CAPTURE Falls
Falls, Frailty and Geriatric Syndromes
March 13, 2012 10:00 – 11:00 a.m. CST

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Acknowledgement

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Background: from 2010 baseline survey

<table>
<thead>
<tr>
<th>Hospital Size</th>
<th>Total Falls/1000 Pt Days</th>
<th>Injurious Falls/1000 Pt Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-CAHs (n=14)</td>
<td>4.2</td>
<td>0.9</td>
</tr>
<tr>
<td>CAHs (n=56)</td>
<td>6.3</td>
<td>1.8</td>
</tr>
</tbody>
</table>

- 55% of pts discharged from CAHs are ≥ 65 compared to 37% of all discharges
- Proportion of county population ≥ 65
  - Mean = 18.9% for 16 CAHs in project
  - Mean = 13.0% for 3 non-CAHs in project
- Greater prevalence of older adults in CAHs contributes to higher fall rates in CAHs as compared to non-CAHs

Objectives

- Identify frailty as a geriatric syndrome
- Explain relationship between frailty and fall risk
- Use established criteria to identify frail individuals
- Manage frailty and commonly associated syndromes to decrease fall risk
- Recognize how frailty may be integrated with existing fall risk reduction assessments
“a clinical condition in older persons that does not fit into a discrete disease category.” (Inouye et al, 2008)

**What is a Geriatric Syndrome?**

<table>
<thead>
<tr>
<th>Etiology</th>
<th>Pathogenesis</th>
<th>Presenting Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disease</td>
<td>KNOWN</td>
<td>KNOWN, but variable presentation</td>
</tr>
<tr>
<td>Geriatric Syndrome</td>
<td>Factor 1</td>
<td>Interacting</td>
</tr>
<tr>
<td></td>
<td>Factor 2</td>
<td>Interacting</td>
</tr>
<tr>
<td></td>
<td>Factor 3</td>
<td>Interacting</td>
</tr>
<tr>
<td></td>
<td>Factor 4</td>
<td>Interacting</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Single Manifestation</td>
</tr>
</tbody>
</table>
Geriatric Syndromes

Incontinence, cognitive or sensory impairment, dizziness, falls, frailty
- High impact on QOL
- Predict outcomes for patients
- There are many factors that contribute to these syndromes, some of which are treatable

Background: Frailty

High Prevalence
- 20–30% over 75 years
- 30% after 80 years
- Twice as common in women
- 28% of moderately-severely disabled women ≥65
Frailty: Predicts outcomes

- Falls, fractures
- Hospitalization
- Mortality
- Institutionalization

Frail older adults are at high risk from stressors such as extremes of heat/cold, acute infection, or injury.

As a group, frail older adults are more likely to:

- Have delayed recovery from illness and/or to fall
- Develop greater functional impairment, including becoming disabled or dependent
- Be hospitalized, with worse outcomes once hospitalized, including functional decline
- Die
Frailty is viewed as a distinct physiologic process, its clinical manifestations are seen in:

- Strength
- Balance
- Motor processing
- Nutrition
- Endurance
- Physical activity
- Mobility
- Cognition (possibly)

A phenotype has been developed and validated that links all but the last in this list.

Research has shown that this definition of frailty is consistent with that of a clinical syndrome that is primarily chronic and progressive.

- Early stages predict progression to more severe frailty
- But frailty can improve

- Early stages are likely most amenable to intervention
- Earliest presentations tend to be weakness, slowed walking speed, and/or decreased physical activity
Sarcopenia (loss of lean body mass) is a central component of frailty and a key predictor of the other clinical manifestations.

Predictors of sarcopenia and loss of strength with aging include:
- Anabolic factors such as testosterone and IGF-1
- Amount of physical activity
- Nutritional intake (e.g., protein, energy, vitamin D, and other micronutrients)
- Age itself

Objective 3

Learn how to identify frail patients

Many Definitions & Tools Have Been Proposed
Frailty = inactivity combined with:

- low energy intake
- weight loss
- low body mass index

- Gait speed alone & with chair stands, & tandem balance test
- Predicts 12-mo rates of hospitalization, ↓ health, and ↓ function
- Proposed: “vital signs” to screen older adults
Cardiovascular Health Study, 2001

- Frailty = a syndrome with a critical mass of signs and symptoms.

Three out of five:
- Slow walking speed
- Poor hand grip
- Exhaustion
- Weight loss
- Low energy expenditure

CHS FRAILTY Criteria
Study of Osteoporotic Fracture (SOF)

- CHS criteria are unrealistic for clinical use
- SOF tested simpler criteria in both men & women.
- **Exclusion** inability to walk without the assistance of another person
- CHS and SOF were concordant in 71%
- SOF is easily evaluated in a few minutes

