



# How-to Guide:

## Reducing Patient Injuries from Falls

**This How-to Guide was initially developed as part of the Transforming Care at the Bedside (TCAB) initiative.** TCAB was a national effort of the Robert Wood Johnson Foundation and the Institute for Healthcare Improvement designed to improve the quality and safety of patient care on medical and surgical units, to increase the vitality and retention of nurses, and to improve the effectiveness of the entire care team. For more information, go to <http://www.ihf.org> or <http://www.rwjf.org/qualityequality/product.jsp?id=30051>.

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**The Robert Wood Johnson Foundation** (RWJF) focuses on the pressing health and health care issues in the US. As the nation's largest philanthropy devoted exclusively to improving the health and health care of all Americans, the Foundation works with a diverse group of organizations and individuals to identify solutions and achieve comprehensive, meaningful, and timely change. For more than 30 years the Foundation has brought experience, commitment, and a rigorous, balanced approach to the problems that affect the health and health care of those it serves. When it comes to helping Americans lead healthier lives and get the care they need, the Foundation expects to make a difference in your lifetime.

**The Institute for Healthcare Improvement** (IHI), an independent not-for-profit organization based in Cambridge, Massachusetts, is a leading innovator in health and health care improvement worldwide. At our core, we believe everyone should get the best care and health possible. This passionate belief fuels our mission to improve health and health care. For more than 25 years, we have partnered with a growing community of visionaries, leaders, and front-line practitioners around the globe to spark bold, inventive ways to improve the health of individuals and populations. To advance our mission, IHI is dedicated to optimizing health care delivery systems, driving the Triple Aim for populations, realizing person- and family-centered care, and building improvement capability.

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## **Introduction**

Launched in 2003, Transforming Care at the Bedside (TCAB) was a national program of the Robert Wood Johnson Foundation (RWJF) and the Institute for Healthcare Improvement (IHI) that engaged leaders at all levels of the health care organization to:

- Improve the quality and safety of patient care on medical and surgical units
- Increase the vitality and retention of nurses
- Engage and improve the patient's and family members' experience of care
- Improve the effectiveness of the entire care team

The pilot program lasted five years and included 10 hospitals that worked to dramatically improve performance in the five TCAB themes:

- Transformational Leadership
- Safe and Reliable Care
- Vitality and Teamwork
- Patient-Centered Care
- Value-Added Care Processes

At completion of the pilot TCAB program, the ten hospitals had created and tested new concepts, developed exemplary care models on medical and surgical units, demonstrated institutional commitment to the program, and pledged resources to support and sustain these innovations. Since then, more than 70 hospital teams across the United States have joined these ten initial participants in applying TCAB principles and processes to dramatically improve the quality of patient care on medical and surgical units through IHI Collaboratives. Sixty-seven hospitals have participated in the American Organization of Nurse Executives (AONE) TCAB program. For more information on TCAB programs and participating sites, please see the following:

- [IHI TCAB initiative website \(background, team stories, examples, and tools\)](#)
- [RWJF TCAB Toolkit](#)
- [AONE TCAB program website](#)

The *How-to Guide: Reducing Patient Injuries from Falls* presents a promising new approach developed within the Transforming Care at the Bedside (TCAB) initiative. In 2006, eight hospitals with strong leadership commitment to a culture of innovation and a special interest in reducing injury from falls received RWJF grants to test, and measure comprehensive changes aimed at reducing patient injury from falls on medical and surgical units. In 2007, these hospitals continued to test innovations in falls and injury prevention in hospitals through a second IHI Falls Collaborative. During this time, key components for reducing falls-related injuries were specified for organization-level and unit-level programs. Unit-level strategies focused on assessment, intervention, and communication about fall risks, injury risks, and management.

While built upon the best known strategies, standards of care, advances in innovation, and science and program management for reducing falls among hospitalized patients, this How-to Guide adds a specific approach to the current thinking on falls prevention: the creation of customized interventions to prevent falls and subsequent injuries for the patients who are at most risk for serious injuries from a fall.

Other useful resources and toolkits on falls prevention include:

- [ECRI Falls Prevention Resources](#)
- [VA National Patient Safety Center Falls Prevention Toolkit](#)
- [Joint Commission Resources, Preventing Patient Falls](#)
- [Minnesota Hospital Association SAFE from FALLS](#)
- [VISN 8 Patient Safety Center of Inquiry Falls Team](#)

## **The Case for Reducing Patient Injuries from Falls**

Falls represent a major public health problem around the world. In the hospital setting, falls continue to be the top adverse event. Injuries from falls are “never events” that are associated with morbidity and mortality, and which also impact reimbursement. Some 3 to 20 percent of inpatients fall at least once during their hospitalization. Injury prevalence ranges from 30 to 51 percent. Of these, 6 to 44 percent experience similar types of injury (e.g., fracture, subdural hematomas, excessive bleeding) that may lead to death. Adjusted to 2010 dollars, one fall without serious injury costs an additional \$3,500, while patients with  $\geq 2$  falls without serious injury have increased costs of \$16,500. Falls with serious injury are the costliest, with additional costs of \$27,000. Many interventions to prevent falls and fall-related injuries have been tested, but require multidisciplinary support for program adoption and reliable implementation for specific at risk and vulnerable subpopulations, such as the frail elderly and those at risk for injury. All efforts must be made to ensure that patient safety programs are in place across settings of care. For example, the elderly who are at risk for falls and injury while in the hospital are also at risk for such injuries once they transition into long-term care settings, so patient safety programs must be in place in both settings.

Injurious falls are more likely to occur among nursing home residents due to advanced age, multiple comorbidities (e.g., dementia and osteoporosis), and multiple prescription medications that negatively affect gait and balance and even bone strength. Falls among nursing home residents occur frequently and repeatedly. Among published studies of falls in nursing homes, the mean number of falls per bed per year was approximately 1.5, with a range of 0.2 to 3.6. About 35 percent of these fall-related injuries occurred in residents who were non-ambulatory (e.g., used wheelchair for mobility).

A considerable body of literature exists on falls prevention and reduction. Successful prevention strategies include risk screening, multifactorial assessment (estimating danger of falling based on known intrinsic and extrinsic factors), interventions (preventive action to modify and compensate for risk factors), and systematic reporting

of falls incidents and their consequences. Oliver and colleagues (2010, p. 685) recommend that fall and injury prevention programs follow four key approaches: 1) implementation of safer environment of care for the whole patient cohort (e.g., flooring, lighting, observation, threats to mobilizing, signposting, personal aids and possessions, furniture, footwear); 2) identification of specific modifiable fall risk factors; 3) implementation of interventions targeting those (modifiable) risk factors so as to prevent falls; and 4) interventions to reduce risk of injury to those people who do fall.

Oliver D, Healey F, Haines T. Preventing falls and fall-related injuries in hospitals. *Clinics in Geriatric Medicine*. 2010;26(4):645-692.

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### **Can We Eliminate Serious Injury from Falls for Hospitalized Patients?**

Despite the growing body of literature that supports the effectiveness of falls reduction programs, there is a relative paucity of information on identifying patients at highest risk for sustaining serious injury from a fall and on interventions to prevent such injuries. At present, no tool exists to guide nurses and other care team members in assessing risk for injury from a fall. However, the literature does identify patient populations at greatest risk for injury from falls, including individuals 85 years of age or older, patients with osteoporosis, and patients taking anticoagulants.

This How-to Guide can help health care staff learn to identify patients at highest risk for sustaining a serious injury from a fall and implement interventions to prevent or mitigate these injuries. Both physical injury (such as hip fracture) and emotional harm (such as subsequent fear of falling) can occur as a result of a fall. While acknowledging the emotional harm that may result from repeated falls or from falls with no apparent injury, this guide focuses on approaches to reduce physical injury associated with patient falls that occur on inpatient units.

The How-to Guide is divided into three sections:

- [Section One](#) highlights six promising changes designed to reduce serious injuries from falls for hospitalized patients. It also includes references and links to helpful resources.
- [Section Two](#) outlines practical step-by-step activities for testing, adapting, and implementing the proposed changes described in Section One.
- [Section Three](#) includes resources and tools from hospitals engaged in fall prevention work.

## **Section One**

This section highlights six promising changes designed to reduce serious injuries from falls for hospitalized patients. Key references and links to helpful resources are also included, where available.

<p><b>1. Screen risk for falling on admission</b></p> <ul style="list-style-type: none"><li>a. Perform standardized fall risk screen for all patients on admission (anticipated physiological falls)</li><li>b. If over 65 years of age, ask about history of falls upon admission. Use time interval (e.g., in past 12 months) based on your screening tool.</li></ul>
<p><b>2. Screen fall-related injury risk factors and history upon admission</b></p> <ul style="list-style-type: none"><li>a. Screen for risk factors for serious injury (history of osteoporosis, risk factors or fracture, presence of anticoagulation/bleeding problems)</li><li>b. Ask about history of fall-related injuries upon admission: history of fractures, history of head trauma, history of uncontrolled bleeding after a fall, and history of hospitalizations due to a fall</li></ul>
<p><b>3. Assess multifactorial risk of anticipated physiological falling and risk for a serious or major injury from a fall</b></p> <ul style="list-style-type: none"><li>a. For positive risk screens, complete in-depth multifactorial fall risk assessment with an interdisciplinary team for all patients on admission and whenever patients' clinical status changes.</li><li>b. Communicate and identify at every shift the patients most at risk of moderate to serious injury from a fall.</li></ul>

**4. Communicate and educate about patients' fall and injury risks**

- a. Communicate to all staff information regarding patients who are at risk of falling and at risk of sustaining a fall-related injury.

Communicate changes in risk for injury from a fall (i.e., started on anticoagulation or new diagnosis of osteoporosis during pre-shift and handoff).

Use signage to identify those patients who are "known fallers" (admitted due to a fall or have experienced a fall during this episode of care), at risk for injury, or who have a history of prior fall-related injury.

- b. Use Teach Back to educate the patient and family members about risk of injury from a fall on admission and throughout the hospital stay, and about what they can do to help prevent a fall.

**5. Standardize interventions for patients at risk for falling**

- a. Implement both hospital-wide and patient-level improvements to the patient care environment to prevent falls and reduce severity of injury from falls.
- b. Perform rounding (every one to two hours) to assess and address patient needs for pain relief, toileting, and positioning.

