

**Evidence Based Practice in Falls and Fall Prevention**

March 2023

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**Objectives**

- Knowledge and understanding of the definition of a “fall” and how it is a complex multifactorial phenomenon
- Knowledge and understanding of falls and injuries burden on the individual, family/caregivers, and society.
- Identify modifiable and non-modifiable risk factors for falls and evidence-based interventions to address modifiable factors.
- Apply STEADI algorithm screen tool and understand limitations in acute care hospital setting.
- Identify common fall screening tools and limitations in predicting recurrent fallers and injury.
- Select evidence-based interventions for patients to reduce falls and injury.

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**What is a fall?**

- Fall<sup>1</sup>
  - An event that results in a person coming to rest inadvertently on the ground or floor or other lower level, with or without injury

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## Is it just balance?



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## Falls Continued...

- Falls<sup>1</sup>
  - A complex multifactorial phenomenon, a syndrome, and an indication of an emerging or worsening health condition.



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## Personal Impact<sup>1</sup>

- Physical Injury
- Quality of Life
  - Decreased independence
  - Living Arrangements
- Mental Health



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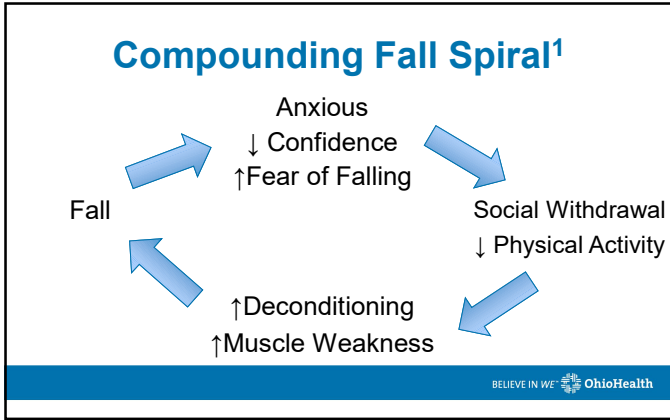
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### Leading Causes of Death<sup>2</sup>

Top 10 Causes of Death Among Older Adults									
1	2	3	4	5	6	7	8	9	10
Heart Disease	Cancer	Chronic Lower Respiratory Disease	Stroke	Alzheimer's Disease	Diabetes	Unintentional Injury	Influenza & Pneumonia	Kidney Disease	Parkinson's Disease

Top 3 Causes of Unintentional Injury Deaths		
1	2	3
Fall	Motor Vehicle (Traffic-related)	Unspecified

Data source: National Vital Statistics System

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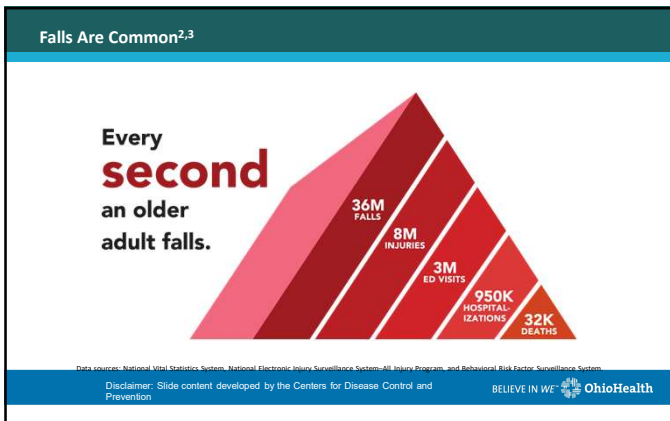
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**Falls Might Not Be a Priority for Patients<sup>4,6</sup>**

Less than half of older adults who fall talk to their doctor about falls

Reasons patients do not talk to their doctor:

- Belief that falls are a normal part of aging
- Fear that a fall may lead to loss of independence
- Not aware of common fall risk factors

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**Falls Might Not Be a Priority for Patients<sup>9</sup>**

Few older adults speak to someone about medications and fall risk

**Example:**  
In the past 12 months, who has talked to you about medications that might make you fall?\*

NO ONE	DOCTOR	OTHER HEALTHCARE PROVIDERS (INCLUDING PHARMACEUTIST)	FAMILY/CAREGIVER/OTHER
82%	15%	8%	3%

\*Percentage does not add up to 100 because participants could select more than one response option. Source: ConsumerStyles survey 2016. Disclaimer: Slide content developed by the Centers for Disease Control and Prevention. BELIEVE IN WE OhioHealth

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**Falls Might Not Be a Priority for Providers<sup>7,8</sup>**

Providers also face many barriers to addressing falls with older patients

- Competing healthcare priorities
- Lack of time during office visits
- Limited fall prevention knowledge
- Limited communication between providers from different disciplines
- Limited reimbursement strategies

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### Consequences of Falls Among Older Adults<sup>9-12</sup>

-  More than 95% of hip fractures are due to falls
-  Falls are the leading cause of traumatic brain injuries
-  Falls and fall injuries increase the risk of nursing home placement
-  Fall death rates increased about 30% between 2009 and 2018

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### Falls Are Costly<sup>13-15</sup>

- Average hospitalization cost due to a fall injury is \$30,000
  - Fall-related injuries are a leading cause of hospital readmission
- Average cost per fall injury:
  - Emergency Department visits = \$4,829
  - Office-based and outpatient visits = \$5,813

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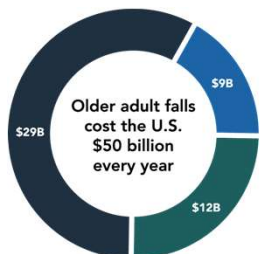
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### Falls Are Costly<sup>16</sup>

Older adult falls cost the U.S. \$50 billion every year



- Medicare: \$29 billion
- Medicaid: \$9 billion
- Private/Out-of-Pocket: \$12 billion

Florence C., et al. (2018). Medical costs of fatal and nonfatal falls in older adults. *Journal of the American Geriatrics Society*, 66(4), 693-698.

