Best Practices in Reducing Falls and Fall Related Injury

Pat Quigley, PhD, MPH, ARNP, CRRN, FAAN, FAANP
Associate Director, VISN 8 Patient Safety Center
Associate Chief for Nursing Service/Research

e-Mail: patricia.quigley@va.gov
Overview

1. Differentiate Prevention vs. Protection
2. State of Science related to patient falls
3. Why we have not “cracked the code” for preventing patient falls
4. Innovations to reduce serious fall-related injuries
Advancing Science in Patient Safety

4 Challenges of Patient Safety

- **Visibility:** magnitude is hidden
- **Ambiguity:** clear cause and effect is often inconclusive
- **Complexity:** practically everything can have an effect on pt safety
- **Autonomy:** reluctance to supersede orders

Challenges to improve the conduct and reporting of patient safety interventions are keys to evaluation

- Describe the theory: theory or logic why patient safety practice works
- Describe the patient safety practices in detail
- Detail implementation process
- Assess outcomes and the influence of context (external factors, organizational characteristics, teamwork and leadership, management tools)

Preventing Falls: Call for Action

- Transform healthcare for frailty associated with old age.
- Prevent falls identified as an effective strategy.
- BUT, major area for improvement in routine practice.
  - 2003: IOM: Priority areas for national action: transforming health care quality

- Multifaceted and individualized fall prevention programs used inside and outside hospital setting.
- Thorough review of the strategies revealed they lack strong empirical evidence.
Prevention + Protection

Prevention
- The act of preventing, forstalling, or hindering

Plus Protection
- Shield from exposure, injury or destruction (death)
- Mitigate or make less severe the exposure, injury or destruction
Clinical trial to test interventions

Review Research, Clinical and Laboratory Information

Is evidence strong enough to warrant practice change?

Yes

Implement evidence-based practice

No

Does evidence support clinical trials?

Yes

Clinical trial to test interventions

No

Epidemiological study to identify modifiable risk factors for adverse events or descriptive studies to understand process and outcomes

OR

Equipment design or redesign

Technology Transfer

Is equipment ready for Market?

Yes
Role of RCTs

- Parachute use to prevent death and major trauma related to gravitational challenge: systematic review of randomized controlled trials
- Gordon C S Smith, Jill P Pell
- BMJ 2003;327
Would you or not?
Who dies if they fall?

- Very young and very old
Where are we?

BEST PRACTICES:
LEVEL OF EVIDENCE
<table>
<thead>
<tr>
<th>Level</th>
<th>Evidence Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level I</td>
<td>Meta-Analysis (Combination of data from many studies)</td>
</tr>
<tr>
<td>Level II</td>
<td>Experimental Designs (Randomized Control Trials)</td>
</tr>
<tr>
<td>Level III</td>
<td>Well designed Quasi Experimental Designs (Not randomized or no control group)</td>
</tr>
<tr>
<td>Level IV</td>
<td>Well designed Non-Experimental Designs (Descriptive-can include qualitative)</td>
</tr>
<tr>
<td>Level V</td>
<td>Case reports/clinical expertise</td>
</tr>
</tbody>
</table>
## Strength of Evidence

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Strongly recommended; Good evidence</td>
</tr>
<tr>
<td>B</td>
<td>Recommended; At least fair evidence</td>
</tr>
<tr>
<td>C</td>
<td>No recommendation; Balance of benefits and harms too close to justify a recommendation</td>
</tr>
<tr>
<td>D</td>
<td>Recommend against; Fair evidence is ineffective or harm outweighs the benefit</td>
</tr>
<tr>
<td>I</td>
<td>Insufficient evidence; Evidence is lacking or of poor quality, benefit and harms cannot be determined</td>
</tr>
</tbody>
</table>
Ambulatory Care

AGS, BGS Clinical Practice Guidelines 2010:

- Assessment
- Interventions
- Evidence Grades
- Bibliography
- www.americangeriatrics.org/health_care_professionals/clinical_practice/clinical_guidelines_recommendations/2010
1. Obtain relevant medical history, physical examination, cognitive and functional assessment

