Fall Prevention: A Primary Care Perspective

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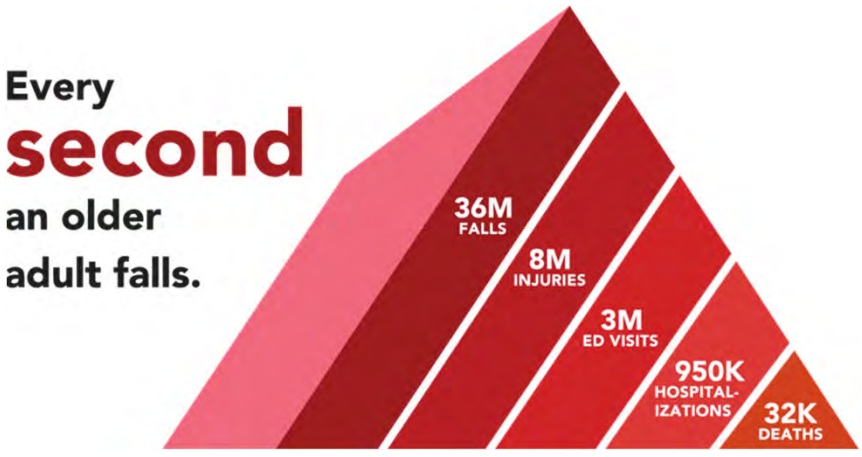
Learning Objectives / Outline

- Identify the common extrinsic and intrinsic factors that cause falls and address those that are modifiable, utilizing the CDC's STEADI Toolkit as a resource and guide.
- Be able to deprescribe medications for your patients with the goal of reducing fall risk.
- Enhance mobility and safety for your patients by evaluating gait, providing equipment recommendations, and referring to evidence-based exercise programs.

Falls: Magnitude of the Problem



Older Adult Falls Data (cdc.gov)

Moreland B, Kakara R, Henry A. Trends in Nonfatal Falls and Fall-Related Injuries Among Adults Aged ≥65 Years — United States, 2012–2018. MMWR Morb Mortal Wkly Rep 2020;69:875–881.

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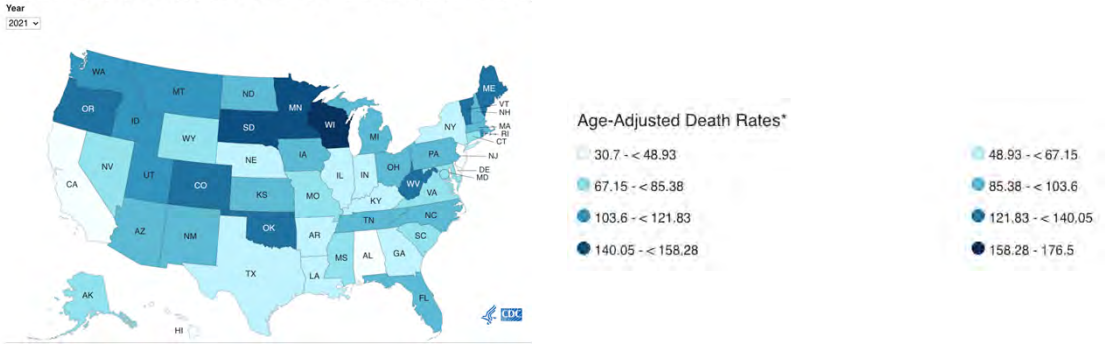
Falls: Magnitude of the Problem

- 1 out of 5 falls causes a serious injury (broken bones or head injury).
- 3 million older people are treated in ERs for fall injuries annually.
- >800,000 patients per year are hospitalized because of a fall injury, most often head injury or hip fracture.

Older Adult Falls Data (cdc.gov)

Falls: Magnitude of the Problem

- Leading cause of injury-related **death** among adults >65 yrs old.
- The age-adjusted fall death rate increased by 41% from 55.3 per 100,000 older adults in 2012[1] to 78.0 per 100,000 older adults in 2021



Older Adult Falls Data (cdc.gov)

Financial Burden of Falls

- $50 billion per year is spent on medical costs related to non-fatal fall injuries
- $754 million is spent related to fatal falls
- Medicare and Medicaid shoulder 75% of these costs

Florence CS, Bergen G, Atherly A, Burns ER, Stevens JA, Drake C. Medical Costs of Fatal and Nonfatal Falls in Older Adults. *Journal of the American Geriatrics Society,* 2018 March, DOI:10.1111/jgs.15304external icon

Reality of Fall Prevention in Clinical Practice

- History of falls rarely elicited
- Fall risk factors not identified
- Most elders seen in ED for falls had no recommendation or appointment for follow-up beyond acute injury

Paniagua MA, et al. Am J Emerg Med, 2006.

Multifactorial Fall Risk Assessment and Management

- Meta-analysis of trials: Multifactorial interventions reduce falls in community-dwelling people with risk factors for falling
- Other trial-demonstrated benefits:
  - Improved physical functioning
  - Improved quality of life
  - Cost-effective

Robertson CM, et al. JAMA 2013.
Tinetti ME, et al. NEJM, 2008.

Why do people fall?