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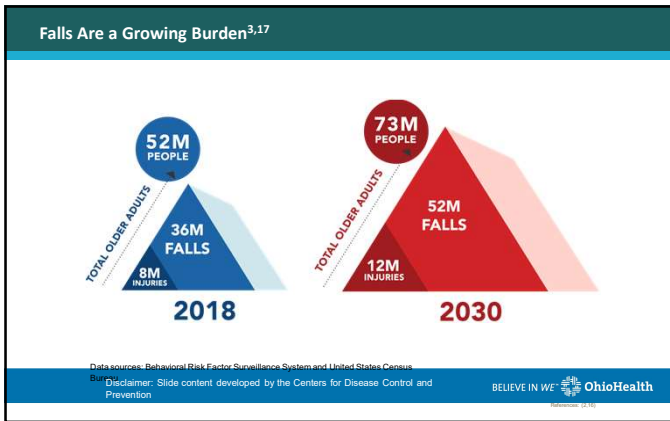
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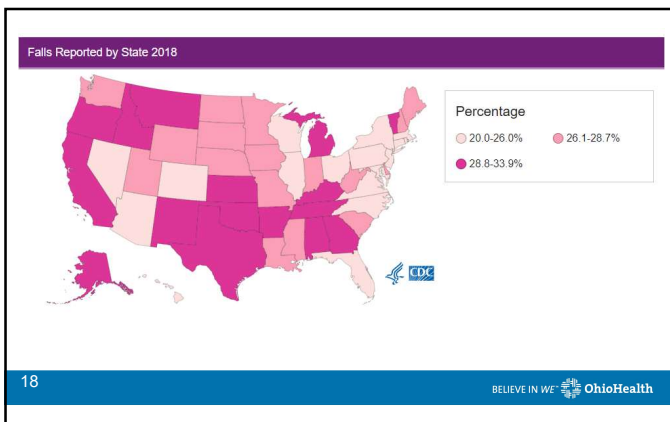
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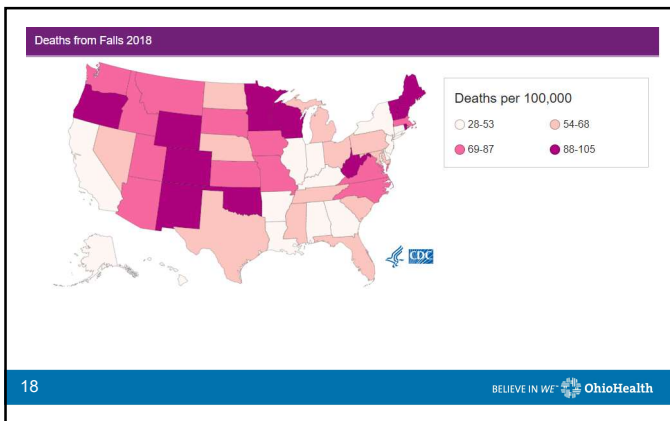
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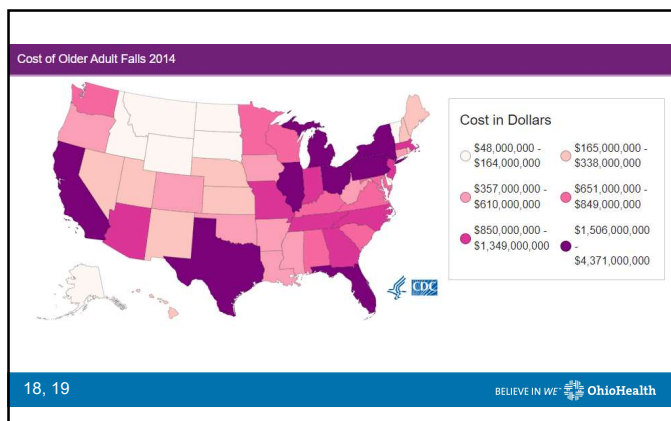
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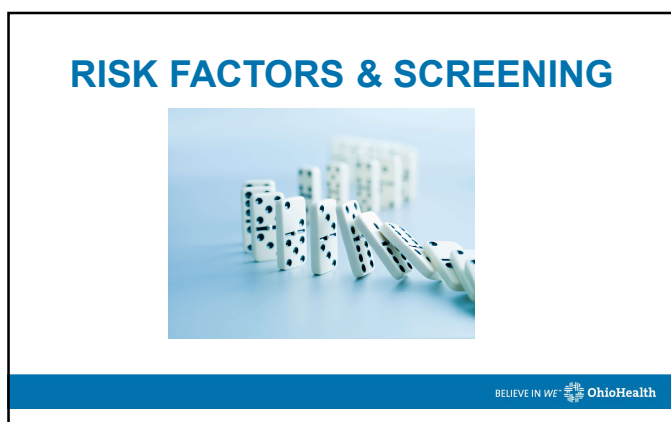
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**Common Fall Risk Factors<sup>3,20-23</sup>**

