



Prevention of Hospital Falls

An RWJF national program

SUMMARY

Patient falls have long been a common and serious problem in hospitals across the nation, causing substantial injury, even death. In 2006–2007, eight hospital organizations collaborated with the Institute for Healthcare Improvement (IHI) in Cambridge, Mass., to test a preliminary package of interventions aimed at preventing harmful patient falls.

Informed by feedback from the hospital sites, an IHI team developed and disseminated a final package of strategies to prevent injuries from patient falls in acute care hospital units.

The program was a spin-off from *Transforming Care at the Bedside*, a national program launched in 2003 by the Robert Wood Johnson Foundation (RWJF) to improve the hospital environment and nursing care.

Key Results

- In 2008, IHI published on its website a 75-page guide to help hospital staff identify patients at risk for serious injury from a fall and to implement interventions to prevent or mitigate fall-related injuries.

The document ([Transforming Care at the Bedside How-to Guide: Reducing Patient Injuries from Falls](#)) outlined four "promising" approaches to reducing falls and related injury:

- Assess risk of falling and risk for a serious or major injury from a fall
 - Communicate and educate about patients' fall risk
 - Standardize interventions for patients at risk for falling
 - Customize interventions for patients at highest risk of a serious fall-related injury
- Most of the hospitals that piloted the interventions demonstrated reduced rates of fall injuries or showed "promising downward trends" in fall injuries, the IHI team reported.

However, data inconsistencies and a constrained testing period made it difficult to evaluate whether improvements resulted from the interventions, the team cautioned.

Key Lessons Learned

- *Comfort rounds*—visits by nurses to check patients for toileting needs, pain and overall condition—are particularly important for patients with altered mental status and incontinence.
- Monitor patients in the bathroom to reduce risk of fall and injury.
- Integrate the instructional technique called *teach back*—asking a person to repeat what has just been taught—into fall-prevention education of patients and families.
- Do not automatically dismiss the young patient as a low risk for fall or injury.
- Customize interventions based on changing patient conditions throughout the hospital stay.
- Immediate *post-fall huddles*—informal staff meetings to analyze factors that contributed to a fall—improve nurses' critical thinking, increase effectiveness of interventions and build the unit's knowledge of fall and injury prevention.

Funding

RWJF funded the program from January 2006 through September 2007 with one grant to the Institute for Health Improvement of \$197,759 and eight grants to participating hospitals totaling \$151,081.

CONTEXT

The Problem of Patient Falls

Patient falls have long been a common and serious problem in hospitals across the nation, causing substantial injury, even death.

Researchers at the Washington University School of Medicine in St. Louis analyzed 183 patient falls at a local hospital over a three-month period and found:

- 76 falls (42%) resulted in some type of injury.
- 14 falls (8%) involved moderate or severe injuries, including lacerations, fractures, head traumas and one "cardiac arrest with death."¹

¹ Hitcho et al. "Characteristics and Circumstances of Falls in a Hospital Setting: A Prospective Analysis." *Journal of General Internal Medicine*, 19(7): 732–739, 2004.

- The risk of serious injury from a fall increases with age, making older patients especially vulnerable.

Hospital Falls: An Impact on Nurses

Falls also have a negative impact on nurses and their work environment. Falls affect nurses' mission as the front-line caregiver and reduce job satisfaction and workforce retention.

Falls divert nurses from their other duties, explains Susan Hassmiller, Ph.D., R.N., RWJF senior adviser for nursing. A physician has to be called, and paperwork has to be completed to document the incident for potential litigation and other purposes, she says. "It takes you completely away from the job you should be doing and [from] paying attention to other people."

Beyond the impact on patients and nurses, fall injuries increase the cost of health care and can lead to expensive legal action.

Fall-Prevention Efforts

Health care-related organizations have increasingly recognized the importance of preventing falls. Hospital prevention strategies generally have focused on assessing patients for their likelihood of falling and directing increased observation and other interventions to patients at heightened risk.

In 2004, the National Quality Forum, a Washington-based agency focused on improving the quality of health care, underlined the significance of fall prevention by including the frequency of falls and fall injuries among 15 performance measures of nursing care in hospitals. The Joint Commission, the organization that accredits health care organizations, published specifications to implement these "nursing sensitive" measures (*Implementation Guide for the National Quality Forum Endorsed Nursing-Sensitive Care Performance Measures*, original 2005 version updated in 2009).

RWJF supported development of both the performance measures (see [Program Results Report on ID# 047479](#)) and the implementation guide (see [Program Results Report on ID# 051781](#)).

Despite these efforts, however, relatively little research evidence existed to help hospital nurses and other front-line staff know what combinations of interventions were most likely to be effective in preventing falls.

For a definition of *patient fall* and a brief explanation of *patient fall rates* and *injury classification levels*, see [Appendix 1](#).

THE PROGRAM

Program Strategy

Prevention of Hospital Falls was developed in 2005 under the aegis of RWJF's Nursing Team. The team selected falls prevention as a priority because of their prevalence and impact on medical-surgical units. By funding this program, the Nursing Team aimed to partially fulfill one of its performance measures: the development and spread of innovations that can have an impact on improving the work environment.

It grew out of RWJF's *Transforming Care at the Bedside* (TCAB) national program. TCAB was designed to create, test and spread prototype hospital nursing unit-level strategies to improve the work environment and quality of care.

For a brief overview of TCAB, see [Appendix 2](#).

Program Design

The goal of *Prevention of Hospital Falls* was to develop and disseminate a comprehensive set of changes that nurses and other front-line hospital staff could make to reduce harm from falls on inpatient medical-surgical units.

RWJF provided an 18-month, \$197,759 grant (ID# 055297) to the Institute for Healthcare Improvement (IHI) to guide the program as an adjunct to its responsibilities in directing *Transforming Care at the Bedside*.

RWJF also provided \$19,000 to each of eight hospital organizations, chosen and assisted by IHI, to implement and test interventions to prevent harm from falls at their organizations.

