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PATIENT SAFETY NETWORK

Falling Through the Crack (in the Bedrails)

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Case Objectives

- Review the epidemiology of patient falls and associated injuries in the hospital setting.
- Describe the three-step fall prevention process.
- Identify fall prevention best practices for use in the hospital setting.
- Discuss a strategy for communicating the tailored fall prevention plan to all care team members, including patients and families.

The Case

A 65-year-old woman with cirrhosis presented to the hospital with septic shock and respiratory failure. She was placed on a mechanical ventilator and admitted to the intensive care unit. In order to administer medications, a nasogastric tube was also inserted. Although given medications for sedation, the patient was disoriented, and restraints were placed on her wrists to prevent her from pulling out key lines or tubes. She was found to have ascites on examination, and the team decided to perform paracentesis to rule out infection. The intern and resident on the team worked together to prepare the patient for the procedure. The bedrail on one side was lowered, and the wrist restraint on that side was removed to facilitate the procedure.

The procedure went smoothly without any complications. The intern and resident cleaned up the materials from the procedure and left the room. Moments later, multiple alarms went off in the patient's room. As nurses ran into the room, they found the patient confused and trying to get out of bed. She had pulled out the nasogastric tube and the endotracheal (breathing) tube, and her leg was stuck between the bedrail and the bed. She had a large laceration on her foot. Her oxygen saturation fell rapidly, and she required urgent re-intubation. Fortunately, she was safely placed back on the mechanical ventilator. The nasogastric tube was also replaced, and the laceration of her foot was sutured. She slowly improved with antibiotics and supportive care and was ultimately discharged to a nursing facility 10 days later.

In a review of the incident, it became evident that, after the procedure, the wrist restraint was not replaced and the bedrail had been left down. In addition, the team had not communicated with the bedside nurse about when they would be performing the procedure or when they had finished. The institution wondered what steps could be taken to prevent a similar incident in the future, as well as what were best practices for preventing inpatient falls.

The Commentary

Falls are a major public health problem globally, and hospitalization increases the risk for falls.(1,2) The National Database of Nursing Quality Indicators (NDNQI) defines patient falls as "an unplanned descent to the floor with or without injury to the patient."(3) Patient falls occur in approximately 2% of hospital stays, and in the United States up to 1 million hospitalized patients fall annually.(4) Fall rates range from 1.3 to 8.9 falls per 1000 patient days, and approximately 30% of falls result in injury.(5) Common fall-related injuries associated with morbidity and mortality include fractures, subdural hematomas, and excessive bleeding.(6) It is estimated that falls with related injuries add 6.3 days to the hospital stay and that the average cost for a fall-related injury is $14,000.(6,7) Fall-related injuries are categorized as: none, minor, moderate, major, and death (Table 1).(3)

Inpatient falls can be further classified as preventable or not.(8) Falls that are not preventable are caused by a new or previously unrecognized medical condition such as a myocardial infarction, syncope, or a seizure; these account for 8% of all falls in the hospital.(9) Preventable falls include accidental falls (14%) and anticipated physiological falls (78%).(9) Accidental falls include slips and trips caused by environmental factors such as food or liquid spills, environmental clutter, or improper footwear. Accidental falls can be prevented using universal fall precautions, which are actions taken by hospital staff to keep the environment safe for all patients. Anticipated physiological falls are caused by known physical factors and can be predicted using a validated fall risk screening tool such as the Morse Fall Scale (MFS) as shown in Table 2.(8) The MFS identifies individual fall risk factors, which can be used to implement personalized interventions to mitigate risk and to prevent falls.(10) Physiological risk factors for falls include gait instability, lower limb weakness, urinary incontinence or frequency, need for assisted toileting, previous fall history, agitation, confusion, or impaired judgment, and medication adverse effects.(5)

A previous WebM&M commentary discussed patient falls but did not report statistics about prevalence. Fall rates reported in the literature at that time were approximately 2.3 to 7 falls per 1000 patient days, with about 30% leading to injuries.(11) Although the fall and related injury rates have not changed much since 2003, new evidence-based practices for preventing falls have emerged.(12) Specifically, published literature suggests that optimal fall prevention in hospitals involves a three-step process (10,13): (i) conduct fall risk screening, (ii) develop a tailored fall prevention plan for individual patients, and (iii) implement the tailored plan along with universal fall precautions.(5) A breakdown in any one of these three steps can increase the risk for falls.