Modifiable Risk Factors	Non-modifiable Risk Factors
<ul style="list-style-type: none"> <li>Gait, strength, and balance deficits</li> <li>Medications that increase fall risk</li> <li>Home hazards</li> <li>Orthostatic hypotension</li> <li>Vision problems</li> <li>Foot issues/inappropriate footwear</li> <li>Vitamin D deficiency</li> <li>Comorbidities</li> </ul>	<ul style="list-style-type: none"> <li>Age</li> <li>Sex</li> <li>Race/ethnicity</li> <li>History of falls</li> </ul>

**Fall risk increases as the number of risk factors increases.**

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## BALANCING ACT

- Risks & Benefits<sup>1</sup>
  - Fall Prevention and Injury Reduction
  - Vs.
  - Personal Freedom, Dignity and Quality of Life
- Family, Caregivers, Healthcare Professionals
  - Focus on falls
  - Inadvertently constrain independence
    - Caution against risk adverse approach
      - Physical restraints
      - Sedating medications
      - Restricting Mobility

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### Falls Are Preventable<sup>23,24</sup>

The [Stopping Elderly Accidents, Deaths, and Injuries \(STEADI\)](#) initiative was developed by the U.S. Centers for Disease Control and Prevention (CDC)

- o STEADI is based on the American and British Geriatrics Societies' Clinical Practice Guideline for Prevention of Falls in Older Persons and designed with input from healthcare providers
- o STEADI offers tools and resources to help healthcare providers **Screen, Assess, and Intervene** to reduce fall risk



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### Overcoming Implementation Barriers<sup>25</sup>

- Use existing incentives to screen and assess for fall risk
  - o Welcome to Medicare Visit
  - o Annual Medicare Wellness Visit
- Adapt STEADI tools to fit priorities and clinical workflow



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**Successful Implementations<sup>26-28</sup>**


Oregon Health & Science University, Oregon

- 64% of patients screened for fall risk
- At-risk patients with modifiable risk factors, such as gait impairment and orthostatic hypotension, received interventions

United Health Services Hospitals, New York

- 79% of patients screened for fall risk
- At-risk patients with a fall prevention care plan were 40% less likely to have a fall-related hospitalization, compared to at-risk patients without a plan

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**Benefits of a STEADI-based Fall Prevention Program<sup>29,30</sup>**

Use STEADI to:

- Prevent fall-related hospitalizations
- Reduce healthcare costs
- Improve the lives and independence of older patients

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

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**STEADI Algorithm<sup>31</sup>**



STEADI Resource

STEADI Algorithm: Algorithm for Fall Risk Screening, Assessment, and Intervention

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**STEADI Algorithm for Fall Risk Screening, Assessment, and Intervention among Community-Dwelling Adults 65 years and older**

**START HERE** | **SCREEN** for fall risk yearly, or any time patient presents with an acute fall.

**Available Fall Risk Screening Tools:**

- **Stay Independent:** A 12-question tool (at risk if score  $\geq 4$ )
  - Important: If score  $\geq 4$  patient fell in the past year (if YES  $\rightarrow$  patient is at risk)
- **Three key questions** for patients (at risk if YES to any question)
  - Falls amblyopically when standing or walking?
  - Worries about falling?
  - Has fallen in past year?
  - If YES to any, "How many times?" "Were you injured?"

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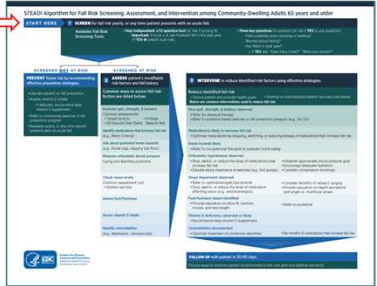
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**STEADI: Screening<sup>23,27,31</sup>**

- If your patient is 65 or older, screen
  - Once a year for fall risk **or**
  - If they present with an acute fall
- Two validated screening tools include
  - The Three Key Questions
  - CDC's *Stay Independent* questionnaire



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**Screening Tool: The Three Key Questions<sup>27</sup>**

Ask your patient these questions:

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

**RESULTS**

**"Yes" to ANY key question**

Interpretation: Screened at fall risk

Next steps: Conduct fall risk assessment

**"No" to ALL key questions**

Interpretation: Screened not at fall risk

Next steps: Recommend strategies to prevent future fall risk

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**Screening Tool: Stay Independent Questionnaire<sup>32,33</sup>**

Check Your Risk for Falling		Circle "Yes" or "No" for each statement below	Why it matters
Yes (2)	No (0)	I have fallen in the past year.	People who have fallen once are likely to fall again.
Yes (2)	No (0)	I use or have been advised to use a cane or walker may wobble or get around safely.	People who have been advised to use a cane or walker may already be more likely to fall.
Yes (1)	No (0)	Sometimes I feel unsteady when I am walking.	Unsteadiness or needing support while walking are signs of poor balance.
Yes (1)	No (0)	I steady myself by holding onto furniture when walking at home.	This is also a sign of poor balance.
Yes (1)	No (0)	I am worried about falling.	People who are worried about falling are more likely to fall.
Yes (1)	No (0)	I need to push with my hands to stand up from a chair.	This is a sign of weak leg muscles, a major reason for falling.
Yes (1)	No (0)	I have some trouble stepping up onto a curb.	This is also a sign of weak leg muscles.
Yes (1)	No (0)	I often have to rush to the toilet.	Rushing to the bathroom, especially at night, increases your chance of falling.
Yes (1)	No (0)	I have lost some feeling in my feet.	Numbness in your feet can cause stumbles and lead to falls.
Yes (1)	No (0)	I take medicine that sometimes makes me feel light-headed or more tired than usual.	Side effects from medicines can sometimes increase your chance of falling.
Yes (1)	No (0)	I take medicine to help me sleep or improve my mood.	These medicines can sometimes increase your chance of falling.
Yes (1)	No (0)	I often feel sad or depressed.	Symptoms of depression, such as not feeling well or feeling slowed down, are linked to falls.
<b>Total</b>		Add up the number of points for each "Yes" answer. If you scored 4 points or more, you may be at risk for falling. Please talk to your doctor about your doctor.	