**6. Customize interventions for patients at highest risk of a serious or major fall-related injury**

- a. Increase the intensity and frequency of observation.
- b. Make environmental adaptations and provide personal devices to reduce risk of fall-related injury.
- c. Target interventions to reduce the side effects of medications.

**1. Screen risk for falling on admission**

***1a. Perform standardized fall risk screen for all patients on admission (anticipated physiological falls).***

Use a fall risk screening tool that has been validated to predict the likelihood of anticipated physiological falls. This type of fall is predicated on intrinsic and extrinsic risk factors known through empirical evidence to contribute to a fall occurring. A review of the predictive validity of fall risk screening scales is provided by Oliver and colleagues (2010).

Oliver D, Healey F, Haines T. Preventing falls and fall-related injuries in hospitals. *Clinics in Geriatric Medicine*. 2010; 26:645-692.

Ask the patient and/or family about immediate history of falls and falls within the last three to six months.

***1b. If over 65 years of age, ask about history of falls upon admission. Use the time interval (e.g., in the past 12 months) based on your screening tool.***

## **2. Screen fall-related injury risk factors and history upon admission**

### ***2a. Screen for risk factors for serious injury.***

Upon admission, ask the patient and/or family screening questions about risk factors for serious injury, specifically fractures or bleeding. For fractures, complete a patient history about osteoporosis risk factors (e.g., history of smoking, steroid use, alcohol use, chemotherapy, etc.), positive diagnosis of osteoporosis, and any history of fracture. Next, determine if the patient is at risk for bleeding: presence of anticoagulation/bleeding problems, and/or platelet disorders.

***2b. Ask about history of fall-related injuries upon admission: history of fractures, history of head trauma, history of uncontrolled bleeding after a fall, and/or history of hospitalizations due to a fall.***

After a positive screen (from steps 1 and 2), the next step is to complete an assessment (step 3). The screening questions will serve as the basis for a focused and comprehensive assessment.

## **3. Assess multifactorial risk of anticipated physiological falling and risk for a serious or major injury from a fall**

Complete this multifactorial risk assessment for all patients on admission and whenever a patient's clinical status changes. For positive risk screens, complete an in-depth multifactorial injury risk assessment with an interdisciplinary team for all patients on admission and whenever a patient's clinical status changes.

Accurate and insightful assessment of all patients' fall *and* injury risks on admission and throughout the hospital stay is a critical step in developing and implementing

customized and timely interventions to prevent falls and reduce the severity of fall-related injuries.

Typical failures associated with patient assessment include the following:

- Failure to recognize the limitations of the falls risk screening tools
- Lack of a standardized or reliable process for comprehensive fall risk assessment
- Lack of identification of patients at increased risk for a fall-related injury
- Lack of expertise in administering the assessment after positive risk screening
- Late administration of multifactorial and interdisciplinary assessment
- Lack of procedure for or time to consistently reassess change in patient condition
- Lack of clarity in expectations regarding patient assessment
- Failure to intervene quickly and link interventions to specific assessed risk factors
- Failure to reassess risk during patients' entire hospital stay

***3a. For positive risk screens, complete an in-depth multifactorial fall risk assessment with an interdisciplinary team for all patients on admission and whenever a patient's clinical status changes.***

Ideally, nurses assess fall risk at critical times during a patient's hospital stay, not only on admission. When nurses switch at shift change, when patients transfer between departments, and when a patient's status or treatment changes, it is important to consider whether the patient's condition has changed and review the risk for falls.

- Ensure that staff completely understand the correct administration and interpretation of the scales, routinely administer the scales upon admission, and quickly implement appropriate interventions based on assessment results. Use nursing judgment and critical thinking skills to occasionally override the results of the assessment scales. If a nurse believes that a patient is at risk for falling, appropriate interventions should be implemented regardless of the

assessment results. A few hospitals use an adapted assessment scale that captures the nurse's critical thinking. A 2010 *Clinics in Geriatric Medicine* article provides an evidenced-based review of fall risk assessments.

Oliver D, Healey F, Haines T. Preventing falls and fall-related injuries in hospitals. *Clin Geriatric Medicine*. 2010; 26:645-692.

- Assess patients for fall risk and risk of injury from a fall. Hospitals have approached assessment in different ways:
  - A few teams integrated information from the patient's family into the fall risk assessment process by asking family members about the actions they take at home to keep the patient safe from falling.
  - Some hospitals added the injury risk assessment to their traditional fall risk assessment form. The combined assessment increases process reliability and helps staff remember to evaluate the patient for both types of risk throughout the hospital stay.
  - Some hospitals partnered with the nursing homes, home care agencies, and rehabilitation centers from which their patients are admitted to identify effective protective devices and techniques for each patient referred.

***3b. Communicate and identify at every shift the patients most at risk of moderate to serious injury from a fall.***

The literature and hospital-based exploration of fall-related injury suggest that the following groups of patients are most at risk for injury if they sustain a fall:

- Individuals who are  $\geq 85$  years old or frail due to a clinical condition
- Patients with bone conditions, including osteoporosis, a previous fracture, prolonged steroid use, or metastatic bone cancer
- Patients with bleeding disorders, either through use of anticoagulants or underlying clinical conditions
- Post-surgical patients, especially patients who have had a recent lower limb amputation or recent, major abdominal or thoracic surgery

Simple reminders, such as the example below, can help identify patients who may be at risk for injury from a fall. Staff can use the **ABCS assessment** at the beginning of each shift to identify the three to five patients on the unit who are most at risk of fall-related injury. Once these at-risk patients are identified, staff can implement interventions to reduce risk of fall-related injury and address specific patient needs in the care plan.

**A** = Age or frailty

**B** = **B**ones (fracture risk or history)

**C** = anti**C**oagulation (bleeding disorder)

**S** = recent **S**urgery (during current episode of care)

#### 4. Communicate and educate about patients' fall and injury risks

Dependable and consistent communication with patients and family members and among the entire care team is critical to preventing falls and reducing fall-related injuries. Tools for patient education, such as the "Teach Back" method, and strategies for improving staff communication, such as visual indicators and use of change of shift reports or rounds, are essential for any fall and injury prevention plan.

*Making Health Care Safer: A Critical Analysis of Patient Safety Practices.* Evidence Report/Technology Assessment, No. 43. Agency for Healthcare Research and Quality; 2001. (AHRQ Publication No. 01-EO58). Available at: <http://www.ahrq.gov/CLINIC/PTSAFETY>.

Abrams MA, Hung LL, Kashuba AB, Schwartzberg JG, Sokol PE, Vergara KC. *Reducing the Risk by Designing a Safer, Shame-Free Health Care Environment.* Chicago: American Medical Association; 2007.

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Typical failures associated with staff communication and patient and family education about risk for falls and fall-related injuries include:

- Failure to quickly communicate the results of a new or changed risk assessment and associated interventions
- Failure to incorporate and document prevention interventions in the patient care plan

- Unclear or incomplete handoffs between departments and among staff within a department or unit
- Insufficient or unclear safety instructions
- Patient or family confusion about nurse teaching on safety instructions and precautions
- Incorrect assumption that the patient is the key or sole learner (family members should also be included)
- Delivery of safety education that fails to fit individual patient and family needs

### ***4a. Communicate to all staff information regarding patients who are at risk of falling or at risk for sustaining a fall-related injury.***

Teams found that poor communication was a hazard and cause of patient harm in health care settings. When nurses on medical-surgical units understand a patient's potential for falling or injury from a fall, they will provide an appropriate level of care and targeted interventions. Studies in health literacy indicate that patients and family members who do not understand instructions do not tell the nurse about their confusion. Staff can use simple techniques to communicate level of risk to other staff members and to discern and address areas of patients and family misunderstanding.

Parikh NS, Parker RM, Nurss JR, Baker DW, Williams MW. Shame and health literacy: The unspoken connection. *Patient Education and Counseling*. 1996;27:33-39.

Focus on five: Strategies to improve hand-off communication. *Joint Commission Perspectives*. 2005;5(7):11.

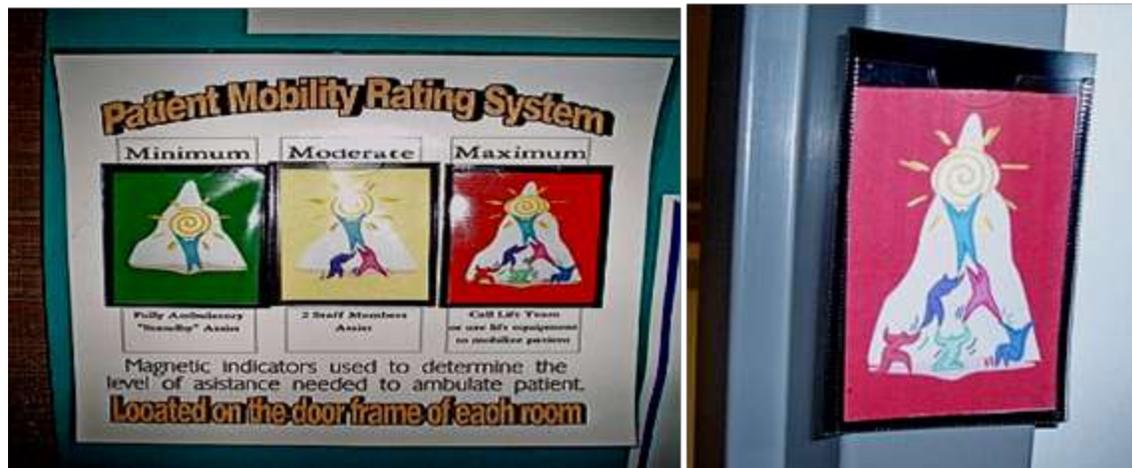
- Use visual indicators to quickly communicate with the care team about patients at risk of fall or injury. For example, use colorful socks, colored wrist bands and/or blankets, or signage outside and inside the room to indicate fall and/or injury risk. Be careful to maintain patients' dignity and respect their wishes about the use of visual identification of risk. Also, use judgment with use of visual aids. For example, if all your patients are at risk for falls, then use signage for only those patients at risk for injury, so as not to have a fall risk sign for every patient. If every patient has such signage, the signage no longer has meaning. Think about this in relation to universal infection control practices – not every patient has a

sign that indicates "at risk to acquire an infection." So, use common sense and clinical judgment when considering communication, identification, and signage decisions.