Shift in Focus

The program's design originally focused on preventing falls in hospitals. However, the IHI team overseeing the work shifted the primary focus, with RWJF's concurrence, to preventing *harm* from falls—specifically, fall-related injuries of moderate or greater severity on the injury scale used by the Joint Commission. (See [Appendix 1](#).) Simply put, those are serious injuries—injuries involving sutures, fractures and, at the extreme, death.

To reflect the change in focus, IHI renamed the program Preventing Patient Injuries from Falls. The prevention of all falls, while still an objective, became secondary to preventing harm from falls.

Patricia Rutherford, M.S., R.N., vice president of the IHI and director of both *Transforming Care at the Bedside* and Preventing Patient Injuries from Falls says "The change in focus came through ongoing learning.... What we've learned from other

initiatives is [the value of] having a more laser focus on preventing injury as opposed to [preventing] errors."

For the full set of key assumptions underlying the program, see [Appendix 3](#).

The IHI Team

The same five-member team of IHI staff and consultants that guided Transforming Care at the Bedside oversaw the program. (See Appendix 4 for a list of team members.) While Preventing Patient Injuries from Falls was separately funded, IHI staff viewed it as part of the overarching TCAB improvement effort—"an accelerant" to TCAB, says Rutherford.

The IHI team conducted activities in three phases. The team:

- Designed a preliminary set of interventions to prevent serious injury from falls in acute care hospitals—what the team termed a "prototype change package"
- Selected eight hospital organizations to test the interventions on select medical-surgical units and assisted the organizations in the test process
- Prepared a final package of recommendations for dissemination, incorporating the results and lessons from the test sites

Phase 1: Prototype Package

Development and Content

In January 2006, at the program's outset, the IHI team convened some 20 fall-prevention experts (physicians, nurses and academics) to get guidance on implementing and measuring interventions to prevent injury from falls.

The team also searched the published literature on patient falls and found that information specifically on injury from falls was sparse. Notably, the review indicated that there was no standardized tool to help clinicians screen patients for their risk of injury from a fall.

However, the literature did indicate that certain patient populations were at heightened risk of fall injury. Based on that information, the team members decided that interventions should focus on patients with one or more of these four risk factors:

- Age greater than 85 years
- Osteoporosis or other bone-thinning disorder (risk for fracture)
- Bleeding disorder or use of an anticoagulant (risk for excessive bleeding after trauma)
- Post-surgery, especially abdominal or thoracic surgery or lower-limb amputation

The team next developed the prototype or preliminary package of steps that hospital staff could take to prevent patients from sustaining serious injury from falls. The proposed strategies were to supplement—not replace—existing fall-prevention efforts.

The package developed by the team was not a tight prescription but a framework to guide hospital staffs in implementing three general strategies:

- "Universal" fall-prevention strategies for ensuring environmental safety (for example, identifying and removing physical hazards from hospital rooms and hallways) and for educating hospital staff, patients and their families in patient safety practices
- Assessment of patients for fall and fall-injury risk on admission and when their clinical conditions change
- Interventions customized to the patient's risk for fall and for injury from a fall. For a patient with both risks, staff would apply a combination of approaches, such as:
 - Providing personal protective equipment, such as hip protectors and helmets
 - Placing floor pads at the bedside
 - Using height-adjustable beds, placed in the lowest position
 - Increasing the frequency of *comfort rounds*—room visits to check the patient for toileting needs, pain and overall condition
 - Reviewing medications in collaboration with the pharmacy to reduce or eliminate sleep-inducing or other drugs that can increase the risk of falls or injury from falls

Data and Measures

Concluding that there was no established national benchmark for injury from falls in hospitals, the team created the following performance target for the program sites:

- One or fewer falls resulting in moderate or more severe injuries per 10,000 patient days

Fall rates are usually expressed as falls per 1,000 patient days. Because falls resulting in serious injury are relatively rare, the team believed a larger denominator (10,000 versus 1,000) would yield rates in whole numbers, thereby making the injury fall-rate data more meaningful to users. (For a brief discussion of fall rates and injury severity levels, see [Appendix 1](#).)

The Institute for Healthcare Improvement team established guidelines regarding data to be collected by hospitals chosen for the initiative. Hospitals would select a unit to pilot the prototype package. Hospital staff would then collect data on the number and severity of injuries from falls over the previous five years for both that unit and for the hospital as

a whole (excluding intensive care, obstetrics and certain other units). This became the baseline for comparison.

The team also decided to ask sites to:

- Analyze the most recent 20 injury falls on the pilot unit, identify factors that might have heightened the patient's risk for injury and consider interventions that might have prevented the injury
- Track and report fall injuries monthly during the test period
- Report the rate of *all falls*, including those causing little or no harm, for the pilot unit and hospital as a whole (minus the intensive care, obstetrics and certain other units) during the baseline and intervention periods. The purpose was to determine if all falls dropped during the intervention period. (For the all-fall rate, the sites were to use 1,000 patient days as the denominator, not the 10,000 patient days used for injury falls.)

Phase 2: Participating Hospitals

Selection

The team chose eight test hospitals based on an informal assessment of their previous work in fall reduction and experience with quality improvement methods. These were "hospitals that we thought were top performers [and] could accelerate our learning," says Rutherford.

RWJF gave each of the eight organizations a one-year, \$19,000 grant to support planning, data collection and other work on the initiative. Site grant start dates ranged from July to October 2006. Each is described in a sidebar at the end of this report.

The hospitals and their project titles were:

Allina Health System (Minneapolis, Minn.)

- Developing innovative interventions to reduce harm from falls at hospitals. See [Sidebar](#) for activities and results.

Iowa Health System (Des Moines, Iowa)

- Testing and implementing promising new diagnostics measures and ideas in Iowa hospitals to significantly reduce falls. See [Sidebar](#) for activities and results.

James A. Haley Veterans' Hospital (Tampa, Fla.)

- Hip fracture for vulnerable patients in acute care. See [Sidebar](#) for activities and results.

Kaiser Foundation Hospitals (Roseville, Calif.)

- Evidence-based program designed to decrease patient falls and fall-related injuries. See [Sidebar](#) for activities and results.

Long Island Jewish Medical Center (New Hyde Park, N.Y.)

- Identifying the best assessment tool to substantially decrease or eliminate harm from falls. See [Sidebar](#) for activities and results.