**Stay Independent**  
Learn more about fall prevention.

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**Screening Tool: Stay Independent Questionnaire<sup>32,33</sup>**

**RESULTS**

**Score of 4 or more**  
 Interpretation: Screened at fall risk  
 Next steps: Conduct fall risk assessment

**Score less than 4 and patient fell in the past year**  
 Interpretation: Screened at fall risk  
 Next steps: Conduct fall risk assessment

**Score less than 4**  
 Interpretation: Screened not at fall risk  
 Next steps: Recommend strategies to prevent future fall risk

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**Tips to Implement Fall Screening<sup>34</sup>**

- Integrate screening tools to fit your clinic workflow
  - Example: Add to usual patient intake forms
- Find an optimal time to ask screening questions
  - Before an office visit—by phone or online portal
  - During routine office visit—in the waiting room or the exam room
  - During Welcome to Medicare Examination or Medicare Annual Wellness Visit
- Set screening goals and monitor progress
  - Example:
    - Goal: We will screen 50% of our older adult patients in 30 days
    - Monitor: Percent of older patients screened for fall risk in the past 30 days
    - Share progress with team members

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**STEADI: Assessment<sup>23,35</sup>**

To identify modifiable fall risk factors in at-risk patients:

Conduct a falls history.

Example questions:

- How many times have you fallen?
- Did you have any symptoms prior to your fall?
- Where and when did you fall?

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**SCREENED NOT AT RISK**

**PREVENT** future risk by recommending effective prevention strategies.

- Educate patient on fall prevention
- Assess vitamin D intake
  - If deficient, recommend daily vitamin D supplements
- Refer to community exercise or fall prevention program
- Reassess yearly, or any time patient presents with an acute fall

**SCREENED AT RISK**

**ASSESS** patient's modifiable risk factors and fall history.

Common ways to assess fall risk factors are listed below:

Evaluate gait, strength, & balance

Common assessments:

- Timed Up & Go
- 4-Stage
- 30-Second Chair Stand
- Balance Test

Identify medications that increase fall risk (e.g., Beers Criteria)

Ask about potential home hazards (e.g., throw rugs, slippery tub floor)

Measure orthostatic blood pressure (Lying and standing positions)

Check visual acuity

Common assessment tool:

- Snellen eye test

Assess feet/footwear

Assess vitamin D intake

Identify comorbidities (e.g., depression, osteoporosis)

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**Preventing Falls and Reducing Injury from Falls**  
Fourth Edition

RCP  
RNIO

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PRACTICE RECOMMENDATIONS	LEVEL OF EVIDENCE	STATUS
<b>1.0 Research Question #1:</b> What are the most effective ways to identify adults at risk for falls or for injury due to falls?		
Recommendation 1.1: Screen all adults to identify those at risk for falls. Conduct screening as part of admission processes, after any significant change in health status, or at least annually. Screening should include the following approaches: <ul style="list-style-type: none"> <li>■ identifying a history of previous falls;</li> <li>■ identifying gait, balance, and/or mobility difficulties; and</li> <li>■ using clinical judgment.</li> </ul>	Ia & V	<b>NEW</b>
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Recommendation 1.2a: For adults at risk for falls, conduct a comprehensive assessment to identify factors contributing to risk and determine appropriate interventions. Use an approach and/or validated tool appropriate to the person and the health-care setting.	III	+
Recommendation 1.2b: Refer adults with recurrent falls, multiple risk factors, or complex needs to the appropriate clinician(s) or to the interprofessional team for further assessment and to identify appropriate interventions.	V	<b>NEW</b>
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## Practice Recommendations<sup>1</sup>

- Past Medical History of Falls
  - Strong Predictor
  - Near-falls, slips, missteps, and fear of falling
- Feasibility
  - Cannot screen every risk factor
  - Clinical Judgement
- \*The literature does not currently support the use of risk prediction tools in hospitals as a stand-alone approach to screening\*

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PRACTICE RECOMMENDATIONS	LEVEL OF EVIDENCE	STATUS
<b>2.0 Research Question #2:</b> What interventions are effective in preventing falls and reducing the risk for falls or falls-related injury among at-risk adults?		
Recommendation 2.1: Engage adults at risk for falls and fall injuries using the following actions: <ul style="list-style-type: none"> <li>■ explore their knowledge and perceptions of risk, and their level of motivation to address risk;</li> <li>■ communicate sensitively about risk and use positive messaging;</li> <li>■ discuss options for interventions and support self-management;</li> <li>■ develop an individualized plan of care in collaboration with the person;</li> <li>■ engage family (as appropriate) and promote social support for interventions; and</li> <li>■ evaluate the plan of care together with the person (and family) and revise as needed.</li> </ul>	Ia, III, & V	<b>NEW</b>

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Recommendation 2.2: Provide education to the person at risk for falls and fall injuries and their family (as appropriate) in conjunction with other falls prevention interventions. This includes providing information about risk for falls, falls prevention, and interventions.  Ensure that the information is provided in a variety of formats and in the appropriate language.	Ia & V	+
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**STEADI: Assessment<sup>23,35</sup>**

To identify modifiable fall risk factors in at-risk patients:

Conduct assessments:

- Evaluate gait, strength, and balance
- Identify medications that increase fall risk
- Ask about potential home hazards
- Measure orthostatic blood pressure
- Check visual acuity
- Assess feet and footwear
- Assess vitamin D intake
- Identify comorbidities

\* Disclaimer: Slide content developed by the Centers for Disease Control and Prevention.