- Interaction between an individual's risk factors and the environment.
  - A combination of intrinsic & extrinsic factors

Intrinsic Factors
- Leg weakness
- Balance impairment
- Gait abnormality
- Vision impairment
- Vitamin D deficiency
- Comorbid conditions
- Orthostatic hypotension

Extrinsic Factors
- Assistive device use/fit
- Environmental Factors
- Footwear
- Medications, Alcohol

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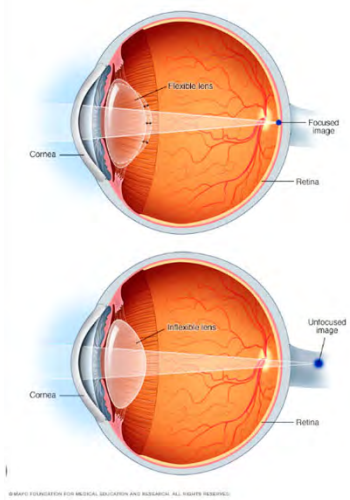
Intrinsic Factors: Vision Changes



- **Normal age-related changes:**
  - Thickening and loss of elasticity of lens (presbyopia)
  - Reduced pupillary response to light variation
- **Common diseases of the eye:**
  - Cataracts
  - Macular degeneration
  - Glaucoma

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Vitamin D Deficiency & Fall Risk

- Vitamin D deficiency can contribute to loss of muscle mass, decreased strength, and hip fracture.
- Vitamin D supplementation is recommended for older patients **at-risk for falls and/or those at risk for low vitamin D** (institutionalized/indoors, obese, history of malabsorption, etc).
- Dosing recommendations vary, but 800-1000u daily is a reasonable range.

https://pubmed-ncbi-nlm-nih-gov.offcampus.lib.washington.edu/18088161/

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Intrinsic Factors: Comoribid Conditions

Vision & Hearing cataracts, macular degeneration, glaucoma, presbycusis	Cardiovascular orthostasis, aortic stenosis, bradycardia, CHF	Musculoskeletal arthritis, foot deformities, chronic pain, spinal stenosis
Urological incontinence, nocturia	Sleep & Mood sleep deprivation, insomnia, depression	Neurological stroke, dementia, peripheral neuropathy, Parkinsonism*

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Orthostasis and Postural Dizziness

- **Definition Reminder:**
  - **Systolic decrease of ≥ 20mmHg or a diastolic decrease of ≥ 10mmHg within 3min of standing from a sitting or lying position for at least five minutes.**
    - For a patient unable to stand, orthostatics can be measured from lying to sitting position.
    - Note a rise in pulse upon standing OR **symptoms of dizziness, regardless of the numbers**

Affects 30% of community-dwelling elders.

- **Causes:**
  - Neurogenic (Parkinson's disease, autonomic neuropathy).
  - Non-neurogenic (aortic stenosis, volume depletion, vasodilation, deconditioning, postprandial).

Orthostasis and Postural Dizziness

Common <u>medications</u> causing orthostatic hypotension

- **Diuretics (furosemide, etc)**
- Antihypertensives: **calcium channel blockers, beta blockers*, nitrates**
- Alpha blockers: **doxazosin*, prazosin*, …tamsulosin**
- Antidepressants: **TCAs*, paroxetine, venlafaxine, trazodone**
- Antipsychotics: **quetiapine***
- **Levodopa**

**meds that inhibit sympathetic activity → increased odds of causing OH*

**pts on multiple BP meds targeting different parts of the BP reflex pathway carry a cumulative risk*

Why do people fall?

- Interaction between an individual's risk factors and the environment
  - A combination of <u>intrinsic</u> & <u>extrinsic</u> factors

<u>*Intrinsic* Factors</u>
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- Gait abnormality
- Vision impairment
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- Orthostatic hypotension

<u>*Extrinsic* Factors</u>
- Assistive device use/fit
- Environmental Factors
- Footwear
- Medications, Alcohol

Extrinsic factors: Environmental Factors

- Inadequate lighting
- Loose objects on floor (throw rugs, cords, clutter)
- Unsafe steps (broken, no railings)
- Items in hard to reach places
- Slippery tub/shower, lack of grab bars by toilet/shower
- Step stools, ladders
- Pets underfoot

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- Environmental Factors
- Footwear
- Medications, Alcohol

Extrinsic factors: Footwear

The enemies:

- Sandals
- Open-backed shoes (mules/slides)
- Bare feet
- Stocking Feet
- High Heels
- Flip-Flops
- Open-backed slippers
- Too big shoes
- Smashed heels

The allies:

- Shoes with good sole contact area, closed-toe, covered heel are best
- Athletic/canvas shoes associated with lowest risk.
- Non-skid hospital socks issued from clinic ☺

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Extrinsic Factors
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- Environmental Factors
- Footwear
- Medications, Alcohol/drugs

Extrinsic factors: Polypharmacy, High-Risk Meds

≥4 meds = fall risk

Certain classes of meds impact balance:

- Psychoactive meds (benzodiazepines, *high-dose* SSRIs, sedative-hypnotics, Trazodone, TCAs)
- BP meds (esp vasodilators, beta blockers, any BP med in high dose)
- Anticonvulsants (including Gabapentin)
- Anticholinergics (Meclizine, Oxybutynin, …and ask about OTCs like Benadryl, Tylenol PM, & Dramamine)
- Muscle relaxants (esp cyclobenzaprine)
- Opioids (in high doses), Tramadol

Let's talk about **deprescribing**

The health care system is geared toward **starting** medications, not **reducing or stopping** them.

Guidelines typically include recommendations for initiating medications, but not stopping them.

Although any medication may offer potential benefit, each also has **potential harm**.

- Newer generations of meds often have better side effect profiles, efficacy, dosing, etc.