Meriter Hospital Inc. (Madison, Wis.)

- Three hospitals used a multihospital approach to develop innovative ideas to reduce falls and collaboratively disseminate information. See [Sidebar](#) for activities and results.

Sentara Healthcare-Sentara Virginia Beach General Hospital (Virginia Beach, Va.)

- Validating a combination of interventions to reduce falls and prevent injury in the Sentara Healthcare System. See [Sidebar](#) for activities and results.

University of Texas M.D. Anderson Cancer Center (Houston)

- Testing interventions to prevent falls in a comprehensive care center. See [Sidebar](#) for activities and results.

At the IHI team's request, an additional organization (Spaulding Rehabilitation Hospital in Boston) participated without RWJF funding, bringing the number of hospitals involved to nine. The addition of a rehabilitation hospital permitted testing in a non-acute care setting.

For grant numbers and contact information, see [Appendix 5](#).

Activities

Each participating hospital (except for the rehabilitation hospital) chose a medical-surgical unit to pilot the interventions and formed a multidisciplinary team to carry out its project. In addition to physicians, nurses and nursing assistants, the teams included pharmacists, risk and quality improvement managers and hospital executives.

Hospital teams reviewed patient charts and incident reports to collect retrospective falls data and examined the data to identify gaps in existing prevention strategies. (Not all of the hospitals, however, fully complied with the IHI team's data requests. See [Challenges](#), below.)

Drawing on insights that emerged from the data, their own experiences and assistance from the IHI team, the hospital teams tailored the prototype package developed by the IHI team to their hospital's needs. They then began testing interventions in the pilot units.

The IHI team instructed the local staffs to first test each change on a small scale—as small as a single nurse working with a single patient. Learning from the results, staff were to refine the intervention, retest it on a larger scale, and continue the process until the intervention was ready for broad application—a cycle central to IHI's [improvement methodology](#).

Intervention Example: Identifying At-Risk Patients

While the prototype package set out general approaches, the specifics of the interventions differed from site to site. For example, to facilitate staff communications, the package proposed labeling at-risk patients. The test sites met that objective in a variety of ways:

- St. Luke's Hospital in Cedar Rapids, part of the Iowa Health System, stuck magnetic caution signs resembling a highway stop sign outside the rooms of patients at greatest risk of fall or injury.
- Trinity Regional Health System in Rock Island, Ill., another Iowa Health System affiliate, posted a yellow leaf at the door of patients at risk for fall and added a red leaf for patients also at risk for injury from fall.
- Kaiser Permanente Roseville Medical Center in California used a series of color-coded doorway cards depicting the number of staff needed to help the patient ambulate.
- Sentara Healthcare in Virginia Beach placed a small, color-coded fleece lap blanket on the beds of at-risk patients (or on their legs when sitting in a chair or wheelchair).

Phase 3: Final Package Development

Rutherford describes Preventing Patient Injuries From Falls as a partnership between the IHI team and the local project staffs, the former making recommendations, the latter testing them, suggesting improvements and reporting results, and IHI reporting these results to the field. Through this process, the change package evolved over the life of the program.

To facilitate this collaboration, the IHI team:

- Held biweekly Web/telephone conferences with the local teams.
- Conducted site visits to three hospitals to observe the interventions, assess factors contributing to their success and identify additions to the change package.
- Convened a face-to-face meeting of the local staffs in May 2007 to harvest best practices, obtain data, share experiences and reassess the content of the intervention package.

Drawing on the results and lessons from the test sites, the IHI team prepared a final set of recommendations for dissemination. See [Overall Results](#) for a description of the report and recommendations.

Challenges

The Institute for Healthcare Improvement reported to RWJF that the program encountered a number of important challenges.

Time Constraints

The prescribed action period for implementation and testing was to be 10 months—June 2006 through March 2007. In reality, however, the sites had to collect and analyze their retrospective data before they could begin making changes. Therefore, most sites could not begin to implement and evaluate their interventions until late 2006.

The shortened action period "made it difficult to actually understand whether the prototype change package achieved the intended results," the IHI team reported.

To gain more time to work with the sites and analyze their data, IHI requested and received from RWJF a six-month extension of what was initially a 12-month grant.

Even so, there was not enough time to fully assess the impact of the interventions. Given the infrequency of serious injury falls, even the full 10 months would have been insufficient. "You need to look at injury from falls over a two- [or] three-year period of time to really make conclusions about results" says Rutherford. See [Appendix 1](#) for falls categories; the bottom three categories are considered serious falls.

Inconsistent Data

Not all sites reported the five years of baseline data or monthly project results, nor did they all use the measures prescribed by the IHI team. These inconsistencies added to the difficulty of determining the impact of the interventions on injury prevention.

To address this problem, the IHI team set up frequent e-mail and phone communications to help guide site staffs in data collection and reporting. The team also simplified the reporting template used by the sites.

Preventing Patient Injuries From Falls was, however, a quality improvement program, not a research program. Therefore, IHI team members believed they could make data requests of the sites but not demands.

The problems and inconsistencies in data reduced what could be learned but did not destroy the program, says Rutherford. "This grant was about learning, and to accelerate progress here, and we think we were successful in that" she says.

Limited Testing of New Technology

Some hospital teams hesitated to acquire and test new injury-prevention equipment, such as floor mats and hip protectors. There was limited evidence of the devices' effectiveness, and the teams faced organizational or budgetary barriers to acquisition for test purposes.

Also, some team members saw protection devices, such as helmets and hip pads, as impositions on patients. In addition, they were concerned about unintended consequences, such as skin breakdown with hip protectors or tripping on the floor mat.

To avoid this problem in the future, the IHI team suggested selecting sites willing to test unproven interventions and also coaching hospitals on how to acquire equipment on a temporary or trial basis.

RESULTS

Rutherford and the IHI team reported the following results:

Overall Results

- **In 2008, IHI published on its website a 75-page document to help hospital staff identify patients at risk for serious injury from a fall and to implement interventions to prevent or mitigate fall injuries.**

Written by members of the IHI team and incorporating results from Preventing Patient Injuries from Falls and the broader RWJF program, *Transforming Care at the Bedside* (see [Appendix 2](#) for more information), the report *Transforming Care at the Bedside How-to Guide: Reducing Patient Injuries from Falls* recommended four "promising" approaches to reducing falls and related injury.

