The 4 M's: **M**obility Assessments and Action Plans

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Objectives

Be able to:

- Identify appropriate mobility screening that can be used in assessments of the elderly population
- List the benefits of promoting & maintaining mobility of the older individual.
- Describe action plans that will allow older adults to move safely in order to maintain function & participation in what matters to them.

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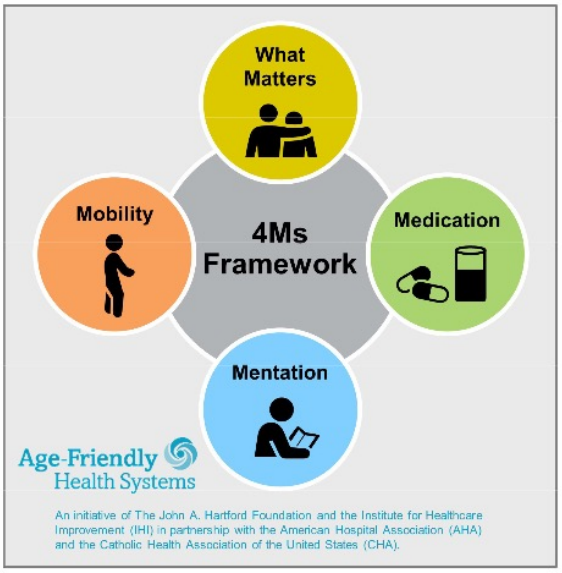
4Ms Framework of an Age-Friendly Health System



What Matters
Know and align care with each older adult's specific health outcome goals and care preferences including, but not limited to, end-of-life care, and across settings of care.

Medication
If medication is necessary, use Age-Friendly medication that does not interfere with What Matters to the older adult, Mobility, or Mentation across settings of care.

Mentation
Prevent, identify, treat, and manage dementia, depression, and delirium across settings of care.

Mobility
Ensure that older adults move safely every day in order to maintain function and do What Matters.

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The **4Ms**: What Matters, Medication, Mentation & Mobility

- Evidence-based practices
- Causes no harm
- Focuses on "What Matters" to:
  - the older adult
  - family
  - caregivers
- Incorporated together to provide age-friendly care

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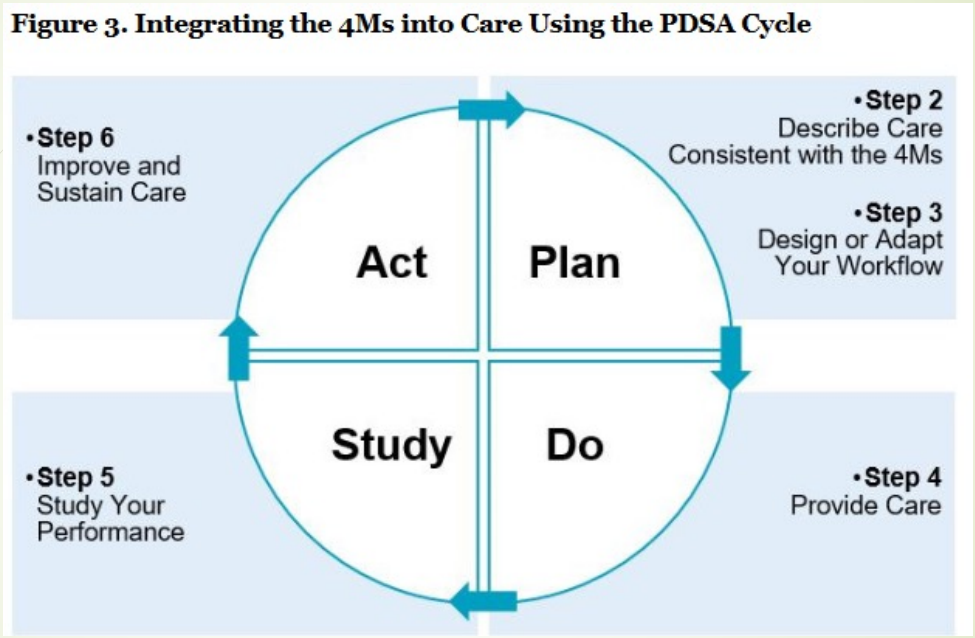

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Mobility

- Ensure that each older adult moves safely every day to maintain function and do **"What Matters"**
  - Screen for mobility limitations and document results
  - Ensure early, frequent, and safe mobility

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What Matters

- Know and align care with each older adult's specific health outcome goals and care preferences including, but not limited to end-of-life, and across settings of care
  - Ask the older adult **What Matters** most, document it, and share What Matters across the care team
  - Align the care plan with **What Matters** most

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What is **mobility** or perception of mobility?