When combined, the risk of **interactions** with other medications or conditions or **cumulative harms** can outweigh the benefits.

https://www.aafp.org/pubs/afp/issues/2019/0101/p7.html#afp20190101p7-t1

Deprescribing

The four issues to discuss with your aging patient.

- The way older bodies respond to and process medication changes, and lower medication dosages can avoid adverse effects while achieving the same benefit.
- There is often weaker evidence regarding medication effectiveness, especially in patients who have multiple comorbidities and who are frail.
- The additive adverse effects from medication burden.
- The possible evolving goals of treatment as patients near the end of life.

https://www.aafp.org/pubs/afp/issues/2019/0101/p7.html#afp20190101p7-t1

The Deprescribing Process

Step 1:

1) Identify potentially inappropriate medications

Consider:

- Continued necessity, benefit
- Contribution to or cause of an adverse reaction
- Future risk of adverse reaction
- Medication or food interactions
- Adherence
- Patient preference
- Goals of care, life expectancy

Resources:

- AGS Beers criteria
- Anticholinergic burden scales:
  - BMC Geriatrics
  - Ephor ACB Scale
  - ACBcalc.com
- MedStopper.com
- STOPP/START tool

https://www.aafp.org/pubs/afp/issues/2019/0101/p7.html#afp20190101p7-t1

The Deprescribing Process

Steps 2, 3, 4:

2) Determine if the medication dosage can be reduced or the medication stopped

3) Plan tapering and withdrawal steps

4) Monitor (for adverse withdrawal events and against criteria for restarting) and support patient

Consider:

How to best engage the patient in a conversation about deprescribing, determine options, and provide monitoring and support.

Resources:

- Deprescribing.org guidelines and algorithms
- Deprescribing.org patient info pamphlets

https://www.aafp.org/pubs/afp/issues/2019/0101/p7.html#afp20190101p7-t1

The Deprescribing Process

Step 5:

5) Document outcomes

Consider:

Documenting reasons for changes and positive and negative outcomes to facilitate future care and prescribing decision making.

https://www.aafp.org/pubs/afp/issues/2019/0101/p7.html#afp20190101p7-t1

Deprescribing: how to start

- Each step requires ***time, careful thought, preparation***, and ***conversation***.
- Leveraging the ***longitudinal relationship*** of geriatric medicine is helpful.
- Assess ***one particular adverse effect*** across all medications (e.g., additive anticholinergic effect affecting cognition).
- Routinely asking if a ***patient's problem*** (e.g. falls, cognitive impairment) is caused by a medication.
- Look for "***legacy prescribing***" (Short duration Rxs that became indefinite, e.g., PPIs, SSRIs, BZDs). Put a flag in the system or a note in the Rx.
- Focus on ***specific medications*** (target meds known to have significant change in metabolism, excretion, effects in older patients – like beta blockers).

https://www.aafp.org/pubs/afp/issues/2019/0101/p7.html#afp20190101p7-t1

Examples of How to Discuss Deprescribing with Patients

Introducing choice

You are on a number of medications now. I would like to regularly review these to make sure each of them is still benefiting you, as well as check for side effects.

Medication side effects can add up. I'm worried that "x," "y," and "z" might all contribute to memory challenges.

Several of your medications might be contributing to this growing issue you are having with falls. I would like to tell you about different options to reduce risks from these medications. We can try reducing the dose or stopping one or more of these medications. What do you think?

As we get older, medications that worked well may no longer have the same benefit; in particular, I'm thinking that "x" may no longer be needed.

A "course" for this medication is usually eight weeks. Because you have been taking it for longer than "x" weeks, we can reduce the dose slowly and stop it.

Benefits and risks

If we reduce the dose or stop your sleeping pill(s), there is a risk you might have difficulty sleeping for a few nights. We will need to focus on how you can get a good night's sleep without medication. On the plus side, if the sleeping pill is reduced or stopped, you may feel less tired in the morning and have fewer falls.

Exploring options and making decisions

From your point of view, what matters most to you? How do you feel about these options? Is this something you would consider?

What medications are important for you to keep taking?

Are you ready to decide? Do you need more time?

Would you like to try a "pause and monitor" approach, in which we stop the medication, monitor you carefully, and restart the medication if needed?

https://www.aafp.org/pubs/afp/issues/2019/0101/p7.html#afp20190101p7-t1

Having conversations about your medications.

Take part in decisions about your medications with your healthcare provider. Consider using the prompts or questions below to help you when having these important conversations.

- "It is important to me that…."
- "What are the different options available to me? Are there any non-drug options?"
- "What are the risks and benefits of each option?"
- "I would prefer…."

deprescribing.org

ONTARIO CLRI Centres for Learning, Research & Innovation in Long-Term Care

INSTITUT DE RECHERCHE Bruyère RESEARCH INSTITUTE

https://deprescribing.org/wp-content/uploads/2021/07/SDM-in-Medication-Management-Cue-Card_V5.pdf

5 STEPS to Participate in Shared Decision-Making About Medications.

1. **CONSIDER** that a decision about your medication may need to be made.
2. **SHARE** goals of care and preferences.
3. **ASK** about the benefits, risks and expected outcomes of each option and listen to what the healthcare provider says about reasonable expectations.
4. Feel like you **UNDERSTAND** each option, ask questions if not sure.
5. **HELP** make an informed decision about medication options and let your healthcare provider know if you change your mind.

