Objectives: To Know and Understand

- The prevalence, consequences and causes of falling
- Falling as a geriatric syndrome
- Evidence supporting fall risk management
- How to implement fall management practices
Falls: Prevalence

- 30-40% of adults 70+ fall each year
- Prevalence increases with age (50% by 80+)
- Falling is recurrent (50% 2+ fall/year)
- Hospitalization and post-hospitalization
  - 20% fall during or within 30 days
Falls: Consequences

- 10% of falls result in serious injury (fracture, head injury, soft tissue)
- 8% persons 70+ visit ED after fall
- Falls/injuries associated with decreased function and mobility
Fall Etiology: Geriatric Syndrome

• Health condition that:
  • Results from accumulated effect of multiple impairments and diseases
  • Occurs when older adults who are predisposed are exposed to precipitating challenges (host, behavior, environment).
Falling Etiology: Geriatric Syndrome

• Predisposing:
  • Increased characteristics = increased risk
  • Immutable-age, female, past fall, chronic disease (arthritis, stroke, Parkinson)
  • Modifiable
Modifiable Predisposing Factors

• Decreased strength (increased risk)
• Impaired balance
• Visual
• Orthostasis
• Cognitive
• Feet, depressive symptoms
Precipitating: Community

- Stairs; tripping hazard
- Footwear
- Unsafe behaviors
- Medications
  - 4+ Medications
  - Psychotropics (sleep, antidep.)
  - Antihypertensives
- Acute illness
Precipitating: Hospital *

- Confusion, agitation
- Multiple medication changes
- Psychotopic medications
- Decreased Hematocrit
- Devices (e.g. IV, catheter)
- Trying to toilet
Fall Prevention: Community

- 60+ trials
- Two types of strategies
  - Single
  - Multifactorial: target multiple risk factors
Ineffective Strategies

- Nonspecific group exercises
- Leg strengthening
- Nutritional supplements
- Vitamin D with or without calcium
- Home modification in non-fallers
- Cognitive behavioral approach
- Correction of visual deficits
Effective Single Intervention Strategies

- Strength and balance retraining
- Home safety modification in fallers
- Tai Chi
- Stop psychotropics
Effective Components

- Medication review and reduction
- Balance/gait training; strengthening
- Manage postural hypotension
- Environmental modifications
- Targeted medical treatments
  - ? Cardiac pacing
Fall Prevention: Hospital

- Only 4 RCTs plus quality assurance
- We know:
  - Restraints, rails don’t decrease injury
  - No effect of fall alerts, stickers
  - Immobility has adverse effects
- Don’t know effect of bed alarms, hip protectors
Fall Prevention Practice: Steps

• **Step 1**: Identify persons at risk
  • Ex. ED, hospital, office, home, SNF

• **Step 2**: Assess health problems known to increase fall risk

• **Step 3**: Treat/manage health problems that increase fall risk
Multi-Faceted Fall Risk Management

• Medical- decreased impairment
• Rehabilitative- Compensate for impairments
• Environmental- decreased impact of impairment
• Patient Education
Risk Factor: Vision

• **Assessment**
  - Acuity < 20/60
  - Decreased depth perception
  - Decreased contrast to sensitivity

• **Management**
  - Ample lighting without glare
  - Avoid multifocal glasses while walking
  - Referral
Risk Factor: Postural Hypotension

- **Assessment**
  - After 5 minutes more or less in a supine position
  - Immediately and 2 minutes after standing (or just at one minute)
  - More or less than 20 mm HG drop in systolic pressure with or without symptoms
Postural Hypotension: Management

- Adequate hydration; modify salt restriction
- Review and reduce medications
- Compensatory strategies (e.g. elevate head of bed, dorsiflexion)
- Pressure stockings- Hard to manage, wash, etc.
- Pharmacologic therapy if above fail
Structured Balance and Gait Assessment

• “Get up and Go” Test
  • Get up from chair, walk 10 feet, turn, walk back, sit in chair
  • Qualitative or timed (10 seconds)

• Performance- Oriented Mobility Assessment:
  • Stand up without arms
  • One leg, tandem, side by side, heel/toe stands
  • Step length, height, width
  • Heel-toe sequencing, path deviation
Balance and Gait: Management

