Falls: A Geriatric Syndrome

Assessment and Prevention

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Geriatric Syndromes

- Historically the term “syndrome” refers to a group of multiple symptoms with a single pathogenic etiology.

- Geriatric Syndromes:
  - Complex of symptoms with high prevalence in the elderly.
  - Usually the result of interactions between multiple diseases and multiple risk factors.
Geriatric Syndromes

- Examples
  - Delirium
  - Falls
  - Urinary Incontinence
  - Functional Decline
  - Anorexia

- DDX ALWAYS includes medication side effect!
Table 1
Geriatric Syndromes

Frailty and Failure to Thrive: Older frail adults are at highest risk for numerous adverse health outcomes. Failure to thrive in the elderly is a multifactorial state of decline often caused by functional impairments and chronic comorbidities.

Delirium: An acute disorder of attention and global cognitive function, delirium is a common, serious, and potentially preventable source of morbidity and mortality in the hospitalized elderly.

Falls: Falls have a multifactorial etiology. Twenty years of research have shown incidence, consequences, risk factors, and prevention techniques.

Sleep Disorders: Sleep difficulties are associated with changes in endogenous circadian clock, medical and psychiatric illness, medication intake, and specific sleep disorders.

Dizziness: A sensation of postural instability or imbalance, dizziness is commonly categorized as vertigo, disequilibrium, and presyncope, among others. Mixed dizziness, a combination of two or more of the above types, is the form most commonly reported by older adults.

Syncope: Syncope is a transient, self-limited loss of consciousness, usually leading to falling, and is associated with rapid onset and a spontaneous, complete, and prompt recovery.

Pressure Ulcers: The preferred term for any lesion caused by unrelieved pressure resulting in damage of underlying tissue is pressure ulcers; they are also referred to as decubitus ulcers and bedsores.

Incontinence: Incontinence is the involuntary loss of urine or feces in an amount or frequency sufficient to be a social and/or health problem.

Disorders of Temperature Regulation: Seniors may experience declining regulation of homeostatic mechanisms (i.e., hypothermia, hyperthermia).

Elder Mistreatment: This describes a variety of activities perpetrated upon an older person by others (e.g., physical abuse, neglect, financial or material abuse, psychological or verbal abuse).

Source: References 11–20
“I’ve fallen, and I can’t get up!”
Case Study

- You recently took an evening position at Shady Pines NH. It is 9pm you are caring for an 80 yo female resident with a PMHx includes Dementia, HTN, CAD, Afib, a heart murmur and DM II. You enter her room in response to her call bell and find her on the floor next to her walker. She doesn’t know how she fell, but denies pain over all bony prominences. She has a 1cm skin tear on her left arm and a bruise on her forehead, but otherwise appears to be ok.
Case Study (con’t)

- Nursing notes from the past few days reveal that she has been complaining of mild dizziness. Her MD was notified of that complaint yesterday, but has not yet been by to see her.

- What will you do as part of your initial assessment?

- What information will you be prepared to share with the on-call doctor when you notify him/her of this patient’s fall?
Epidemiology of Falls

- > 1/3 of people age 65 and older fall each year
- Of those cases 50% are recurrent falls
- Falls are the leading cause of death from injury in people age 65 and older
Epidemiology of Falls

- ~1 in 10 falls results in serious injury
  - Hip or other fracture
  - Subdural hematoma or other head injury
  - Serious soft tissue injury
- Among the elderly, falls account for
  - 10% of ER visits
  - 6% of urgent hospitalizations
Sequelae of Falls

- Restricted mobility
- Functional decline
  - ADLs – “DEATH” (Dressing, Eating, Ambulating, Toileting, Hygiene)
  - IADLs – “SHAFT” (Shopping, Housekeeping, Accounting, Food Preparation, Transportation)
- Increased risk of nursing home placement
Causes of Falls

- Usually multi-factorial
- Interactions between intrinsic and extrinsic factors
- Interactions between pre-disposing factors and precipitating factors
- **KEY:**
  - A = Patient with an accidental fall and no intrinsic or extrinsic risk factors
  - B = Patient with acute illness
  - C = Patient with moderate illness, loss of mobility and some prescription medications who falls because of an extrinsic factor
  - D = Severely ill patient with many medications who falls even without extrinsic factors
  - E = Elderly patient with numerous age-related changes who falls because of an extrinsic factor
Risk Factors

- Weakness
- Vision impairment
- Arthritis
- Gait instability
- Balance problems
- Dizziness
- Medications
  - Drug-drug interactions
  - Drug-disease interactions
- Recent Hospitalization