For more information visit www.deprescribing.org/deprescribing-in-ltc-framework/

https://deprescribing.org/wp-content/uploads/2021/07/SDM-in-Medication-Management-Cue-Card_V5.pdf

STEADI Initiative: CDC toolkit for you

- The Stopping Elderly Accidents, Deaths, and Injuries (STEADI) Initiative was developed by the U.S. Centers for Disease Control and Prevention (CDC)
- 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.
- STEADI offers tools and resources to help healthcare providers **Screen**, **Assess**, and **Intervene** to reduce fall risk.

STEADI Algorithm: for Screening, Assessment, & Intervention

STEADI Algorithm: for Screening, Assessment, & Intervention

STEADI: Screening

- **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"
  1) Have you fallen in the past year?
  2) Do you feel unsteady when standing or walking?
  3) Do you worry about falling?
     → If "yes" to any ONE question → conduct falls risk assessment
     → If "no" to all questions → recommend strategies to prevent future falls

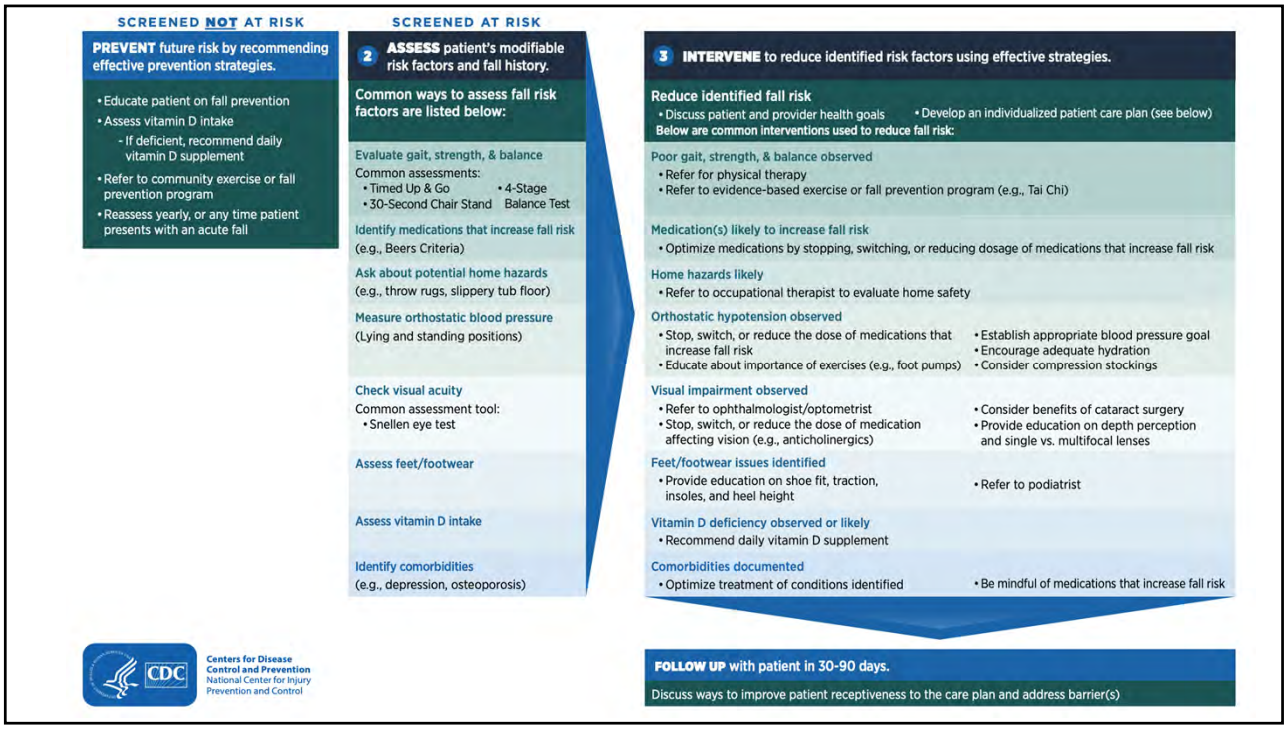
  CDC's *Stay Independent* questionnaire

Screening Tool: "Stay Independent" Questionnaire

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 to 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.
Total		Add up the number of points for each "yes" answer. If you scored 4 points or more, you may be at risk for falling. Discuss this with me will your doctor.	

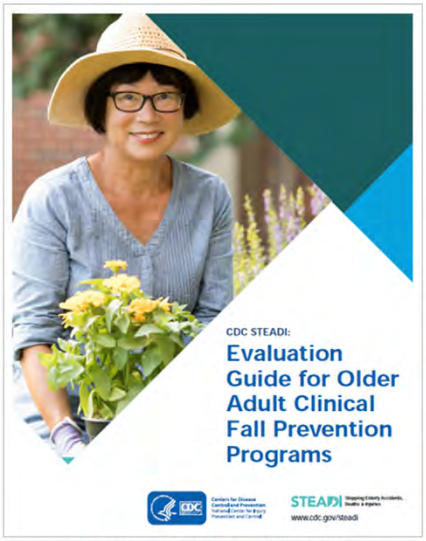
This checklist was developed by the Greater Los Angeles VA Geriatric Research Education Clinical Center and affiliates and is a validated fall risk self-assessment tool (Rubenstein et al. J Safety Res. 2011; 42(6):493-499). Adapted with permission of the authors.