— Assess risk of falling and also risk for a serious or major injury from a fall:

- Perform standardized fall risk assessment for all patients on admission and whenever patients' clinical status changes.
- Identify at every shift the patients most at risk of moderate to serious injury from a fall.

— Communicate and educate about patients' fall risk:

- Communicate to all staff information regarding patients who are at risk of falling and at risk of sustaining a fall-related injury.
- Educate the patient and family members about the risk of injury from a fall, both on admission and throughout the hospital stay, and about what they can do to help prevent a fall.

- **Standardize interventions for patients at risk for falling:**
 - Implement both hospital-wide and patient-level improvements to the patient care environment to prevent falls and reduce severity of injury from fall.
 - Perform *comfort rounds* hourly or every two hours to assess and address patient needs for pain relief, toileting and positioning.
- **Customize interventions for patients at highest risk of a serious or major fall-related injury.**
 - Increase the intensity and frequency of observation.
 - Make environmental adaptations and provide personal devices to reduce risk of fall-related injury.
 - Target interventions to reduce the side effects of medications.

The *How-to Guide* includes:

- Step-by-step activities to implement these four approaches and specific interventions associated with each
- Case studies of changes made by two of the Iowa Health System's participants (Luke's Hospital, Cedar Rapids, Iowa; and Trinity Medical Center, Rock Island, Ill.) and by the Sentara hospitals in Virginia Beach and Norfolk, Va.
- Resources and tools from hospitals engaged in the work, such as a form for assessing the hospital environment for fall risks and another for logging hourly rounding stops
- **IHI also disseminated information on fall injury prevention through:**
 - A [section](#) of its website devoted to the problem of patient falls, with links to outside resources.
 - A one-time [Web-based education program](#) for health care professionals. The program, part of the IHI's Web&ACTION series, ran from May to July 2007.

The IHI team drafted a 39-page manuscript (“Preventing Injury from Falls”) describing the program, site activities and results. IHI staff planned to refine the document and publish it on its website, but as of late 2009, the manuscript remained in draft form.

Overall Results at the Hospitals

- **"Most of the hospitals demonstrated reduced rates of fall injuries during the program, or they are currently showing promising downward trends" in fall injuries, according to Rutherford.**

At the program's conclusion, participating hospitals were in the process of spreading their interventions beyond the pilot units, potentially affecting additional patient populations.

Pilot Unit Results: Injury Falls

- **Baseline performance:** At the beginning of the program, 11 units submitted baseline data. Five of them met the target of one or fewer injury falls of moderate or greater severity per 10,000 patient days at baseline.
- **Project performance:** By the end of the program, six units had gone 10 months without a fall of moderate or higher injury and "showed promise that, given more time, they would achieve the design target." Among the other units:
 - Three were "very close to achieving" the target.
 - The "remaining units have more improvement to make before approaching the design target."

IHI's report did not break down the data by hospital or relate the aggregate baseline data to the aggregate program results. This makes it impossible to know to what extent the five units on-target at baseline overlapped the six without an injury fall during their projects.

In an interview, Rutherford said confidentiality considerations prevented disclosure of individual hospital results. She also explained that in addition to fall-injury data, the performance result reflects the IHI team's assessment of the sites' intervention processes—how reliably, for example, pilot-unit nurses conducted hourly comfort rounds.

Pilot Unit Results: All Falls

- **Baseline performance:** Among the seven units that submitted baseline data on all falls (including falls resulting in little or no harm), fall rates ranged from 3.90 to 6.40 falls per 1,000 patient days, so no unit met the target. (The rehab hospital rate was 7.22—a reflection of its different patient population, the IHI team said.)
- **Project Performance:** At the end of the program, four of the seven units had fall rates for all falls below 3.5 per 1,000 patient days, thus falling within the "better performers range" (2.5 to 3.5) identified by researchers conducting a separate, unrelated study. (See [Appendix 1](#) for more on fall rates.)

Hospital-wide Results

In addition to their pilot units, the project sites were to report fall and injury data for their hospitals as a whole, excluding intensive care, emergency room and certain other units (psychiatric, obstetric, rehabilitation and outpatient).

At the conclusion of the program, the IHI team reported the sites provided the following hospital-wide data on falls resulting in serious injury and on all falls:

Injury Falls

- **Baseline performance:** Seven hospitals provided hospital-wide data on injury falls for the five-year baseline period. Of those, four met the target (one or fewer injury falls of moderate or greater severity per 10,000 patient days) prior to the program's start.
- **Project performance:** At the end of the program, 10 hospitals submitted hospital-wide data on injury falls during their project periods. Of those, eight "showed promise in meeting the design target, based on an average of 10 months of data. However, 10 months of data are insufficient for assessing whether hospitals achieved the design target because falls of moderate or higher injury severity are rare," according to IHI.

All Falls

- **Baseline performance:** Nine hospitals provided baseline data on all falls hospital-wide. The fall rates for *all falls* ranged from 2.44 to 5.7 falls per 1,000 patient days. (The 5.7 rate was reported by the rehabilitation hospital and may reflect a patient population at higher risk of fall, according to the Institute for Healthcare Improvement.)
- **Project performance:** At the end of the program, nine hospitals reported fall rates for all falls in the 2.5 to 3.5 per 1,000 patient day range, which an unrelated fall-reduction team at another hospital system identified as the "better performers range." Four of the nine had a rate below 2.5 falls per 1,000 patient days. (See [Appendix 1](#) for more on fall rates.)

The team did not attempt to relate the hospital-wide results to the pilot-unit results other than to note that more hospitals than pilot units achieved the 1/10,000 target for injury falls. The team suggested a possible explanation is that hospitals selected pilot units with relatively high injury-fall rates.

Site-Specific Results

In addition to the aggregate results reported by the IHI team, each of the eight grantee organizations reported separately to RWJF on its interventions and results.

