A Balancing Act

Preventing falls in middle and older age
Disclosures

• None
Gabriel Garcia Marquez

“Old age began with one's first fall and the death came with the second.”

Love in the Time of Cholera
Case example: Mrs. H

- 85 year old lady living in an assisted living facility
- Has a history of atrial fibrillation (irregular heart beat), osteoporosis, difficult to control blood pressure (can be too high or too low)
- Gets out of bed one night to use bathroom, falls and breaks her hip
- Returns home after hip replacement, very fearful of falling, reduces her activities
Outline

1. Magnitude of the problem
2. Risk factors
3. Management guidelines
4. Johns Hopkins Falls Prevention Clinic
Magnitude of the problem
Prevalence of dizziness and falls in the US population

Data from NHANES 2001-2003
Impact of falls

• > 1/3 community-dwelling adults >65yo fall each year

• 10% of falls result in major injuries such as hip fractures

• 10-fold increased risk of nursing home placement after fall with injury

• Costs estimated to exceed $20 billion annually
Risk factors
Most common risk factors

- 4 most common risk factors:
  1. Balance and gait
  2. Vision
  3. Multiple medications use
  4. Home safety

*Falls often multifactorial so need to consider all risk factors*
Balance and Gait

- Most important of the 4 risk factors
- Components of balance:
  - Sensory
    - Visual
    - Proprioceptive
    - Vestibular
  - Motor
    - Motor strength
    - Motor coordination

- All components must be considered
Balance and Gait

Gait Speed and Survival in Older Adults

- Gait speed as more predictive of survival than history of heart disease, stroke, hospitalization, smoking, BMI
Balance and Gait

Studenski et al JAMA, 2011
Medications

• Highest risk: psychototropic medications
  – Sedatives/hypnotics (sleeping aids, benzodiazepines, e.g. Valium, Xanax, Klonopin)
  – Anti-psychotics (for treatment of schizophrenia, e.g. Zyprexa, Seroquel)
  – Anti-depressants
  – Narcotics (e.g. Percocet, Oxycodone)
Medications

• Anti-hypertensives:
  – E.g. beta-, alpha-blockers, diuretics
  – Risk of postural/orthostatic hypotension (fall in systolic blood pressure ≥ 20mm Hg moving from supine to standing position)
• Polypharmacy
  – Use of $\geq 4$ prescription medications, regardless of which medications they are, increases fall risk
Vision

• Most common cause of low vision in the elderly:
  – **PRESBYOPIA**: age-related decline in near vision

• Other big 3 causes of age-related visual loss:
  – Cataracts
  – Glaucoma
  – Macular Degeneration
Home Safety

• **Common home hazards:**

  – Poor lighting
  – Tripping hazards (e.g. throw rugs, telephone cords, cables)
  – Lack of handrails
  – Objects stored close to the ground or on high shelves
Management guidelines
USPSTF Guidelines

• US Preventive Services Task Force:
  – Recommends exercise or physical therapy and vitamin D supplementation in community-dwelling adults ≥ 65 years at increased risk for falls (Grade B recommendation)
  – Does not recommend multifactorial risk assessment in any adult ≥ 65 years, but only in individual cases based on circumstances of prior falls, comorbid medical conditions, and patient values (Grade C recommendation)
AGS Guidelines

• American Geriatrics Society 2010:
  – Older persons who present for medical attention because of a fall, report recurrent falls in the past year, or report difficulties in walking or balance (with or without activity curtailment) should have a multifactorial fall risk assessment.
Many falls can be prevented. By making some changes, you can lower your chances of falling.

Four things YOU can do to prevent falls:

1. Begin a regular exercise program
2. Have your health care provider review your medicines
3. Have your vision checked
4. Make your home safer

“We feel stronger when we walk frequently. And we have a more positive outlook.”

What YOU Can Do

To Prevent Falls
Most important of the 4 risk factors

Choosing Wisely: Don’t prescribe under-dosed strength training programs for older adults. Instead, match the frequency, intensity and duration of exercise to the individual’s abilities and goals.