CDC STEADI Toolkit: Patient Education Materials

CDC STEADI Toolkit: Clinical Resources For Providers

Coordinated Care Plan [PDF – 13 MB]



Evaluation Guide [PDF – 4 MB]

CDC STEADI Toolkit: Clinical Resources For Providers

Putting this all together…

Harborview Fall Prevention Clinic

- Comprehensive fall risk assessment and management for those who have fallen or have gait and balance problems
  - Aged 65+ and <65 with referral review
  - Outpatients (or nearing SNF discharge)
- Interdisciplinary approach
  - Physical therapy
  - Geriatric medicine
  - Social work
  - Pharmacy
  - Nutrition
- Dedicated medical assistant
- In-person or telephonic interpreter services

Harborview Fall Prevention Clinic

- Comprehensive identification of fall risk factors
- Gait and balance assessments
- Assistive device assessment, fitting, and recommendations
- Medication adjustment recommendations, deprescribing
- Patient/caregiver education, including written materials
- Targeted laboratory tests and imaging
- ***…these elements can be done in the Primary Care setting!***

Fall Evaluation

- History: Think **SPLAT!**

- (S) Symptoms preceding the fall
  - Dizziness, lightheadedness, vertigo, knee laxity, etc.
- (P) Previous falls or near falls
  - How frequent, in what setting, do they have a *fear of falling*
- (L) Location to identify environmental factors
  - At home or in community, on what surface, lighting, tripping hazards, on stairs, etc.
- (A) Activity at the time
  - Multitasking? Hurrying? Turning? Reaching? Just stood up? Using walker/cane?
- (T) Time of fall
  - Time of day, ?cocktail hour, relationship to meds taken, meal eaten, etc.
  - How much time needed to get up from fall? >5min or required assistance → risk of long lie

Fall Evaluation

- **Key Physical Exam Components:**
  - Orthostatics (can abbreviate to lying→standing, note postural dizziness regardless of BP)
  - Gait & balance evaluation:
    - Width of base
    - Step height, foot dorsiflexion, stride length
    - Truncal rotation, arm swing
    - Observe balance with turning
    - Assistive device: proper fit, proper use, adequate support
  - Leg strength ("Can you stand up from this chair without pushing off with your arms?", Chair stands)
  - Feet sensation, proprioception, deformities
  - Look for Parkinsonism (tremor, rigidity, bradykinesia, shuffling gait)

Fall Evaluation

- Additional Physical Exam Components:
  - **Visual acuity check if not done w/in 1yr**
    - 20/40 or worse = fall risk
    - Bifocal lenses are a fall risk when worn outside
  - **Cardiac exam**
- Common lab studies, imaging:
    - B12 level, Vit D level, CK, TSH, Hct, BUN/Cr, DEXA

Intervention: Go After the Modifiable Fall Risk Factors!

Gait abnormality	Lower extremity weakness	Impaired balance
Medications	Orthostatic hypotension	Vision
Feet / footwear	Assistive device	Home environment

Frequent Components of a Fall Prevention Plan

- Exercise – PT strength and balance
- Medication reduction (“de-prescribing”)
  - Stop, taper with goal to stop, lower dose
- Home / environmental modifications (clutter, rugs, lighting, adaptive equipment)
- Behavioral modifications (avoid hurrying to answer phone / doorbell, no more step stools, arranging caregiver assistance for some tasks)
- Self-management of postural hypotension
- Footwear modification
- Vitamin D supplementation

Treatment Plan – Referrals

- Other healthcare providers:
  - Physical therapy
  - Cardiology
  - Neurology, Memory and Brain Wellness Clinic
  - Ophthalmology
  - Psychiatry
  - Orthopedics
- Home health PT if home-bound, or community-based exercise programs (senior centers, community centers, **adult day centers**):
  - Enhance Fitness®
  - Matter of Balance
  - Tai Chi – Tai Ji Quan: Moving for Better Balance®
  - SAIL (Stay Active and Independent for Life)
  - OTAGO (PT-led, home health or outpatient)
- Home Safety Evaluation:
  - One Step Ahead (King County) – other programs available via AAA
  - Home Health OT or PT

Treatment Goals

- Reduce chances of *falling*
  - Goal is zero falls
- Reduce risk of *injury*
  - Environmental modifications
  - Personal alert system (prevent long lie)
  - Bone strengthening interventions
  - Counseling about risky behaviors
  - Counseling about anticoagulation risks when applicable

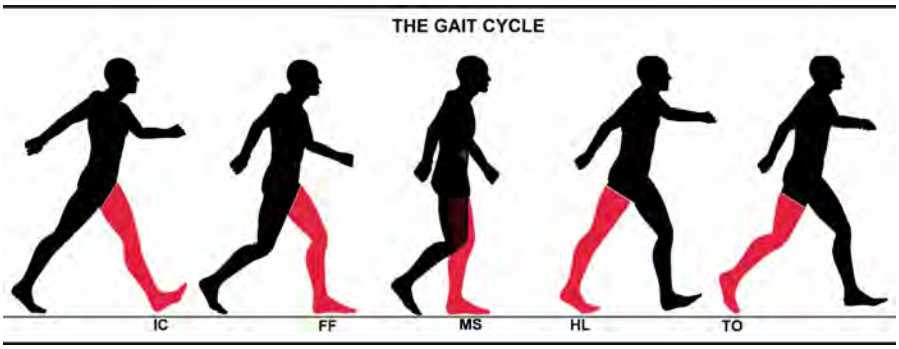
- **<u>Preserve highest possible level of mobility</u>**

Thank you

- Kristina Cosley, PT, DPT
- Elizabeth Phelan, MD
- Questions? jenny5@uw.edu

Photo credit: betterbalance.net (Tai Ji Quan)

Gait Assessment



Gait Analysis: Planes of Movement

Frontal Plane

- Stance phase (symmetrical/asymmetrical weight bearing)
- Trendelenburg presence
- Antalgic Gait presence