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**STEADI: Intervention**<sup>23,35</sup>

STEADY algorithm for Fall Risk Screening, Assessment, and Intervention among Community-Dwelling Adults 65 years and older

**1. ASSESS** Fall Risk

**2. ASSESS** patient's functional status

**3. INTERVENE** to reduce identified risk factors using effective strategies

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Reference: 27

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**3. INTERVENE** to reduce identified risk factors using effective strategies.

**Reduce identified fall risk**

- Discuss patient and provider health goals
- Develop an individualized patient care plan (see below)

Below are common interventions used to reduce fall risk:

**Poor gait, strength, & balance observed**

- Refer for physical therapy
- Refer to evidence-based exercise or fall prevention program (e.g., Tai Chi)

**Medication(s) likely to increase fall risk**

- Optimize medications by stopping, switching, or reducing dosage of medications that increase fall risk

**Home hazards likely**

- Refer to occupational therapist to evaluate home safety

**Orthostatic hypotension observed**

- Stop, switch, or reduce the dose of medications that increase fall risk
- Educate about importance of exercises (e.g., foot pumps)
- Establish appropriate blood pressure goal
- Encourage adequate hydration
- Consider compression stockings

**Visual impairment observed**

- Refer to ophthalmologist/optometrist
- Stop, switch, or reduce the dose of medication affecting vision (e.g., anticholinergics)
- Consider benefits of cataract surgery
- Provide education on depth perception and single vs. multifocal lenses

**Feet/footwear issues identified**

- Provide education on shoe fit, traction, insoles, and heel height
- Refer to podiatrist

**Vitamin D deficiency observed or likely**

- Recommend daily vitamin D supplement

**Comorbidities documented**

- Optimize treatment of conditions identified
- Be mindful of medications that increase fall risk

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**Components of STEADI: Examples**<sup>23,25</sup>

Fall Risk Factor	Assessment	Intervention
Gait, strength, and balance deficits	Conduct tests: - Timed Up and Go (TUG) - 30-second chair stand - 4-stage balance	<ul style="list-style-type: none"> <li>Physical therapy</li> <li>Evidence-based fall prevention program</li> </ul>

**STEADI Resource**

- Handouts: TUG, 30-second chair stand, and 4-stage balance tests
- Instructional videos: TUG, 30-second chair stand, and 4 stage balance tests

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## STEADI Balance Screen

STEADI Balance Screen	
Variance	
Timed Up and Go	
TUG Assessment	
TUG Observations	
30 Second Chair Stand	
30 Sec Chair Stand Assessment	
4 stage Balance Test	

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## STEADI Balance Screen<sup>36-41</sup>

TUG Fall Risk Cut-Off Scores	
POPULATION	Cut-off time
Community dwelling adults	>13.5 seconds
Older Stroke Patients	>14 seconds
Older adults in falls clinic	>15 seconds
LE Amputees	>19 seconds
Parkinson's disease	>11.5 seconds
Vestibular Disorders	>11.1 seconds

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## STEADI Balance Screen<sup>42</sup>

30 - Second Sit-to-Stand Test		
Age	Men	Women
60-64	17	15
65-69	16	15
70-74	15	14
75-79	14	13
80-84	13	12
85-89	11	11
90-94	9	9

\* MARK IT ZERO! If done with B UE support

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## STEADI Balance Screen<sup>43,44</sup>



1. Feet Together – Stand with feet side by side
2. Feet Staggered – place the instep of one foot so it is touching the big toe of the other foot.
3. Romberg Stance – place one foot in front of the other, heel touching toe.
4. One Foot – Stand on one foot.

FIGURE 1. Testing Positions for the 4-Stage Balance Test.

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## Screening into Assessment<sup>45</sup>

Neurologic Core Outcome Measures	
10 – Meter Walk Test (10mWT)	Walking Speed Assessment
5x Sit to Stand (5xSTS)	Functional Transfer Assessment
6 Minute Walk Test	Walking Distance / Endurance Assessment
Activities Specific Balance Confidence Scale (ABC)	Balance Confidence
Berg Balance Scale	Static Sitting / Standing Balance Assessment
Functional Gait Assessment	Dynamic / Walking Balance Assessment

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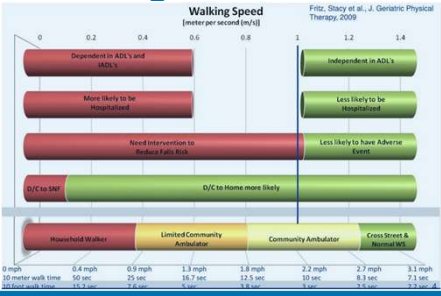
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## Screening into Assessment<sup>47</sup>



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## Fall Risk Screening Tools In ED<sup>44</sup>

- Not regularly screened
- Validated measures for setting / population?
- PT seeing small population
- Screening Tools
  - Falls Risk for Older People in the Community (FROP-COM)
    - Sensitivity 43.4%
  - **STEADI Toolkit – 12 item questionnaire**
    - Scores  $\geq 4$  did not predict adverse outcomes including recurrent falls.