Limitations

The IHI team identified a number of limitations in assessing the results of the program. See [Appendix 6](#) for a full discussion of these limitations.

RECOMMENDATIONS & LESSONS LEARNED

Recommendations

In the unpublished manuscript *Preventing Injury from Falls*, the Institute for Healthcare Improvement (IHI) team made the following recommendations for future work in reduction of hospital falls resulting in injury:

- **Raise the standard for serious injury falls to one or fewer per 10,000 patient admissions (instead of patient days), and add a second measure: the number of days between injury falls.** Because injury falls are rare, tracking the time between them may be a more sensitive measure of changes in frequency than a rate based on the number of falls per patient days or admissions.
- **Replicate the program in hospital units other than medical-surgical units as well as in long-term care, home care and rehabilitation settings.**
- **Develop and test a tool to assess the risk of injury from falls.** The site teams were expected to assess patients for risk of injury from falls and found the lack of a screening tool to be a problem. (The IHI team could not find a standardized assessment tool in the literature and did not create one of its own.)
- **Create and/or test a curriculum to enhance nurses' judgment and critical thinking regarding the prevention of injury from falls.**
- **Address the particular needs of cognitively impaired patients. Also, investigate prevention of emotional injury due to falling.**

Lessons Learned

The IHI team identified the following as the key lessons learned by program participants:

Lessons for Patient Fall and Injury Prevention

1. **Comfort rounds are particularly important for patients with altered mental status and incontinence.** The site staffs confirmed the experts' belief that regularly checking patients for toileting needs constituted the change most likely to prevent falls and injury from falls.
2. **Monitor patients in the bathroom to reduce risk of fall and injury.**
3. **Integrate the instructional technique called *teach back*—asking a person to repeat what has just been taught—into fall-prevention education of patients and families.** Use of this technique showed that many patients instructed about the danger and prevention of falls were unable to restate the information.
4. **Do not automatically dismiss the young patient as a low risk for fall or injury.**

5. **Customize interventions based on changing patient conditions throughout their hospital stay.**
6. **Immediate post-fall *huddles*—informal staff meetings to analyze factors that contributed to a fall—improve nurses' critical thinking, increase effectiveness of interventions and build the unit's knowledge of fall and injury prevention.**
7. **Be aware that shifting the focus from falls reduction to injury prevention may present a challenging paradigm shift for staff.** Some site teams were reluctant to test injury-prevention interventions that directly impacted patients, such as wearing helmets and hip protectors. They were more comfortable using indirect strategies, such as toileting rounds and teach back instruction.
8. **Don't rely on a single intervention to reduce fall injuries.** Project staff employed combinations of interventions to address multiple fall and injury risk factors.
9. **Risk assessment should be ongoing during the patient's entire hospital stay.** A patient's risk factors can change after admission and thus may require a change in interventions.
10. **Don't underestimate the importance of communication as a strategy in fall injury prevention.** Good communication is critical among caregivers, including at shift changes, and with patients and family members.
11. **Ensure that each unit has a fall-prevention champion.** The teams found that the presence of a staff member who championed falls prevention was pivotal in achieving unit improvement.
12. **Professional judgment trumps an assessment tool.** The teams found that nursing judgment and critical thinking played a larger role than assessment instruments in protecting patients from falls and injuries. When an instrument indicates a lack of risk but clinical judgment suggests otherwise, go with the latter.
13. **Realize that patient safety may compete with patient privacy and independence, and that balancing the two can be a struggle.** Project participants voiced concern about these competing priorities—for example, whether the need for a patient to ambulate was greater than the need to keep the patient safe by limiting their mobility.
14. **Some team members saw helmets, hip pads and other protection devices as an imposition on patients and a potential source of non-fall injury.** There was also concern about patient discomfort with visual cues denoting elevated risk.
15. **Recognize that analysis of retrospective fall data may not identify risk factors.** The teams found that reviewing the previous 20 injury falls was helpful in identifying gaps in care and corrective steps. However, reviews failed to identify specific factors that put patients at risk for injury from fall.

Lessons for Quality Improvement Generally

16. **Make sure at the outset of a program that there is enough time to accomplish the objective—especially if the program seeks to measure the impact of a comprehensive set of changes.** Program duration must be sufficient to implement interventions and track their impact over time. For an event that occurs only rarely, such as a fall that causes serious injury, 10 months is not long enough to measure change.
17. **Make sure that planned interventions are actually implemented and that requested data are reported.** The IHI and local project teams found that although protocols for fall assessment and prevention interventions were in place in the test units, implementation was often not reliable. In short, the required steps were not executed for every patient every time.
18. **Financial incentives to ensure compliance might be helpful in this regard.** Consider tying installments of grant funding to successful data reporting and intervention testing.
19. **Consider scheduling a face-to-face meeting of local teams at the start of a multi-site initiative.** The bi-weekly Web/telephone conferences convened by the IHI permitted coaching and information-sharing, but the members of the site teams met each other in person only at the end of the program. In hindsight, a physical get-together at the start might have helped accelerate the learning pace.

The IHI team held several face-to-face meetings of its own during the course of the program. Those were helpful, and even more such sessions might have been advantageous.

AFTERWARD

RWJF and the Institute for Healthcare Improvement continued to promote improved fall- and injury-fall prevention through the *Transforming Care at the Bedside* (TCAB) national program and the spread of TCAB processes to additional hospitals. (See [Appendix 2](#) for more information on TCAB.)

Grantee Organizations

The hospital organizations that participated in Preventing Patient Injuries From Falls continued many of the tested interventions and spread them to additional units and institutions within their organizations, according to representatives of the organizations contacted in late 2009 for this report.

The program "opened our eyes to the risk for harm" and stimulated "a more proactive, aggressive approach to intervention" to prevent harm from falls, said Linda Smith,

M.S.P.T., quality improvement coordinator for the Iowa Health System's Des Moines hospitals—a statement representative of others contacted.