Unlike other adverse events in the acute care setting (e.g., line infections) that are prevented by implementing a standard checklist (14), the fall prevention plan needs to be tailored to individual patients based on their risk factors. For example, a patient with cognitive impairment requires different interventions than a patient at risk for falling due to a gait disturbance.(15) Because many factors place patients at risk

for falling, a multifactorial approach to prevention has been recommended for over a decade.(16) However, prior to 2010, no published randomized controlled trials had demonstrated an effective hospital-based fall prevention protocol.(17)

Ensuring an accurate fall risk screening occurs early in the hospitalization is essential. In most hospitals, nurses conduct fall risk screening on admission and then repeatedly throughout the hospitalization. This assessment is operationalized in many hospitals by integration of the fall risk screening tool into the clinical documentation system. Consistent with the evidence, The Joint Commission requires that the results of the fall risk screening be used to develop a care plan to address patient-specific risk factors.(18)

Evidence suggests that one of the root causes of patient falls is poor communication of the fall prevention plan and failure of staff, patients, and families to follow the plan.(19) Therefore, strategies are needed to ensure that the tailored fall prevention plan is communicated to all care team members (including patients and families) and that it is consistently implemented. Patient and family engagement should be integrated into each step of the fall prevention process.(19,20) Ideally, patients and families should be engaged during risk screening to ensure they understand their unique risk factors. Then, patients and families should be involved in planning to ensure that everyone understands the rationale for each intervention and agrees to work with the health care team to implement the plan consistently. The Fall TIPS (Tailoring Intervention for Patient Safety) intervention is one example of a tool that links evidence-based interventions to each risk factor, communicates the fall prevention plan to care team members, and involves patients and families in the three-step fall prevention process (Figure).

The patient in this case was in an intensive care unit (ICU) at the time of the event. Patient falls in the ICU are less frequent than on acute care or intermediate care units, but they still occur.(21) The patient in this case was clearly at risk for falling due to the fact that she was disoriented and sedated.(5) Although this patient did not technically fall (she does not meet the NDNQI definition because she did not fall to the ground), she did experience a "near fall" with an associated injury. Had the patient been found on the floor, her foot laceration would have been classified as a moderate fall injury since it required suturing. This patient is a good illustration of the complexity of patients commonly cared for in hospital settings and particularly in intensive care. She has serious, complex, and multiple medical problems and requires both a fall prevention plan and an overall safety plan to protect her from injury. Like the fall prevention plan, the patient safety plan should be based on a thorough assessment of patient status, be tailored to patient-specific risk factors, and communicated to all team members.

In addition to a near fall that resulted in an actual injury, this patient also experienced self-extubation of her nasogastric and endotracheal tubes. Self-extubation of the endotracheal tube is an adverse event that occurs in 3%–14% of sedated patients and is associated with significantly high rates of mortality.(22) Self-extubation is most common in patients whose Glasgow Coma Scale (GCS) is greater than 9.(23) In this case, no information was included about the patient's GCS. There is also no information about the patient's fall risk screening or other assessment information needed to determine her level of sedation and whether she had delirium. It is unclear whether there was a fall prevention plan in place.

However, it is clear that a breakdown in team communication occurred. The resident and intern did not communicate with the nurses after the procedure, and they failed to replace the patient's wrist restraints

and bedrails. Wrist restraints are commonly used to prevent patient interference with medical care such as self-extubation.(24) Bedrails may be considered a restraint and are usually not an appropriate fall prevention intervention. Bedrails may have been indicated in this case if the team determined that the patient's risk for injury from falling out of bed without bedrails was higher than her risk of injury from climbing over the bedrails.(25) However, bedrails will not prevent an active or agitated patient from falling out of bed and can increase the likelihood of injury if and when they do fall.(25) In this case, there was no communication of the overall safety and fall prevention plans, and the collaboration between the medical team and nursing staff was suboptimal.

To prevent falls, interventions must be tailored to patient-specific risk factors.(10) Table 3 includes a list of interventions that are both effective and feasible for preventing falls in hospitalized medical patients.(10) As in this case, hospitalized patients are often at risk for falls because of medication-related disorientation or sedation. Multiple interventions can be employed to address such disorientation and sedation, including frequent or continuous observation, medication review and adjustment, and bed (or chair) exit alarms. For this patient, continuous observation likely was appropriate. If present and involved, the patient's family members potentially could have assisted with observation and redirecting the patient as needed. Other strategies that have been used to manage disoriented patients include locating the patient in a room close to the nursing station and an emerging technology called "continuous virtual monitoring" (CVM).(26) CVM allows a single trained observer to monitor patients (who meet a pre-specified set of criteria) via video fed through cameras placed in the patient's room. The observer can notify nursing staff while redirecting the patient via two-way audio to prevent falls and other self-injury. Over time, CVM may reduce the cost of one-on-one observers for monitoring patients because multiple patients can be monitored by one CVM monitor technician.