The following strategies have been adopted to help with specific communication about patients at greatest risk for falls or injuries:

- At St. Luke's Hospital in Cedar Rapids, Iowa, magnetic fall precautions signs, which resemble street signs, protrude into the hallway to help nurses quickly identify the patients at greatest risk for falls or injuries.
- At Trinity Regional Health System in Rock Island, Illinois, a yellow leaf posted outside the patient's door indicates the patient's risk for falling; a red leaf indicates the patient also is at risk for injury from a fall.
- At Sentara Healthcare in Virginia, patients at risk for falling and injury are given a small fleece lap blanket, color-coded to match the system-wide alert method that indicates patients at highest risk. When the patient is in a chair or wheelchair, the lap blanket is kept across the patient's legs. When in bed, the lap blanket is placed on top of the bedding.
- At Kaiser Permanente Roseville Medical Center in California, a visual card (see below) is displayed at the doorway of patients who need assistance ambulating. The card clearly depicts the number of staff needed to support and protect both patients and staff, using color-coding to indicate the needed level of support.

Example: Visual Cards Used at Kaiser Permanente Roseville



- For patients at risk for injury but not identified as being at risk for falling: identify and communicate any changes in patient condition that may result in a risk for falling (e.g., patient on anticoagulation who is placed on sedatives).
- Ensure safe, standardized handoffs between nurses (e.g., at shift change) and communication with all unit staff and members of other departments.
  - Many teams added safety huddles at the beginning of each shift to identify and discuss the three to five patients believed to be at greatest risk for a fall-related injury. Team members found the intervention especially helpful when a high proportion of patients on the unit were at risk for falling. Teams collected data on these patients to ascertain whether they sustained falls despite an escalation of interventions. Teams also tested new ideas for preventing these “breakthrough” falls. (Refer to Section Three for the [Safety Huddle Form](#) used at Trinity Health System in Illinois.)
  - At Sentara Health System in Virginia, nurses integrated information on patients’ risk for falling and injury into the shift handoff checklist. They discuss the patient’s current condition, the effectiveness of previous interventions to prevent falls and fall-related injuries, and any currently interventions. (See Section Three for the [Nursing Handoff Checklist and Worksheet](#), a sample shift report tool.)

**4b. Use Teach Back to educate the patient and family members about risk of injury from a fall on admission and throughout the hospital stay, and about what they can do to help prevent a fall.**

Many teams found the “Teach Back” method helpful for assessing patient and family caregiver understanding of fall and injury risk and associated safety precautions. Teach Back is a patient education technique in which a patient or family caregiver recalls and restates, in their own words, the information they heard during education or other instructions. Teach Back also can be a repeat demonstration (i.e., how to use the call light). According to the patient safety literature, the Teach Back technique is one of the 11 most effective patient safety practices.

*Making Health Care Safer: A Critical Analysis of Patient Safety Practices.* Evidence Report/Technology Assessment, No. 43. Agency for Healthcare Research and Quality; 2001. (AHRQ Publication No. 01-EO58). Available at: <http://www.ahrq.gov/CLINIC/PTSAFETY/>.

Abrams MA, Hung LL, Kashuba AB, Schwartzberg JG, Sokol PE, Vergara KC. *Reducing the Risk by Designing a Safer, Shame-Free Health Care Environment.* Chicago: American Medical Association; 2007.

Schillinger D, Piette J, Grumbach K, et al. Closing the loop: Physician communication with diabetic patients who have low health literacy. *Archives of Internal Medicine.* 2003 Jan 13;163(1):83-90.

Teach Back use by Transitions Home innovation units:

Rutherford P, Nielsen GA, Taylor J, Bradke P, Coleman E. *How-to Guide: Improving Transitions from the Hospital to Community Settings to Reduce Avoidable Rehospitalizations.* Cambridge, MA: Institute for Healthcare Improvement; June 2012 . Available at:

<http://www.ihl.org/knowledge/Pages/Tools/HowtoGuideImprovingTransitionstoReduceAvoidableRehospitalizations.aspx>.

- Use Teach Back to close understanding gaps between health care providers and the patient and family members and to highlight the fall prevention and injury reduction strategies. Teams found that including family members in the Teach Back process uncovered gaps in understanding about how to keep the patient safe in the hospital and at home. (See the [Tips for Using Teach Back](#) in Section Three.)

## 5. Standardize interventions for patients at risk for falling

By assessing all patients for risk of falling and fall-related injuries, staff can identify a subset of patients at high risk of falling and sustaining a fall-related injury. Staff can then focus on providing a safe environment for these patients by implementing standardized processes that create and maintain a safe care environment.

### ***5a. Implement both hospital-wide and patient-level improvements to the patient care environment to prevent falls and reduce severity of injury from falls.***

Improvements at both the hospital- and patient-level are essential to preventing falls and reducing fall-related injuries. Such improvements include:

- Creating a safe hospital environment by eliminating hazards (e.g., sharp edges, cluttered walkways, or raised thresholds)
- Providing safety aids (e.g., adequate lighting and non-slip flooring)
- Ensuring that every nurse takes responsibility for maintaining the safe hospital environment for every patient
- Establishing a standard process for specifying interventions based on individual patient needs

Recommendations for planning and implementing these improvements include:

- Ensure that the unit champion for fall prevention performs an initial walk-through (and then quarterly walk-throughs) with hospital leaders to identify needed equipment, identify and eliminate environmental hazards, and identify needed renovations to the physical plant.
  - Use the walk-through technique to improve the safety of the physical plant. The hospital walk-through is most effective when conducted collaboratively with administration (e.g., associate directors and chiefs of services), support staff (e.g., environmental management and risk management), and clinical staff (e.g., nursing managers and staff nurses). Collaborative rounds are most effective because each member of the group provides a different perspective and ideas to improve safety. For example, facilities staff may notice a high threshold to the shower. Risk management personnel may suggest that grab-

- bars are affixed between the patient bed and the bathroom. Working together, staff can identify opportunities to create a safer environment and ensure that relevant improvements are made and maintained.
- Use a “punch list” or inventory for walk-throughs with facilities and risk prevention staff, paying special attention to toilet heights and weight limits, gradations in flooring, potential sources of laceration (e.g., sharp edges on furniture or fixtures, and the presence or absence of grab bars). (See Sentara Healthcare’s [Environmental Fall Risk Assessment](#) in Section Three.)
  - Ensure that every nurse (and other hospital personnel who enter the patient room) assesses environment safety at every patient encounter. For example, nurses and other hospital staff should make it a habit to ensure that:
    - The call bell is within reach and visible
    - Personal care items are within easy reach
    - The bed is in the lowest position with wheels locked
    - The floor is free of clutter and trip hazards
    - Auditory alerts such as bed, chair, and personal alarms are turned to the “On” position
    - The wheels of bedside tables and cabinets are locked to prevent rolling
  - Arrange the patient room to favor the patient’s stronger or unaffected side or to create the shortest path to the bathroom. Room arrangements may involve moving the bed against a wall to allow egress from the side favoring the patient’s stronger or unaffected side, or orienting the bed to minimize the distance to the bathroom or maximize the accessibility of hand rails.
  - Check that all patient assistive equipment (e.g., walkers, wheelchairs, canes, and anti-tipping devices on wheelchairs) meets safety standards and is properly maintained. Reliably implementing this step may require collaboration with the physical or occupational therapy department, central purchasing and distribution, or the management team.

- Follow up on staff concerns about malfunctioning alarms. Contact manufacturers or vendors promptly if equipment adjustments are required.
- A number of teams discovered that nurses' reports of malfunctioning bed alarms ultimately required a call to the manufacturer for service, repairs, or calibration.
- Standardize processes for specifying fall-prevention interventions based on individual patient needs.
  - Improve the reliability with which staff use standard processes for transfer and mobility aids (e.g., gait belts, sliding boards, and patient handling lifts) for those patients requiring assisted transfer or ambulation.
  - Standardize fall-prevention interventions by clearly defining prevention steps and techniques, specifying associated roles and activities, and ensuring that the interventions are implemented for every at-risk patient. (For more information about a process for increasing the reliability of fall-prevention interventions, see [Achieving High Reliability of New Processes](#) in Section Three.)
  - At Iowa Health System, hospital teams found it helpful to take the system's standardized approach to prevention techniques and use tests of change to adapt it to each individual unit's population and culture. Customizing the system-wide approach allowed for more creative interventions and fostered unit ownership of the prevention efforts.

### **5b. Perform rounding (every one to two hours) to assess and address patient needs for pain relief, toileting, and positioning.**

Inpatient falls are often associated with ambulation to the bathroom and toileting.

Furthermore, toileting is considered a risk factor for falling in standardized assessments of fall risk.

Morse J. *Preventing patient falls*. Thousand Oaks, CA: Sage; 1997:27.

Hendrich A, Bender P, Nyhuis A. Validation of the Hendrich II Fall Risk Model: A large concurrent case/control study of hospitalized patients. *Applied Nursing Research*. 2003 Feb;16(1):9-21.

Hendrich A. Inpatient falls: Lessons from the field. *Patient Safety and Quality Health Care*. 2006:26-30. Available at: <http://www.psqh.com/mayjun06/falls.html>.

The scientific literature on preventing falls and staff at hospitals engaged in this work have identified routine and frequent rounding as an intervention that effectively addresses falls prevention. Frequent rounding also has been shown to be effective in preventing decubiti and improving pain management. Medical and surgical units in which staff use routine rounding have demonstrated a marked decrease in call light usage by patients.

Oliver D, Healey F, Haines T. Preventing falls and fall-related injuries in hospitals. *Clinics in Geriatric Medicine*. 2010;26:645-692.

Lancaster AD, Ayers A, Belbot B, et al. Preventing falls and eliminating injury at Ascension Health. *The Joint Commission Journal on Quality and Patient Safety*. 2007;33(7):367-375.

Meade CM, Bursell AL, Ketelsen L. Effects of nursing rounds: On patients' call light use, satisfaction, and safety. *American Journal of Nursing*. 2006;106(9):58-70.

