Falls Risk Screening and Assessment Skills for the Student Physical Therapist

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Learning Objectives

- **Following the lecture and lab, DPT2 students will be able to:**
  - Describe falls screening and assessment and their importance in physical therapy care for the older adult.
  - Implement and interpret a falls screen with 2 clients of different functional levels.
  - Select and administer an appropriate assessment measure based on clinical reasoning and findings of falls screen, client presentation, and other data available.
  - Present findings and explain clinical reasoning behind selection of assessment measure with potential recommendations for intervention and anticipated client outcomes.

Case: Sarah

- 85-year-old female, referred to OP PT for "general weakness"
- History of falls, approximately 4 in 12 months with 1 resulting in injury (L hip fracture – ORIF and PT in SNF/HH)
- Mild cognitive impairment
  - MoCA = 21, points lost on visuospatial/executive, attention, and delayed recall
- No other significant PMHx
- Lives in 2-story house, ambulates with a cane, modified independent to independent in ADL

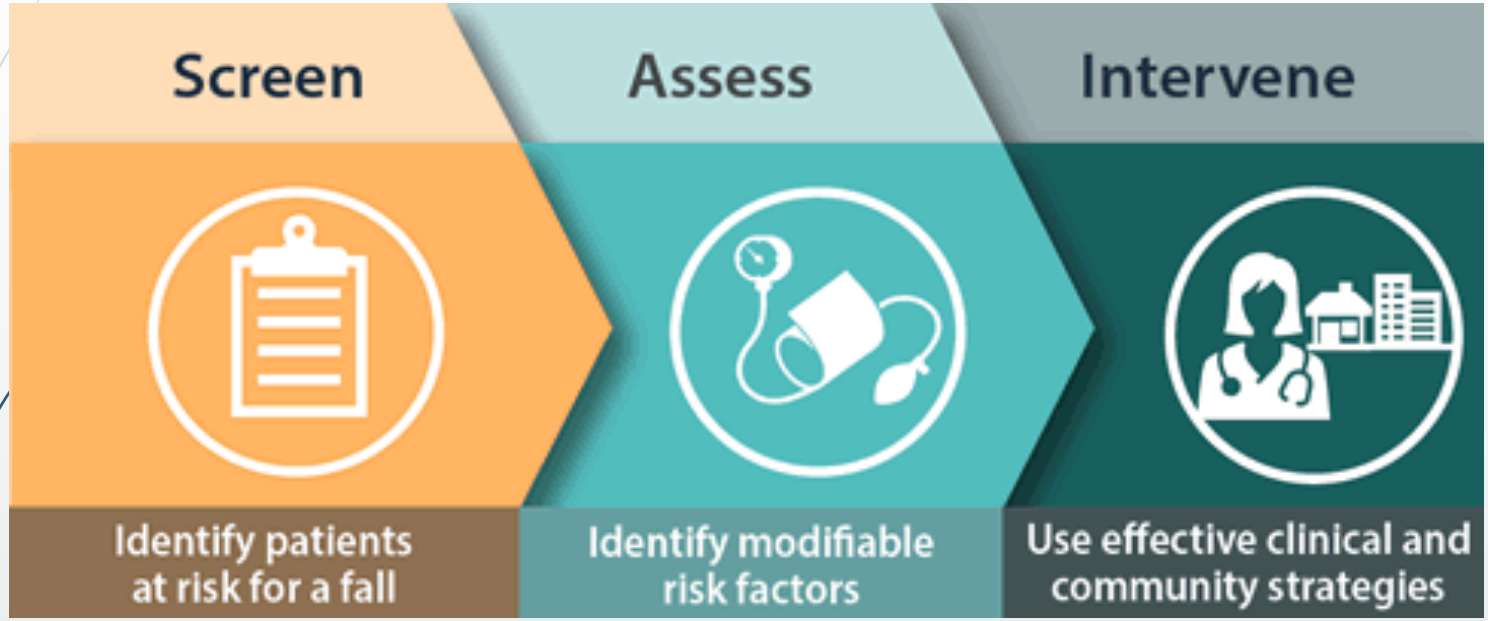
What else do you want to know?

Falls are the leading cause of death/injury in adults 65+

- 1 in 4 older adults fall each day
- 1 in 5 of those falls result in serious injury, including fractures or brain injury
- >95% of hip fractures result from a fall, resulting in at least 300,000 hospitalizations annually
- Women > men

Source: CDC[1]

What can we as PTs do?



Source: CDC STEADI[2]

STEADI: Stopping Elderly Accidents, Deaths, & Injuries

- Initiative created by the CDC Injury Prevention and Control Center
- Published materials for healthcare providers and at-risk individuals
- Coordinated approach by algorithm:
  - → Screen
    - → Assess
      - → Intervene

Sources: CDC STEADI[2] and AGS/BGS CPG[3]

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

START HERE

1 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 ≥ 4]
  - **Important:** If score < 4, ask if patient fell in the past year (If **YES** → patient is at risk)
- **Three key questions** for patients [at risk if **YES** to any question]
  - Feels unsteady when standing or walking?
  - Worries about falling?
  - Has fallen in past year?
    - » If **YES** ask, "How many times?" "Were you injured?"

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 supplement
- Refer to community exercise or fall prevention program
- Reassess yearly, or any time patient presents with an acute fall

SCREENED AT RISK

2 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 Balance Test
- 30-Second Chair Stand

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)

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

FOLLOW UP with patient in 30-90 days.

Discuss ways to improve patient receptiveness to the care plan and address barrier(s)

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

What's the difference?

