

## Fall Prevention Interventions In Acute Care Settings: The Rhode Island Hospital Experience

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### CASE:

Mrs. J, an 85-year-old independent woman, was admitted to the hospital with left arm cellulitis. In the emergency room a bladder catheter and intravenous line (IV) with normal saline running were inserted. She was given an antibiotic and an analgesic for pain and admitted to the medical service for treatment and monitoring. Upon arrival to the medical unit, she proceeded to get out of bed without assistance, became entangled in the bladder catheter and IV tubing, and fell. Mrs. J suffered a left hip fracture requiring surgical repair. On postoperative day 3, she developed a pulmonary embolus and died.

### OVERVIEW OF FALLS

Older persons when hospitalized are at much higher risk of falls. Preventing falls and injury is not only important for improving the quality of care and keeping patients safe, but it is also part of a national patient safety initiative. The Center for Medicare and Medicaid (CMS) will no longer reimburse hospitals for hospital-acquired conditions, including falls and falls with injury.<sup>9</sup>

Falls in hospitalized persons are common, about 2% in the elderly population, or between 0.6 and 2.9 falls annually per bed.<sup>5,1</sup> Hip fractures result in permanent disability in 20% of patients.<sup>1</sup> Many nationally recognized fall prevention guidelines include early and frequent mobilization as an important strategy

to prevent deconditioning, orthostasis, falls, and injuries related to falls.<sup>1,2,8,6,7</sup> Immobility has been shown to be associated with increased fall risk and recommendations are to increase exercise and activity level.<sup>5</sup> Studies of fall prevention have not been successful in the hospital setting. Pooled effect of a meta-analysis showed no effect for randomized controlled trials but a 25% reduction in prospective cohort studies using historical controls.<sup>8</sup>

In any setting, falls and injuries related to falls, are more common than strokes and are the most preventable cause of admission to nursing homes.<sup>10</sup> Additionally, 30% of adults over the age of 70 will fall each year, 10% will suffer a serious fall injury, and falls cause over 90% of broken hips.<sup>10</sup> Older persons are at greater risk for osteoporosis, which markedly increases their likelihood of an injury even with falls from a low height. In 2000, the total direct cost of all fall injuries for people 65 and older exceeded \$19 billion. The financial toll for older adult falls is expected to increase as the population ages, and may reach \$54.9 billion by 2020.<sup>9</sup>

At Rhode Island Hospital (RIH) 36% of the patient population is 65 and over.

RIH's inpatient fall rates have been higher than the national average; for the last year RIH has focused on reducing patient falls, particularly falls with injury.

### DEVELOPING A FALL PREVENTION TEAM

In our fall quality improvement initiative, we developed a team of registered nurses, certified nursing assistants, li-

**Table 1. Risk Factors For Falls in the Hospital**

Non-Modifiable	Modifiable
Age	Fear of Falling
History of Falls	Clutter in Room and Hallways
Dementia	Medications
Disease Process	Bedrest and Deconditioning
Alcohol or Drug Withdrawal	Bladder Catheters and Other Devices
	Delirium
	Hearing and Visual Impairment
	Urinary Urgency and Incontinence
	Use of Physical or Chemical Restraints
	Unsteady Gait
	Patient Room Layout

**Table 2. Rhode Island Hospital Fall Risk Assessment Tool**

Safety Risk Factor Assessment	
Confusion/Disorientation/Agitation	6
Unable to Rise From a Chair Independently	6
Altered Elimination Bowel/Bladder	5
Depression	1
Generalized Weakness	2
Prescribed Benzodiazepines/Antiepileptics	2
Dizziness/Lightheadedness	2
Sensory Loss – Hearing Loss	2
History of Falls (within last 6 months)	4
Potential Drug/Alcohol Withdrawal	1

#### Final Risk Score

Risk Score Level Key: 0-5 points = Safety Level 1, >5 points = Safety Level 2

**Table 3. Fall Precautions Protocol at Rhode Island Hospital Category Action**

<b>1. Identification</b>	Placing a Falling star sign outside their door Placing a Falling star on the assignment board in order to see where the high fall risk patients are located A fall precaution arm band to notify other departments patient is a fall risk A fall precautions order entered into the computer
<b>2. Monitoring</b>	Hourly rounding to focus on the 3 Ps - Pain, Potty, and Positioning. Early and frequent ambulation to prevent deconditioning Encouraging patients to call for help Frequent toileting
<b>3. Physical Environment</b>	Call light within reach at all times Use of bed alarms or chair alarms Lowering beds
<b>4. Patient Specific Interventions</b>	Avoidance of using bladder catheters Double sided slippers at all times Remove intravenous lines when no longer medically necessary Using activity apron for patients with dementia Avoid sedative use Back rub and warm milk at bedtime to promote sleep

censed practical nurses, physical therapists, occupational therapists, ad hoc physicians including a geriatrician, and pharmacists.

The team reviewed a year's worth of occurrence reports to recognize trends. One major trend: a majority of the falls occurred in the context of toileting. Bladder catheters were a significant risk factor. Paradoxically, catheters often resulted in an increased urge to urinate, and seemed to confuse patients with mild cognitive impairment, dementia, or delirium.