- Orthostasis
- Depressive Symptoms
- Cognitive Impairment
- Environmental Hazards
- Movement Disorder
  - Parkinson’s Disease
- Age>80
- Use of assistive device
  - proper use?
- History of falls
- Acute illness or exacerbation of chronic illness
Risk Factors

• The risk of falling increases as the number of risk factors increases

• In a cohort of community dwelling elders...
  - No risk factors: 8% risk of falling
  - > 4 risk factors: 78% risk of falling
Medications and Falls

- Meds are among the most readily modifiable risk factors
- Poly-pharmacy confers an increased risk of falling
  - Four or more medications
- Psychotropic agents (medications that act on the central nervous system) have the strongest link to increased risk of falling
- Try to avoid the Beer’s List meds…
The Beer’s List: Potentially Inappropriate Medications for the Elderly

- Xanax (alprazolam)
- Ativan (lorazepam)
- Elavil (amitriptyline)
- Demerol (meperidine)
- Chlor-Trimeton (chlorpheniramine)
- Flexeril (cyclobenzaprine)
- Valium (diazepam)
- Phenergan (promethazine)
- Benedryl (diphenhydramine)
- Darvon (propoxyphene)
- Ditropan (oxybutinin)
- Sinequan (doxepin)
- Bentyl (dicyclomine)
Anticholinergic Side Effects

- Ataxia – loss of coordination
- Xerostomia – dry mouth
- Urinary retention
- Decrease bowel motility – constipation
- Altered mental status
- Agitation
Medications and Falls

- “Start low and go slow”
- Minimum number of medications
- Educate pts regarding the indications for each medication
- Perform “brown bag biopsies” often
- Review meds regularly (esp. if pt sees more than one MD)
- Identify drugs of uncertain benefit
- Diligently look for drug/drug and drug/disease interactions
  - Look for duplication of therapeutic action
Assessment: Low Risk or High Risk?

- Tailored to each patient’s needs based on assessment of risk (low vs. high)
  - Back-packing across Europe?
    - Brief assessment
  - Hanging out at the SNF?
    - Previous falls?
      - Comprehensive and detailed assessment
Assessment: The Essentials

- Take a good history
  - Previous falls: “If you don’t ask…they won’t tell”
  - Inquire about fear of falling, and perception of gait stability
    - Sometimes you have to be sneaky…
  - Details about the circumstances of the fall
    - Eye witness accounts?
    - High risk activities?
Assessment: The Essentials

- **Risk Factors**
  - **Medicines, medicines, medicines!**
  - Modifiable (med side effect, muscle weakness, hypotension, etc)
  - Non-modifiable (blindness, hemiplegia, etc)

- **Functional Status**

- **Environmental Hazards**
  - Home safety evaluation?
Assessment: The Exam

- Comprehensive PE (VS, HEENT, chest, abdomen, etc)
- Increased muscle tone, rigidity?
  - Other signs of Parkinsonism – masked facies, hoarseness
- Neurologic Exam
  - Level of consciousness, speech, strength, movement, etc
- Watch them walk…
  - Stable or Unstable
  - Assistive devices
- Timed Get Up and Go test
  - Rise from a hard chair (without using the arms), walk 10 feet, turn around, return, and sit back down in the chair
    - > 10 seconds = increased risk of falling
Post-Fall Assessment: Special Considerations

- Observation: sick vs. not sick
- Orthostatic vital signs, pulse oximetry
- HEENT (if applicable)- cerumen impaction and ETD are associated with increased risk of falls in the elderly
- Listen to the chest (heart and lungs)
  - Heart rate and rhythm
  - Are the lung fields clear?
Post-Fall Assessment: Special Considerations

- **MSK exam**
  - Limb length discrepancy
  - Outward rotation of the hip
  - Function/gait - can they bear weight?

- **Neuro checks**
  - Q15minutes x 4
  - Q1 hour x 4
  - Q8 hours x 72
Is the hip broken?