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## Fall Risk Assessment Tools In ED<sup>44</sup>

- Functional Balance Assessments
  - TUG
    - Huded et al. 39% (443/1135) patients evaluated by geriatric RN liaison
    - Retrospective study – not predictive of future falls in ED
  - 4 – Stage Balance Test (4SBT)
    - Cut-off Score = < 10 seconds tandem stance
    - SLS (Stage 4) – valid and useful for fall screening in clinics + research setting
    - 4SBT alone might be insufficient for identifying fallers
      - Conclusion 2SBT + A-P Trunk sway measurements
      - Hypothesis – dynamic activity
      - Falls more than just balance
        - » Cognition, behavior, vision, endurance, environmental context, psychological, family / caregiver support

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## Fall Risk Assessment Tools In ED<sup>44</sup>

1. Feet Together – Stand with feet side by side.
2. Feet Staggered – place the instep of one foot so it is touching the big toe of the other foot.
3. Romberg Stance – place one foot in front of the other, heel touching toe.
4. One Foot – Stand on one foot.

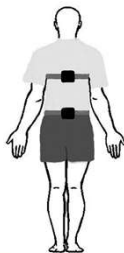


FIGURE 1. Testing Positions for the 4-Stage Balance Test.

FIGURE 2. (Pel) Goniometer: Calibration Placement at the Lower Border of the Pelvis (x100)

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## Hospital Inpatient Falls<sup>46</sup>

- Screens
  - Morse Fall Scale (Sn 76%; Sp 68%)
  - St Thomas Risk Assessment Tool (STRATIFY) (Sn 80%; Sp 61-68%)
  - **Schmid Fall Risk Assessment (Sn 93%; Sp 78%)**
- \*Do not include psychosocial factors
  - Except for mental status

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## Schmid Score

1. Mobility
  - a. (0) Ambulates with no gait disturbance
  - b. (1) ambulates or transfers with assistive device
  - c. (1) ambulates with unsteady gait and no assistance
  - d. (0) unable to ambulate or transfer
2. Mentation
  - a. (0) alert, oriented x 3
  - b. (1) periodic confusion
  - c. (1) confusion at all time
  - d. (0) comatose / unresponsive
3. Elimination
  - a. (0) Independent in elimination
  - b. (1) Independent, with frequency or diarrhea
  - c. (1) Needs assistance with toileting
  - d. (1) Incontinence
4. Prior Fall History (within past 6 months)
  - a. (1) Yes- Before Admission (Home or previous inpatient care)
  - b. (2) Yes - During this admission
  - c. (0) No
  - d. (0) Unknown
5. Current Medications
  - a. (1) A score of 1 given if the patient is on 1 or more of the following medications: Anticonvulsants/sedatives or psychotropics/hypnotics (consider all medication side effects and role in fall risk)

Score of 3 or more: Patient is at risk for falls and fall prevention interventions should be implemented.

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## Schmid Score

Flowsheets  
 File Edit View Add Rows Add Col Insert Col Light Filed Rag Doc Graph Go to Date Responsible Refresh More  
 PT Charges PT Eval and Tx PT Evaluation PT Tx NPH Vestibular Outcome Measures Soft Goods Daily Cares/Safety Daily Cares/Safety

Fall Risk Scale	
Mobility	
Mentation	
Elimination	
Prior Fall History	
Current Medications	
Fall Risk Score	
Fall Intervention	

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## Hospital Inpatient Falls<sup>46</sup>

- Prevention Protocols
  - Hospital beds
    - Wheels locked, lowest setting, bedrails
  - Alarms
    - Companions
  - Environment
    - Call light, telephone, bedside table, urinal, personal items in view
    - Closer to nursing station
  - Visuals
    - Wrist bands, signs, socks
  - Cognition
    - Diversional activity, re-orientation, rounding
  - Non-skid footwear, Gait belt
  - PT/OT order

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## Hospital Inpatient Falls<sup>46</sup>

- 55.2% patients screened to be at risk for falls did not have fall precaution protocol in place
- Predictors
  - ARI 30% fall precaution protocol missing
  - ARI 20% nonintact mental status
  - ARI 18% patients require supervision – min A
    - ARR 19% patients who were Independent
    - ARR 1% patients who were moderate A - Dependent
  - ARI 10% PMHx substance abuse
- \*Substance Abuse or Medicaid - ↓ protocol implementation 15%

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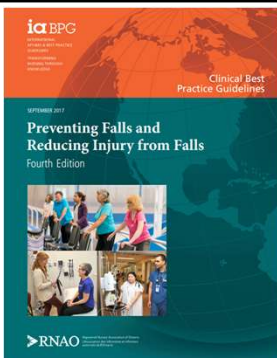
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<b>Mobility Level 1</b>  <b>OR</b>  <small>Air-Assisted Transfer Device</small>	<b>Mobility Level 2</b>  <b>OR</b>  <small>Powered Stand-Assist Device</small>
<b>Mobility Level 3</b>  <b>OR</b>  <small>Appropriate Assistive Device</small>	<b>Mobility Level 4</b>  <small>Gait Belt</small>

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## Interventions

- Physical Activity<sup>48-50, 59</sup>
  - ↑ Physical Activity = > ↓ Risk of falling and injuries from falls
    - Multicomponent -> Aerobic, Strength, Balance – most successful
- Exercise<sup>51-53</sup>
  - Single intervention; ↓ # fallers (36%) and recurrent fallers (41%) in nursing homes
  - Individually Tailored
    - Capabilities and Risks – most effective
- Post Fall Intervention<sup>54</sup>
  - Multidisciplinary in ED=> ↓ 6mo ED encounters
  - Home Based => strength & balance

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## Interventions

- Education<sup>55</sup>
  - Risk of falling ↑ Compliance fall preventions
- Calf Muscle Strengthening<sup>56</sup>
  - Balance Training + Calf strengthening 2x/wk x 5wks
- Walking Aid Training<sup>57</sup>
  - Risk factor for future falls
  - Extensive training periods
- Lumbar stabilization<sup>58</sup>
  - Balance training + lumbar stabilization