Recommendations for implementing routine rounding include:

- Combine frequent and regular toileting rounds with existing patient care tasks, such as patient turning, environmental safety assessments, and pain assessment. Address all patient needs (e.g., pain, position, toileting, and environment) in one effective encounter.
- Assign a specific staff member(s) to routine rounding to ensure that responsibility for the task is clear.
  - A few of the more successful teams engaged managers and chief nursing executives to coach and clarify expectations for reliable application of rounding and other interventions.
- Measure the reliability of rounding, including data on every selected patient at every indicated time period. Focus on improving reliability, with a goal of 100 percent. For example, if rounding is completed 70 percent rather than 100 percent of the time, clarify that the expectation is 100 percent and involve staff in testing ideas to improve reliability.
  - A number of teams have found that manager expectation and review of rounding documentation combined with coaching staff members improved the reliability of rounding. (For an example of documentation, see the [Hourly Rounding Form](#) from Iowa Health–Des Moines in Section Three.)

- The staff at Iowa Health–Des Moines developed a poster as a visual reminder of the new rounding process. Staff store the documentation forms inside the patients' rooms and near the unit's communication whiteboard.

## **6. Customize interventions for patients at highest risk of a serious or major fall-related injury**

Through specific assessment of risk factors, staff can identify a subset of patients at highest risk for a fall-related injury. These patients may or may not have been previously identified as being at risk for falling.

Typical failures associated with customizing interventions for patients at the highest risk of fall-related injury include the following:

- Lack of nurse observation of patients (including patients who have been placed closer to the nurses' station)
- Failure to identify that a change in status represents a new risk for falling, for a patient at greater risk for fall-related injury
- Failure to individualize the plan of care based on patient needs
- Lack of reliable implementation of interventions to prevent fall-related injuries
- Lack of staff knowledge about fall-prevention interventions for more challenging patient populations (e.g., patients who are confused or impulsive, tend to wander, or have fallen previously)

### ***6a. Increase the intensity and frequency of observation.***

Teams have used increased intensity and frequency of patient observations as a preventive intervention for patients at risk for falling and at risk of injury from a fall. For example, patients on a diuretic require more frequent toileting, and patients with cognitive impairment and impulsivity require more frequent observation.

Recommendations for patient observation include:

- Create a direct line of sight and improve surveillance of at-risk patients by transferring these patients to a location closer to the nurses' station, or create decentralized workstations for nursing staff.
  - Many teams have found it helpful to transfer patients who tend to wander or are at risk for falling to locations close to the nurses' stations. However, other teams have found that the busy environment of the nurses' station worsens agitation in some patients.
- Consider use of bed, chair, and tab alarms. Although these alarms do not prevent falls, they do alert staff to patient movement and the possible need for quick attendance. In addition, the alarms allow for early rescue of patients who have fallen.
- Consider one-to-one observation in patient's room by trained hospital staff.
- Ensure the reliability of all protective observation processes.

### ***6b. Make environmental adaptations and provide personal devices to reduce risk of fall-related injury.***

Recommendations for environmental adaptations and personal devices include:

- Reduce the impact of potential trauma through judicious use of protective equipment (e.g., hip protectors and helmets).
  - These protective clothing articles are designed to reduce the impact associated with trauma to the body when the body hits the ground.
  - When using helmets and hip protectors, watch for unintended adverse consequences, such as skin breakdown with hip protectors or increased confusion in the cognitively impaired with helmets. Research findings are demonstrating the efficacy of hip protectors in reducing hip fractures in the long-term care setting. Laboratory-based studies have also verified the protective properties shunt impact. The following studies support the spread of these devices into other settings of care.

Parker MJ, Gillespie LD, Gillespie WJ. Hip protectors for preventing hip fractures in the elderly. *Cochrane Database Systematic Review*. 2003;3:CD001255.

Bentzen H, Forsen L, Becker C, et al. Uptake and adherence with soft- and hardshelled hip protectors in Norwegian nursing homes: A cluster randomised trial. *Osteoporos International*. 2008;19(1):101-111.

Applegarth SP, Bulat T, Wilkinson S, Fitzgerald SG, Quigley P, Ahmed S. Durability and residual moisture effects on the mechanical properties of external hip protectors. *Gerontechnology*. 2009;8(1):26-34.

Minns RJ, Marsh AM, Chuck A, et al. Are hip protectors correctly positioned in use? *Age and Ageing*. 2007;36:140-144.

Robinovitch SN, Evans SL, Minns J, et al. Hip protectors: Recommendations for biomechanical testing—an international consensus statement (part I). *Osteoporos International*. 2009;20:1977-1988.

Cameron ID, Robinovitch S, Birge S, et al. Hip protectors: Recommendations for conducting clinical trials—an international consensus statement (part II). *Osteoporos International*. 2010;21:1-10.

- Add a high-impact, beveled-edge floor mat to the bedside when the patient is in bed and stow it safely when patient is standing and ambulating.
  - Use careful observation and proactive testing to ensure that floor mats do not become trip and fall hazards for staff and patients.
  - Staff at the VA system have used floor mats quite successfully, although experts there caution that mats must adhere to the floor, have beveled edges, and be placed carefully for maximum effect. (Please refer to the [Biomechanics of Falls from Bed and Bedside Floor Mats](#) guidelines in Section Three.)

Raymond DE, Catena RD, Vaughan TR. Biomechanics and injury risk assessment of falls onto protective floor mats. *Rehabilitation Nursing*. 2011;36(6):248-254.

Bowers B, Lloyd J, Lee W, Powell-Cope G, Baptiste A. Biomechanical evaluation of injury severity associated with patient falls from bed. *Rehabilitation Nursing*. 2008;33(6):253-259.

- Use height-adjustable beds, maintaining them in the low position with brakes locked when the patient is resting.
- Use gait belts for ambulating patients with mobility concerns. Some teams found that nurse's use of a gait belt improved patient stability when walking and reduced injuries among patients and staff. (See Section Three for [Gait Belt FAQs](#).)
- Consider use of wheelchairs with anti-tipping devices.

### **6c. Target interventions to reduce the side effects of medications.**

Recommendations for reducing medication side effects include:

- Review all patients' current medication lists in collaboration with prescribing providers and/or pharmacy staff with the goal of eliminating or replacing any unnecessary drugs contraindicated in the elderly, and drugs that increase the risk of falls or the severity of fall-related injury.

Quigley P. Clinical practice algorithm: Medication management to reduce fall risk in the elderly. Part 1. *Journal of the American Academy of Nurse Practitioners*. 2007;19(12). 625-626.

- When initiating drugs that increase the risk of falling (e.g., sedatives and antihypertensives) or the risk of a fall-related injury (e.g., anticoagulants), use caution and increase the frequency and intensity of patient observation.
- Consider the use of protocols to decrease use of sleep-promoting medications. The Madison Patient Safety Collaborative provides a number of non-pharmacologic interventions to promote sleep.

Agostini JV, Zhang Y, Inouye SK. Use of a computer-based reminder to improve sedative-hypnotic prescribing in older hospitalized patients. *Journal of the American Geriatrics Society*. 2007;55:43-48.

Fick DM, Cooper JW, Wade WE, Waller JL, Maclean JR, Beers MH. Updating the Beers criteria for potentially inappropriate medication use in older adults: Results of a US consensus panel of experts. *Archives of Internal Medicine*. 2003;163:2716-2724.

Madison Patient Safety Collaborative. Available at: <http://www.rwjf.org/pr/product.jsp?id=63954>.

McDowell JA, Mion LC, Lydon TJ, Inouye SK. A nonpharmacologic sleep protocol for hospitalized older patients. *Journal of the American Geriatrics Society*. 1998;46:700-705.

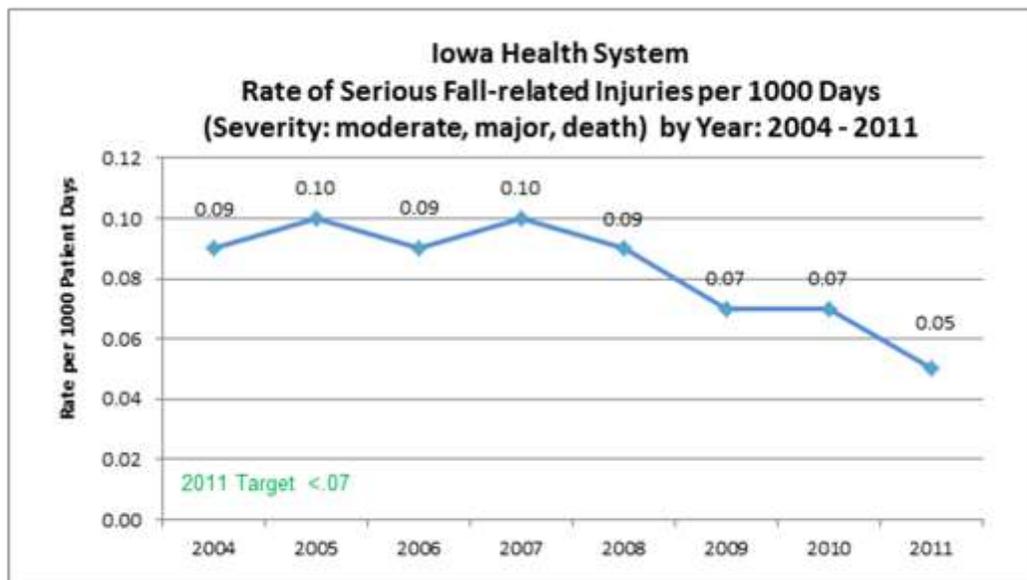
### Improving Patient Safety by Decreasing Falls and Falls with Injuries

Ten years ago, Iowa Health System (IHS) began a major patient safety initiative to decrease falls. As part of that initiative, system-wide collaborative fall prevention teams have been working to actively identify risks and to implement processes to measurably reduce falls and fall-related injuries. IHS aims to accomplish this through appropriate assessment (for both fall risk and injury risk), manipulation of the environment, and implementation of standardized interventions and customized patient-centered interventions. Based on recommendations established by the Institute for Healthcare Improvement and the Robert Wood Johnson Foundation's "Transforming Care at the Bedside" initiative, a goal was set to decrease serious injuries from falls to 0.07 per 1,000 patient days by December 31, 2011. Many ideas to help achieve this goal were developed, tested, and implemented.

Iowa Health System's collaborative improvement teams reduced the potential of approximately 4,000 patient falls across the system. After hitting a plateau in 2008, IHS adopted an innovative approach to reduce injury from falls to notable lows. By implementing the risk for injury assessment tool, adopting a manager as a coach leadership model, implementing real-time problem solving, promoting shared learning through monthly team phone calls, and cultivating employee and leader communications, IHS has significantly reduced fall-related injuries.

