Reducing Risk of Falls and Fall-Related Injury in the Hospital Setting

Shanghai Sunshine Rehabilitation Center
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Where in the world is Nebraska?

- Population: Approximately 2 million
- Area: Approximately 200,000 km²
- Number of hospitals: Approximately 100; Approximately 65% are “Critical Access Hospitals”
Research Project: Collaboration and Proactive Teamwork Used to Reduce (CAPTURE) Falls

Purpose: To reduce fall risk and fall-related injury risk by using a multi-team system
Disclosure

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# Acknowledgement: Research Team

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Objectives

1. Discuss the motives for reducing falls and fall injury risk in U.S. hospitals

2. Identify components of a multi-team system that can be used to reduce falls and fall injury risk

3. Explain how the knowledge and skills of physical therapists can be integrated across components of the multiteam system

4. Describe the relationship between fall type (assisted vs. unassisted) and fall injury
Objective 1

Discuss the motives for reducing falls and fall injury risk in U.S. hospitals
Financial Motives

• The U.S. Centers for Medicare and Medicaid Services
  – U.S. Government Insurance for the Elderly (Medicare) and the Poor (Medicaid)

• Care for Healthcare Acquired Conditions is not reimbursed
  – Examples: Pressure Ulcers, Catheter-Associated Urinary Tract Infections, Fall-Related Injury, and others

• Estimated cost of care from fall-related injury is > $7,000 (AHRQ, 2013)

https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/HospitalAcqCond/Hospital-Acquired_Conditions.html
Patient Centered Motives

• Approximately 25% of falls result in physical injury (Bouldin et al, 2013)

• Patients who experience a fall are more likely to require a longer length of stay, and are more likely to be discharged to long term care (Corsinovi et al, 2009; Dunne et al, 2014)

• Patients who fall often develop fear of falling (Deshpande et al, 2008)
Who is responsible for preventing inpatient falls?

Historically, the responsibility has fallen on nursing
- National Database of Nursing Quality Indicators

Fall prevention should be viewed as an organizational responsibility

(Jones et al, 2015)
Evidence indicates that teams decrease inpatient fall risk.

**Cohort pre-post designs**
Fall risk has been reduced in studies where interprofessional team members were actively engaged in fall risk reduction efforts (Gowdy et al, 2003; von Renteln-Kruse et al, 2007)

**Systematic review**
Etiology of falls is multifactorial (Oliver et al, 2004), thus falls require a multifactorial/interprofessional approach for prevention

**Systematic review**
Themes specific to successful implementation of fall risk reduction programs include multidisciplinary implementation and changing attitudes of nihilism (Miake-Lye et al, 2013)
Does your fall risk reduction team integrate evidence from multiple disciplines to continually improve fall risk reduction efforts?

*Negative binomial model

(Jones et al, 2015)
Objective 2

Identify components of a multi-team system that can be used to reduce falls and fall injury risk

- Patient/Family
- Core Team
- Coordinating Team
- Hospital Administration
- Contingency Team
Multi-team System (MTS)

Two or more component teams work together toward a goal

Patient/Family

Core Team

Coordinating Team

Hospital Administration

Contingency Team

Mathieu, Marks, & Zaccaro, 2001
http://teamstepps.ahrq.gov
Fall Risk Reduction MTS

Core Team
- Provide direct patient care
- Diagnose and treat
- Conduct fall risk assessment
- Implement interventions that address fall risk factors
- Conduct medication review
- Evaluate mobility and function

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**Core Team**

- Nurses
- Pharmacists
- Physicians
- PT/OT

**Patient/Family Core Team**

**Coordinating Team**

**Contingency Team**

**Hospital Administration**
Fall Risk Reduction MTS

Coordinating Team
- Develop and implement hospital-wide policies and procedures for fall risk reduction
- Educate core team and hold them accountable for following policies and procedures
- Span status and knowledge boundaries across disciplines
(Edmondson, 2012)
Post-Fall Huddle:
Meet immediately after a fall to determine what happened, why it happened, what will be done differently going forward

Goals:
1. Decrease risk of future falls for an individual patient
2. Apply what is learned throughout the hospital
3. Build trust and share knowledge
Objective 3

Explain how the knowledge and skills of physical therapists can be integrated across components of the multi-team system.
Common Fall Risk Factors

- History of Falls
- Muscle Weakness
- Gait Deficits
- Balance Deficits
- Use of Assistive Device
- Impaired ADL status
- Arthritis
- Visual Deficit
- Depression
- Cognitive Impairment
- Age > 80
- Polypharmacy

(American Geriatrics Society, 2001; Tinetti et al, 1986)
Biomechanical Basis for Falls

Falls occur when the center of mass is outside the base of support

How do we maintain our center of mass within our base of support?