<table>
<thead>
<tr>
<th></th>
<th>SOF</th>
<th>CHS ≥ 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shrinking</td>
<td>Wt loss ≥ 5% over 3 years</td>
<td>Unintentional wt loss &gt;10 lb in last year</td>
</tr>
<tr>
<td>Weakness</td>
<td>Unable to do 5 chair stands</td>
<td>Grip strength in lowest quartile</td>
</tr>
<tr>
<td>Poor energy</td>
<td>“Do you feel full of energy”= no</td>
<td>“Do you feel full of energy”= no</td>
</tr>
<tr>
<td>Slowness</td>
<td></td>
<td>Walking speed in lowest quartile</td>
</tr>
<tr>
<td>Low physical activity</td>
<td></td>
<td>Physical Activity Scale for the Elderly</td>
</tr>
</tbody>
</table>
### Study of Osteoporotic Fracture (SOF) Criteria for Frailty

<table>
<thead>
<tr>
<th>Frailty Criteria</th>
<th>Data Collection</th>
<th>Score</th>
</tr>
</thead>
</table>
| Weight loss $\geq 5\%$ over 3 yrs | Weight 3 years ago  
Weight today  
Change in weight/  
Weight 3 years ago $=$ % loss | Score=1 if weight loss $\geq 5\%$  
Otherwise, Score=0 |
| Inability to do 5 chair stands   | Sit in chair, do not use arms, rise 5 times        | Score=1, if unable  
Otherwise, Score=0 |
| “Do you feel full of energy?”    | Ask the question, must answer yes or no            | Score=1, if no  
Otherwise, Score=0 |

If summed score is 2 or 3, patient is frail;  
If score is 1 patient is prefrail;  
If score=0 the patient is robust

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### Objective 4

Manage frailty and commonly associated geriatric syndromes to decrease fall risk
The focus of care should be to:

- **Exclude any modifiable precipitating causes of frailty**, including causes that are treatable or environmental
- **Improve the core manifestations of frailty**, especially physical activity, strength, exercise tolerance, and nutrition
- **Minimize the consequences of vulnerability**, whether in terms of **environmental risks**, risks from low social support, or risks from stressors such as acute illness or injury, hospitalization, or surgery

The approaches that older adults use to adapt to age-related losses can also be applied to frailty:

- **Carefully choose goals**
- **Optimize the abilities needed to reach these goals**
- **Compensate for diminished competencies by increased reliance on other functions or by replacement**

Clinical management needs to include these approaches for frail older adults, as well as more standard medical care.
Interventions for Sarcopenia

Randomized, placebo-controlled trial
progressive resistance exercise training,
multinutrient supplement, both,
and neither in 100 frail NH residents over 10-wks
Nursing Home (NH) Residents

Outcomes for Resistance Training

NH Residents, Age ≈ 87 yrs
Resistance training:

- ↑muscle strength >100%
- ↑LE muscle size 3%
- ↑gait velocity 12%
- ↑mobility
- ↑spontaneous activity
Recommendation:

Frail patients need* referrals to dietary and physical therapy

* If consistent with goals
Sarcopenia and Hip Fracture Study:

- 5-yr prospective cohort study admitted to hospitals for hip fracture.
- 193 participants enrolled
- 71% were sarcopenic, 58% undernourished, and 55% vitamin D deficient.
- Poorer nutrition & walking endurance, greater pre-fracture disability and inactivity predicted ↑ length of hospital stay

Recommendation:

Screen Frail patients for Vitamin D deficiency and treat
Frail patients

- **Intervention**: 6 mo home-based PT to improve function, balance, muscle strength, transfers and mobility vs control education program.
- **Outcome**: change in function score at 3, 7 & 12 months. Intervention significantly slowed functional decline
Exercise Reducing Disability

Systematic Review: What works?
- **Multicomponent**: endurance, flexibility, balance, strength
- **Duration**: 3, 9, 12 mos.
- **Intensity**: 2-3 supervised/week, with/without daily home program

www.biomedcentral.com/1472-6963/8/278

Recommendation:

Frail patients should be discharged with home physical therapy *

* When D/C from home PT, ongoing exercise is critical
Symptom relief
Set patient centered goals
Family & caregiver support

Exercise Interventions
CGA, GEM, PACE, ACE

Hospice, comfort & dignity

INCREASINGLY FRAIL

STRATEGIES FOR MANAGING FRAILTY

- Comprehensive geriatric assessment and management is designed to optimize outcomes for frail older adults, particularly to prevent loss of independence
  - This team-based approach has positive effects on polypharmacy, falls, functional status, nursing-home admission, and mortality
Interventions: Assessment

- Medication evaluation with focus on simplification, medication debridement
- Diagnosis and management of cognitive impairment
- Diagnosis and treatment of other geriatric syndromes.

Syndromes Overlap

treatment for one is treatment for the others

- Frailty
- Falls
- Dizziness
- Bladder Dysfunction (UI)
- Sensory Impairment
- Cognitive Impairment
Cognitive Impairment

- Is common: up to 50% of people 85 years and older affected.
- Is easily and quickly detected
- Changes how we treat patients

Detection: the Mini Cog

- 3 item recall
- “I am going to give you 3 things to remember, I want you to repeat those after me and remember them, because I’ll ask you to repeat them in a few minutes. Ready: apple, table, penny”
- Clock drawing
- “Now, I want you to draw a circle and make the face of a clock with the hands set at 10 minutes after 11.”
Recommendation:

If the patient fails Mini Cog do not rely on the patient’s memory when developing your treatment plan.
Bladder dysfunction

- Urgency with/without incontinence.
- History: what is the usual voiding pattern? Has there been a change with this illness/hospital stay?
- A change should prompt evaluation for infection, retention, post-catheter urethritis.