Adequate staff training is essential to prevent falls. As a starting point, all hospital staff should receive fall prevention training as part of maintaining universal fall precautions. Clinical staff members also require education related to the three-step fall prevention process, the importance of engaging patients, and in communicating the fall prevention plan. In a previous qualitative study (15), we found that physicians and other clinicians did not know how to locate the results of the fall risk assessment or the fall prevention plan in the medical record. All clinicians should be educated about where to find this information and be encouraged to routinely communicate with nurses about a patient's fall risk status and to contribute to the fall prevention plan. Equally important is for nurses to be competent in fall risk assessment and to understand how to tailor the fall prevention plan to address patient-specific areas of risk. The effectiveness of a tailored fall prevention plan relies on an accurate risk assessment, so a mandatory refresher course on this process is encouraged. A tool such as Fall TIPS (Figure), available at the bedside and updated regularly, can also help facilitate the communication of the patient's fall risk status and prevention plan to the patient, family members, and any provider unfamiliar with the patient to ensure that they can safely care for them.

We learned from existing research that anticipated physiological falls can be prevented by following these three steps: properly screening for fall risks, developing a fall prevention plan, and implementing evidence-based interventions. The process should be supported by a tool that can engage the patients and families. All providers should also be involved and informed about the plan, because this may help prevent errors such as the one in this case.

Take-Home Points

- Falls and related injuries are a serious problem globally.
- Hospitalization increases the risk for falls.
- Use of a validated fall risk screening tool can help identify risks and guide development of an individualized or tailored fall prevention and education plan.
- Fall prevention is a three-step process: (i) screening for fall risk, (ii) identifying interventions tailored to patient-specific areas of risk, and (iii) applying the plan consistently along with universal fall precautions.
- Use of bedside tools to communicate the tailored fall prevention plan to all team members, including patients and families, can effectively prevent patient falls.

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Tables

Table 1. NDNQI Fall-related Injury Classification and Definitions.(3)

Classification	Definition
None	No injuries, signs, or symptoms resulting from a fall
Minor	Application of a dressing, ice, cleaning of a wound, limb elevation, topical medication, bruise, or abrasion resulting from a fall
Moderate	Suturing, application of steri-strips/skin glue, splinting or muscle/joint strain resulting from a fall
Major	Surgery, casting, traction, required consultation for neurological (basilar skull fracture, small subdural hematoma) or internal injury (rib fracture, small liver laceration) or patients with coagulopathy who receive blood products as a result of the fall
Death	Patient death as a result of injuries sustained from the fall (not from physiologic events causing the fall)

Table 2. Morse Fall Scale.(8)

Morse Fall Scale		
Item	**Select Areas of Risk**	**Score**
1. History of Falling	? No	0

? Yes	25	
2. Secondary Diagnosis	? No	0
	? Yes	15
3. Ambulatory Aid		
• None/bed rest/nurse assist	?	0
• Crutches/cane/walker	?	15
• Furniture	?	30
4. IV Therapy/HepLock	? No	0
	? Yes	20
5. Gait		
• Normal/bed rest/wheelchair	?	0
• Weak	?	10
• Impaired	?	20
6. Mental Status		
• Oriented to own ability	?	0
• Overestimates/forgets limitations	?	15

Table 3. Fall Prevention Best Practices for Hospitalized Patients.(9,10)

Fall Prevention Best Practices in Hospital Setting

Universal Fall Precautions *(All patients)*

- Evaluation of the condition of the patients' feet can identify anatomic abnormalities that can impair ability to walk securely and may also reveal need for corrective footwear
- Ensure a safe environment, with room free of clutter and a clear path to the door and bathroom
- Place all necessary items (such as call light, telephone, and water) within patient's reach
- Maintain bed in proper position with wheels locked

Interventions to Reduce Anticipated Physiological Falls *(Tailored to patient-specific areas of risk)*

Risks:	**Evidence-based Interventions:**

Previous fall	• Safety precautions • Communicate risk status via plan of care, change of shift report, and signage • Document circumstances of previous fall
Medication adverse effects	• Review medications with pharmacist and physician • Consider adverse effects of medications used to treat comorbidities • Consider toileting schedule
Need for assisted toileting	• Implement toileting/rounding schedule: assist to bathroom, assist to commode, or provide bedpan
Urinary incontinence/frequency	• Implement toileting/rounding schedule: assist to bathroom, assist to commode, or provide bedpan • Ambulatory aid at bedside if appropriate • Consider PT consult
Gait instability	• Assist with out of bed: one or two person(s) • Consider PT consult
Lower limb weakness	• Assist with out of bed: one or two person(s) • Consider PT consult
Agitation/Confusion/Impaired judgment	• Turn on bed alarm/chair alarm • Place patient in visible location • Encourage family presence • Frequent rounding

Figure

Figure. The Three-Step Fall Prevention Process.

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