- Mobility is the ability to get where you want to go, when you want to go there. (CDC)
- Mobility is an indicator of how will an older person successfully ages!
- When mobility declines it seems to lead to a decline in all areas – health, nutrition, indep, etc.
  - ?s Difficulty climbing 10 steps or walking ¼ mile
- Mobility problems have been linked to closely to **falls**, chronic illness, decreased bone density & ultimately mortality. (JAMA Clinical Review, 2013)

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Benefits of Encouraging & Promoting Mobility in the Older Population

- Decrease risk of falls
- Improve cardiovascular condition
- Weight control
- Mental health benefits
- Increase social engagement
- Improve flexibility
- Bone density improved
- Improved overall function (i.e., self-care & independence)

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Most Common Risk Factors for Mobility Deficits are:

- Older age,
- Little physical activity,
- Obesity,
- Strength or balance impairment,
- Chronic diseases such as diabetes or arthritis.

(JAMA article)

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Major **Mobility** Concern = "Fall Risk"

- Falls are the leading cause of injury & injury related deaths in adults 65+ (CDC, 2019)
  - Between 2007–2016, fall death rates increased **31%** (Burns, 2018)
  - 30 million falls/year (Florence, 2018)
- Economic impact of falls = $50 billion medical costs/yr
- Falls can lead to decrease in health, social interactions & mobility.
- Primary care practices need to systematically identify & address fall risk among their older patients.
- EBP – interventions (i.e., exercise), reduced medications & improve home safety. (Syst Rev -Gillespie, 2012/Tricco, 2017)

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CDC: **STEADI** – Stopping Elderly Accidents, Deaths & Injuries

Coordinated Care Plan to Prevent Older Adult Falls (2019)

- Fall prevention start-up in primary care
- Clinical fall prevention program components
  - **Screen**
  - **Assess**
  - **Intervene**
- Follow-Up and Care Coordination

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Action Plan – CDC STEADI

- **Step 1**: Assess readiness to address issues of mobility/fall risk
  - Is your facility screening, assessing & intervening older adults for fall risk? Monitor # of older adults screened annually
- **Step 2:** Assess current fall prevention activities
  - How many? Who? What are they doing?
- **Step 3:** Create Fall Prevention Team (MD, PT, OT, Nurses, Pharmacists, etc.)
- **Step 4:** Obtain Leadership support
- **Step 5**: Determine components of clinical fall prevention program to implement – Screen, Assess, & Intervene
- **Step 6**: Identify and link with community partners and resources
  - Stepping On or Tai Chi; Senior Center or fitness center balance classes, etc.
- **Step 7**: Add fall prevention to the clinic workflow
  - During routine office visits, or Medicare/Medicaid Wellness visits, following a medically treated fall or hospitalization
- **Step 8:** Adapt health care record – EHR fall risk modules (Epic, Evident STEADI pro, etc)
- **Step 9**: Identify primary team members' tasks
- **Step 10:** Train Team members
- **Step 11:** Develop an implementation & monitoring plan
  - Plan -> Do -> Study -> Act -> Repeat
- **Step 12**: Identify reimbursement and quality improvement opportunities