Sidebars

ALLINA HEALTH SYSTEM

Creating and Testing A Best Practices Bundle of Interventions to Reduce Harmful Falls

United Hospital in St. Paul—a part of the [Allina](#) network of hospitals and other health services—developed and tested multiple steps to reduce harmful falls as part of a project, *Prevention of Hospital Falls* funded by the Robert Wood Johnson Foundation (RWJF) and managed by the Institute for Healthcare Improvement (IHI) in Boston, Mass. The process resulted in the creation of a "best practice" bundle of interventions, which was implemented on nursing unit 4900 and combined nursing unit 4920/4940.

Interventions

The bundle included the following:

- Assessment of all patients for fall risk on admission using a standardized screening tool (*Hendrich II Fall Risk Model*) and the nurse's professional judgment, with reassessment each shift and at any change in the patient's condition
- For patients at-risk for falls, application of a "fall risk kit" consisting of a magnetized label for the patient's room door, a sticker on the patient's chart and a yellow wrist band on the patient's wrist
- For at-risk patients assessed to be cognitively intact:
 - Discussion with the patient about why he or she was at risk for falling
 - A copy of an instructional document, *10 Tips for Preventing Falls*
 - A "verbal contract" in which the patient acknowledges his or her risk and pledges during the upcoming eight-hour shift to call for help before getting up
- For at-risk patients not cognitively intact:
 - Explanation of the risk to the patient and family members.
 - A copy of an instructional document, *10 Tips for Preventing Falls*.
 - Application of a personal monitoring device that alerts staff should the patient attempt to get up.
- For all patients, hourly rounds to assess for pain, positioning and toileting needs.

- For patients given a monitoring device or with a history of fainting or loss of consciousness, a staff member's presence during toileting.

Results

The hospital tracked falls on nursing unit 4900 and combined nursing units 4920/4940 over a 12-month project period ending June 2007. The results were mixed:

- Unit 4900 reduced its *overall fall rate* from an average of 5.74 falls per 1,000 patient days in 2005 (the baseline for this hospital) to 1.38 falls for the last quarter of the project period. The unit had no falls of either minimal or moderate/major harm.
- However, combined units 4920/4940 experienced an increase in its *overall fall rate*—from 1.80 during the 2005 baseline to 4.36 in the last quarter of the project period.

The *harmful fall rates* on the combined units also increased (see Appendix 1 in [Program Results](#) for definitions of categories of harmful falls.):

- Falls resulting in *minimal harm* rose from a baseline of 14.39 falls per 5,000 admissions to an average of 17.0—the result of eight falls during the project period. (The hospital used 5,000 admissions for its minimal-harm rate.)
- Falls of *moderate/major harm* went from 0 falls per 10,000 admissions at baseline to 4.42—the result of one fall during the project period (in November 2006). (For this rate, the hospital used 10,000 admissions.)

The project provided "an acute appreciation of the need to maintain focus on the targeted area for improvement," the team reported. "Sufficient time, focus and continual reinforcement with staff are critical to realize and sustain significant clinical quality improvements."

Lessons Learned

The following were the most important lessons learned about reducing harm from falls:

- Stay with the patient while he or she is toileting.
- Reinforce patient education during every shift is vital.
- It is important to assess and reassess the patient's cognition and to base interventions on the level of cognition.
- Patients who are not at high risk for falling but have osteoporosis or certain other conditions need fall-prevention interventions.

Afterward

The hospital reported at the end of the project that it planned to spread the prevention bundle to other units. As of late 2009, fall-prevention strategies in place throughout the

hospital included the following, according to Julie Sabo, M.N., R.N., director of practice and magnet program director:

- Red socks for patients at risk of falling, and yellow magnets for their room doors
- Bed alarms and other monitoring devices
- Proactive *rounds* to visit patients at risk of falling
- Discussions with patients or family about the risk of falling
- Verbal contracts with the patient to call for assistance before getting up
- Monthly meetings of "fall champions" to examine data, address problems and roll out prevention initiatives
- Immediate post-fall staff *huddles* conducted by the nurse in charge
- Consultation with a clinical nurse specialist to initiate special care for patients with a history of repeat falls or other complexities

IOWA HEALTH SYSTEM

Implementing Fall Prevention in Pilot Units in Three Hospitals

Iowa Health System—an integrated system operating in Iowa and western Illinois—implemented fall prevention in pilot units at three of its hospitals:

- St Luke's Hospital, Cedar Rapids, Iowa
- Iowa Methodist Hospital, Des Moines, Iowa
- Trinity Regional Health System, Rock Island, Ill.

The system's other hospitals (it owned a total of 10 during the grant period) participated indirectly by testing ideas and implementing changes shared by the pilot units. The project was part of *Prevention of Hospital Falls* funded by the Robert Wood Johnson Foundation (RWJF) and managed by the Institute for Healthcare Improvement (IHI) in Boston, Mass.

Interventions

The 12-month project, which began in July 2006, focused initially on collecting data and learning about prevention strategies. Testing and change implementation began in earnest in January 2007.

While the pilot units did not all implement identical interventions, all three did the following:

- Tested screening of patients for four risk-of-harm criteria: (age 85 or older, bone disorders, blood thinning and recent abdominal/thoracic surgery)
- Instituted post-fall staff *huddles* to review contributing causes to the fall and lessons for the future
- Created and used tools to increase staff communications regarding fall risks, including placing visual markers in and near patient rooms
- Made regular *rounds* to address patients' toileting needs
- Increased use of personal and voice response alarms
- Tested and implemented the *teach back* technique to gain knowledge of patient understanding of safety instructions
- Customized interventions and care based on the patient's risk assessment
- Engaged staff in review of every fall, and tested staff ideas for prevention improvements—an effort to increase critical thinking and awareness regarding fall prevention
- Bundled fall-prevention tools and supplies into ready packets kept in locations easily accessed by nurses

Results

The goal for the pilot units was to reduce the:

- Fall rate to one per 1,000 patient days
- Rate of fall-related injuries of moderate or greater severity to one or fewer per 10,000 patient days. See Appendix 1 in the [Program Results](#) for definitions of injury categories.

