Approach to Falls

Authors: Cyrus Mowdawalla, Taha Awan, and Kathryn Haroldson MD

Falls are defined as inadvertently coming down to a lower level such as the ground, usually under the influence of gravity. Falls are very common in populations greater than 65 and are one of the leading causes of injury-related disability and mortality worldwide.

According to CDC data from 2015, every year ~$50 billion is spent on medical expenditures related to non-fatal fall injuries, while $754 million annually is spent on fatal falls[1-2]. These costs do not consider the long-term consequences of fall injuries, such as disability, reliance on household members and the effects of significant injury on overall quality of life.

Both the incidence of falls and cost to treat related injuries is expected to climb in the near future as the population of those 65 and older continues to grow.

Intrinsic Risk Factors:

- Age: 27.5% of ≥ 65 y.o. have at least one fall in the past year and increases to 34% in >84 y.o.)[3]
- Medication: Antiepileptics, Antipsychotics, Antidepressants, Antihistamines, Antiarrhythmics, Benzodiazepines/Nonbenzodiazepines, Sedatives/Hypnotics, Opioids
- Acute: Delirium, Fever, Infection, Stroke, Seizure, Dehydration, Syncopal events
- Chronic: Dementia, Hypertension, Arrhythmias, Arthritis, Anemia, Peripheral Vertigo

Extrinsic Risk Factors:

- Environmental hazards: Wet floors/loose rugs, Poor lighting, Improper bed height, Lack of bathroom/staircase grab handles
- Substance use: Alcohol, Marijuana, Opioids
- Hospital based/Long term facility: Increased nurse: patient ratio
- Improper use of assistive devices for ambulation

HPI:

- Onset: When did the fall occur?
- Who witnessed the fall?
- Events immediately prior to, during, and after the fall
- Where did the fall take place?
- Have you fallen like this before? How frequently?
- Have you recently started a new medication or changed doses?
- Do you remember the event? Did you lose consciousness?
- Did the fall occur in the daytime or at night?
- Witnessed accounts can provide useful insight into the mechanism of fall

Events prior to fall (warning signs):

- Dizziness, chest pain, pressure to the neck, sudden head rotation, rising from seated position?

Events during the fall:

- Any tongue-biting or incontinence, loss of consciousness, flushing, head trauma?

Events after the fall:

- Did the patient return to baseline, any post-ictal state, or sustained weakness?

Common Injuries after Fall:

- Hip Fractures: >95% of hip fractures among older adults are caused by falls[4]
- Cranial injuries: Falls are the most common cause of traumatic brain injury (TBI)
- Spinal/Back Injury: Compression fractures, herniated disc, spondylolisthesis
- Dislocated Shoulders
- Ankle/Knee Injury

Screening for Fall Risk

1. The Performance Oriented Mobility Assessment tool (POMA, or Tinetti Assessment Tool)
    a. Task-based tool used to assess gait and balance, most commonly in elderly populations
    b. Balance tests, such as balance while sitting and attempting to rise, are graded on a 16-point scale. Gait tests, such as initiation of gait and symmetry of steps, are graded on a 12-point scale
    c. Combined scores below 19 are high risk for falls
2. "Get Up and Go" test
    1. Graded 1 to 5 scale (1 = normal and 5 = severely abnormal)
    2. Observe the patient rising from a chair -> walking a fixed distance (10 feet) across the room -> turning around -> walking back to the chair -> sitting back down
    3. Note difficulties in stability during standing and sitting phase, gait, and leg strength.
    4. The test is timed and compared with mean times of adults in age groups: 60 - 69 y.o., 70 - 79 y.o., and 80 - 99 y.o.

Work-up for Suspected Fall

- Vital signs
- Visual and auditory testing
- Cognitive and memory testing
- Labs: CBC, BMP, LFT, A1C, B12, RPR, TSH, UA, UDS
- Electrocardiogram and Echocardiogram
- X-ray, CT head with/without contrast, Bone densitometry (DEXA Scan)
- Serum medication levels
- Home safety evaluation (especially in elderly or disabled populations)
- Physical Therapy consult/assessment

Clinical Pearls/Final Points:

- Cost to US healthcare can be lowered with primary prevention
- Threatens individual's independence and autonomy
- Obtaining a detailed history is crucial to determining cause of fall

References:

1. Florence CS, Bergen G, Atherly A, Burns E, Stevens J, Drake C. Medical Costs of Fatal and Nonfatal Falls in Older Adults. J Am Geriatr Soc. 2018 Apr;66(4):693-698.
2. United States, Department of Health and Human Services, Centers for Disease Control and Prevention. "Cost of Older Adult Falls." Centers for Disease Control and Prevention, National Center for Injury Prevention and Control, 9, July, 2020, www.cdc.gov/falls/data/fall-cost.html.
3. Kiel D. Falls in older persons: Risk factors and patient evaluation. In: UpToDate Shefner JM (Ed), UpToDate, Waltham, MA. (Accessed on August 15, 2022.)
4. Parkkari J, Kannus P, Palvanen M, Natri A, Vainio J, Aho H, Vuori I, Järvinen M. Majority of hip fractures occur as a result of a fall and impact on the greater trochanter of the femur: a prospective controlled hip fracture study with 206 consecutive patients. Calcif Tissue Int, 1999;65:183–7.
5. Falls in older people: assessing risk and prevention. Clinical guideline [CG161]. Published date: June 2013. Available from: https://www.nice.org.uk/guidance/cg161\
6. Berry, Sarah D, and Ram R Miller. "Falls: epidemiology, pathophysiology, and relationship to fracture." *Current osteoporosis reports* vol. 6,4 (2008): 149-54. doi:10.1007/s11914-008-0026-4.