Throughout the health system, building a culture of safety is not about more signage and stark warnings: it is about customized and patient-centered expressions of care. Ultimately, fostering an enhanced safety culture focuses on sensible practices, clear guidelines, and open communication between staff and with patients and their families.

Using this collaborative approach, combined with sustainable initiatives, measurable results, and fostering a fall prevention culture has led to significant positive results for Iowa Health System affiliated hospitals.



## **Section Two**

### **Forming the Team**

IHI recommends a multidisciplinary team approach to the prevention of injuries from falls. Teams offer the value of bringing diverse personnel together, working to achieve the same goal. All the stakeholders in the process should be included, to gain the buy-in and cooperation of all parties.

In order to be most effective, a core team should oversee the work. As different changes to reduce patient injuries from falls are tested, other key people in the organization can be included on an ad hoc basis, especially if they can offer some special expertise that is limited to one area of the work. Team members should include the following:

- Senior executive
- Nursing: staff nurses and nurse extenders
- Physician
- Education leader
- Performance Improvement Specialist
- Pharmacist
- Materials Management staff
- Rehabilitation Medicine/Physical Therapist /Occupational Therapist
- Home health representative
- Patient or family caregiver

### ***Roles and responsibilities of team members***

Every successful team has team members that clearly understand their roles and responsibilities and work together to meet the outcomes of the team. Team roles and responsibilities — Senior Leader Executive Champion, Team Leader, Day-to-Day Leader, Team Member, and Improvement Advisor — are described below.

### **Senior Leader Executive Champion**

- Ensure team success
- Approve team charter
- Take status quo off the table
- Meet regularly with team
- Remove barriers
- Ensure that resources for the work are provided
- Make projects visible to others
- Build will
- Plan and manage spread of the improvements (to other units, departments, hospitals, etc.)

### **Team Leader**

- Create a shared vision and provide intellectual leadership
- Serve as topic area expert and consultant
- Attend front-line five-minute testing huddle weekly
- Assist in small tests of change
- Guide plans for next steps

### **Day-to-Day Leader**

- Coordinate team process
- Partner with Physician Leader
- Oversee at least five tests of change weekly
- Report tests and progress to senior leader monthly

### **Team Member**

- Serve as a change agent
- Has knowledge and experience in topic area (or process improvement)
- Plan and run daily tests
- Offer ideas for tests of change and for hardwiring change into the work
- Assist team process

### **Improvement Advisor**

- Build capacity for team success
- Keep process moving with data and process rigor
- Promote small tests of change using PDSA
- Help teams get results with data to prove it

Some suggestions to attract and retain excellent team members include using observation and data to define and solve the problem; identifying champions within the hospital who are passionate about preventing injuries from falls and have credibility with staff and administration; and working with those who want to work on the project, rather than trying to convince those who do not.

The team needs encouragement and commitment from senior leadership; an administrative representative on the team is powerful in keeping the team focused and removing barriers. Identifying a champion increases a team's motivation to succeed. When measures are not improving, the champion readdresses the problems with staff and helps to keep everyone on track toward the aims and goals.

Another approach to the improvement work is to create sub-teams to work on specific care components or groups of care components. For example, one sub-team might work on education strategies for all staff. Another sub-team might focus on the supplies,

availability of equipment needed as options for patients at risk, such as floor mats and alarms. A third team might be responsible for the testing and piloting of tools and standard processes. These are just a few examples of sub-teams, which can be an effective way to divide the work and achieve improvement more quickly. The sub-teams should report their work and results to the core team, which oversees the entire project and ensures coordination.

### Identifying Opportunities for Improvement and Setting Aims

Improvement requires understanding the problem, identifying opportunities for improvement, and setting aims. An organization will not improve without a clear and firm intention to do so. To understand the scope of the problem and identify opportunities for improvement, analyze the last 10 to 20 falls associated with injury and study the data trends from the last three to five years of falls categorized by injury.

- Analyze the last 10 to 20 falls associated with injury (see the [Injurious Fall Data Collection Tool](#)).
- Strive to understand what happened, why, when, and where by asking the following questions:
  - Were there any commonalities or trends among the patients (e.g., age, gender, diagnosis, type of medications)?
  - What were patients doing when they fell?
  - Were fall and injury risk assessments used, and if so, how reliably?
  - Did the risk assessments accurately identify at-risk patients?
  - Were interventions implemented based on the results of risk assessments?
  - Why did a fall-related injury occur despite these interventions?

Interview patients and family members to gather additional information. Aggregate and analyze data on patient falls. Discuss falls with clinicians to better understand how to prevent falls and injury. Identify opportunities for improvement from gaps detected in the current processes (e.g., environmental hazards).

***Use observation as a tool.***

Go out on the unit and observe the process. Observation is a useful tool to learn more about a process. Observe it on different shifts being done by different team members. This observation is not to judge but to better understand the real work that is being done. Walk through the process described by the front-line staff to better identify the frequency, location, and cause of any failures in the rounding process. When completing the observation, share the findings with the team member to ensure what you see is validated by the person doing the work.

Analyze data trends from the last three to five years of falls. Categorize falls by injury.

- Use the American Nurses Association – NDNQI fall-related injury categories to categorize falls by severity of injury. To clarify the magnitude of the problem, assess data trends in the incidence of falls and associated injury levels. Consider the proportion of falls that result in serious injury and the number of falls associated with moderate injury that occur over time. Attempt to predict which patients might be at risk for injury in the event of a fall and plan custom interventions for testing.

Using what is learned from the analysis of the last 10 to 20 falls, observation, historical fall data, and injury trends data, develop a clear aim statement for the initiative. The aim should be time-specific and measurable; it should also define the specific population of patients that will be affected. Agreeing on the aim is crucial; so is allocation of people and resources necessary to accomplish the aim.

Aim statements for preventing falls with injury should specify percentage reductions within a set timeframe. A sample aim statement might be:

*On 3 West, we will prevent falls so that there are fewer than 1.7 falls per 1,000 patient days and reduce injury from falls (moderate, major, and death) to fewer than 0.5 per 1,000 patient days (< 1 per 10,000 patient days) by January 2012.*

Teams are more successful when they have unambiguous, focused aims. Setting numerical goals clarifies the aim, helps to create tension for change, directs measurement, and focuses initial changes. Once the aim has been set, the team needs to be careful not to back away from it deliberately or “drift” away from it unconsciously.

This is only meant to be an example; your team should develop its own aim statement so that the team will feel ownership of the aim.

### **Using the Model for Improvement**

In order to move this work forward, IHI recommends using the Model for Improvement. Developed by Associates in Process Improvement, the Model for Improvement is a simple yet powerful tool for accelerating improvement that has been used successfully by hundreds of health care organizations to improve many different health care processes and outcomes.

The model has two parts:

- Three fundamental questions that guide improvement teams to: 1) set clear aims, 2) establish measures that will tell if changes are leading to improvement, and 3) identify changes that are likely to lead to improvement.
- The Plan-Do-Study-Act (PDSA) cycle to conduct small-scale tests of change in real work settings — by planning a test, trying it, observing the results, and acting on what is learned. This is the scientific method, used for action-oriented learning.

Each test builds on learning from the previous one and moves the team closer to its aim. Multiple test cycles help staff identify differences among patients, shifts, and care teams, and help the team refine changes to bring about reliable, standardized work to improve care. For more information on possible interventions to test to reduce injuries

from falls for hospitalized patients, see Section One and the [Tips for Using Teach Back](#) in Section Three.

**Implementation:** After testing a change on a small scale, learning from each test, and refining the change through several PDSA cycles, and standardizing the process, the team can implement the change on a broader scale (e.g., for an entire pilot population or on an entire unit). For example, once a team has determined how to reliably conduct comfort rounds, it can begin full implementation of rounding. Implementation requires the institution of permanent changes such as documentation of new policies and procedures, development of a communication plan, staff training, changes to new hire orientation, and continued data monitoring to maintain improvement gains.

**Spread:** After successful implementation of a change or package of changes for a pilot population or an entire unit, the team can spread the changes to other parts of the organization or to other organizations.

You can learn more about the Model for Improvement on [www.ihl.org](http://www.ihl.org).

The sample PDSA Worksheet that follows illustrates how an improvement team might document a first test cycle using this tool.

PDSA Worksheet

**CYCLE: 1**

**DATE:**

**1/10/12**

	<p><u>Project:</u> Decreasing injuries from falls <u>Objective for this PDSA Cycle:</u> Test the process for completing a fall injury risk assessment on admission to the hospital.</p>
<p><b>Plan:</b></p>	
<p><b>Questions:</b></p>	<p>How can we ensure total compliance with completion of a fall injury risk assessment on each admission to the hospital?</p>
<p><b>Predictions:</b></p>	<p>Adding cues to the admission packet will help ensure compliance with identification of patients at risk for injuries from falls on admission.</p>
<p><b>Plan for change or test — who, what, when, where:</b></p>	
<p>What:</p>	<p>Add a risk assessment tool to admission packet</p>
<p>Who:</p>	<p>Bonnie (nurse) to do a risk assessment on each patient admitted on 4 North</p>
<p>Where:</p>	<p>Admission packets (Make up 3 packets for pilot test.)</p>
<p>When:</p>	<p>January 15</p>
<p><b>Plan for collection of data — who, what, when, where:</b></p>	
<p>Who:</p>	<p>Bonnie (nurse)</p>
<p>What:</p>	<p>Compliance with any patient admitted</p>
<p>When:</p>	<p>January 15</p>
<p>Where:</p>	<p>4 North</p>
<p><b>Do:</b></p>	<p>Carry out the change or test. Collect data and begin analysis.</p>
<p></p>	<p>Four patients were admitted to 4N on 1/15; the assessments and the risk assessments were completed by Bonnie.</p>
<p><b>Study:</b></p>	<p>Complete analysis of data.</p>
<p></p>	<p>How did or didn't the results of this cycle agree with the predictions that we made earlier? Summarize the new knowledge we gained by this cycle: All assessments of risk were completed as designed for these four patients.</p>
<p><b>Act:</b></p>	<p>List actions we will take as a result of this cycle.</p>
<p></p>	<p>Test for all admissions to 4N for the week of January 20. Plan for the next cycle (adapt change, another test, implementation cycle?): Will see if additional cues are needed, look for completion and compliance with all elements of tools.</p>

### **Tips and Tricks**

- Use fall injury data to assist with the choice of a pilot unit. (Start with the units, and the populations, with the highest prevalence.)
- Use process measures to drive change (e.g., percent of patients with documented fall injury risk assessment on admission), not outcome measures (e.g., number of injuries from falls).
- Collect data on process measures weekly (10 charts/week) on units piloting and implementing changes, until reliability is achieved.
- Begin with one pilot unit, design specific processes for compliance with strategies, and roll out by units.
- Set a schedule to spread changes to units systematically and adhere to it.
- Match the staff education schedule with the roll-out schedule.
- Develop a “pocket guide” for staff containing helpful tips for patients at risk for injuries from falls.
- Include the patient and family in education regarding prevention of injuries.
- Consider designating a team leader/champion for each unit or area. This person will be the unit resource for fall injury prevention and coordination of the process with the unit manager.

