FALL RISK AND PREVENTION IN OLDER ADULTS

Josette Rivera, MD
Assistant Professor of Medicine
Division of Geriatrics
Department of Medicine
University of California, San Francisco

Ellen Corman, BS, MRA
Supervisor, Community Outreach and Injury Prevention
Stanford University Medical Center Trauma Service

STANFORD UNIVERSITY

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Josette Rivera is a clinician educator and an Assistant Professor of Medicine in the Division of Geriatrics. She is dedicated to providing primary and palliative care to homebound older adults throughout San Francisco through the UCSF Housecalls Program. Dr. Rivera’s educational focus is on training students and professionals how to collaborate within interdisciplinary teams to provide effective, patient-centered care for older adults. She recently received a Geriatric Academic Career Award with which she will create and expand interprofessional and geriatric education opportunities at UCSF.

Dr. Rivera received her medical degree from the University of Rochester and residency training in Primary Care Internal Medicine at Johns Hopkins Bayview. She then completed a three year clinical and research fellowship in the Division of Geriatric Medicine and Gerontology at Johns Hopkins. At the conclusion of fellowship, Dr. Rivera became a staff physician at On LokLifeways, a Program of All-Inclusive Care for the Elderly, which serves nursing home eligible seniors in the San Francisco area. She joined the Geriatrics faculty at UCSF in 2008.
Ellen Corman, MRA

Ellen Corman, Supervisor of Community Outreach and Injury Prevention for the Trauma Service at Stanford University Medical Center, has over 20 years experience working in the area of injury prevention. She has an undergraduate degree in Occupational Therapy and a Masters degree in Rehabilitation Administration. Ellen was a member of the state’s Injury Prevention Strategic Planning Committee and active in the state’s Stop Falls Network. Ellen currently co-chairs the San Mateo County Fall Prevention Task Force and developed and manages a fall prevention program for older adults called Farewell to Falls at Stanford’s Trauma Service. She has presented locally to seniors, caregivers and professionals and has presented at national conferences.
Fall Risk and Prevention in Older Adults

Josette Rivera, MD
Division of Geriatrics
UCSF
Objectives
By the end of this discussion, participants should be able to:

1. Understand the personal and societal impact of falls
2. Identify risk factors for falls among older adults
3. Describe evidence based guidelines for screening and prevention
4. Discuss interventions that have been demonstrated to reduce falls in clinical trials

What is a Fall?
- Unintentionally coming to rest on the ground or other lower level
- Not due to a major intrinsic event or overwhelming environmental hazard
- No loss of consciousness

The Importance of Falls
Falls Cause Morbidity and Mortality

- Injuries are common:
  - 40% of falls result in minor injuries
  - 10% result in major injuries
- 2.2% of injurious falls result in death
- Cost of fall-related injuries for 65+
  - Currently $19 billion -> $54.9 billion by 2020

Falls Associated with Functional Decline

- Decline in function/loss of independence
- Fallers 3X more likely to enter SNF
- Fear -> isolation, further functional decline
  - 60% fallers reported moderate activity restriction
  - 15% reported severe restriction
Epidemiology of Falls

Question
What % adults > 65 yrs old living in the community fall each year?
A. 5%
B. 10%
C. 20%
D. 30%
E. 50%

Incidence
• 30% of community-dwelling people over the age of 65 fall each year
• Increases to ~50% for those 80 years and older
• Half are repeat fallers

Chang TT J All 2004
Tinetti M E Engl J Med 2003
Rubenstein J Am Ger Soc Med 2002
Question

Which ethnic groups are most likely to fall?

A. African Americans
B. Asian Americans
C. Latino Americans
D. European Americans
E. No difference between groups

Falls and Socio-demographic Factors

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Falls Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latino</td>
<td>18.1%</td>
</tr>
<tr>
<td>African American</td>
<td>11.3%</td>
</tr>
<tr>
<td>Asian</td>
<td>7.9%</td>
</tr>
<tr>
<td>White</td>
<td>15.3%</td>
</tr>
</tbody>
</table>

Multiple falls past year, age 65+

Source: 2007 California Health Interview Survey

Question

Which ethnic group is most likely to be hospitalized because of a fall?

A. African Americans
B. Asian Americans
C. Latino Americans
D. European Americans
E. No difference between groups
Screening

- AGS: All adults > 65 should be asked at least annually if they have fallen in the past year or whether they have difficulties in gait or balance
- Single fall: check balance/gait
- Recurrent falls or balance/gait disturbance: do multifactorial fall risk assessment
Evaluation of the Faller

Evaluation of Falls: History

• Rule out acute badness
  – Syncope or fall?
  – Injury?
  – Acute illness?

• Any recent changes in health or environment?

Evaluation of Falls: History

• Relevant medical conditions
  – Neurological, cardiac, ophtho, incontinence, osteoporosis

• Medications
  – Psychoactive? Recent changes? Total # > 4?