The pilot units did not achieve either goal during the project period (July 2006–June 2007). However, all three units reduced their fall rate at least minimally during the project period compared to the previous 12 months. Two units also reduced their rate of injury from falls:

- St Luke's:
 - Fall rate *down* from 5.95 to 4.25 per 1,000 patient days
 - Injury from falls rate *down* from 2.7 to 1.3 per 10,000 patient days
- Trinity Regional:

- Fall rate *down* from 4.54 to 4.08 per 1,000 patient days
- Injury from falls rate *down* from 3.2 to 1.1 per 10,000 patient days
- Iowa Methodist:
 - Fall rate *down* from 3.15 to 3.14 per 1,000 patient days
 - Injury from falls rate *up* from 0.0 to 1.5 per 10,000 patient days

(Because of data limitations, the baseline period for Iowa Methodist was the six months previous to the project's start, not 12 months.)

The reductions in falls in the pilot units were not statistically significant. However, during the same time period, the rate of fall injuries across all of the Iowa Health System hospitals showed statistically significant improvement.

As an explanation, the project team suggested that the test-and-implementation process slowed the pilot sites while other units were free to adopt the successful interventions and build on them. The post-fall huddle was one change that had a significant impact on the organization, the team members indicated.

Systemwide, the organization's hospitals had 14 fewer injuries from falls during the project period compared to the previous 12 months. The project team attributed "the saving of 13 out of the 14 injuries" to ideas and changes stemming from the project.

Afterward

After the project ended, the Iowa Health System spread interventions initiated by the project to all of its hospitals and continued to see improved outcomes, according to Gail A. Nielsen, B.S.H.C.A., the system's clinical performance improvement education administrator and director of its fall-reduction project. (She was also part of the team from IHI that guided the project.)

Nielsen cited this comparison:

- Before the project, the rate of moderate or more serious injuries from falls at the system's 10 hospitals ranged from 0.091 to 1.0 falls per 10,000 patient days.
- In the third quarter of 2009, the 10 hospitals had a combined rate of 0.071 serious injuries from falls per 10,000 days.

Nielsen attributed the progress to the RWJF-funded effort and to prevention-improvement work that continued with IHI.

JAMES A. HALEY VETERANS' HOSPITAL

Preventing Injury Falls on Two Medical Nursing Units

Staff reviewed the previous 22 injury falls in acute care settings at the [James A. Haley Veterans' Hospital](#) in Tampa, Fla. The review showed that in a majority of the falls, the patient had mobility difficulties, toileting issues and/or a history of falls. Other common factors included altered mental status/confusion and use of certain kinds of drugs. In all but two incidents, the patient had multiple risk factors. The project was part of *Prevention of Hospital Falls* funded by the Robert Wood Johnson Foundation (RWJF) and managed by the Institute for Healthcare Improvement (IHI) in Boston, Mass.

Staff used the review results to guide implementation and testing of changes to prevent injury falls on two medical nursing units: 5-South and 7-North.

Interventions

The two units tested the following:

- Safety *huddles* after a fall or a near miss. Staff discussed what happened, what should have happened and what could be done to prevent a future occurrence.
- The *teach back* technique to educate patients on why they are at increased risk for a fall injury. Staff asked at-risk patients to agree to call for help even if they thought they did not need it.
- Regular comfort, care and safety *rounds* to check on patients' conditions
- Precautions with patients at high risk for injury from fall. Staff applied the following precautions to patients with one or more specified risk conditions (including history of falls, osteoporosis and use of anticoagulants):
 - A room near the nurses' station
 - Chair and/or bed alarm
 - Bedside floor mat
 - Observation every hour via toileting and comfort rounding
 - Evaluation by an interdisciplinary team
 - Hip protectors for patients at risk for hip fracture
 - Non-skid socks
 - Visual identifiers of at-risk patients
 - Consideration given to:

- Moving the patient to a "low" bed, one that can be lowered to within inches of the floor
- Providing a helmet for patients at risk of head injury

Results

The goal was to reduce falls resulting in injury of moderate or greater severity to one or fewer falls per 10,000 patient days. The test period was June 2006–March 2007; the comparison baseline was October 2003–May 2006.

- Unit 5-South had no falls resulting in injury of moderate/greater severity, and so met the project goal.
- Unit 7-North did not meet the goal; it experienced one moderate/more serious fall during the project period, resulting in a rate of 1.69.
- The fall on 7-North was the only serious injury fall to occur in any of the hospital's acute care units during the test period. Reflecting that one fall, the hospital-wide rate for the study period was 0.30, thus meeting the project goal.
- Both pilot units and the hospital as a whole reduced injury fall rates (moderate and more serious) during the study period:
 - The 5-South rate dropped from about 1.5 to 0.0.
 - The 7-North rate dropped from about 4.5 to 1.69.
 - The hospital-wide acute care rate also declined—from just over 1.0 to 0.3.
- As of June 2007 the hospital had gone more than six months without a fall injury of moderate or greater severity. See Appendix 1 in [Program Results](#) for categories of fall injuries. (The 7-North fall occurred in late 2006.)

The hospital's team said the information and changes stemming from the project spread quickly to other units in the hospital and had promise of usefulness across the Veterans Health Administration (VHA).

Afterward

In an interview in late 2009, Pat Quigley, Ph.D., M.P.H., director of the project and deputy director of the Patient Safety Center for VHA facilities in Florida and Puerto Rico, said the 2006–2007 work did, in fact, have an impact beyond Haley. (Quigley was also a member of the IHI team.)

When the project started, the VHA was already a national leader in the use of hip pads to protect patients at risk for hip fracture from a fall, said Quigley. The RWJF project

focused the VHA's attention on reducing fall injuries among other kinds of at-risk patients. "It was transforming."

As an example of new thinking, Quigley cited the bundling of three interventions for people at risk for hip injury: protective hip pads, a low bed and floor mats.

Bibliography

Articles

Quigley P, Hahm B, Collazo S, Gibson W, Janzen S, Powell-Cope G, Rice F, Sarduy I, Tyndall K and White S. "Reducing Moderate and Severe Injury from Falls in Two VA Acute Medical Surgical Units." *Journal of Nursing Care Quality*, 24(1): 33–41, 2009.