Courtney BA, Ruppman JB, Cooper HM. Save our skin: Initiative cuts pressure ulcer incidence in half. *Nursing Management*. 2006;37(4):35-46.

### **Weekly Operations Team Meetings**

The Nurse Unit Leader, Unit Champion, and key staff from the pilot unit attend weekly operations meeting to report falls and injuries from falls identified during the previous week. Determine the root cause for each fall and create an action on the root cause to prevent this type of fall from happening in the future.

Gibbons W, Shanks HT, Kleinhelter P, Jones P. Eliminating facility-acquired pressure ulcers at Ascension Health. *Joint Commission Journal on Quality and Patient Safety*. 2006;32:488-496.

The Nurse Unit Leader and Unit Champion report learnings from each root cause for the pilot unit and, as roll-out to other units occurs, share these learnings with others. Measure compliance until reliability is demonstrated.

Courtney BA, Ruppman JB, Cooper HM. Save our skin: Initiative cuts pressure ulcer incidence in half. *Nursing Management*. 2006;37(4):35-46.

### Measurement

Measure compliance with each of the key components of evidence-based fall injury prevention programs. Document whether each component of care was provided or contraindicated; these are “process measures.” While improvements in individual measures indicate the processes surrounding those care elements have improved, improvement in actual patient outcomes requires improvement in all component measures.

IHI recommends the use of some or all of the following measures, as appropriate, to track your progress. In selecting your measures, consider the following:

- Whenever possible, use measures you are already collecting for other programs.
- Evaluate your choice of measures in terms of the usefulness of the final results and the resources required to obtain them; try to maximize the former while minimizing the latter.
- Try to include both process and outcome measures in your measurement scheme.
- You may use different measures or modify the measures described below to make them more appropriate and/or useful to your particular setting. However, be aware that modifying measures may limit the comparability of your results to others’.
- Posting measure results within your hospital is a great way to keep teams motivated and aware of progress. Try to include measures that your team will find meaningful and exciting.

***Process Measures***

We recommend three process measures for reducing injuries from falls:

1. Percent of patients with documented fall injury risk assessment on admission (fall risk assessment)
  - a. Numerator: Number of patients with documented injury assessment on admission
  - b. Denominator: Number of patients admitted
  
2. Percent of patients at risk for injury receiving Teach Back related to injury risk status
  - a. Numerator: Number of patients at risk for injury receiving Teach Back related to injury risk status
  - b. Denominator: Number of patients at risk for injury
  
3. Percent of patients at risk for injury receiving Teach Back related to call light use
  - a. Numerator: Number of patients at risk for injury receiving Teach Back related to call light use
  - b. Denominator: Number of patients at risk for injury
  
4. Percent of falls with moderate or higher severity of injury with completed root cause analysis
  - a. Numerator: Number of falls with moderate or higher severity of injury with completed root cause analysis
  - b. Denominator: Number of falls with moderate or higher severity of injury

Note: There are pros and cons to conducting a root cause analysis on all injuries or limiting it to serious (moderate and higher severity) injuries. Medium-sized and large hospitals may struggle to do a root cause analysis (RCA) on all injuries. Moderate and higher severity injuries are more compelling, given the time and resources required for a

RCA. That said, minor injuries can be considered near misses for serious injury, and more aggressive or experienced organizations can consider a RCA for these as well.

***Outcome Measures***

In addition to the process measures for each of the key components of reducing injuries from falls, we recommend the following outcome measures:

1. Number of falls with moderate or higher severity of injury per month

(Note that there is no numerator or denominator, just number of falls with moderate or higher severity of injury plotted over time.)

2. Falls rate with moderate or higher severity of injury per 1,000 patient days

a. Numerator: Number of falls with moderate or higher severity of injury in the month

b. Denominator: Number of patient days in the month

Multiply by 1,000 to get the rate per 1,000 patient days.

## **Section Three**

### **Tools and Resources**

This section includes the tools and resources developed by hospitals engaged in fall and fall-related injury prevention work.

- [Achieving High Reliability of New Processes](#)
- [Nursing Handoff Checklist and Worksheet](#)
- [Environmental Fall Risk Assessment](#)
- [Fall Risk Assessment and Interventions Audit](#)
- [Safety Huddle Form](#)
- [Tips for Using Teach Back](#)
- [Test of Change Data Report Form](#)
- [Sample Test of Change Data Report](#)
- [Hourly Rounding Form](#)
- [Biomechanics of Falls from Bed and Bedside Floor Mats](#)
- [Gait Belt FAQs](#)

Additional resources can be found through IHI's [Mentor Hospital Registry](#).

## Achieving High Reliability of New Processes

Once a team has standardized a process at a reliability level of 80 percent or more, team members should identify resources needed to redesign the process with the goal of achieving a reliability level 95 percent or higher.

Nolan T, Resar R, Haraden C, Griffin FA. *Improving the Reliability of Health Care*. IHI Innovation Series white paper. Boston: Institute for Healthcare Improvement; 2004. Available at: <http://www.ihl.org/knowledge/Pages/IHIWhitePapers/ImprovingtheReliabilityofHealthCare.aspx>.

- **Review process failures and identify causes.**

Review every process failure (e.g., a patient fall or rounds that were incompletely performed) and identify the contributing causes of the failure. Review should occur immediately after a failure. Assess whether there are failures in the process that led to the fall or the fall-related injury. Consider which portion of the process to protect patients from falls may have failed. Use the review to inform iterative tests to redesign the process.

- **Identify barriers that create process failures and near-failures, and redesign to improve reliability.**

Ask staff to identify barriers that prevent them from “doing it right every time.” Observe the process to learn more about the current state. For example, one manager observed the process, validated her perceived barriers with her team, and together they identified a need to make fall-prevention supplies readily available, whenever and wherever needed, to support staff implementation of preventive interventions. Use human factors tools, such as decision aids and visual reminders, to support staff in reliable implementation. Redesign processes and make the desired action the default action. For example, one hospital team made fall and injury risk assessments a required field in the electronic assessment program and ensured that housekeeping staff place kits with fall and injury intervention supplies in each clean room before patients arrive. Create redundancies to prevent injury, if

appropriate (e.g., a rounding documentation sheet that allows all team members to check activity completion throughout the day).

Staff at St. Luke's Hospital in Cedar Rapids, Iowa, identify failures in reliable assessment and completion of patient protection interventions with an audit tool (see [Fall Risk Assessment and Interventions Audit](#)).

Staff at many hospitals conduct a post-fall huddle to identify the root cause of prevention failures immediately after a fall. During the huddle the team asks front-line staff for their ideas about how to prevent a similar fall in the future and those ideas are tested on a small scale (see [Safety Huddle Form](#)). Also, the nurse leader can use the tool to help to determine the current state through observation, identify the root cause with input from the staff, and conduct small tests of change to improve the failed process.

- **Spread the reliable design and processes.**

Hospital leadership must take responsibility for spreading reliable design and processes within a hospital or health system. Leaders must commit sufficient resources to support such spread, including support for continued measurement and monitoring of fall prevention outcomes. Pilot units participating in TCAB used a variety of methods to communicate changes with care units initiating TCAB-related initiatives to prevent falls and fall-related injury, including communication boards, emails to staff, newsletters, and town hall meetings. One successful team held monthly nurse manager meetings sponsored by the chief nurse executive and patient safety officer to share information across units about falls that occurred in the preceding month and tests underway to prevent similar falls. Another successful team created a “swarm team” that promptly gathers at the site of each fall to accelerate the learning during the post-fall huddle. The team shared locally developed expertise and lessons learned from falls and testing in the huddles and spread this information across the hospital through nursing council meetings, newsletters, and patient safety committee meetings.

Massoud MR, Nielsen GA, Nolan K., Schall MW, Sevin C. *A Framework for Spread: From Local Improvements to System-Wide Change*. IHI Innovation Series white paper. Cambridge, MA: Institute for Healthcare Improvement; 2006. Available at: <http://www.ihl.org/knowledge/Pages/IHIWhitePapers/AFrameworkforSpreadWhitePaper.aspx>.