• Substance/alcohol use
• Difficulty with walking or balance
• Ability to complete ADLs
• Fear of falling
Gait and Balance Evaluation

- You have not fully examined the nervous or musculoskeletal systems until you have analyzed gait
- Quick, validated, in office tests
  - Timed Up and Go
- Physical Therapy Evaluation (insurance/$ dependent)
  - Outpatient
  - Adult Day Health Center
  - Home Care

Evaluation of Falls: Physical Exam

- Supine and standing BP & CV exam
- Vision and hearing evaluation
- Neurological exam, including cognition
- Musculoskeletal exam
- Feet/footwear
- Formal gait and balance assessment
- Inappropriate assistive device use

Etiology and Risk Factors
Thinking About Fall Risk

Intrinsic Factors
- Medical conditions
- Impaired vision and hearing
- Age-related changes

Extrinsic Factors
- Medications
- Improper use of assistive devices
- Environment

Most Common Fall Risk Factors

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Relative Risk</th>
<th># studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Previous Falls</td>
<td>1.9 – 6.6</td>
<td>16</td>
</tr>
<tr>
<td>Balance Impairment</td>
<td>1.2 – 2.4</td>
<td>15</td>
</tr>
<tr>
<td>Decrease Muscle Strength</td>
<td>2.2 – 2.6</td>
<td>9</td>
</tr>
<tr>
<td>Vision Impairment</td>
<td>1.5 – 3.3</td>
<td>8</td>
</tr>
<tr>
<td>Meds: &gt; 4 or psychotropic</td>
<td>1.1 – 2.4</td>
<td>8</td>
</tr>
<tr>
<td>Gait Impairment</td>
<td>1.2 – 2.2</td>
<td>7</td>
</tr>
<tr>
<td>Depression</td>
<td>1.5 – 2.3</td>
<td>6</td>
</tr>
<tr>
<td>Orthopedics</td>
<td>2.0</td>
<td>5</td>
</tr>
<tr>
<td>Age &gt;80</td>
<td>1.1 – 1.3</td>
<td>4</td>
</tr>
<tr>
<td>Female</td>
<td>2.1 – 3.9</td>
<td>3</td>
</tr>
<tr>
<td>Cognitive Impairment</td>
<td>2.4 – 3.0</td>
<td>3</td>
</tr>
<tr>
<td>Arthritis</td>
<td>1.2 – 1.9</td>
<td>2</td>
</tr>
</tbody>
</table>

Tinetti, JAMA. 2010;303(3):258-266

Thinking About Fall Risk

![Bar chart showing the number of risk factors and the corresponding falling risk percentages.](chart.png)
### Summary

- Falls are common and multifactorial
- Often lead to injuries, functional decline, nursing home placement, and death
- Screen older adults for falls at least annually
- Evaluation should include risk factor assessment, gait assessment, and home assessment
- Targeted multifactorial interventions most effective
- AGS Fall Prevention Guidelines available
- Interprofessional collaboration essential

### Resources

- American Geriatrics Society Fall Prevention Clinical Practice Guideline  
- Centers for Disease Control Falls in Adults Publications and Resources  
  - [http://www.cdc.gov/HomeandRecreationalSafety/Falls/index-pr.html](http://www.cdc.gov/HomeandRecreationalSafety/Falls/index-pr.html)
- NIH Senior Health: Falls and Older Adults for patients  
  - [http://nihseniorhealth.gov/falls/toc.html](http://nihseniorhealth.gov/falls/toc.html)
Fall Risk
Best Practice in Prevention

ELLEN CORMAN, OT, MRA
STANFORD HOSPITAL AND CLINICS
TRAUMA SERVICE

Falls at Stanford Trauma

Cause of Injury >= 65 years old

Santa Clara County Fall Facts

- In 2006, there were 2,645 hospitalizations due to falls.
- Average cost of hospitalization estimated to be $38,963/person.
- Average cost of ambulance ride after 911 call in Santa Clara County estimated to be $1,423.
Why Do People Fall?

Health Issues

Personal Habits

Medications

Vision

Home Safety Issues
Best Practice in Fall Prevention

Causes of falls are due to multiple causes. Therefore,
the best intervention to prevent falls is found to be multi-factoral.
(Tinetti, Baker, McAvoy, Claus, Gareet, Gottschalk, NJMed, 1994)

Interventions for Fall Prevention

- Medication Review
  - special attention to psychotropic drugs
- Home Safety Assessment and Modification
  - Most effective if can assure follow-through with recommendations
- Exercise
  - Type and frequency of exercise not conclusive
  - Balance and strength training seems to be most effective
  - Tai Chi – only exercise strategy that was significantly effective in isolation of other interventions.
- Personal Habits
  - Attention to surroundings and change in behaviors.

Farewell to Falls

- Free home-based program offered by Trauma Service at Stanford Hospital and Clinics
- Multi-faceted program
  - Home Safety
  - Medication management
  - Strength/balance – exercise
  - Personal habits
Program Implementation

- Two home visits by Occupational Therapist
  - Health, ADL and activity interview
  - Medication review (meds listed by OT and reviewed by Stanford pharmacist with written report)
  - Sensory-Motor assessment
  - Home safety assessment

Exercise and Home Safety Intervention

- Connection to community exercise program and/or home-based exercise program with DVD provided and/or written material.
  - Home-based exercise is equally beneficial for participants as group-based exercise (King, Haskell, et al., 1991: Vol266 No11)
- Connection to home safety company to install grab bars, if necessary. Program covers those who need financial assistance.

Admission Criteria

- 65 years and older
- Live in Santa Clara or San Mateo County in home or apartment
- Ambulatory
- Cognitively aware – can follow instructions and provide own health history
- Willing to commit to exercise and program recommendations
Evidence-Based Fall Prevention Programs

- A Matter of Balance – Volunteer Lay Leader Model
  - www.mainhealth.org
- Stepping On
  - Wisconsin Institute of Healthy Aging – 608-243-5690
- Tai Chi: Moving for Better Balance
  - Oregon Research Institute, Eugene, Oregon
  - fuzhongl@ori.org
- Otago
  - clare.robertson@otago.ac.nz

Resources

- National Council on Aging (NCOA) – Center for Healthy Aging, www.ncoa.org/improve-health/center-for-healthy-aging

For information about Farewell to Falls or a Matter of Balance, contact:

ELLEN CORMAN
SUPERVISOR, INJURY PREVENTION
STANFORD UNIVERSITY MEDICAL CENTER
TRAUMA SERVICE
650-724-0369
ECORMAN@STANFORDMED.ORG