EXERCISE!
– Progressive balance, strength and endurance, consider Tai Chi
Vision

- Expedited first cataract surgery shown to significantly reduce fall risk
## Medications: Beers criteria

**TABLE 2:** 2012 AGS Beers Criteria for Potentially Inappropriate Medication Use in Older Adults Due to Drug-Disease or Drug-Syndrome Interactions That May Exacerbate the Disease or Syndrome

<table>
<thead>
<tr>
<th>Disease or Syndrome</th>
<th>Drug(s)</th>
<th>Recommendation, Rationale, Quality of Evidence (QE) &amp; Strength of Recommendation (SR)</th>
</tr>
</thead>
</table>
| History of falls or fractures | Anticonvulsants  
Antipsychotics  
Benzodiazepines  
Nonbenzodiazepine hypnotics  
- Eszopiclone  
- Zaleplon  
- Zolpidem  
TCAs/SSRIs | Avoid unless safer alternatives are not available; avoid anticonvulsants except for seizure.  
Ability to produce ataxia, impaired psychomotor function, syncope, and additional falls; shorter-acting benzodiazepines are not safer than long-acting ones.  
QE = High; SR = Strong |
Medications:

**STOPP and START criteria**

**STOPP:** Screening Tool of Older People’s potentially inappropriate Prescriptions.

The following drug prescriptions are potentially inappropriate in persons aged $\geq 65$ years.

**H Drugs that adversely affect fallers**

1. Benzodiazepines.
2. Neuroleptic drugs.
3. First-generation antihistamines.
4. Vasodilator drugs with persistent postural hypotension, i.e. recurrent $>20$ mmHg drop in systolic blood pressure.
5. Long-term opiates in those with recurrent falls.

**START:** Screening Tool to Alert doctors to Right, i.e. appropriate, indicated but often omitted Treatments.

These medications should be considered for people $\geq 65$ years of age with the following conditions, where no contraindication to prescription exists.
Medications

• Trade-offs
  – Diseases, e.g. heart failure, hypertension associated with poor health outcomes (e.g. heart attack, stroke), but the medications that treat them associated with fall risk
  – Patients need to weigh benefit of treating disease with risk of medications
  – Reduce dose or eliminate high-risk medications
Home Safety

This checklist is based on the original version printed by the Centers for Disease Control and Prevention. Support for this version was provided by MetLife Foundation.

2005

CDC Foundation

MetLife Foundation

Department of Health and Human Services
Centers for Disease Control and Prevention

Check for Safety

A Home Fall Prevention Checklist for Older Adults
“Last Saturday our son helped us move our furniture. Now all the rooms have clear paths.”

**FLOORS:** Look at the floor in each room.

**Q:** When you walk through a room, do you have to walk around furniture?
- Ask someone to move the furniture so your path is clear.

**Q:** Do you have throw rugs on the floor?
- Remove the rugs or use double-sided tape or a non-slip backing so the rugs won’t slip.

**Q:** Are there papers, books, towels, shoes, magazines, boxes, blankets, or other objects on the floor?
- Pick up things that are on the floor. Always keep objects off the floor.

**Q:** Do you have to walk over or around wires or cords (like lamp, telephone, or extension cords)?
- Coil or tape cords and wires next to the wall so you can’t trip over them. If needed, have an electrician put in another outlet.
Home Safety

STAIRS AND STEPS:
Look at the stairs you use both inside and outside your home.

Q: Are there papers, shoes, books, or other objects on the stairs?
☐ Pick up things on the stairs. Always keep objects off stairs.

Q: Are some steps broken or uneven?
☐ Fix loose or uneven steps.

Q: Are you missing a light over the stairway?
☐ Have an electrician put in an overhead light at the top and bottom of the stairs.

Q: Do you have only one light switch for your stairs (only at the top or at the bottom of the stairs)?
☐ Have an electrician put in a light switch at the top and bottom of the stairs. You can get light switches that glow.

Q: Has the stairway light bulb burned out?
☐ Have a friend or family member change the light bulb.

Q: Is the carpet on the steps loose or torn?
☐ Make sure the carpet is firmly attached to every step, or remove the carpet and attach non-slip rubber treads to the stairs.