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**Components of STEADI: Examples<sup>23,25</sup>**

Fall Risk Factor	Assessment	Intervention
Medications that increase fall risk	Conduct a comprehensive medication review	Medication management - <b>Stop</b> medications when possible - <b>Switch</b> to safer alternatives - <b>Reduce</b> to lowest effective dose

**STEADI Resource**  
 Fact sheets: Medications Linked to Falls, SAFE Medication Review Framework, STEADI-Rx Pharmacist Flyer

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**Components of STEADI: Examples<sup>23,25</sup>**

Fall Risk Factor	Assessment	Intervention
Home hazards	Ask patients and their family members about home safety	<ul style="list-style-type: none"> <li>Refer to occupational therapy</li> <li>Recommend tips to improve home safety</li> </ul>

**STEADI Resource**  
 Educational material: *Check for Safety*

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**Check for Safety**  
 A Home Fall Prevention Checklist for Older Adults

Contact your local community or senior center for information on exercise, fall prevention programs, or options for improving home safety.  
 For additional information on fall prevention, visit [www.cdc.gov/steadi](https://www.cdc.gov/steadi)

**CDC** Centers for Disease Control and Prevention  
**STEADI** Stopping Elderly Accidents, Deaths & Injuries

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Use this checklist to find and fix hazards in your home.

STAIRS & STEPS (INDOORS & OUTDOORS)	FLOORS	BEDROOMS
<p><b>Are there papers, shoes, books, or other objects on the stairs?</b></p> <p><input type="checkbox"/> Always keep objects off the stairs.</p> <p><b>Are some steps broken or uneven?</b></p> <p><input type="checkbox"/> Fix loose or uneven steps.</p> <p><b>Is there a light and light switch at the top and bottom of the stairs?</b></p> <p><input type="checkbox"/> Have an electrician put in an overhead light and light switch at the top and bottom of the stairs. You can get light switches that glow.</p> <p><b>Has a stairway light bulb burned out?</b></p> <p><input type="checkbox"/> Have a friend or family member change the light bulb.</p> <p><b>Is the carpet on the steps loose or torn?</b></p> <p><input type="checkbox"/> Make sure the carpet is firmly attached to every step, or remove the carpet and attach non-slip rubber treads to the stairs.</p> <p><b>Are the handrails loose or broken? Is there a handrail on only one side of the stairs?</b></p> <p><input type="checkbox"/> Fix loose handrails, or put in new ones. Make sure handrails are on both sides of the stairs, and are as long as the stairs.</p>	<p><b>When you walk through a room, do you have to walk around furniture?</b></p> <p><input type="checkbox"/> Ask someone to move the furniture so your path is clear.</p> <p><b>Do you have throw rugs on the floor?</b></p> <p><input type="checkbox"/> Remove the rugs, or use double-sided tape or a non-slip backing so the rugs won't slip.</p> <p><b>Are there papers, shoes, books, or other objects on the floor?</b></p> <p><input type="checkbox"/> Pick up things that are on the floor. Always keep objects off the floor.</p> <p><b>Do you have to walk over or around wires or cords (like lamp, telephone, or extension cords)?</b></p> <p><input type="checkbox"/> Coil or tape cords and wires next to the wall so you can't trip over them. If needed, have an electrician put in another outlet.</p>	<p><b>Is the light near the bed hard to reach?</b></p> <p><input type="checkbox"/> Place a lamp close to the bed where it's easy to reach.</p> <p><b>Is the path from your bed to the bathroom dark?</b></p> <p><input type="checkbox"/> Put in a nightlight so you can see where you're walking. Some nightlights go on by themselves after dark.</p>
	<p><b>BATHROOMS</b></p> <p><b>Is the tub or shower floor slippery?</b></p> <p><input type="checkbox"/> Put a non-slip rubber mat or self-stick strips on the floor of the tub or shower.</p> <p><b>Do you need some support when you get in and out of the tub, or up from the toilet?</b></p> <p><input type="checkbox"/> Have grab bars put in next to and inside the tub, and next to the toilet.</p>	
	<p><b>KITCHEN</b></p> <p><b>Are the things you use often on high shelves?</b></p> <p><input type="checkbox"/> Keep things you use often on the lower shelves (about waist high).</p> <p><b>Is your step stool sturdy?</b></p> <p><input type="checkbox"/> If you must use a step stool, get one with a bar to hold on to. Never use a chair as a step stool.</p>	

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Components of STEADI: Examples<sup>23,25</sup>

Fall Risk Factor	Assessment	Intervention
<p><b>Orthostatic hypotension</b></p> <p>The patient has orthostatic hypotension if systolic blood pressure drops by at least 20 mm Hg or diastolic by at least 10 mm Hg</p>	<p>Measure orthostatic blood pressure</p> <ol style="list-style-type: none"> <li>1. Have the patient lie down for 5 minutes</li> <li>2. Check blood pressure</li> <li>3. Have the patient stand</li> <li>4. Check blood pressure within 3 minutes</li> </ol>	<ul style="list-style-type: none"> <li>• Treat underlying cause</li> <li>• Adjust medications if warranted</li> </ul>

**STEADI Resource**

Handout: *Measuring Orthostatic Blood Pressure*  
Educational material: *Postural Hypotension*

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## Orthostatic Hypotension<sup>60</sup>