Sagittal Plane

- Step length (symmetrical/asymmetrical/reduced)
- Step height
- Toe clearance/Ankle Dorsiflexion during swing phase
- Push Off
- Foot drop presence
- Posture (forward flexed/kyphotic)

Transverse Plane

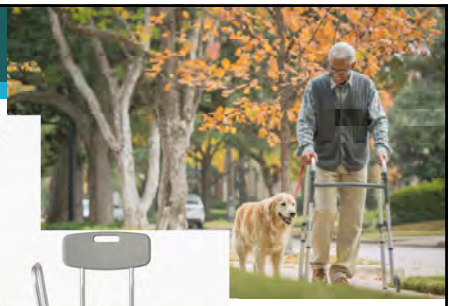
- Spine/Trunk Rotation & Arm Swing

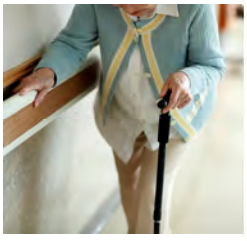
Gait Analysis

Reference (1)

Assistive Devices





Assistive Devices

- Single Point Cane
- Quad Cane

DEVICE	PROS	CONS	RECOMMENDED USE
SINGLE POINT CANE	IMPROVES BALANCE ADJUSTABLE	MINIMAL WEIGHT BEARING ONLY	MILD ATAXIA (SENSORY, VESTIBULAR OR VISUAL) MILD LOWER LIMB PAIN, ARTHRITIS
QUAD CANE	LARGER BASE OF SUPPORT THAN SINGLE POINT CANE CAN BEAR MORE WEIGHT THAN ON SINGLE POINT CANE ADJUSTABLE STANDS ON ITS OWN	DIFFICULT TO GET ALL 4 LEGS ON THE GROUND HEAVIER THAN SINGLE POINT CANE MAY NOT FIT ON STAIRS	HEMIPARESIS

Reference (2-6)

Assistive Devices

- Standard Walker
- Two-Wheeled Walker
- Four-Wheeled Walker

DEVICE	PROS	CONS	RECOMMENDED USE
STANDARD WALKER	MOST STABLE FOLDS EASILY	HAS TO BE PICKED UP WITH EACH STEP SLOWER GAIT SPEED	SEVERE MYOPATHY, NEUROPATHY, CEREBELLAR ATAXIA, LOWER LEG FRACTURES
TWO-WHEELED WALKER	NORMAL GAIT PATTERN DOES NOT NEED TO BE LIFTED/CAN BE PUSHED	LARGE TURNING RADIUS LESS STABLE THAN STANDARD WALKER	LOWER LEG ARTHRITIS, PAIN, INJURY; POOR BALANCE, SEVERE MYOPATHY, NEUROPATHY; PARAPERESIS; PARKINSONISM
FOUR-WHEELED WALKER	EASY TO PROPEL & MANEUVER TURNS EASILY (REVOLVING WHEEL) SMALL TURNING RADIUS SEAT FOR RESTING, BASKET	LESS STABLE THAN 2 WHEELED WALKER CANNOT USE TO BEAR WEIGHT/OFFLOAD LOWER EXTREMITY DOES NOT FOLD AS COMPACT	GENERALIZED DECREASE IN ENDURANCE, SPINAL STENOSIS, MODERATE LOWER LEG ARTHRITIS, LUNG DISEASE, CHF

Reference (2-6)

Assistive Devices

Helpful Tips

Patient needs to hold onto caregiver or family member when walking outside of home	• Consider Cane, Walker, Hiking Poles
Patient is using furniture and walls to walk in home	• Consider Cane or walker
Patient has had a Slip or Fall in bathroom or difficulty getting up from toilet	• Grab bars in and near shower/tub • Non-slip mats • Raised toilet seat with our without handles
Patient cannot stand without support, gets symptoms when standing	• Tub bench/shower chair • Grab Bars • Walker
Routinely check: fit, use and condition of device	• Replace equipment as needed • Refer to PT if needed

Fall Risk Screening

- **Objective Testing**

  - 30 second chair stands
    - > Functional lower extremity strength
  - Timed up and Go (TUG)
    - > Dynamic Balance, Gait
  - 4 Stage Balance Test
    - > Static Balance

Reference (7, 8, 9)

Fall Risk Screening: Objective Testing

- **30 Second Chair Stand Test**

Reference (10)

30-Second Chair Stand Test

ASSESSMENT

30-Second Chair Stand

Purpose: To test leg strength and endurance

Equipment: A chair with a straight back without arm rests (seat 17" high), and a stopwatch.

① **Instruct 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, then sit back down again.
6. Repeat this for 30 seconds.

NOTE: Stand next to the patient for safety.

② **On the word "Go," begin timing.**
If the patient must use his/her arms to stand, stop the test. Record "0" for the number and score.

③ **Count the number of times the patient comes to a full standing position in 30 seconds.**
If the patient is over halfway to a standing position when 30 seconds have elapsed, count it as a stand.

④ **Record the number of times the patient stands in 30 seconds.**

Number: _____ Score: _____

CDC's STEADI tools and resources can help you screen, assess, and intervene to reduce your patient's fall risk. For more information, visit www.cdc.gov/steadi

Patient _____

Date _____

Time _____ ☐AM ☐PM

SCORING

Chair Stand
Below Average Scores

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

A below average score indicates a risk for falls.