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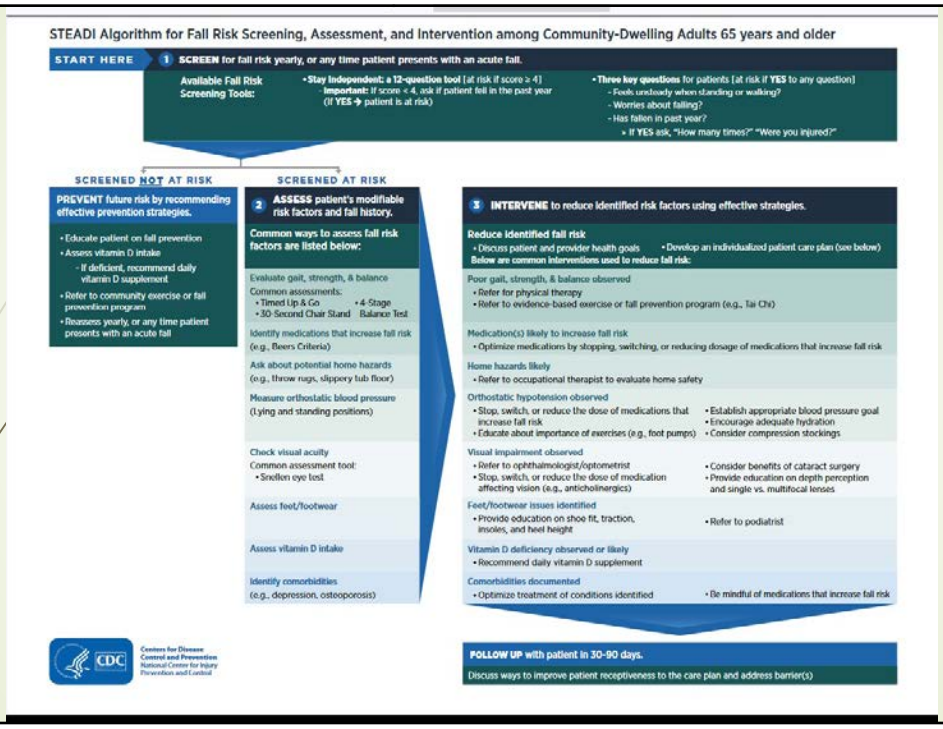

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Screen for Fall Risk

- **Three (3) key questions**: a "yes" response indicates that a person may be at increased risk of falling but, needs to be assessed to identify specific fall risk factors (postural hypotension or medication, etc.)
  - Have you fallen in the past year?
  - Do you feel unsteady when standing or walking?
  - Are you worried about falling?
- **CDC's *Stay Independent Questionnaire***
  - *4 or more "yes" responses may indicate > risk of falls*
- *If not at risk -> educate in fall prevention, refer to community exercise program i.e., Senior Center or fall prevention program.*

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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.	

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.

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STEADI - Assess Fall Risk & Mobility

https://www.cdc.gov/steadi/pdf/STEADI-Poster-Integrating-508-2019.pdf

- Fall history - circumstances of the fall - where/when/how?
- Identify medications that may increase fall risk;
- Assess Vit-D intake
- Environmental assessment
  - https://www.cdc.gov/steadi/pdf/STEADI-Brochure-CheckForSafety-508.pdf
- Check vision acuity
- Assess feet and footwear
- Identify comorbidities that increase fall risk
  - cognitive, orthostatic hypotension, depression, etc.
- *Gait, strength, & balance/mobility tests (PT referral)
  - https://www.cdc.gov/steadi/pdf/STEADI-Form-RiskFactorsCk-508.pdf

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Mobility/Fall Risk Assessments

- **Timed Up & Go** (TUG) test
- **30-Second Chair Stand Test**
  - (or) 5-times Sit to Stand Test (5xSTS/FTSTS)
- **4-Stage Balance Test** (FSBT) - standing
  - Feet together, semi-tandem, tandem and single leg stance

    https://www.cdc.gov/steadi/materials.html
- **Functional Reach Test (FRT)**
- **10-meter Walk Test**
  - Gait speed (m/sec) – "The 6th vital sign"
- **Activities-Specific Balance Confidence** (ABC) scale
  - Self-report measure

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Timed Up and Go (TUG) Test

- Purpose: To assess mobility (Gait/Balance)
- Patient is asked to sit in a chair (17-18" in height), stand up, walk 10 ft, turn around, walk back to the chair, and sit down. https://www.cdc.gov/steadi/pdf/STEADI-Assessment-TUG-508.pdf
- Tester times the activity & observes movement quality
  - **12 seconds or >** indicates increased risk of falls
  - Some studies will use >13.5 sec
- TUG instructional video on CDC STEADI site
  - https://youtu.be/BA7Y_oLElGY
- Barry (2015) – more useful to rule in falls than out

