matter what forms of tai chi, if specific tai chi principles are incorporated into tai chi practice, the result will be better balance and reduced falls.
VIII. 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

National Council on Aging: Falls Prevention
X. References


Centers for Disease Control and Prevention. (2017b). Falls and Fall Injuries Among Adults Aged ≥65 Years-United States. https://www.cdc.gov/mmwr/volumes/65/wr/mm6537a2.htm?s_cid=mm6537a2_w


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Appendix A: Algorithm for Fall Risk Screening, Assessment & Interventions (CDC, 2017e)

**Algorithm for Fall Risk Screening, Assessment, and Intervention**

As a healthcare provider, you are already aware that falls are a serious threat to the health and well-being of your older patients.

More than one out of four people 65 and older falls each year, and over 3 million are treated in emergency departments annually for fall injuries.

The CDC’s STEADI initiative offers a coordinated approach to implementing the American and British Geriatrics Societies’ clinical practice guideline for fall prevention. STEADI consists of three core elements: Screen, Assess, and Intervene to reduce fall risk.

The STEADI Algorithm for Fall Risk Screening, Assessment and Intervention outlines how to implement these three elements.

**Additional tools and resources include:**

- Information about falls
- Case studies
- Conversation starters
- Screening tools
- Standardized gait and balance assessment tests (with instructional videos)
- Educational materials for providers, patients, and caregivers
- Online continuing education
- Information on medications linked to falls
- Clinical decision support for electronic health record systems

You play an important role in caring for older adults, and you can help reduce these devastating injuries.
**Algorithm for Fall Risk Screening, Assessment, and Intervention**

**START HERE** Patient completes the *Stay Independent* brochure

**Screen for fall risk**
- Patient scores ≥ 4 on the *Stay Independent* brochure
  - OR
- Clinician asks key questions:
  - Fell in past year?
  - If YES ask, How many times? Were you injured?
  - Feels unsteady when standing or walking?
  - Worries about falling?

Score ≥ 4 — OR — YES to any key question

**Evaluate gait, strength, & balance**
- Timed Up & Go (recommended)
- 30-Second Chair Stand (optional)
- 4-Stage Balance Test (optional)

No gait, strength or balance problems*

Gait, strength or balance problem

≥ 2 falls
- Injury

1 fall
- No injury

0 falls

**Conduct multifactorial risk assessment**
- Review the *Stay Independent* brochure
- Falls history
- Physical exam, including:
  - Postural dizziness
  - Postural hypotension
  - Medication review
  - Cognitive screening
  - Feet & footwear check
  - Use of mobility aids
  - Visual acuity check

**HIGH RISK individualized fall interventions**
- Educate patient
- Vitamin D +/- calcium
- Refer to PT to enhance functional mobility & improve strength & balance
- Manage & monitor hypotension
- Manage medications
- Address foot problems
- Optimize vision
- Optimize home safety

**Follow up with HIGH RISK patient within 30 days**
- Review care plan
- Assess & encourage fall risk reduction behaviors
- Discuss & address barriers to adherence
  - Transition to maintenance exercise program when patient is ready

**LOW RISK**

Individualized fall interventions
- Educate patient
- Vitamin D +/- calcium
- Refer for strength & balance exercise (community exercise or fall prevention program)

**MODERATE RISK**

Individualized fall interventions
- Educate patient
- Vitamin D +/- calcium
- Refer to PT to improve gait, strength, and balance
  - OR
  - Refer to a community fall prevention program

*For these patients, consider additional risk assessment (e.g., medication review, cognitive screen, gait check).

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

2017

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Appendix B: Preventing Falls in Older Patients, Provider Pocket Guide (CDC, 2017e)

Key Facts About Falls:
- One in four older adults (age 65+) fall every year.
- Many patients who have fallen do not talk about it.

Fall Screening Questions:
- Have you fallen in the past year?
- Do you feel unsteady when standing or walking?
- Do you worry about falling?

For more information, visit www.cdc.gov/steady

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Appendix C: Chair Rise Exercise (CDC, 2017e)

**RECOMMENDED EXERCISE**

**Chair Rise Exercise**

**What it does:** Strengthens the muscles in your thighs and 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 and feet flat on the floor, shoulder-width apart.
2. Rest your hands lightly on the seat on either side of you, keeping your back and neck straight, and chest slightly forward.
3. Breathe in slowly. Lean forward and feel your weight on the front of your feet.
4. Breathe out, and slowly stand up, using your hands as little as possible.
5. Pause for a full breath in and 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 and work up to this number.

Rest for a minute, then do a final set of 10-15.
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, crosswalks, 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

*Fall Prevention for Community Dwelling Older Adults*

## Participant Information:

1. Name: __________________________________________

2. Mailing address: ____________________________  
__________________________  
__________________________  
__________________________

3. Date exam completed ________________________

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

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**For credit**, please return: MTGEC/IPHARM, Skaggs Building, Room 318, University of Montana, 32 Campus Dr., Missoula, MT 59812.
### Evaluation: **Fall Prevention for Community Dwelling Older Adults**

Please indicate your major:

1. Based on the module description and stated objectives, this module met my expectations of the content it would deliver.

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2. How effective were the following in helping you understand the material?

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3. I learned something I can use in my practice/employment or personal setting.

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4. How do you plan to implement the information from this module to strengthen your practice, employment or personal goals? (check any that apply)

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<th>Provide new information to family/friends/co-workers</th>
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* Describe 'other' implementation plan here:

5. How long did it take you to complete the module? (including pre-test, module review, post-test and evaluation)

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<td>0</td>
</tr>
</tbody>
</table>

6. The test questions were relevant to the module content.

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neither Agree nor Disagree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>Don't Know</th>
</tr>
</thead>
<tbody>
<tr>
<td>O</td>
<td>0</td>
<td>O</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

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: MTGEC/IPHARM, Skaggs Building, Room 318, University of Montana, 32 Campus Dr., Missoula, MT 59812.