2. Determine multifactorial fall risk:
   a. History of falls
   b. Medications
   c. Gait, balance, and mobility
   d. Visual acuity
   e. Other neurological impairments
   f. Muscle strength
   g. Heart rate and rhythm
   h. Postural hypotension
   i. Feet and footwear
   j. Environmental hazards

[ F ]

Initiate multifactorial/multicomponent intervention to address identified risk(s) and prevent falls:

1. Minimize medications
2. Provide individually tailored exercise program
3. Treat vision impairment (including cataract)
4. Manage postural hypotension
5. Manage heart rate and rhythm abnormalities
6. Supplement vitamin D
7. Manage foot and footwear problems
8. Modify the home environment
9. Provide education and information
Must Reads:

*Clinics in Geriatric Medicine*, Nov. 2010.


- 30% to 51% of falls result with some injury
- 80% - 90% are unwitnessed
- 50%-70% occur from bed, bedside chair (*suboptimal height*) or transferring between the two; whereas in mental health units, falls occur while walking
- Risk Factors: Recent fall, muscle weakness, behavioral disturbance, agitation, confusion, urinary incontinence and frequency; prescription of “culprit drugs”; postural hypotension or syncope
Most effective, fall prevention interventions should be targeted at both point of care and strategic levels

- Best Practice Approach in Hospitals:
  - Implementation of safer environment of care for the whole patient cohort (flooring, lighting, observation, threats to mobilizing, sign posting, personal aids and possessions, furniture, footwear)
  - Identification of specific modifiable fall risk factors
  - Implementation of interventions targeting those risk factors so as to prevent falls
  - Interventions to reduce risk of injury to those people who do fall

(Oliver, et al., 2010, p. 685)
What are we doing? Why?

- Risk Screening vs. Assessment
  - Over reliance on screening tools
- Differential Diagnosis
- Individualized Care Planning
- Identify fallers from non-fallers
- Identify those with injury hx or at risk for injury
- Protecting Patients
- Implementing:
  - Bed Alarms
  - Sitters
  - Intentional / Purposeful Rounding
Most effective, fall prevention interventions should be targeted at both point of care and strategic levels

- In nursing homes, focus on modifiable individual and institutional risk factors
- Assessment performed within 1st days of admission and after a fall (Becker & Rapp)

- Best Practice Approach in Hospitals (applies to LTC):
  - Implementation of safer environment of care for the whole patient cohort (flooring, lighting, observation, threats to mobilizing, signposting, personal aids and possessions, furniture, footwear
  - Identification of specific modifiable fall risk factors
  - Implementation of interventions targeting those risk factors so as to prevent falls
  - Interventions to reduce risk of injury to those people who do fall (Oliver, et al., 2010, p. 685)
Differentiate **Screening** from **Assessment**

- **Screening**
  - Disease Detection
  - Who should undergo diagnostic testing for confirmation- Cut off point to be negative or positive

- **Assessment**
  - Data for differential Diagnosis
Limits to Science

- Failure to Differentiate Type of Fall
  - Accidental
  - Anticipated Physiological
  - Unanticipated Physiological (Morse 1997)
  - Intentional Falls
- Failure to Link Assessment with Intervention
Interventions

1. Basic preventive and universal falls precautions for all patients
2. Assessment of all patients for risk of falling and sustaining injuries from a fall in the hospital
3. Cultural infrastructure
4. Hospital protocols for those identified at risk of falling
5. Enhanced communication of risk of injury from a fall
6. Customized interventions for those identified at risk of injury from a fall
Protect from Injury

Protecting Patients from Harm –
Our Moral Imperative
Moderate to Serious Injury

- Those that limit function, independence, survival
- Age
- Bones (fractures)
- Bleeds (hemorrhagic injury)
- Surgery (post operative)
## Fall Prevention and Injury Reduction Matrix
(Assumes Universal Falls Prevention Implemented)