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STEADI Stopping Elderly Accidents, Deaths & Injuries

2017

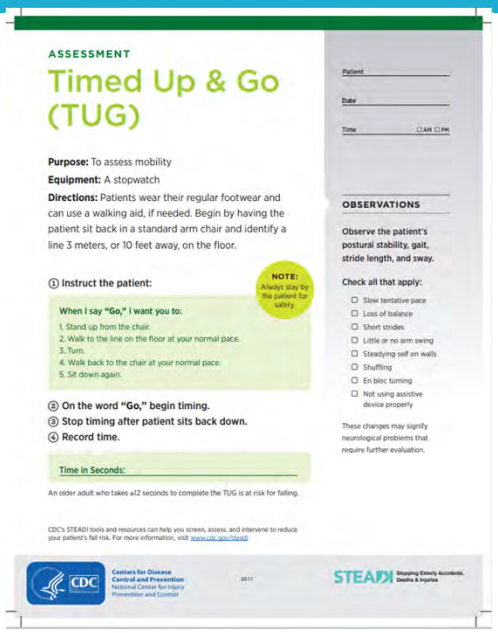
Reference (11)

Fall Risk Screening: Objective Testing

- **Timed Up and Go Test**

Reference (12)

Timed Up & Go Test (TUG)



ASSESSMENT

Timed Up & Go (TUG)

Purpose: To assess mobility

Equipment: A stopwatch

Directions: Patients wear their regular footwear and can use a 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.

① Instruct 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.

NOTE: Always stay by the patient for safety

② On the word "Go," begin timing.

③ Stop timing after patient sits back down.

④ Record time.

Time in Seconds: _____

An older adult who takes ≥12 seconds to complete the TUG is at risk for falling.

CDC's STEADI tools and resources can help you screen, assess, and intervene to reduce your patient's fall risk. For more information, visit www.cdc.gov/steadi

Patient _____

Date _____

Time ☐ AM ☐ PM

OBSERVATIONS

Observe the patient's postural stability, gait, stride length, and sway.

Check all that apply:

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

These changes may signify neurological problems that require further evaluation.

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

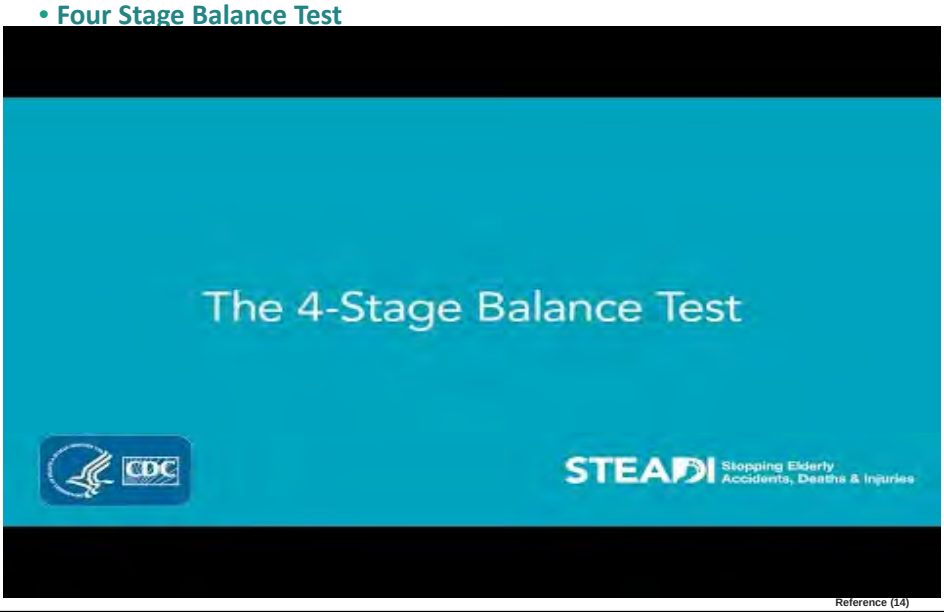
2017

STEADI Stopping Elderly Accidents, Deaths & Injuries

Reference (13)

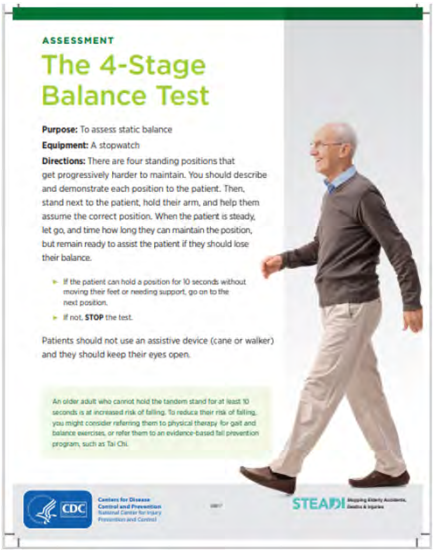
Falls Risk Screening: Objective Testing

- **Four Stage Balance Test**



Reference (14)

The 4-Stage Balance Test


ASSESSMENT

The 4-Stage Balance Test

Purpose: To assess static balance

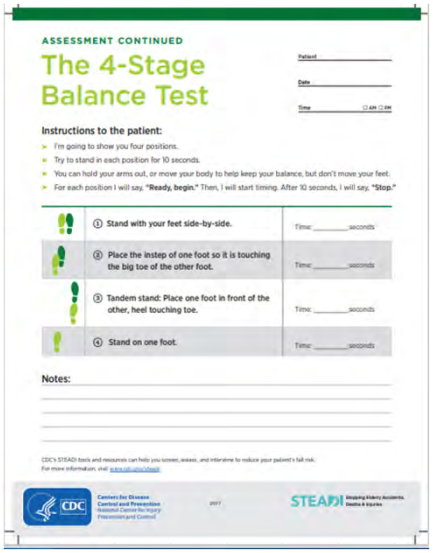
Equipment: A stopwatch

Directions: There are four standing positions that get progressively harder to maintain. You should describe and demonstrate each position to the patient. Then, stand next to the patient, hold their arm, and help them assume the correct position. When the patient is steady, let go, and time how long they can maintain the position, but remain ready to assist the patient if they should lose their balance.