Q: Are the handrails loose or broken? Is there a handrail on only one side of the stairs?
☐ Fix loose handrails or put in new ones. Make sure handrails are on both sides of the stairs and are as long as the stairs.
Home Safety

**KITCHEN:** Look at your kitchen and eating area.

**Q:** Are the things you use often on high shelves?

☐ Move items in your cabinets. Keep things you use often on the lower shelves (about waist level).

**Q:** Is your step stool unsteady?

☐ If you must use a step stool, get one with a bar to hold on to. Never use a chair as a step stool.

**BATHROOMS:** Look at all your bathrooms.

**Q:** Is the tub or shower floor slippery?

☐ Put a non-slip rubber mat or self-stick strips on the floor of the tub or shower.

**Q:** Do you need some support when you get in and out of the tub or up from the toilet?

☐ Have a carpenter put grab bars inside the tub and next to the toilet.
Home Safety

“I put a lamp on each side of my bed. Now it’s easy to find the light if I wake up at night.”

**BEDROOMS:** Look at all your bedrooms.

**Q:** Is the light near the bed hard to reach?

☐ Place a lamp close to the bed where it’s easy to reach.

**Q:** Is the path from your bed to the bathroom dark?

☐ Put in a night-light so you can see where you’re walking. Some night-lights go on by themselves after dark.
Johns Hopkins
Falls Prevention Clinic
The Falls Prevention Clinic is a collaboration of the following Johns Hopkins Departments:

- Geriatric Medicine and Gerontology
- Neurology and Neurosurgery
- Otolaryngology-Head and Neck Surgery
- Physical Medicine and Rehabilitation
- The Wilmer Eye Institute

Appointments: 410-614-3234

The Falls Prevention Clinic
The Johns Hopkins Hospital
600 North Wolfe Street
Meyer 1-130
Baltimore, MD 21287

Appointments: 410-614-3234
Signed physician referral forms may be faxed to: 410-614-0503
The Johns Hopkins Falls Prevention Clinic is a comprehensive multidisciplinary program designed for patients at risk of falls or with recurrent falls who want to prevent future events and improve their quality of life.

Treatment may include providing strategies and tactics to address strength, balance and visual deficits; pain and reduced flexibility; medication side effects; home safety risks; and difficulty walking.

Your Visit
At the clinic, patients will complete a screening questionnaire and see a physical therapist and an occupational therapist who will perform the initial comprehensive evaluation. These therapists are uniquely qualified to understand the multiple factors involved that lead to balance issues and falls.

Referrals to specialist physicians in the areas of neurology, ophthalmology, otolaryngology, physical medicine and rehabilitation, and orthopedics are then made, if needed.

Our Approach
The team at our Falls Clinic will work to best address your balance problems and fall risk by providing:

- Comprehensive balance evaluation
- Identify treatments and specialists needed to address your specific needs
- Develop a customized plan of tools and recommendations to best address balance problems and fall risks in coordination with the patient’s referring or primary care physician
- Patients leave after their Falls Clinic appointment with strategies to help prevent falls

To make an appointment, call 410-614-3234
July 2013: NIH Aging/PCORI seek a clinical trial to prevent serious injuries resulting from falls in older people.

“Serious injuries from falls, such as broken bones or traumatic brain injury, are a major reason for the loss of independence among older people,” said NIA Director Richard J. Hodes, M.D. “This is a significant public health problem, greatly affecting older adults and their families — as well as the health care system. The clinical trial envisioned here seeks to test a comprehensive and practical approach that can make real progress in reducing these injuries.”
Intervention

- Patient-centered and evidence-based
  - Personalized, addresses all risk factors
  - A nurse falls care manager will work with patient to develop their specific goals
  - Nurse will work as coach to motivate patients to follow recommendations
  - Nurse will check in with patient and follow-up with them over 3 years
A Balancing Act: Take Home Messages

• Falls are common, devastating, and preventable

• To reduce your risk:
  – EXERCISE! (Taichi, appropriate dose)
  – Check your medications
  – Make sure your eyeglasses are up to date
  – Make sure your home is safe
THANK YOU!