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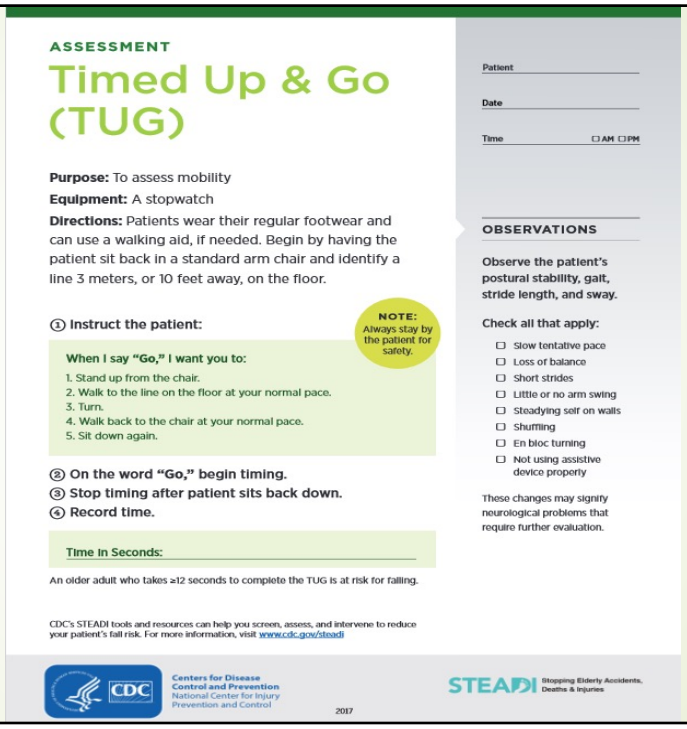

ASSESSMENT

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

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30-second Chair Stand Test

- Purpose: To quantify functional leg strength/endurance & transfer skill.
- Individual is asked to sit in middle of a chair without arms (17" seat height), with feet flat on floor, cross arms on chest, when tester says "go" the person stands fully up & sit down repeatedly until the tester says "stop."
- The tester counts number of stands in 30 sec. If the individual is unable to stand with arms crossed the score = 0. A score below age norms is considered a fall risk. Instructional video - https://youtu.be/Ng-UOHjTejY

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

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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

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(or) Five Time Sit to Stand Test (5xSTS)

- Purpose: to assess functional lower extremity strength, transitional movements, balance, and fall risk
- Individual sits with their back against chair (17" height). Instruction are to "stand up straight as quickly as you can 5 times, without stopping in between. Keep your arms folded across your chest." Time with stopwatch & stop the test when the body touches down on 5th repetition. If unable to stand without use of arms score = 0.
- Age-Matched Norms:
  - Lower times = Better scores
  - **60-69** =11.4 sec; **70-79** =12.6 sec; **80-89** =14.8 sec
  - Fall Risk & need for further assessment: ≥ 12 sec (MCID = 2.3 sec)

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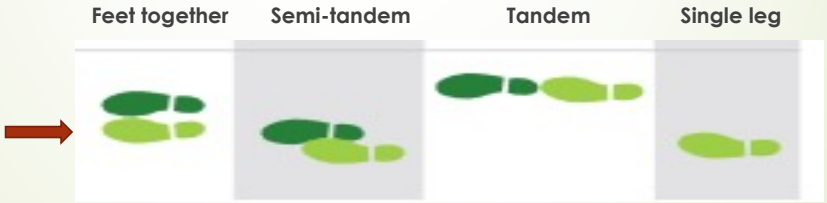
Four Stage Balance Test (FSBT)

- Purpose: To assess static standing balance
- Individual is instructed to stand in four different positions (feet together, semi-tandem, tandem & one-legged stance) for 10 seconds each. The foot positions are in a progressive fashion, so testing can be stopped if the individual is unable to hold a position for the 10 seconds. Instructional video - https://youtu.be/3HvMLLIGY6c
- An older person that is unable to hold a Tandem position for 10 sec is at an increase risk of falling.



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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.

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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:

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

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2017

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FRT - Functional Reach Test (Ducan, 1990)

- Purpose: a "quick" screen of dynamic standing balance in older adults
- Position the individual close to a shoulder height yardstick on wall, feet shoulder distance a part, client makes a fist & raise the arm up to 90 degrees. Tester takes an initial reading on the yard stick, at 3rd metacarpal & records final reading after client reaches as far as they can without moving their feet.
  - https://www.physio-pedia.com/Functional_Reach_Test_(FRT)
- Average of 3 trials is then recorded.
- **Modified FRT** – sitting position for those unable to stand

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FRT - Functional Reach Test

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Functional Reach Test (FRT)

- A score of 6 inches or < indicates a significant increased risk for falls. A score between 6-10 inches indicates a moderate risk for falls.