Sensory Input  Motor Output
PTs Can Share Knowledge and Skills Throughout the MTS

- Impact of Physical Impairments on Movement
- Impact of Pathophysiology on Movement
- Interaction of Environment and Ability to Move
- Biomechanical Basis of Movement
- Psychometric Properties of Measurement

PT Contribution to Decrease Fall Risk
PT Role on Core Team

• Assess patients and provide interventions to address impairments

• Recommend and instruct in use of assistive devices

• Educate patient and family about safe mobility & environmental modifications

• Provide discharge recommendations for ongoing services
Collaborate with others to:

- Develop fall risk policies and procedures
- Develop or select patient/family education materials
- Select fall risk screening tools with strong predictive validity

<table>
<thead>
<tr>
<th>Screening Test Result</th>
<th>True Fall Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>+ for Fall Risk</td>
<td>True +</td>
</tr>
<tr>
<td>- for Fall Risk</td>
<td>False -</td>
</tr>
<tr>
<td></td>
<td>False +</td>
</tr>
<tr>
<td></td>
<td>True -</td>
</tr>
</tbody>
</table>
PT Role on Coordinating Team

Collaborate with others to:

• Develop strategies to document and communicate mobility and transfer status
• Design environmental modifications to rooms and public areas
• Provide staff training for safe transfers and mobility
PT Role on **Contingency Team**

- **Meds**
- **Mobility Status**
- **Medical Status**
- **Environment**
- **Cognition**

Provide our unique and complementary perspective of a fall event and future prevention strategies during post-fall huddles.
Objective 4

Describe the relationship between fall type (assisted vs. unassisted) and fall injury
Predictors of Fall-Related Injury – Krauss et al, 2007

Based on 3,962 falls from 8 Midwestern U.S. Hospitals from 2001-2003

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unassisted Fall</td>
<td>1.83</td>
</tr>
<tr>
<td>Being in the Bathroom</td>
<td>1.46</td>
</tr>
<tr>
<td>Increased Age</td>
<td>1.01</td>
</tr>
</tbody>
</table>

“Even if fall rates remain the same, increasing the proportion of falls that are assisted by a staff member could help decrease injury rates.”
## Predictors of Fall-Related Injury – Staggs et al, 2014

Based on 154,324 falls reported to the NDNQI in 2011

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unassisted Fall</td>
<td>1.59</td>
</tr>
<tr>
<td>Male Gender</td>
<td>1.12</td>
</tr>
<tr>
<td>Assessed for Risk</td>
<td>1.22</td>
</tr>
<tr>
<td>Medical Unit (vs. Surgical)</td>
<td>1.08</td>
</tr>
<tr>
<td>Nonteaching Hospital</td>
<td>1.17</td>
</tr>
<tr>
<td>Small Hospital (&lt;300 beds)</td>
<td>1.08</td>
</tr>
</tbody>
</table>
Results from CAPTURE Falls

Unassisted falls are significantly more likely to result in injury

Association Between Assistance and Injury for 353 Adult Patient Falls Reported by 17 Small Rural Hospitals 8/12 - 7/14

Assisted (n=90)
- Moderate-Major: 17.8%
- Minor: 2.2%

Unassisted (n=263)
- Moderate-Major: 80.0%
- Minor: 31.2%

$\text{Chi-Square Test} \quad p = 0.021$
Predictors of Fall-Related Injury – CAPTURE Falls

Based on 353 falls from 17 Small Rural Hospitals in 2012-2014

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unassisted Fall*</td>
<td>1.48</td>
</tr>
<tr>
<td>Assisted Fall <em>without</em> a gait belt*</td>
<td>3.65</td>
</tr>
<tr>
<td>Being in the Bathroom</td>
<td>2.48</td>
</tr>
<tr>
<td>Increased Age</td>
<td>2.55</td>
</tr>
</tbody>
</table>

*As compared to an assisted fall *with* a gait belt
Purpose of Gait Belts

- Control the patient’s center of mass during mobility
- Control descent if a fall occurs
- Reduce need to grab the patient's upper extremities or waistband
Recommendation: Keep a gait belt in a specific place in each patient room to make it easy to find and use.
Assisted Falls Should Not Be Viewed as a Failure

| Assisted falls are less likely to result in injury. | Staff has accurately identified that a patient needs help. | Staff was in the “right place at the right time.” | A goal of preventing all falls may discourage appropriate mobilization of patients. | Staggs et al, 2014; Staggs et al, 2015 |
Summary

Motives for Fall and Fall Injury Risk Reduction

Components of the Multi-team System

Where does PT fit into the Multi-team System?

Relationship Between Assistance and Injury
Questions?
and
Thank You!

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For More Information….

https://www.unmc.edu/patient-safety/capturefalls/index.html
References


References


References


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