<table>
<thead>
<tr>
<th>RISK OF FALL</th>
<th>RISK OF INJURY FROM A FALL</th>
</tr>
</thead>
<tbody>
<tr>
<td>+ RISK FALL/-- RISK INJURY</td>
<td>+ RISK FALL/+ RISK INJURY</td>
</tr>
<tr>
<td>Implement fall reduction interventions</td>
<td>Implement fall reduction interventions</td>
</tr>
<tr>
<td>Assess, intervene and communicate if <em>injury risk</em> changes</td>
<td>Assess, intervene and communicate if <em>fall risk or injury risk</em> changes</td>
</tr>
<tr>
<td>--RISK FALL/--RISK INJURY</td>
<td>--RISK FALL/+RISK OF INJURY</td>
</tr>
<tr>
<td>Assess, intervene and communicate if <em>fall risk or injury risk</em> changes</td>
<td>Implement injury prevention interventions</td>
</tr>
<tr>
<td></td>
<td>Assess, intervene and communicate if <em>fall risk</em> changes</td>
</tr>
</tbody>
</table>
Universal Injury Prevention

- Educates patients / families / staff
  - Remember 60% of falls happen at home, 30% in the community, and 10% as inpts.
  - Take opportunity to teach
- Remove sources of potential laceration
  - Sharp edges (furniture)
- Reduce potential trauma impact
  - Use protective barriers (hip protectors, floor mats)
- Use multifactorial approach: COMBINE Interventions
- Hourly Patient Rounds (comfort, safety, pain)
- Examine Environment (safe exit side)
Age: > 85 years old

- Education: Teach Back Strategies
- Assistive Devices within reach
- Hip Protectors
- Floor Mats
- Height Adjustable Beds (low when resting only, raise up bed for transfer)
- Safe Exit Side
- Medication Review
Bones

- Hip Protectors
- Low Beds
- Floor Mats
- Evaluation of Osteoporosis
Bleeds

- Evaluate Use of Anticoagulation: Risk for DVT/Embolic Stroke or Fall-related Hemorrhage
- Patient Education
- TBI and Anticoagulation: Helmets
- Wheelchair Users: Anti-tippers
Surgical Patients

- **Pre-op Education:**
  - Call, Don’t Fall
  - Call Lights

- **Post-op Education**

- **Pain Medication:**
  - Offer elimination prior to pain medication

- **Increase Frequency of Rounds**
Post Fall Safety Huddles

- Post Fall Analysis
  - What was different this time?
  - When
  - How
  - Why
  - Prevention: Protective Action Steps to Redesign the Plan of Care
Biomechanics of Fall-Related Injuries

Understanding the “rate of splat” and its impact on injury
Bedside Mats – Fall Cushions

- CARE Pad bedside fall cushion
- NOA Floor Mat
- Posey Floor Cushion
- Tri-fold bedside mat
- Roll-on bedside mat
- Soft Fall bedside mat
Summary of Results

Feet First Fall from Bed

- No Floor Mat fall over top of bedrails: ~40% chance of severe head injury
- No Floor Mat, low bed (No Bedrails): ~25% chance of severe head injury
- Low bed with a Floor Mat: ~ 1% chance of severe head injury
Technology Resource Guide: Bedside Floor Mats

- Bedside floor mats protect patients from injuries associated with bed-related falls.
- Targeted for VA providers, this web-based guidebook will include: searchable inventory, evaluation of selected features, and cost.
Hip Protectors – Examples

Safehip

KPH

CuraMedica

HipGuard

HIPS
Hip Protector Toolkit

- This web-based toolkit will include:
  - prescribing guidelines
  - standardized CPRS orders
  - selection of brands and models
  - sizing guidelines
  - protocol for replacement
  - policy template
  - laundering procedure
  - stocking procedure
  - monitoring tools
  - patient education materials
  - provider education materials
Assistive technology for safe mobility - Bed & Chair Monitors

- AirPro Alarm
- Locator Alarm
- Bed & Chair Alarm
- Chair Sentry
- Economy Pad Alarm
- Floor Mat Monitor
- Keep Safe
- QualCare Alarm
- Safe-T Mate Alarmed Seatbelt
Wheelchair-Related Falls

- Current Fall-Risk Assessment tools not effective
- Features of Wheelchairs contribute to risk
- Most common site of injury is NOT hip, but rather fractures of extremities
- Head injury/mortality
- W/c safety and Dementia
What to do When you Fall...
Discussion

- I hope this helps!