Age	Men (in inches)	Women (in inches)
20-40yrs	16.7 ± 1.9	14.6 ± 2.2
41-69yrs	14.9 ± 2.2	13.8 ± 2.2
70-87	13.2 ± 1.6	10.5 ± 3.5

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10-Meter Walk Test (10MWT)

- Purpose: to assess walking speed over a short distance (m/sec)
- Individual walks without assistance 10 meters (32.8 ft) & the time is measured for the middle 6m (19.7 ft) to allow for 2m for acceleration & deceleration, timing starts when lead foot toes cross 2m mark, timing stops when lead foot toes cross 8m mark.
- Assistive devices can be used but should be kept consistent & documented test to test; no physical assistance given
- Preferred &/or fast walking speed can be tested. Collect 3 trials & calculate the average walking speed; 6m/avg sec
- Cutoff Scores (Healthy older adults): **< 0.7 m/s** is indicative of increased risk of adverse events (fall, hospitalization, etc.)

Montero-Odasso, 2005

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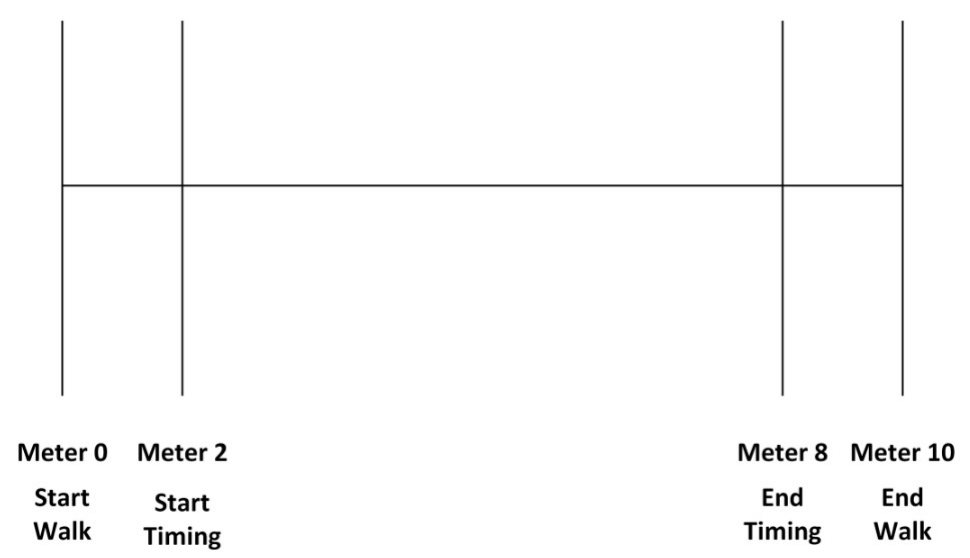
10MWT Layout



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10MWT

Norms for Healthy Older Adults (Bohannon, 2011)

Decade	Men	Women
60s	1.34	1.24
70s	1.26	1.13
80's/90s	0.97	0.94

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Activities-Specific Balance Confidence (ABC) scale – (Powell & Meyers, 1995)

- Self-report - Items are rated on a 0% to 100% whole number rating scale.
- Scores reflect overall perceived confidence.
  - 0 = no confidence; 100 = complete confidence.
- Total the ratings (possible range = 0-1600) and divide by 16 (number of items) to get the patient's overall % of balance confidence. Total ÷ 16 =_____ % of self-confidence (ABC score)
- At least 12 of the 16 items must be answered to calculate an ABC score. If items are skipped, only divide by the number of items completed.

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ABC Scale

- Instructions: For each of the following, please indicate your level of confidence in doing the activity without losing your balance or becoming unsteady by choosing one of the percentage points on the scale from 0% to 100%. If you **do not currently do** the activity in question, try and imagine how confident you would be if you had to do the activity. If you **normally** use a walking aid to do the activity or hold onto someone, rate your confidence as if you were using these supports. If you have any questions about answering any of the items, please ask the administrator.
  0% 10 20 30 40 50 60 70 80 90 100%
  No Confidence Completely Confident

"How confident are you that you can maintain your balance and remain steady when you..."