- **Femoral Head Fx**
  - Usu. assoc w/ dislocation

- **Femoral Neck Fx**
  - Usu. slightly shortened abducted and externally rotated

- **Intertrochanteric Fx**
  - Markedly shortened and externally rotated

- **Torchaneric Fx**
  - No obvious exam findings

- **Subtrochanteric Fx**
  - Flexed and externally rotated
Assessment: Test/Studies

- **Limb X-ray where appropriate**
  - Trust your initial assessment and request repeat plain film if necessary

- **Laboratory Tests (if indicated)**
  - UA/UCx (NOT REFLEX!!!!!!)
  - CBC (get the diff), CMP, TSH-r, vitamin B12, 25-OH vitamin D

- **Other studies (based on exam findings)**
  - CXR for abnormal lung exam
  - EKG for ectopy
  - Head CT (AMS, esp if patient is on blood thinners or anti-platelet therapies…ASA, warfarin, plavix, etc)
Periodic case finding in Primary Care: Ask all patients about falls in past year

- Recurrent Falls
  - Gait/ balance problems
  - Patient presents to medical facility after a fall
  - Fall Evaluation*
    - Assessment
      - History
      - Medications
      - Vision
      - Gait and balance
      - Lower limb joints
      - Neurological
      - Cardiovascular
    - Multifactorial intervention (as appropriate)
      - Gait, balance, & exercise programs
      - Medication modification
      - Postural hypotension treatment
      - Environmental hazard modification
      - Cardiovascular disorder treatment

- Single Fall
  - Check for gait/balance problem
  - No Problem

- No Falls
  - No intervention
Then What?

- Reverse any underlying etiologies
  - Don’t underestimate the power of treating SAR, ETD and ear wax!
- Modify medications according to principles mentioned above
- Physical therapy
  - Assistive devices if necessary
- Home safety evaluation
  - Modifications if necessary
Reducing Falls: Home Safety
Home Safety Checklist

- All living spaces
  - Remove throw rugs
  - Secure carpet edges
  - Remove low furniture and objects on the floor
  - Reduce clutter
  - Remove cords and wires on the floor
  - Check lighting for adequate illumination at night (especially pathways to the bathroom)
- Secure carpet or treads on stairs
- Install handrails on staircases
- Eliminate chairs that are too low to sit in and get out of easily
- Avoid floor wax
- Ensure that telephone can be reached from the floor
Home Safety Checklist

- **Bathrooms**
  - Install grab bars in the bathtub or shower and next to the toilet
  - Use rubber mats in the bathtub or shower
  - Take up floor mats when the bathtub or shower is not in use
  - Install a raised toilet seat
Home Safety Checklist

- Outdoors
  - Repair cracked sidewalks
  - Install handrails on stairs and steps
  - Trim shrubbery along the pathway to the home
  - Install adequate lighting by doorways and along walkways leading to doors
Success in Fall Prevention

- Most successful approaches are multifactorial assessments followed by targeted interventions
  - Gait training
  - Exercise programs with balance component (Tai Chi)
  - Med review/modification
  - Advice about assistive devices
  - Modification of environmental hazards
  - Treatment of underlying diseases
Fall Prevention in Nursing Homes

- Identifying and modifying risk factors
- Prevent & treat dehydration
- Attention to subtle changes
- Motion detectors/alarms
- Prompt attention to call bells
- Adjusting bed height and/or “landing strips”
- Adequate foot care/foot wear
- Adequate lighting, grab bars in bathrooms, raised toilet seats, handrails in hallways
- Relocating highest risk residents to rooms nearest the nursing station
...and if a fall occurs anyway?

- Reduce the likelihood of fractures
  - Low bone density increases the risk of hip and other fractures
    - Dexa scans
    - Vitamin D deficiency: VERY common in the elderly
- Hip Protectors
  - Small RCT showed efficacy in high risk patients
    (60% reduction in hip fracture, 80% when worn consistently)
“Cane Fu”: Assistive Devices
Correct size! (Too Tall) (Too Short)

Lowest point on top of handle

Image 1: An image of a walking cane.
Image 2: An image of two people walking on a sidewalk.
Image 3: A diagram illustrating how to determine the correct size of a walking cane.
“Self-DeFENCE”: Assistive Devices
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For this patient, be prepared to share...

- Your complete assessment
  - Orthostatic vitals: orthostasis may be the cause of her recent dizziness
  - Blood glucose measurement (hypo-glycemics?)
  - Exam and mental status as compared to baseline

- Medication List
  - Recent changes
  - Diuretics/anti-hypertensives?
  - Warfarin with indication and goal range (heart murmur or afib)

- Labs
  - Renal function
  - INR (if applicable)
  - Last Hct
Nurse – Physician Communication: The Long-term Care Setting

- Teamwork and collegiality is the benchmark.
- You may know the patient better than the physician does.
- Time is of the essence: efficiency benefits the patient, the physician, and the nurse.
- You are the physician’s eyes, ears, and hands.
  - Patient care instructions given to you by the on-call physician are only as good as the information you give that physician.
The End

Questions?
References

- Fuller, GF. Falls in the elderly. Am Fam Physician 2000;61(7):2159-2168
- Tinetti, ME. Preventing falls in elderly persons. NEJM 2003;348(1):42-49