- Dx and Tx underlying cause, if possible
- Reduce medications that impair balance
- Environmental interventions
- Referral to rehabilitation (PT/OT)
Balance and Gait: Management (Physical Training)

- Gait training- appropriate stride length/height; appropriate assistive device
- Appropriate footwear- high box, thin sole, low heel
- Most unsafe footwear are slippers we give patients in the hospital
- Strength training
- Balance training
Rehabilitative & Environmental Interventions: Hospital and SNF

- Based on known fall etiology
  - Avoid restraints and side rails
  - Avoid bed rest
  - Limit devices (e.g. IVs, Catheters)
  - Regular (assisted if needed) toileting
  - Assistive devices (appropriate use)
Risk Factor: Medications

• Assessment
  • High-risk medications
  • Four or more medications

• Management
  • Review and reduce medications
    » Medication reconciliation
Medications and Falling

• Chain of Evidence
  • Increased Medication equals increased risk of falls
  • Falls (and dizziness, unsteadiness, orthostasis, weakness, inattention)...most common ADE
  • Decreased Medications equals decreased risk of falls
Risk of ADE by Number of Medications

- Number of medications only independent predictor of ADE in recent ambulatory study
- Mean number of ADE increases by 10% for each additional medication
Frequency of ADE by Class

- Cardio: 19%-26%
- Antibiotics: 15%-17%
- CNS: 6%-16%
- Endocrine: 12%-16%
- Analgesic: 12%-13%
- Respiratory: 1%-8%
- G.I.: 2%-8%
Manifestations of ADE

- Post-hospitalization cohort
  - CNS (ex. Dizziness, fatigue, confusion, falls) 33%
  - GI (ex. Nausea, diarrhea, anorexia, weight loss) 30%

- Outpatient Cohort
  - CNS (ex. Confusion, falls) 33%
  - GI (nausea, anorexia, diarrhea, GI bleed) 22%
  - Cardiovascular (bradycardia, orthostasis)
- 40% of medications taken before admission are changed
- 45% of discharge medications begun during hospitalization
- Post hospitalization-riskiest time for medication errors and falls (Transition of Care)
Medication Review and Reduction

• Fall-related medication review of symptoms
  • Neuro- dizziness, mental/lethargy, confusion, postural instability, falls
  • Systemic- fatigue, weakness, decreased energy, depressive
Fall-Related Medication Exam

- Postural blood pressure
- Cognition/attention: months of year backwards; walk and talk
- Muscle Strength: 5 Chair Stands
- Balance/gait
Medication Management: As certain Total Use

- All prescribing physicians responsible for total medical effects
- Pharmacists (hospital, HMO, nursing home)
- Homecare nurse (most accurate list)
Medication Management

• Present medication goal: Manage individual disease, avoid specific events (ex. MI, stroke)

• Optimal medication goal in older patient with multiple conditions: Maximize overall health (consider overall harms and benefits)
Medication Management: Minimize

- With every increased dose/medications, equal amount to review all medications
  - What can be eliminated or reduced?
  - Perform “medication review of symptoms and examination”
Medication Challenges

- Multiple prescribers: median of 3 for 75+
- Disease guidelines - most multiple medications
- Patients demand medications
- Difficult ascribe findings to medications
Fall Prevention: Patient Education

• Useful websites:
  • National Institutes on Aging
    – www.nia.nih.gov/health/agepages/falls
  • American Geriatrics Society
    – www.americangeriatrics.org/education/forum
  • Centers for Disease Control
    – www.dcd.gov/ncipc/factsheets/falls
  • Connecticut Collaboration for Fall Prevention
    – www.fallprevention.org
Fall In Older Adults: Summary

• Falls are:
  • Extremely common (30-50+%)
  • Associated with serious morbidity- equivalent to stroke, MI
  • Result of multiple predisposing factors plus precipitating events
  • Predictable and preventable
Falls In Older Adults: Summary

- Falls are (continued)
  - Common, modifiable predisposing factors: cognitive, visual, strength, balance/gait impairments; orthostasis; depressive sx's
  - Common precipitating events:
    » Community: stairs, tripping hazards
    » Hospital, SNF: toileting, devices
    » Community, hospital, SNF: Medications
Take Home Message

• Best way to decrease falls is by looking for and reducing as many of the predisposing and precipitating factors as possible

• Need to incorporate fall risk assessment and management into clinical care of older patients
Questions?
Thank you for your time!