- 1: ... walk around the house? ___%
- 2: ... walk up or down stairs? ___%
- 3: ... bend over and pick up a slipper from the front of a closet floor? ___%
- 4: ... reach for a small can off a shelf at eye level? ___%
- 5: ... stand on tip toes and reach for something above your head? ___%
- 6: ... stand on a chair and reach for something? ___%
- 7: ... sweep the floor? ___%
- 8: ... walk outside the house to a car parked in the driveway? ___%
- 9: ... get into or out of a car? ___%
- 10: ... walk across a parking lot to the mall? ___%
- 11: ... walk up or down a ramp? ___%
- 12: ... walk in a crowded mall where people rapidly walk past you? ___%
- 13: ... are bumped into by people as you walk through the mall? ___%
- 14: ... step onto or off of an escalator while you are holding onto a railing? ___%
- 15: ... step onto or off an escalator while holding onto parcels such that you cannot hold onto the railing? ___%
- 16: ... walk outside on icy sidewalks? ___%

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Activities-Specific Balance Confidence (ABC) scale

- Older Adults: Scores < 67% indicate risk for falling; accurately classify people who fall 84% of the time
  - >80% = high level of physical functioning;
  - 50-80% = moderate level of physical functioning;
  - < 50% = low level of physical functioning

(Lajoie, 2004; Meyers, 1998)

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Evidence-based Findings

- Lusardi (2017) – Systematic Review/Meta-Analysis of community-dwellers 65 and older, found no single test predicted falls, but use of **history questions, self-reported measures** (i.e., **ABC scale**); **TUG >12 sec, 5xSTS >12 sec** and Berg Balance Scale score <50 pts were the most evidenced supported measures to determine risk of future falls.

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Screen/Assess – Mobility In-patient/LTC

- Balance/Mobility Assessments -
  - TUG – Timed Up and Go Test or Get up and Go (GUG)Test
  - JH-HLM – John Hopkins Highest Level of Mobility Scale
  - POMA (Tinetti) – Performance Oriented Mobility Assessment
  - Other
- Functional Assessments
  - Barthel Index of ADLs
  - The Lawton Instrumental Activities of Daily Living (IADL)
  - Katz Index of Independence in Activities of Daily Living (ADL)
- Refer to physical therapy

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JH-HLM Scale

MOBILITY LEVEL

		Score
WALK	250+ FEET	8
	25+ FEET	7
	10+ STEPS	6
STAND	≥1 MINUTE	5
CHAIR	TRANSFER to CHAIR	4
BED	SIT AT EDGE OF BED	3
	TURN SELF/BED ACTIVITY*	2
	ONLY LYING	1

**Bed activity includes passive or active range of motion, movement of arms or legs, and bed exercises (e.g., cycle ergometry, neuromuscular electrical stimulation).*

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Act On - Creating an individual mobility plan and an environment that enables mobility

Community-dwelling and Ambulatory Care Setting

- Multifactorial fall prevention protocol (e.g., STEADI – Stopping Elderly Accidents, Deaths & Injuries)
  - MyMobility Plan for community-dwelling individuals 65+
- Educate older adult and family caregivers
- Manage impairments that reduce mobility (e.g., pain, balance, gait, strength)
- Ensure safe environment
- Identify and set a daily mobility goal with older adult that supports What Matters; review and support progress toward the goal

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CDC: STEADI Program MyMobility Plan

- MySelf
- MyHome
- MyNeighborhood

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Act On

Hospital and LTC Inpatient settings

- Out of bed or leave room for meals
- PT intervention (balance, gait, strength, gait training, exercise program)
- Avoid restraints
- Remove catheters and other tethering devices
- Avoid high-risk medications
- Other

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Adaptive Equipment

- Intelligent Power Wheelchairs
  - Lucy Technology
- Merry Walker
- U-Step Walker - hand brakes that automatically engage whenever the
- There appears to be substantive evidence that wheelchairs are overused in NHs. While a few studies have demonstrated the benefits of individualized wheelchair seating, there is no published research that specifically tracked outcomes related to use of alternative mobility technology in NHs setting. By providing clinics or programs to objectively evaluate functional mobility, NHs can draw their residents into the decision-making process by offering alternatives to wheelchairs when choosing assistive mobility devices.

