Fall Prevention from the Ground Up

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Objectives

- To Understand:
  - The importance of falls by older persons
  - Fall risk assessment
  - Gait evaluation
  - Fall prevention
  - Cultural and socioeconomic impact of falls
  - Fall complications

Topics

- The epidemiology of falls
- Fall etiology
- Mobility assessment and disorders
- Clinical guidelines for preventing falls
- Fall Consequences
  - Medical
  - Economic

Consequences of Gait Abnormalities

- Predict functional decline
- For community dwelling elders, predict higher risk of institutionalization
- Associated with increased morbidity and mortality
- Humiliation

Falls: The Basic Facts

- Cost $20 billion per year
- Annual fall rate for the elderly
  - 33% community dwelling elderly
  - 50% nursing home residents
- 50% sustain injury
  - 2% hip fracture
  - 5% other fracture

Falls: Meta-analysis of 12 Studies

- Accident/environment 31%
- Gait/balance disorder 17%
- Dizziness 13%
- Drop Attack 10%
- Confusion 4%
- Postural Hypotension 3%
- Impaired Vision 3%
Risk Factors for Falling

- **History of Falls**
- Gait Deficit
- Balance Deficit
- Strength Deficit

Risk Factors for Falling

- Arthritis
- Uses assistive devices
- Impaired ADLs
- Depression
- Cognitive Impairment
- Postural Hypotension

Decreasing the Risk of Falls

- Obtain a History of Falls
- Perform a Fall-Related Assessment
- Initiate an Intervention

Checklist for Patients who Fall: Past Medical History

- History of Injuries, Accidents
- Falls within the Last 12 Months
- History of Diseases and Surgeries
- History of Orthopedic Procedures
- Hospitalizations
- **MEDICATIONS**

Falls and Medications: The Culprits

- Polypharmacy
- Sedative Hypnotics
- Antidepressants
- Antihypertensives
- Cardiac medications
- Hypoglycemic agents
- Topical Eye Medications

Checklist for Patients who Fall

- Associated Symptoms
  - Dizziness
  - Light-headedness
  - Vertigo
  - Syncope
  - Weakness
  - Confusion
  - Palpitations
Checklist for Patients who Fall: Social/Environmental History

- **Home**
  - Multilevels/Stairs
  - Pets
  - Hazards (Rugs, cords, poor lighting)
- **Lives Alone?**
- **Assistive Devices?**
- **Frequently leaves home?**

Checklist for Patients who Fall: Review of Systems

- **Visual Impairment**
- **Shortness of Breath, Chest Pain**
- **Neurological**
  - Sensory Deficit
  - Muscle Weakness or Pain
  - Poor Balance

Fall Risk Assessment: Physical Exam

- **Gait Examination**
  - Watch patient enter the exam room
  - Assess gait initiation/shuffling
  - Asymmetric weight distribution
- **Evaluate Gait**
  - From the front
  - From the back
  - From the side

Fall Risk Assessment: Classic Gait Abnormalities

- **Trendelenburg**
- **Gluteus Maximus Lurch**
- **Steppage**
- **Ataxic**
- **Antalagic**

Fall Risk Assessment: Usual and Maximal Gait Speed

- 5 meters adequate to assess
- Slow (0.6 meter/second) predicts hospitalization and functional decline
- Versus Fast (1.0 meter/second)

Fall Risk Assessment: Timed Get Up and Go

- **Time Necessary to:**
  - Stand up from a chair with arms
  - Walk 3 m (10 feet)
  - Turn
  - Walk back to the chair
  - Sit Down
**Timed Get Up and Go Test**
- Most adults can complete in 10 sec
- Most frail elders can complete in 11-20 seconds
- >14 seconds = increased fall risk
- >20 seconds = comprehensive evaluation indicated

**Post-Fall Assessment**
- Details of the Fall
  - Location
  - Time of Day
  - Relationship to meals, toileting
- Trauma Check
- Postural Hypotension
- Determine Fall Risk Factors
- Check Incident Reports

**Fall Interventions: Decreasing the Risk**
- Factors that can be Modified
  - Medications (* Psychotropics)
  - Muscle Weakness
  - Hypotension
- Nonmodifiable Factors
  - Hemiplegia
  - Blindness

**Fall Interventions: Intrinsic**
- Treat the Underlying Disease
- Eliminate Drugs and Dosages
- Initiate Physical Therapy
  - Balance and Gait Training
  - Vestibular Rehabilitation
- Initiate Exercise Program
  - Tai Chi
  - Resistive

**Fall Interventions: Extrinsic**
- Reduce Environmental Hazards
- Reduce/remove Restraints
- Improve Fall Surveillance
  - Staff
  - Motion Detectors
- Consider Protective Pads and Floors and/or a Low Bed

**Falls and Dizziness**
- Was the Onset Sudden?
- Is the Dizziness Constant or Periodic?
- How Long do the Episodes Last?
- How is the Dizziness Impacting the Patient’s Life?
Common/Curable Dizziness
- Postural Hypotension
- Benign Positional Vertigo
- Anxiety
- Depression
- Cardiac Arrhythmia

Case One
- Mary Jones is an 87 year-old retired teacher whose family has convinced her to move to an assisted living facility.
- Her problem list includes:
  - Dementia
  - Deafness
  - Degenerative Joint Disease

Case One
- Two days after arriving staff completes her assessments. She is at low risk for pressure ulcers and falls.
- Her mobility is noted as "halting."

Case One: Outcomes
- Physical therapy is only "allowed" for a week because she does not improve and is no longer ambulatory
- She develops a UTI
- She develops C. Diff
- A Stage III pressure ulcer is noted when she transfers to a skilled nursing facility.

Case One
- Three days after her arrival she is found on the floor next to her bed.
- Her leg is externally rotated and she is transferred to the hospital. Her fractured femur requires hip replacement.

Mobility
- Walking
- Climbing stairs
- Getting in/out of cars
- Transfers
  - To and from a bed
  - To and from a chair
  - To and from a wheelchair
- Getting up from the floor
Is Elder Mobility a Problem?

- 8-19% Community dwelling elders have difficulty walking
- 40% Nursing home residents require the help of another or special equipment to walk
- 54% of elders over the age of 85 have mobility limitations

Gait and Aging

- Gait changes with advanced age
  - Decline in gait speed
  - Stride length diminishes
  - Not due to decrease in cadence

Gait Characteristics of 80 Year-olds

- Shorter, broader strides
- Longer stance
- Shorter swing duration

Common Diagnoses Leading to Gait Disorders

- Degenerative Joint Disease
- Sensory Impairment
- Neurological Diseases
  - Stroke
  - Parkinson’s
- Postural Hypotension/Rx induced
- Fear of Falling

Falls and Warfarin

- History of Falls Takes Precedence over Most Anticoagulation Indications
- Double Check List
  - INR at time of fall
  - Recent antibiotics or antifungals
  - Green Tea
- Change of Mentation = CT

Falls and Economics

- Medicare Payment Issues
- Frailty and Rehab Costs
- Long-term Care Costs