Screen vs. Assessment

Why Screen AND Assess?

- Falls are largely preventable
  - Healthcare providers have a key role in discussing falls prevention and providing interventions
    - Ask about falls history
    - Assess gait/balance
    - Medication review
    - Strengthening/balance interventions
- These multifactorial approaches can reduce falls by 24%

Source: Gillespie et al Cochrane Review[4]

Falls Risk Screening

- 3 key questions:
  1. Unsteady when standing or walking?
  2. Worried about/fearful of falling?
  3. Fallen in the last 6-12 months?
- STEADI Stay Independent Questionnaire
  - A 12-question self-check tool
  - Score of 4 or more indicates fall risk

Source: CDC STEADI[2]

Falls Risk Screening Tools

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

Falls Risk Screening Results

NOT at Risk

- Reassess annually
- Educate in fall prevention and risk management
  - Exercise
  - Home safety

At Risk

- PT *Screen* further
  - Medications
  - Cognitive impairment
  - Polypharmacy
  - Orthostatic hypotension
- PT *Assess* further
  - Gait, strength, balance
  - Environmental hazards
  - Patient education
  - Feet/footwear

Source: CDC STEADI[2]

Falls Risk Assessment

- Importance of individualization
  - What additional information is important based on the screen?
  - Is each assessment the same across patients?
- Use of other outcome measures
  - Aim to get a “bigger picture” in order to guide approach to plan of care and interventions

Falls Risk Assessment Tools

- Berg Balance Scale
- Tinetti Performance Oriented Mobility Assessment (POMA)
- Dynamic Gait Index
- Balance Evaluation Systems Test
  - Mini-BEST

While we use these tools, what's wrong here?

Berg

- 14 items scored 0-4 for total of 56
  - Lower scores indicate lower function and are interpreted as greater risk for falls
- Recent psychometrics
  - Cut-off: 51
  - Sensitivity (95% CI): 0.77
  - Specificity (95% CI): 0.40-.97
  - Effect size: 0.29
  - MID/MCID: 2.50

Sources: Shirley Ryan[5], Yingyongyudha et al[6], Pardasaney et al[7], Berg et al[8], Shumway-Cook et al[9], Godi et al[22]

Tinetti POMA

- 16 items (9 balance, 7 gait) scored 0-2 for total of 28
  - Lower scores indicate greater impairment and are interpreted as greater risk for falls
- Recent psychometrics
  - Cut-off: 19
  - Sensitivity: 0.51
  - Specificity: 1.00
  - Effect size: 0.27
    - Baseline POMA <25 effect size: 0.94
  - MID/MCID: 1.60

Sources: Pardasaney et al[7], Shirley Ryan[10], Tinetti et al[11], Panzer et al[12]

DGI

- 8 items scored 0-3 for total of 24
  - Lower scores interpreted as greater risk for falls
- Recent psychometrics
  - Cut-off: 19
  - Sensitivity: 0.67
  - Specificity: 0.86
  - Effect size: 0.27
  - MID/MCID: 1.90

Sources: Pardasaney et al[7], Shirley Ryan[13], Marchetti[14], Wrisley and Kumar[15], Shumway-Cook et al[16]

FAB

- 10 items scored 0-4 for total of 40
  - Lower scores indicative of greater risk for falls
- Recent psychometrics
  - Cut-off: 25
  - Sensitivity (95% CI): 0.67
  - Specificity (95% CI): 0.58

Sources: Shirley Ryan[17], Schlenstedt[18]

BESTest

- 36 items scored 0-3 for a total of 108, reported as a percentage
  - 6 domains analyzed
    - Biomechanical constraints, stability limits/verticality, transitions/anticipatory, reactive, sensory orientation, stability in gait
  - Lower scores indicate greater impairment
- Recent psychometrics
  - Cut-off: 66-69% (71-75/108)
  - Sensitivity (95% CI): 0.76-0.86
  - Specificity (95% CI): 0.50-0.95

Sources: Yingyongyudha et al[6], Shirley Ryan[19], Padgett et al[20]

Mini-BEST

- 14 items scored 0-2 for total of 28
  - May see total reported out of 32 in research
- Recent psychometrics
  - Cut-off: 16/28
  - Sensitivity (95% CI): 0.71-0.94
  - Specificity (95% CI): 0.75-1.00

Sources: Yingyongyudha et al[6], Shirley Ryan[21], Godi et al[22]

Other Helpful Outcome Measures

- Other assessment tools can help track progress or focus interventions on deficits that are not specific to falls and/or balance:
  - Senior Fitness Test
  - Short Physical Performance Battery
  - Gait Speed (e.g. 10-Meter Walk Test)
  - Four Square Step Test
  - Functional Gait Assessment

Remember Sarah?

What screening and assessment would be appropriate for her?

Remember Sarah?

- Increased physical activity
  - Group exercise classes and water aerobics
- Decreased fear of falls
- Modified Independence
  - Downgraded from cane to rollator for community distances

What do you recommend?

Questions?

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What to expect: Carol Woods 2/7

- 2 screening/assessment scenarios for residents in:
  - **Assisted Living**
    - CW required tests: TUG, 30s Chair Stand, 4 Stage Balance, ABC Scale
    - Additional tool based on initial screen
  - **Community-Dwelling**
    - CW required tests : 4 Square Test, 30s Chair Stand, Arm Curl, 2-Minute Step Test, Sit-and-Reach, TUG
    - Additional tool based on initial screen
- Refer to Sakai for assignment guidelines

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