(Rushton PW)

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Assistive Devices & Mobility

- Over 6.8 million individuals in the U.S., living outside of institutions, use assistive devices to help them with movement.
- Out of all who use an assistive device: 1.7 million individuals use a wheelchair or scooters for mobility (90% use manual wheelchairs).
- The remaining 5.1 million individuals use other mobility devices; canes (70%), crutches (20%), and walkers (10%).
- 41% of the residential care facilities reported that 10% or less of the residents use a wheelchair or electric scooter to get around.
- 20% of facilities say 24-49% of residents use a wheelchair or electric scooter to get around in the facility
- 70% of the Residential Care Facilities report 10% of the residents confined to a bed or chair and 12% of facilities say 11-24% confined to a bed or chair.

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Mobility in Long Term Care Facilities "MOVE"

- 90% of residents have limited mobility
  - Associated with a loss of ability in ADL, falls, increased risk of serious medical problems (pressure ulcers), incontinence and significant decline in health-related quality of life
- Residents in long-term care fall ~3x more often than community dwellers

(Slaughter, 2011)

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Immobility in LTC may result in complications in almost every body organ system

- > stress on heart
- Orthostatic hypotension
- Pooling of secretions in the lungs
- Demineralization and loss of bone
- Muscle atrophy and weakness
- Pressure ulcers
- Sensory deprivation
- Urinary complications
- Feelings of helplessness, depression, anxiety

(Illinois Council on LTC)

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No Lift Policy

- Healthcare one of the highest numbers of reported workplace injuries
- Hazards of Manual lifting -> American Nurses Association
  - Nurses and HealthCare Worker Protection Act
  - If passed will set a national standard for safe patient handling practice
- $$$ high

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Benefits of Encouraging & Promoting Mobility in the Older Population

- Decrease risk of falls
- Improve cardiovascular condition
- Weight control
- Mental health benefits
- Increase social engagement
- Improve flexibility
- Bone density improved
- Improved overall function (i.e., self-care & independence)

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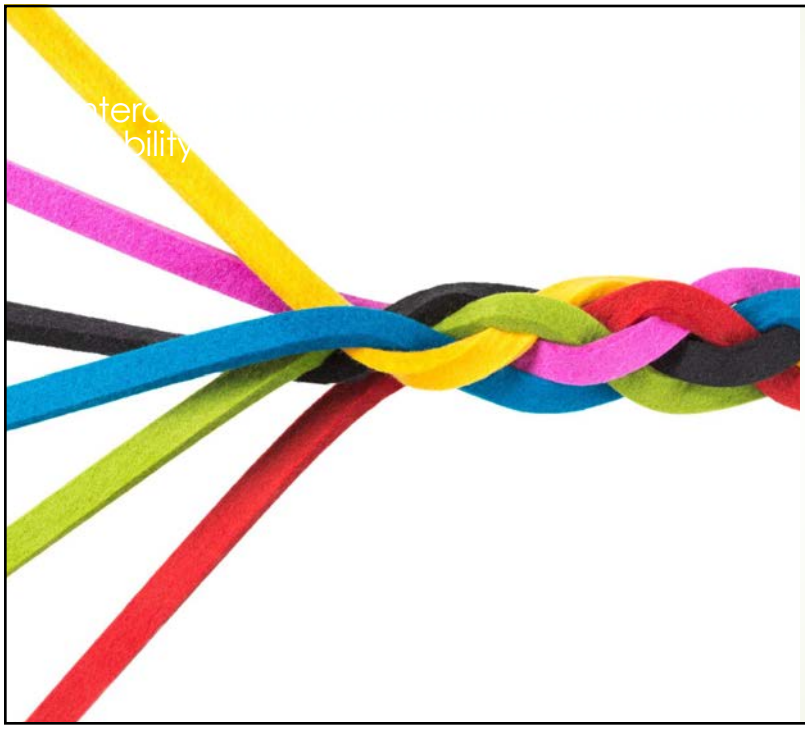

- Example – Person with Dementia
  - Extra processing time
  - Simplified communication with multiple sensory cues
  - One-step directions
  - Transfer safely without use of a lift
  - Person-centered care
    - Adapting exercise programs
    - Gender and ethnic differences
  - Restorative aide
    - Functional maintenance plans

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