Evaluation for Change in Bladder Function

- UA, if positive C&S
- Post voiding residual urine, further evaluation if over 200
- Check for constipation/fecal impaction
- If recent history of indwelling foley, and UA is negative for infection, treat for presumed post catheter urethritis with topical vaginal estrogen
**Chronic Urgency/Frequency: Adapt the environment**

- Bedside commode and OT or PT to work on safe transfers
- Protective garment and reassurance
- Bedside sitter
- Family at bedside

**Chronic Urgency/Frequency**

- May respond to bladder training:
  - frequent voluntary voiding to keep bladder volume low
  - urgency suppression using CNS and pelvic mechanisms
- May respond to antimuscarinic agents
  - oxybutynin, tolterodine, fesoterodine, trosiprium, darifenacin, and solifenacin
  - increase bladder capacity
Promoted toileting for Frail or Cognitively impaired

- Monitor and encourage patient to report any need to void
- Prompt patient to toilet every 2–3 hours during the day; lead patient to the bathroom, and gives the patient positive feedback when he/she toilets.
- Patients most likely to improve void ≤4 times during the day (12 hours) and are able to accept and follow the prompt to toilet at least 75% of the time in an initial 3-day trial

Objective 5

Integrating frailty into fall risk reduction
## How Fall Risk Links with Frailty

<table>
<thead>
<tr>
<th>Tool</th>
<th>Age</th>
<th>Mobility Subjective</th>
<th>Mobility Objective</th>
<th>Sensory Impairment</th>
<th>Cognition</th>
<th>Elimination</th>
<th>Prior Fall History</th>
<th>Meds</th>
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<tbody>
<tr>
<td>FRASS</td>
<td>1</td>
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<td>1</td>
<td>1</td>
<td>1</td>
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<tr>
<td>Hendrichs II</td>
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<td>Morse</td>
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<tr>
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<td>1</td>
<td>4</td>
<td>3</td>
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</table>

## How Fall Risk Links with Frailty

<table>
<thead>
<tr>
<th>Tool</th>
<th>Dizziness</th>
<th>Vertigo</th>
<th>Male Gender</th>
<th>Secondary Diagnosis</th>
<th>IV/Heparin Lock</th>
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<tbody>
<tr>
<td>FRASS</td>
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<td>Hendrichs II</td>
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<tr>
<td><strong>Total</strong></td>
<td>1</td>
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</tbody>
</table>
Summary

- Frail people have 2 or more of the following:
  - weight loss,
  - fatigue,
  - inability to do 5 chair stands
- Falls and fractures are important outcomes of untreated frailty

Summary (2)

- Managing frailty and associated geriatric syndromes is key to fall risk reduction.
- Not everything contributing to falls and frailty will be modifiable; BUT WE TREAT THE TREATABLE.
- Because frailty is linked to other geriatric syndromes, they share common risk factors, and treatment of one often improves some of the others.
Summary (3)

- **Global Considerations:**
  - Carefully set goals
  - Optimize abilities to achieve those goals
  - Compensate for diminished competencies often by replacement (e.g. environmental modification).

Summary (4)

- **Specific Considerations:**
  - Improve mobility with long-term exercise
  - Improve nutrition
  - Replace Vitamin D
  - Screen for/manage cognitive disorders, bladder dysfunction, dizziness, and sensory impairment.
Questions?
Thank You

Please complete the course evaluation located at the link below:

https://www.research.net/s/capturefalls-eval4

We value your input!
## Upcoming Events

<table>
<thead>
<tr>
<th>Date (Time 10 – 11 am CST)</th>
<th>Event</th>
<th>Presenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monthly Call March 26, 2013</td>
<td>Review of Fall Event Reports and Communication Between Hospitals</td>
<td>Katherine Jones, PT, PhD</td>
</tr>
<tr>
<td>Webinar April 2, 2013</td>
<td>Webinar: Best Practices in Conducting Effective Meetings to Support Fall Risk Reduction</td>
<td>Victoria Kennel, MA</td>
</tr>
<tr>
<td>Webinar May 14, 2013</td>
<td>Best Practices in Teamwork to Support Fall Risk Reduction</td>
<td>Katherine Jones, PT, PhD</td>
</tr>
<tr>
<td>Webinar June 11, 2013</td>
<td>Best Practices in Using Data to Reduce Fall Risk</td>
<td>Katherine Jones, PT, PhD</td>
</tr>
<tr>
<td>Webinar July 9, 2013</td>
<td>Best Practices in Mobility Assessment to Reduce Fall Risk</td>
<td>Dawn Venema, PT, PhD</td>
</tr>
<tr>
<td>Webinar August 20, 2013</td>
<td>Best Practices in Mobility Interventions to Reduce Fall Risk</td>
<td>Dawn Venema, PT, PhD</td>
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</tbody>
</table>

CAPTURE

Collaboration and Proactive Teamwork Used to Reduce Falls