## Nursing Handoff Checklist and Worksheet



### Required Knowledge About Each Patient

<p><b><u>Patient</u></b></p> <p>[Place Patient Label Here]</p> <p>Attending Physician: Consulting Physician(s):</p> <p>Diagnosis:</p> <p>History:</p> <p>Allergies: Fall risk? <input type="checkbox"/> No <input type="checkbox"/> Yes, due to: Intervention: <input type="checkbox"/> <b>armband</b> <input type="checkbox"/> <b>doorsign</b> <input type="checkbox"/> <b>bed alarm</b></p> <p><b>Other:</b> _____</p> <p><b>High Risk for Harm?</b></p> <ol style="list-style-type: none"> <li>1. Patients 85 years and over</li> <li>2. Patients at risk for bleeding</li> <li>3. Patients with osteoporosis</li> <li>4. History of hip fracture and history of fall</li> </ol> <p>Intervention: _____</p> <p>Restraints? <input type="checkbox"/> No <input type="checkbox"/> Yes Isolation? <input type="checkbox"/> No <input type="checkbox"/> Yes</p> <p>Code status: Vital Signs &amp; Weight:</p> <table style="width: 100%; text-align: center; border-collapse: collapse;"> <tr> <td></td> <td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>1</td><td>1</td><td>1</td> </tr> <tr> <td><b>Me</b></td> <td><b>1</b></td><td><b>2</b></td><td><b>3</b></td><td><b>4</b></td><td><b>5</b></td><td><b>6</b></td><td><b>7</b></td><td><b>8</b></td><td><b>9</b></td><td><b>0</b></td><td><b>1</b></td><td><b>2</b></td> </tr> <tr> <td><b>ds</b></td> <td></td><td></td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>2</td><td>2</td><td>2</td><td>2</td><td>2</td> </tr> <tr> <td></td> <td></td><td></td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td> </tr> </table>		0	0	0	0	0	0	0	0	0	1	1	1	<b>Me</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>ds</b>			1	1	1	1	1	2	2	2	2	2				5	6	7	8	9	0	1	2	3	4	<p><b>Problems/Systems Assessment</b></p> <p><b>Neurological</b></p> <p><input type="checkbox"/> Level of consciousness <input type="checkbox"/> Neurological deficits <input type="checkbox"/> Pain score/meds  <input type="checkbox"/> Sedation score current/desired <input type="checkbox"/> Glasgow coma score  <input type="checkbox"/> Lab results</p> <p><b>Cardiovascular</b></p> <p><input type="checkbox"/> Lab results <input type="checkbox"/> PRN meds <input type="checkbox"/> Telemetry <input type="checkbox"/> Rhythm <input type="checkbox"/> Tubes/drains  <input type="checkbox"/> Peripheral pulses/edema <input type="checkbox"/> IV access/location/drip meds  <input type="checkbox"/> Pacemaker settings/rate <input type="checkbox"/> <b>IABP</b> <input type="checkbox"/> <b>Alarm parameters</b></p> <p><b>Respiratory</b></p> <p><input type="checkbox"/> Lab results <input type="checkbox"/> PRN meds <input type="checkbox"/> O2 sat/requirements <input type="checkbox"/> Breath sounds  <input type="checkbox"/> Tracheotomy/chest tubes/drains <input type="checkbox"/> Sputum characteristics  <input type="checkbox"/> <b>Ventilator settings/weaning status</b></p> <p><b>Gastrointestinal</b></p> <p><input type="checkbox"/> Lab results <input type="checkbox"/> PRN meds <input type="checkbox"/> Bowel sounds/movement/consistency  <input type="checkbox"/> Nutrition <input type="checkbox"/> Rectal tubes/output/ostomies <input type="checkbox"/> Oral care</p>
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<p><b>Plan of Care</b>                  Pending procedures / tests:                   Results of procedures / tests:                   Clinical pathways / guidelines / protocols:                   Education needs / IPOC:                   If smoker, cessation education given: <input type="checkbox"/> No <input type="checkbox"/> Yes                  Vaccines update: <input type="checkbox"/> No <input type="checkbox"/> Yes</p>	<p><b><i>Genitourinary</i></b>  <input type="checkbox"/> <i>Lab results</i> <input type="checkbox"/> <i>PRN meds</i> <input type="checkbox"/> <i>Urine output/color/sediment</i>  <input type="checkbox"/> <i>Voiding/catheter</i> <input type="checkbox"/> <i>Dialysis</i></p> <p><b><i>Endocrine</i></b>  <input type="checkbox"/> Lab results <input type="checkbox"/> PRN meds <input type="checkbox"/> Blood sugar</p> <p><b><i>Integumentary</i></b>  <input type="checkbox"/> Decubitus ulcer stage/treatment <input type="checkbox"/> Erythema/rash  <input type="checkbox"/> Surgical incisions/dressing <input type="checkbox"/> Specialty bed</p> <p><b><u>Musculoskeletal</u></b>  <input type="checkbox"/> Weakness/paralysis <input type="checkbox"/> Mobility/activity level <input type="checkbox"/> Assistive devices  <input type="checkbox"/> Joint swelling/tenderness</p> <p><b><u>Psychosocial</u></b>  <input type="checkbox"/> Behavioral/mental health <input type="checkbox"/> Family dynamics/support system  <input type="checkbox"/> Customer service issues</p>
<p><b>Purpose/Desired Outcome</b>                  Anticipated discharge/transfer date:    <b>Discharge/transfer destination:</b></p>	
<p><b>Precautions</b>                  Concerns and priorities for my patient:</p>	

**Bold Font = ICU Related Criteria**  
 Revision M: May 23, 2006



**Environmental Fall Risk Assessment**

Date: \_\_\_\_\_ Hospital \_\_\_\_\_ Unit: \_\_\_\_\_

Rooms assessed:

\_\_\_\_\_

(minimum of 10% of rooms)

Individual(s) Surveying:

\_\_\_\_\_

Item #	<b><u>Environmental Consideration</u></b>	Yes	No	N/A	Room # / area deficiencies found	Comments
<b>PATIENT ROOM</b>						
	Is there adequate lighting in the patient's room? (Bright light – no burned out bulbs?)					
	Is the nightlight on the patient's bed functional / operating?					
	Does the patient have an unobstructed path to the bathroom?					
	Are patient room furnishings safely arranged?					
	Is bedside furniture free of sharp edges?					
	Is the bedside furniture sturdy?					
	Are beds /stretchers kept at lowest setting whenever possible?					
	Are beds/ stretchers kept in locked position?					
	Were the upper siderails in the up position for patient to reach controls?					
	Was the bedcheck system on in the patient's room?					
	Were the patient's personal belongings / telephone call bell within reach?					
	Are handrails provided in patient bathroom and properly secured?					
	Emergency call button / cord in patient care bathroom present and works properly?					
	Are nonslip surfaces provided in patient showers?					

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	Are the door openings into the patient bathroom wide enough for an assistive device to fit through?					
	Are door openings flush with the floor for ease of movement for patient equipment?					
<b>EQUIPMENT</b>						
	Portable equipment pushed by patient (i.e., IV pole) sturdy and in good repair?					
	Are bedside commodes available on the unit and have proper rubber slip tips on the legs?					
	Do walkers/canes/crutches have the appropriate slip tips?					
	Are wheelchairs locked when stationary?					
	Is broken equipment properly tagged for non-use?					
<b>OTHER ENVIRONMENTAL CONSIDERATIONS</b>						
	Are floor surfaces/carpeting free of cracks and tripping hazards?					
	Are hallways kept adequately clear/clutter free to allow patient ambulation?					
	Are floors properly marked when wet to avoid slipping or spill cleaned up immediately?					
	Do parking lots have uneven pavement/potholes/tripping hazards?					
	Do sidewalks have uneven pavement/tripping hazards?					
	Entrance areas free and clear?					
	Parking areas/entrances well lit?					
	Parking lots well marked?					



**ENVIRONMENTAL FALL RISK ASSESSMENT FOLLOW-UP**

<b>ITEM #</b>	<b>CORRECTIVE ACTION</b>	<b>DATE INITIATED</b>	<b>RESPONSIBLE INDIVIDUAL(S)</b>	<b>ANTICIPATED DATE OF COMPLETION</b>

Original 2005, rev 5/08



## Fall Risk Assessment and Interventions Audit

Instructions:

1. Review 10 patient charts in your first test sample. Choose the patient charts for review using random selection.
2. Complete a data collection form for each patient in the audit. Place a patient label on each form.
3. Ask charge/designee if they are aware of any patients that have fallen within their stay. Post-fall audit questions are used if one of these patients turns up in the random sample.
3. Closely review each of the randomly selected patient charts to look for information to support or negate fall precautions.
  - a) Was a risk assessment completed upon admission?
  - b) From this score, was the patient appropriate for fall prevention (FP) implementation?
  - c) Utilizing the standard operating procedure, were the appropriate FP interventions completed?
4. If a patient had a fall:
  - a) Were the appropriate items completed?
  - b) Was documentation complete?
5. Send completed forms to your Falls Team leader.
6. Bring results of the sample review to the January 30-31 meeting.
  - a) % of patients assessed for risk of falling
  - b) % of patients assessed for risk of injury from falling
  - c) % of patients with all indicated fall precaution interventions completed
  - d) % of patients who fell who have all indicated interventions completed
  - e) Summary of the % of yes/no responses (indicates where you need to work on reliability — what gets in the way?)

**Fall Risk Assessment and Interventions Audit**

Date: \_\_\_\_\_ Hospital/Unit \_\_\_\_\_

**1. Reliability of Assessment and Interventions**

a) Patient was assessed for risk of falling?  Yes  No Risk of harm?  Yes  No

b) Admission Fall Score: \_\_\_\_\_

c) Was the patient placed on **Fall Precaution (FP)** upon admission?  Yes  No  N/A

d) **If the patient is on FP is there a:** Yes No N/A Comments

	Yes	No	N/A	Comments
Written nursing order				
Risk ID arm band on the patient				
High risk sticker on chart				
FP sign on doorframe				
Red slippers on/near patient				
Education of patient and family – CareCast/Adm				
Evidence of Teach Back				
Evidence of call light Show Back				
Fall Precaution bag in patient’s room				
Risk communication on handoff				
<b>ALL OR NONE SCORE = 1 or 0</b>				In “all” count those in your SOPs

**2. If there was an identified fall:** Yes No N/A Comments

	Yes	No	N/A	Comments
Was the patient on FP prior to the fall?				
Was patient placed on FP after the fall?				
Was there communication on handoff?				
Is there a written nursing order?				
Is there an arm band on?				
Is there a sticker on the chart?				
Is there evidence of patient and family education completed in the chart?				
Is there a FP sign on the doorframe?				

