'TO AVOID A HUMPTY DUMPTY- PREVENTION OF FALLS
Reena Kuriacose, MD
Department of Internal Medicine
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- Definition of a fall:
  A sudden, unintentional change in position causing an individual to land at a lower level, on an object, the floor, or the ground, other than as a consequence of sudden onset of paralysis, epileptic seizure, or overwhelming external force

- 35-40% of community dwelling, generally healthy, above 65 years – fall annually
- One in every 3 adults >65 fall every year
- Every 18 seconds, an older adult is treated in an emergency room for a fall
- Every 35 minutes a senior dies following a fall
The nation's population is aging. Older adults are expected to reach 20 percent of the U.S. population by 2030. The nation's health care spending is projected to increase by 25 percent due to this demographic shift.

By 2020, the annual costs for fall-related injuries are expected to reach $54.9 billion (in 2007 dollars).

1994: Cost estimated for fall related injury- 20.2 billion

Average hospitalization for a fall costing $17,500.

- 60% in home
- 30% in public places
- 20% NH

Complications of falls:
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1. Fractures
2. Soft tissue injury
3. Head trauma
4. Joint distortion and dislocation
5. Loss of confidence
6. Restricted activity

Unintentional injury: 5th leading cause of death in older people

Falls - 2/3 of deaths from unintentional Injury

First 4:
1. Disease of heart
2. Malignant neoplasm
3. Cerebrovascular disease
4. Chronic lower respiratory disease

2/3 of those who fall experience a fall again in 6 month (~ 16,000 deaths in 2005)

- 3% falls $\rightarrow$ fractures
- $\sim$ 95% of hip fractures >65yr are a result of falls
- 90% of the 300,000 hip fractures treated annually in the United States occur as a result of a fall
- Hip fractures: 5~20% more likely to die in first year following injury than any other reason in the same age group

- Approximately 25% of hip fracture patients will make a full recovery
- 40% will require nursing home admission
- 50% will be dependent upon a cane or a walker
- 20% will die in one year.

- The National Osteoporosis Foundation reports 35,700 deaths each year from complications from hip fractures as a result of osteoporosis.

Causes of falls:

- Intrinsic
- Extrinsic/Environmental
Intrinsic:
1. Age related:
   - Increases reaction time
   - Decreased reflexes
   - Decreased proprioception
   - Decreased muscle mass
   - Slower gait
   - Decreased stride length and arm strength

2. Medical Conditions:
   - Acute Illness
   - Cardiac arrhythmias (irregular heartbeat)
   - Blood pressure fluctuation – orthostatic hypotension
   - Vertigo, pre-syncope
   - Cancer that affects bones
   - Depression, Alzheimer's disease, and senility
   - Arthritis, Hip weakness or imbalance
   - Neurologic conditions, Strokes, Parkinson's disease, Multiple sclerosis
   - Urinary and bladder dysfunction

Forward flexion of head and torso
- Increased lateral sway
- Forward flexion of shoulder and knees

Dysmobility/ Proprioceptive dysfunction
Reduced physical activity

3. Vision – decreased vision
   - decreased accommodation
   - decreased dark adaptation

4. Hearing loss/ Vestibular dysfunction
- Women have greater risk

- Men more likely to die

- Women have 2-3 times as many hip fractures as men and a 20% chance of a hip fracture during their lifetime

- Caucasians and Asians with small, slender body structures are at risk; so are people who have a family history of fractures later in life.

- Low body weight, Tall

- Fear of falling

Extrinsic:
Medications:

Four or more medicines.

If there are changes in medication within the past two weeks

Always check for OTC medication

- Sedatives-Hypnotics: long acting benzodiazepams
- SSRI, TCA
- Anti-arrhythmics, Digoxin, Diuretics
Others:

- Alcohol
- Illicit drugs

- Low calcium dietary intake, reduced calcium absorption and inadequate vitamin D are factors in osteoporosis
- Low Vitamin D leads to falls

Environmental:

- Environmental 1/3 of falls
  - Assisted devices
  - Poor lighting or throw rugs
  - Slippery or wet surfaces
  - Inadequate footwear and cluttered pathways in a home.

Fall in a home, usually related to everyday activities such as walking on stairs, going to the bathroom or working in the kitchen
PREVENTION:

- Researchers have found that fall prevention includes several components including:
  1. Regular exercise including both strength and flexibility training
  2. Attention to nutrition particularly vitamin D and calcium supplements
  3. Reducing or withdrawing certain medications
  4. Vision assessments such as cataract surgery
  5. Environmental evaluation to remove tripping hazards and lighting deficiencies

- The CDC has published a checklist of prevention approaches that includes reviewing medications, increasing physical activity, modifying homes to remove fall hazards, and vision screening.

Recommendation:

To assess cause and implement preventive measures if there is more than one fall

Assessment:

- All older persons should be asked about falls at least once a year
- Get up and go test – in all persons with history of fall
- Further assessment if difficulty or unsteadiness
History:

- Circumstance of fall
- Associated symptoms
- Medical problem- acute or chronic
- Medication list current/ recent changes
- Previous history/ near falls

Physical examination:

- Vital signs- orthostatic BP, rate and rythm
- Exam of all systems- cognitive function, mental status, cardiovas, neuro, lower extremities
- Vision and hearing
- Acute illnesses
- Gait and balance assessment- rehab

Take in consideration:

- Osteoporosis- supplements
- Smoking cessation
- Environmental assessment (OT)
- Hip protectors
- Risk factors, Gait, Exercise (PT)

Thank you.
- Pan-Ching Sze et al. The efficacy of a Multidisciplinary Falls Prevention Clinic with an Extended Step down Community Program: Arch Phys Med Rehab 2008; 89:1329-34
- Hylton B. Menz et al. A structural equation model relating impaired sensorimotor function, fear of falling and gait patterns in older people: Gait and posture 2007; 25: 243-249