A literature review on prevention of falls in acute care settings cited the common risk factors to consider when screening patients. (Table 1) Our aim was to minimize modifiable risk factors and identify patients at risk for falling.

### DEVELOPING A FALL PREVENTION INTERVENTION

The first task was to increase identification and communication of high-risk patients. A "falling star" (the symbol for our program) is posted on a sign at the entrance to patient rooms and on the assignment board. In addition, a nursing order protocol was developed in order for the staff to choose individual plans of care for their patients. These orders print three times a day and are reflected on the printable care plan, which the staff uses for change of shift report.

Every patient, on every admission and every shift, is screened to determine if they are at risk for falls. If the patient scores a six or higher on our assessment scale (Table 2), the patient will be placed on fall precautions. The team made several modifications to the previously used protocol. These modifications included developing 4 categories: (1) identification of high-risk

patients, (2) monitoring, (3) modifying the physical environment, and (4) patient specific interventions. (Table 3)

In addition to the falling star sign, an armband is placed on a patient, and an order is placed in the computer order entry system to alert outside departments of the status. Once the patient has been identified, the staff implements multiple interventions; e.g., hourly rounding, repositioning, early and frequent ambulation to prevent deconditioning, encouraging patients and families to call for assistance, keeping all essential items within the patient's reach, and offering frequent toileting.

Additionally, the clutter is minimized or eliminated, and bed alarms and chair alarms may be utilized. Finally, patient-specific interventions such as removing bladder catheters, using double sided slippers at all times, and elimination of unused or unnecessary intravenous lines are implemented.

The team also recommended changes to the nurse documentation forms that helped cue staff on different interventions to use with a particular patient.

The educational rollout of the intervention consisted of fifty classroom classes, held at various times to facilitate attendance. Multimedia techniques, video, PowerPoint, music, and didactic presentations were used. Historically at RIH, new educational rollouts were presented only to the management team with the expectation that unit managers would then educate the frontline staff as effectively as the nursing education members. The message was not always consistent and the education of frontline staff was not always optimal, therefore we elected this new strategy of classroom education.

The new fall prevention intervention was implemented in June 2008 in the 14 medical-surgical units, followed by the 10 intensive care and step-down units in July 2008. Although the program is consistent across all units, the patient-mix and acuity varies across the critical care units as compared to the medical-surgical units, therefore, the education and rollout occurred separately.

### RESULTS

Although the fall rates initially rose slightly, the subsequent three months showed a significant decrease in falls, and falls with injury. Since then, the fall rates have had a minor increase, but falls with injury have decreased below the national average.

One specific unit whose patient population is mostly head trauma and the neurologically compromised had a higher fall rate going into the intervention. After implementation of the intervention, the unit has recently gone 27 days without a fall, a dramatic achievement, and demonstrated a decrease in fall average of 14.18 falls per 1000 patient days down to 2 falls per 1000 patient days.

Upon further evaluation of recent falls, it was determined that toileting continued to be a factor in patients' falling. This area of patient care will be the team's next intervention target.

### CONCLUSION

The development and roll-out of a fall prevention program is only the beginning; constant monitoring and reassessment remains crucial. In order for a program to be successful, the staff, unit management, and senior leadership must remain

in alignment with the goals of the project and keep fall prevention as a priority for the long run.

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### REFERENCES

1. Agostini JV, Baker DI, Bogardus ST. Prevention of falls in hospitalized and institutionalized older people. Chapter 26, Making Health Care Safer: A Critical Analysis of Patient Safety Practices. Agency for Healthcare Research and Quality (AHRQ) 2001 July. <http://www.ahrq.gov/clinic/ptsafety/chap26a.htm>
2. Centers for Disease Control and Prevention. Public health and aging: nonfatal fall-related traumatic brain injury among older adults – California 1996-1999. *MMWR* 2003;52:276-8.
3. Guidelines for the prevention of falls in older persons. *J Amer Geriatrics Soc* 2001;49:665-72.
4. Inouye SK, Bogardus ST, et al. The Hospital Elder Life Program. *J Amer Geriatrics Soc* 2000;48:1697-706.
5. Mahoney JE. Immobility and falls. *Clin Geriatric Med* 1998;14:699-726.
6. Strumpf NE, et al. Chapter: Assessment of Fall Risk and Prevention of Injurious Falls. *Restraint-Free Care: Individualized approaches for frail elders*. Springer Series on Geriatric Nursng. New York; 1998;60-83.
7. VHA National Center for Patient Safety. Fall Prevention Toolkit. May 2004.
8. Oliver D, et al. Do hospital fall prevention programs work? *J American Geriatrics Soc* 2000;48:1679-89.
9. Center for Disease Control and Prevention. *Preventing Falls in Older Adults. 2008*. <http://www.cdc.gov/HomeandRecreationalSafety/Falls/fallcost.html>
10. Prevent Falls. (2009). Fall Prevention. <http://www.fallprevention.org/pages/fallfacts.htm>

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