- If the patient can hold a position for 10 seconds without moving their feet or needing support, go on to the next position.
- If not, **STOP** the test.

Patients should not use an assistive device (cane or walker) and they should keep their eyes open.

An older adult who cannot hold the tandem stand for at least 10 seconds is at increased risk of falling. To reduce their risk of falling, you might consider referring them to physical therapy for gait and balance exercises, or refer them to an evidence-based fall prevention program, such as Tai Chi.


ASSESSMENT CONTINUED

The 4-Stage Balance Test

Patient _____

Date _____

Time _____ ☐ AM ☐ PM

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.
- For each position I will say, **"Ready, begin."** Then, I will start timing. After 10 seconds, I will say, **"Stop."**

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.	Time: _____ seconds
③	Tandem stand: Place one foot in front of the other, heel touching toe.	Time: _____ seconds
④	Stand on one foot.	Time: _____ seconds

Notes:

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

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

STEADI Stopping Elderly Accidents, Deaths & Injuries

Reference (15)

Evidence Based Fall Prevention Programs

- **Regionally Available:**

Evidence Based Fall Prevention Programs: HOME

- OTAGO
- Tai Ji Quan Moving for Better Balance

Evidence Based Fall Prevention Programs: COMMUNITY

- Enhance Fitness
- Matter of Balance
- SAIL: Stay Active and Independent for Life
- Tai Ji Quan Moving for Better Balance

Evidence Based Fall Prevention HOME Program

OTAGO

For people 65+ years old who:

- Have had one or more falls
- Are frail, have a complex medical history
- Would have difficulty participating in tai chi class due to reduced strength, coordination
- Do not have access to community classes

Emphasis:

- 17 Strength and Balance Exercises
- Provided by a Physical Therapist or Physical Therapist Assistant
- Location: Home, Outpatient Clinic, Community Setting
- 8 week progressive clinical phase (PT, PTA) followed by 4-10 month Home exercise program supported by phone calls and visits at 6 & 12 months
- Developed in New Zealand

Research:

- Reduces Falls by 35-40% for older adults

Reference (16)

Evidence Based Fall Prevention HOME & COMMUNITY Program

Tai Chi Moving for Better Balance

Highest fall reduction of any intervention

Emphasis:

- Weight shifting moving center of gravity toward limit of stability
- Changing base of support from narrow to wide
- Increase support leg standing time to improve step length with walking
- Trunk rotation, upright posture
- Heel/toe forward weight shift and Toe/Heel backward weight shifts for strengthening

Research:

- Publications – Tai Ji Quan: Moving for Better Balance (tjqmbb.org)

Reference (17, 18))

Evidence Based Fall Prevention Programs: Community

Enhance Fitness

For: Older adults of all levels of fitness

Emphasis

- Taught by a certified instructor
- 1 hour session
- Includes:
  - Warm up/cool down
  - Stretching
  - Strengthening
  - Static & Dynamic Balance Exercises
  - Low cost

Research:

- Citations - Project Enhance

Reference (19)

Evidence Based Fall Prevention Programs: Community

Matter of Balance

For older adults who

- Are concerned about falls
- Have a history of falls
- Limit activites due to concerns about falling
- Are motivated to improve balance, strength, flexibility
- Community-dwelling, able to problem solve

Emphasis

- Reduces Fear of Falling and Increases Physical Activity levels
- Offered In person (8 x 2 hour sessions) and Virtually (9 x 2 hour sessions)
- All Classes are taught by 2 trained instructors
- Small group 8-12 participants
- Nationally Recognized program
- Developed at Royalbal Center at Boston University
- Offered at Senior Centers and Community Centers

Research:

- Research Articles | MaineHealth

Reference (20, 21, 22)

Evidence Based Fall Prevention Programs: Community

SAIL: Stay Active and Independent for Life

For people 65+

Emphasis

- 3x/week class
- Includes Strength, Balance (static & dynamic), Fitness

Find a Class:

- www.sailfitness.org
- contact Sandy Gatlin at **sailwithmesg@gmail.com**

Research:

- A Translational Research Evaluation of the Stay Active and Independent for Life (SAIL) Community-Based Fall Prevention Exercise and Education Program - Sally C. York, Anne Shumway-Cook, Ilene F. Silver, A. Clare Morrison, 2011 (sagepub.com)

Reference (23)

World Falls Guidelines

Current Guidelines

These guidelines were developed by the World Falls Task Force, which assembled 96 multidisciplinary experts from 39 countries across 5 continents, with representation from 36 scientific and academic societies, including the BGS.

The *World Guidelines for Falls Prevention and Management for Older Adults: A Global Initiative* are published by *Age and Ageing* and aim to provide a framework and expert recommendations to healthcare and other professionals working with older adults on how to identify and assess the risk of falls.

They recommend which interventions, alone or in combination, should be offered to older people as part of a person-centred approach to preventing and managing falls.

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THANK YOU!

Questions?

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