Geriatric Falls

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Clinical Case

- Gertrude is an 88 y/o woman admitted for back pain after a fall stepping off a curb outside her assisted living.
- Xray demonstrates thoracic compression fracture.
- Admit for pain control, inability to ambulate.

PMH
- Mild Alzheimer's Dementia
- HTN
- Urge incontinence
- Depression
- Insomnia

Medications
- Clonidine 0.1 mg bid
- Aspirin 81 mg daily
- Sertraline 50 mg daily
- Amitriptyline 50mg at night

IMPACT

- 30-40% of people over age 65 will have a fall each year.
- In an elderly patient who has fallen, the risk of having a second fall within a year rises to 60%

Rao SS. Prevention of Falls in Older Patients. JAGP 2005;72:1-16
Consequences

- Many falls cause minor or no injury.
  - Skin tears, lacerations, bruising

- Between 5 and 10% of community dwelling elderly who fall will suffer a serious injury
  - Up to 20-30% of elderly patients overall

- 8% of people > 70 come to ER for falls each year
  - 1/3 will be admitted

Injuries

- Fractures
  - 1% of falls in the elderly lead to hip fx
  - 20-30% mortality in the year after hip fx
  - ___ to ___ of patients do not recover prior level of ADLs

- Prolonged lie- half of all elderly patients who fall are unable to get back up
  - 2e rhabdo, dehydration/ARF, pressure injury

- Rib Fractures
  - Mortality 12% with 1-2 rib fx
  - 40% in patients with 7 or more fx

- Subdural Hematoma
Post Fall Anxiety Syndrome
“Fallophobia”
Self-limiting activity, worsening deconditioning, social isolation

- Picture the geriatric fall as a node on a decline spiral

Gertrude’s Tragic Tale
- Admit team orders IV dilaudid prn for pain
- Benadryl pm for insomnia
- An indwelling catheter is placed
- Maintenance IV fluids and telemetry ordered
- SCDs for DVT prophylaxis

Gertrude’s Tragic Tale
- She gets out of bed to use bathroom at 2 a.m. and is found by staff on the floor
Hospital Falls

- 2-12% of patients will have a fall in the hospital
  - 30% with minor injury
  - 4% with major injury
  - Associated with increased hospital charges ($4233)
  - Associated with increased LOS (12 days)

Injuries from falls in the hospital are “Never Events”
- Medicare will no longer pay for them

Hospital falls with significant injury are JCAHO reportable
- sentinel events

Falls with injury in the hospital pose malpractice risk

Risk Assessment- Physicians

- How do physicians assess fall risk?

- For the most part, physicians pay little or no attention to this issue.

- A simple falls screen:
  - Have you fallen in the last month or are you afraid of falling?
  - Get-Up-And-Go test
    - You learn a lot about strength, balance, and gait in 30 seconds.

Fall Risk Scoring Tools

- More complex screening tools are available used to target interventions to high risk patients
  - STRATIFY Score
  - Downton Score
  - Morse Falls Scale
  - Hendrich

- Using the standards of EBM, even the best of these tools has poor test performance
  - Sens 67% Spec 51%
  - PPV 23% NPV 87%

- ACTION on modifiable risk factors is far more important than risk stratification
Gertrude’s Tragic Tale

Which actionable risk factors are relevant for Gertrude?

- PMH
  - Mild Alzheimer’s Dementia
  - HTN
  - Urinary incontinence
  - Depression
  - Insomnia
  - Urinary catheter
  - SCDs
  - IVF

- Medications
  - Clonidine 0.1 mg bid
  - Aspirin 81 mg daily
  - Sertraline 50 mg daily
  - Amitryptiline 50mg at night
  - + new IV dilaudid for pain
  - + new benadryl for sleep