- Causes
  - Neurogenic
    - Neuropathy
    - Central Lesion (PD, MSA)
  - Cardiac impairment ( MI, Aortic Stenosis)
  - ↓ Intravascular Volume (Dehydration)
  - Vasodilation
  - Medications

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## Orthostatic Hypotension<sup>60</sup>

- Symptoms
  - Lightheaded
  - Dizziness
  - Weakness
  - Difficulty Thinking
  - Headache
  - Syncope

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## Orthostatic Hypotension<sup>60</sup>

- Symptoms continued...
  - Compensatory autonomic over-reaction
    - Palpitations
    - Tremulousness
    - Nausea
    - Coldness of extremities
    - Chest pain
    - Syncope

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## Orthostatic Hypotension<sup>60</sup>

- Management
  - Goal:
    - ↓ Postural Sx
    - ↑ Standing time
    - ↑ Function
  - Dilemma:
    - ? ↑ Standing BP without ↑ Supine BP
  - Key: Understanding Cause

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## Orthostatic Hypotension<sup>60</sup>

- Management A-F:
  - A – Abdominal compression
  - B – Boluses of water + Bed Up
  - C – Counter Maneuvers
  - D – Drugs
  - E – Education + Exercise
  - F – Fluid & Salt (Volume Expansion)

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### Components of STEADI: Examples<sup>23,25</sup>

Fall Risk Factor	Assessment	Intervention
Vision impairment	<ul style="list-style-type: none"> <li>Ask patients about vision problems</li> <li>Use Snellen eye chart to assess visual acuity</li> <li>Ask if patient uses bifocal lenses when outdoors</li> </ul>	<ul style="list-style-type: none"> <li>Refer to ophthalmology or optometry</li> <li>Recommend single distance lenses for walking outside</li> </ul>

**STEADI Resource**  
 Guide: *Coordinated Care Plan to Prevent Older Adult Falls*  
 Educational materials: *Family Caregivers: Protect your Loved Ones from Falling, What You Can Do to Prevent Falls*

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### Components of STEADI: Examples<sup>23,25</sup>

Fall Risk Factor	Assessment	Intervention
Feet or footwear issues	<ul style="list-style-type: none"> <li>Look for foot deformities, deficits in sensation, or pain</li> <li>Assess for inappropriate footwear</li> </ul>	<ul style="list-style-type: none"> <li>Counsel on shoe fit, insoles, and heel height</li> <li>Refer to podiatry</li> </ul>

**STEADI Resource**  
 Guide: *Coordinated Care Plan to Prevent Older Adult Falls*  
 Educational materials: *Family Caregivers: Protect your Loved Ones from Falling, What You Can Do to Prevent Falls*

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**Components of STEADI: Examples<sup>23,25</sup>**

Fall Risk Factor	Assessment	Intervention
Comorbidities	Screen for comorbidities such as osteoporosis, depression, dementia, incontinence	Optimize treatments of identified conditions

**STEADI Resource**  
 Guide: *Coordinated Care Plan to Prevent Older Adult Falls*  
 Educational materials: *Family Caregivers: Protect your Loved Ones from Falling, What You Can Do to Prevent Falls*

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**Follow-Up**

Follow up with patients within 30–90 days

- Review plan of care
- Encourage adherence to recommendations
- Discuss barriers to adherence

**STEADI Resource**  
 Fact sheet: *Talking with Patients about Fall Prevention*  
 Educational materials: *Family Caregivers: Protect your Loved Ones from Falling*

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**Let's Do Our Part to Prevent Falls**

- Learn about older adult fall prevention and STEADI resources
  - Available at [www.cdc.gov/steadi](http://www.cdc.gov/steadi)
- Earn continuing education with an online training on fall prevention
  - STEADI: Empowering Healthcare Providers to Reduce Fall Risk  
 Available at [www.cdc.gov/steadi/training.html](http://www.cdc.gov/steadi/training.html)
- Hear from other healthcare providers on their STEADI experience
  - Available at [www.cdc.gov/steadi/about/success-stories.html](http://www.cdc.gov/steadi/about/success-stories.html)

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Appendix: Resource Gallery

STEADI Guides



Coordinated Care Plan to Prevent Older Adult Falls

Evaluation Guide for Older Adult Clinical Fall Prevention Programs

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Appendix: Resource Gallery

STEADI Assessment Handouts



Timed Up & Go (TUG)

4-Stage Balance

30-Second Chair Stand

Measuring Orthostatic Blood Pressure

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Appendix: Resource Gallery

STEADI Fact Sheets



Medications Linked to Falls

SAFE Medication Review Framework

STEADI-Rx Pharmacist Flyer

Talking about Fall Prevention with Your Patients

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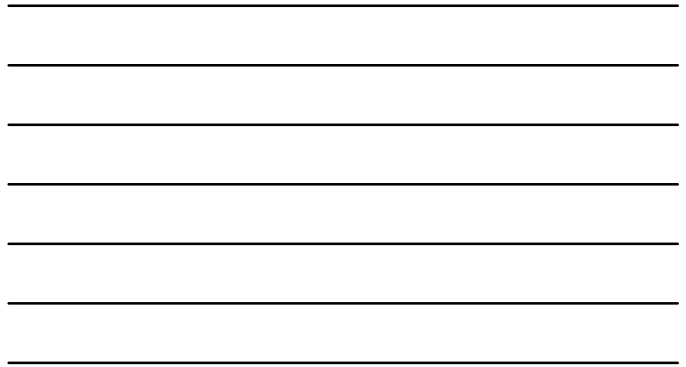
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**Appendix: Resource Gallery**

**STEADI Educational Materials**

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**Appendix: Resource Gallery**

**Wall Chart and Algorithm**

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