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Are red slippers on/near patient?				
Is there a fall precaution bag in room?				
Is there a personal alarm in use now?				
Is there a bed alarm in use now?				
<b>ALL OR NONE SCORE = 1 or 0</b>				In "all" count those indicated

**3. Reassessment**

a) Was the patient reassessed with each new patient caregiver? (Look back 7 days only)

**YES**  **NO**: Explain when it wasn't complete date/time: \_\_\_\_\_

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b) Transfer: Was the patient reassessed for FP upon transfer?  **Yes**  **No**  **N/A**

c) Following a fall: Was the patient reassessed for FP following a fall?  **Yes**  **No**  **N/A**

### Safety Huddle Form



DATE: \_\_\_\_\_

**Shift: 3<sup>rd</sup>**

Top 3 Patients for Fall Precautions

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

Patient/Family Issues

1. \_\_\_\_\_

Most Unstable Patient

1. \_\_\_\_\_

Highest Acuity

1. \_\_\_\_\_

**Shift: 1<sup>st</sup>**

Top 3 Patients for Fall Precautions

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

Patient/Family Issues

1. \_\_\_\_\_

Most Unstable Patient

1. \_\_\_\_\_

Highest Acuity

1. \_\_\_\_\_

**Shift: 2<sup>nd</sup>**

Top 3 Patients for Falls Precautions

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

Patient/Family Issues

1. \_\_\_\_\_

Most Unstable Patient

1. \_\_\_\_\_

Highest Acuity

1. \_\_\_\_\_

## **Tips for Using Teach Back to Redesign Patient Teaching**

- Use Teach Back with patients to improve understanding of:
  - The reasons that the patient is at risk for falling and/or injury
  - The reasons fall prevention is important
  - Actions the patient can take to stay safe
  - The importance of patients asking for help when accessing the bathroom
  - The location and use of the call light
  - The importance of using non-slip footwear
- When using Teach Back, the nurse should explain needed information to the patient or family caregiver and then ask in a non-shaming way for the individual to explain what he or she understood.
  - For example, “I want to be sure that I did a good job of teaching you about staying safe from falling in the hospital. Can you please tell me in your own words how you can prevent falling?”
- If the staff member identifies a gap in understanding, he or she should offer additional teaching or explanation, followed by a second request for Teach Back.
- “Return demonstration” or “show back” is another method for “closing the information loop.” When using this technique, the nurse asks the patient to demonstrate how he or she will perform an action that was just explained. Many teams successfully used the technique to improve patient understanding and use of the call light.
  - One medical and surgical unit reported that 20 percent of patients who initially demonstrated successful use of the call light could no longer use the light 30 to 60 minutes later. The team instituted more aggressive interventions to protect these patients.
- Incorporate “Ask Me 3,” another useful patient communication and education tool, to assist staff in patient education. Ask Me 3 promotes three simple but essential questions that patients should ask their providers in every health care interaction:
  1. What is my main problem?
  2. What do I need to do (for that problem)?
  3. Why is that important?

Ask Me 3 also advises patients to ensure that they always receive information about their care using these questions. Ask Me 3 materials are available at <http://www.npsf.org/askme3/>.

1. Break down the content into 2 to 4 simple, “need to know” concepts using the Ask Me 3 questions.
2. TEACH the patient.
3. Ask the patient to TEACH BACK the information.
4. ANALYZE your results using the questions that follow:

What percent of information could patients Teach Back?

What did you learn?

What surprised you?

What are you curious about now?

Next steps you planned as a result of findings?

**Test of Change Data Report Form**  
**PDSA on Using Ask Me 3 and Teach Back to Redesign Patient Teaching**

<b>PATIENT</b>	<b>TEACHING POINT #1</b>	<b>TEACHING POINT #2</b>	<b>TEACHING POINT #3</b>	<b>SCORE</b>	<b>LESSONS LEARNED</b>

**Sample Test of Change Data Report  
PDSA on Using Ask Me 3 and Teach Back to Redesign Patient Teaching**

<b>PATIENT</b>	<b>TEACHING POINT #1</b>	<b>TEACHING POINT #2</b>	<b>TEACHING POINT #3</b>	<b>SCORE</b>	<b>LESSONS LEARNED</b>
Age/Gender: 67F  Admitting dx. Lt. knee replacement	At risk for falling because of the surgery on her knee	How to call for help. Review of the call light system.	Why it is important to ask for help. Pain medication may cause dizziness and confusion that may increase your risk for falls.	0%	Patient unable to call for assistance so increased fall precautions required
Age/Gender: 68F	Up with walker, weakness, IV pole	How to call for help. Review of the call light system.	Why it is important to ask for help. The IV pole is hard to move and it may cause you to trip and fall.	75%	Patient didn't see using a walker with an IV pole as a fall risk
Age/Gender: 72M  Admitting dx. Weakness & SOB	At risk for falling because of weakness and shortness of breath	How to call for help. Review of the call light system.	Why it is important to ask for help we are concerned that you are a risk for falling and getting hurt; we want to keep you safe.	100%	Patient able to repeat back all teaching points  Patient already placed on fall precautions (Morse fall score >45)
Age/Gender: 85F  Admitted for CHF	At risk for age, shortness of breath	How to call for help. Review of the call light system.	Why it is important to ask for help: Because you are short of breath we fear that you will need our help to walk. You might fall and get hurt,	50%	Patient able to repeat her risks, but struggled with the call light and why important to call nurse

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			requiring you to stay in the hospital longer.		
Age/Gender: 27M  Admitting dx. s/p MVA with Lt. radial fx.	d/t pain medication which can cause dizziness, confusion and reduced mobility of left arm	How to call for help. Review of the call light system.	Why it is important to ask for help: Because of your dizziness and weakness of your arm, we are afraid you will fall and get hurt. The bathroom is a place where it is easy to fall and surfaces are very hard.	100%	Patient able to repeat back all teaching points  Patient not placed on fall precautions (Morse fall score <45), but nurses were worried that confusion could return

Conclusions: Teach Back used in conjunction with Ask Me 3 teaching and using the fall risk assessment tool was valuable in assessing the patients’ understanding of “if and how they could call for help.” Staff who participated in the Teach Back explained that by questioning the patients about their understanding of “how to call for help” and the patients’ ability to repeat back the why and how to call for help provided an extra assessment needed to aid in preventing falls.

### Hourly Rounding Form

**Purpose:** The purpose of this log is for data collection on hourly patient rounding ensuring clinical accountability and keeping our patients and families informed.

**Instructions:** The log serves as documentation of hourly rounds. Completed logs are submitted to the Clinical Supervisor daily for review and compliance. The Manager will retain the log for 30 days.

Date: \_\_\_\_\_ Room # \_\_\_\_\_ (Do NOT include name)

Time Standard Time Military Time	Initials of Person Rounding	Time of Rounding Visit	Reason for Patient Unavailable	
			Sleeping	Off unit / Out of room
6 – 7 a.m. 0600 - 0700				
7 – 8 a.m. 0700 - 0800				
8 – 9 a.m. 0800 - 0900				
9 – 10 a.m. 0900 - 1000				
10 – 11 a.m. 1000 - 1100				
11 a.m. – 12 noon 1100 - 1200				
12 noon – 1 p.m. 1200 - 1300				
1 – 2 p.m. 1300 - 1400				
2 – 3 p.m. 1400 - 1500				
3 – 4 p.m. 1500 - 1600				
4 – 5 p.m. 1600 - 1700				
5 – 6 p.m. 1700 - 1800				
6 – 7 p.m. 1800 - 1900				
7 – 8 p.m. 1900 - 2000				
8 – 9 p.m. 2000 - 2100				
9 – 10 p.m. 2100 - 2200				
10 – 12 a.m. 2200 - 2400				
12 a.m. – 2 a.m. 2400 - 0200				
2 a.m. – 4 a.m. 200 - 0400				
4 a.m. – 6 a.m. 400 - 0600				

Do not put patient label or identifying information on this form;  
not a part of the permanent medical record.

## **Biomechanics of Falls from Bed and Bedside Floor Mats**

Veterans Administration VISN 8 Patient Safety Center of Inquiry, Tampa, Florida

1. Based on laboratory research using an instrumented mannequin at the VISN 8 Patient Safety Center, the force of fall from a bed can cause mild, moderate, or severe injury depending on height of bed and floor surface. Head-first falls that can occur when a person rolls out of a bed were compared to feet-first falls that can occur when a frail or weak person tries to get out of bed without assistance.
2. Biomechanical forces of falling from bed can be minimized with the use of height-adjustable low beds that are kept in the low position and lowering side rails to decrease the height of a fall, and using bedside floor mats to decrease the impact of a fall.
  - Although calculated Head Injury Criteria (HIC) values (i.e., a value used in the automotive industry to correlate acceleration with injury severity), suggested a 40% chance of sustaining a serious brain injury as a consequence of a feet-first fall from bed, the use of a mat significantly reduced risk by an average of 72% across bed heights ranging from 0.34m to 0.98m.
  - Falls onto an unprotected surface did not present any significant risk of hip fracture, and use of a bedside floor mat reduces pelvis impact forces by only 6%.
3. In some of the trials the mannequin's head hit the bare floor at the headboard end of the bed when the bedside floor mat was in place, and occasionally hit the floor to the side of the mat. The head may also strike furniture near the head of the bed.
  - Based on this finding, the size of the floor mat is an important consideration for use. It is most prudent to use a mat that extends beyond the head of the bed and one that is at least 44 inches wide.
  - Furniture near the head of the bed should be placed with care and sharp edges should be padded for persons likely to fall from bed.
4. Researchers at the VISN 8 Patient Safety Center are currently investigating the energy absorbing properties of different flooring surfaces and bedside floor mats.
5. Other considerations of using bedside floor mats were not addressed by this study.
  - Although there is no empirical evidence to support the use of mats with beveled edges, in theory, beveled edges should decrease tripping risk. Anecdotally, nurses who have used mats with beveled edges reported that the beveled edge seems to reduce tripping risk. Make sure the edges of the mat do not curl up over the life of the mat.
  - Check with the manufacturer for cleansing instructions. Work with your local environment of care/housekeeping service to establish a routine cleaning schedule and process.
  - Many staff store mats underneath the bed when the patient is not in the bed. Mats that are constructed with fold lines may be easier to store than ones that cannot be folded.

## Gait Belt FAQs

### What is a gait belt?

- Gait belts are thick fabric belts that give staff a place to hold onto the patient to assist with balance and support of the patient. Contact your supervisor for location of gait belts on your unit.

### Why should you use a gait belt?

- Gait belts should be worn to ensure safe mobility for patient and staff, and also to decrease staff liability.

### Who should use a gait belt?

- Every staff member that assists patients with mobility, including transfers and ambulation.

### Where should you place a gait belt?

- Most gait belts are placed at the waist level. Some patients have injuries or surgery that require the belt to be placed higher or lower than waist level.

### When should you use a gait belt?

- Gait belts should be worn ***every time you assist a patient with mobility!!!***
- Gait belts should be worn in patient's room, in the halls if ambulating, or any place patient will need to transfer from one surface to another.

### How do you use a gait belt?

- Buckling the belt: Bring the metal end through the teeth side of the buckle and pull snugly, and then thread the metal end through the other end of the buckle.
- Holding the belt: Depending on the level of assistance that the patient requires, one hand can be placed on the belt threading fingers from the bottom towards the top of the belt or two hands can be used on each side of the belt at patient's waist. If patient has a weaker side, spotter must stand on that side (i.e., patient with right-sided paralysis, you stand on their right side), or if patient requires a great amount of assistance more than one person should be holding onto the belt.