Falls are a Prototypical Geriatric Syndrome

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower extremity weakness</td>
<td>4.4</td>
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<tr>
<td>History of falls</td>
<td>3.0</td>
</tr>
<tr>
<td>Gait deficit</td>
<td>2.9</td>
</tr>
<tr>
<td>Balance deficit</td>
<td>2.9</td>
</tr>
<tr>
<td>Need for assistive device</td>
<td>2.6</td>
</tr>
<tr>
<td>Visual defect</td>
<td>2.5</td>
</tr>
<tr>
<td>Arthritis</td>
<td>2.4</td>
</tr>
<tr>
<td>Impaired activities of daily living</td>
<td>2.3</td>
</tr>
<tr>
<td>Depression</td>
<td>2.2</td>
</tr>
<tr>
<td>Cognitive impairment</td>
<td>1.8</td>
</tr>
<tr>
<td>Age &gt; 80 years</td>
<td>1.7</td>
</tr>
</tbody>
</table>


A Brief Diversion

- In Malcolm Gladwell’s book on cognition “Blink”, he describes a fascinating psychology experiment.
- A sample table is set up at two grocery stores for customers to try a sample of jam.
- On table has 6 varieties of jams, the other has 24 selections.
- Which table do you think sold more jam?
### Multiple Alternatives Bias

- Table with only 6 varieties sold 10X more jam
- The reason lies in the human psyche.
- Faced by too many choices, customers freeze up and make no decision at all.

### A New Conceptual Framework

- Fall risk has specific components:
  - **Latent risk for fall**
    - Physiologic changes of aging
    - Disease and medications
    - Behavioral traits
  - **Environmental trigger**
    - the “accident”
  - **Underlying frailty**
    - Vulnerability to injury
  - EACH COMPONENT HAS CONCRETE ACTIONS TO REDUCE RISK OF FUTURE INJURY

### OPPORTUNITY FOR INTERVENTION

1. Physical Therapy
2. Ambulation/Gait assists
3. Sensory Aids
4. Remove Problematic Medications
5. Bed Alarms for dementia with impulsivity
6. OT Home Safety Eval
   - rugs
   - cords
   - lighting
   - rails
7. Calcium+Vitamin D/Bisphosphonate
8. Hip protectors
What about Tests?

- No specific laboratory or imaging testing is indicated in the absence of clinical correlation.

- Vitamin D levels are reasonable:
  - Vitamin D deficiency associated with falls and osteoporosis.
  - CBC/Chem 7 if anemia or dehydration are suspected.
  - Urinalysis, B12 levels, and TSH if driven by other clinical cues.
  - Echo is only indicated if exam suggests valvular disease.
  - EKG/holter monitoring- low yield without syncope, chest pain, or palpitations.
  - Brain imaging if neurologic findings on exam or if fall caused head injury.

What Interventions Reduce Falls?

What Interventions Reduce Falls?

- Physical therapy evaluation
  - Maintain strength + balance.
- Ambulation/Gait assists
  - Cane, walker.
- Encourage sensory aids.
- Remove problematic meds.
- Home safety eval on D/C.
- Calcium + Vitamin D.
- Bisphosphonates.

OPPORTUNITY FOR INTERVENTION

- Physical therapy evaluation
- Ambulation/Gait assists
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- Calcium + Vitamin D.
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- Hospital Specific:
  - Schedule prompts to toilet.
  - Hourly nursing rounding.
  - Bed/chair alarms
    - For impulsive dementia.
  - Eliminate tethers.
Prevention of Future Injury

- No single hospital strategy, using rigorous methodology, has been proven effective at reducing injury
- Multifactoral interventions appear to reduce hospital falls by 18%

In the community a multi-pronged prevention strategy reduces future falls by 21%

Schwendimann R, et al. Falls and Consequent Injuries in Hospitalized Patients: Effects of an Interdisciplinary Falls Prevention Program
BMC Health Services Research 2006;6:69

Oliver, D. et al. Strategies to Prevent Falls and Fractures in Hospitals and Care Homes and Effect of Cognitive Impairment: Systematic Review and Meta-analysis
BMJ 2006

Final Thought

Geriatric fall

versus

Transient Ischemic Attack