KAISER FOUNDATION HOSPITALS

Reducing Harmful Falls on a Medical-Surgical Unit

The Kaiser Permanente Roseville Medical Center in Roseville, Calif., participated in the Robert Wood Johnson Foundation's (RWJF) *Transforming Care at the Bedside* (TCAB) national program. As part of that program, staff had taken steps to reduce patient falls, including instituting hourly safety rounds and portable bed alarms. These interventions resulted in a reduction of the unit fall rate, staff reported in 2005.

For its project as part of RWJF's *Prevention of Hospital Falls* (managed by the Institute for Healthcare Improvement (IHI) in Boston, Mass.), the hospital focused on reducing harmful falls on 2 South, a 24-bed medical-surgical unit that was also involved in the hospital's TCAB work.

Interventions

The project team used combinations of the following interventions on 2 South:

- Safety and toileting *rounds*
- Posting a sign showing the number of days the unit had gone without a fall—a device to focus staff attention on fall prevention
- Portable bed/chair alarms
- Post-fall staff *huddles*
- Moving at-risk patients to rooms near the nurses' station
- "Special care companions" for impulsive patients

- "Partnering" with family and friends
- Low beds
- Consultation with the hospital pharmacy on patients over 85 years of age
- Monthly fall reports by the unit manager

Results

The pilot unit achieved the goal of one harmful fall or fewer per 10,000 patient days, according to Charles B. Meek, R.N., the project director. (The hospital's report to RWJF did not include fall rates or other data.)

Listing lessons learned from the project, the hospital report said that while the tested interventions can assist in preventing patient falls and harm, they "are only tools to aid staff." The "number one factor in preventing patient falls is staff accountability for keeping their patients safe."

In an interview, Meek emphasized that point, likening the interventions to seat belts, the horn and other safety devices on an automobile. "If you don't use them, what good are they?"

LONG ISLAND JEWISH MEDICAL CENTER

Building a Hospital-Wide System for Decreasing Harm from Falls

The pilot unit for Long Island Jewish Medical Center was 5 South, a 37-bed acute medical unit with patents ranging in age from 19 to over 100. In 2005, as part of the hospital's involvement in RWJF's *Transforming Care at the Bedside* national program, 5 South reduced its patient fall rate. However, there was no decrease in the severity of the falls that did occur.

Long Island Jewish Medical Center used its project in *Prevention of Hospital Falls* to build a reliable hospital-wide system for decreasing harm from falls. The projects in this effort were funded by the Robert Wood Johnson Foundation (RWJF) and managed by the Institute for Healthcare Improvement (IHI) in Boston, Mass.

Interventions

A team headed by the 5 South director and the hospital's nursing education and research director tested changes in patient assessment, safety education, monitoring devices and other tools and strategies.

The tested education measures included showing a hospital safety video (*It's Everyone's Responsibility*) to patients who were mentally alert and at risk for falling. Patients continued to get out of bed on their own, however, often explaining they did not want to bother the staff.

The team evaluated new technologies—such as infrared motion detectors and easily released lap belts—and instructed nurse managers about the importance of the post-fall *huddle* as a "blame free" environment in which to analyze falls and identify additional preventive steps.

The team also developed a "safety toolbox," which was distributed to every unit of the hospital in June 2007. The toolbox contained:

- Non-skid socks colored red to denote a patient at risk for harm from falls
- Lap belts
- Voice monitoring devices
- "Call Don't Fall" buttons
- "Care Partner" buttons for family members
- A resource binder with such tools as a "Call Don't Fall" patient contract, a form for documenting hourly patient checks for toileting needs and criteria for identifying patients at risk for harm from a fall

Results

The hospital reported that its rate of falls and its rate of harm from falls decreased in the first half of 2007 compared to 2006. The hospital said its "restraint rate" did not significantly increase in that period, indicating that the reduction in harm from falls stemmed from assessing patients and applying needed prevention strategies and not from physically restraining patients.

The end-of-project report said every department of the hospital had received instruction in the falls-safety program, and that the practices would be disseminated throughout all 15 hospitals and nursing homes in the North Shore-Long Island Jewish Health System.

THREE HOSPITALS IN MADISON, WIS.

Extending the Work of a Falls Team Started by a Patient Safety Collaborative

In 2000, the local hospitals and medical groups in Madison, Wis., organized the Madison Patient Safety Collaborative—a formal effort to develop, share and implement patient safety solutions across the community.

The collaborative's work included formation of a Falls Team to direct efforts to reduce hospital falls by 20 percent. The Robert Wood Johnson (RWJF)-funded *Prevention of Hospital Falls* initiative supported an extension of the Falls Team's efforts. The initiative was managed by the Institute for Healthcare Improvement (IHI) in Boston, Mass.

Meriter Hospital, the recipient of the RWJF grant, is a 448-bed community hospital where the executive director of the collaborative was based. Two other Madison hospitals—University of Wisconsin Hospital and St. Mary's Hospital—also sponsored the collaborative. The William S. Middleton Memorial Veterans Hospital was not a sponsor but participated in the collaborative.

Interventions

An analysis of the five most recent injury falls at each of three Madison hospitals resulted in two findings that "surprised" the Falls Team and helped shape the interventions tested:

- Many of the patients who fell were relatively young—under 70.
- Some falls occurred even though the patient had a bed alarm.

Two of the three hospitals designated pilot units for the project while one hospital tested the changes systemwide. (The collaborative report did not identify the hospitals by name). While details of the interventions differed from one hospital to another, in general the three tested the following:

- Post-fall *huddles*
- Patient *teach back*
- A fall-prevention kit
- Assessment for high risk of fall
- "Prompted" toileting
- Patient-safety *rounds*

Results

The participating hospitals met the target of one or fewer fall-related injuries of moderate or greater severity per 10,000 patient days during the 12-month project period. However, because injury falls that severe are rare and the hospitals had low rates to begin with, "this design target was not likely to be sensitive to any change after 12 months," the collaborative noted in its report to RWJF.

The collaborative also reported that the hospitals' retrospective data did not support the IHI hypothesis that age greater than 85 or bone and blood disorders (osteoporosis and anticoagulants) increased the risk of harm from a fall:

"While these risk factors were present in some cases, there were a substantial number of falls with harm where these risk factors were not present."

The collaborative's work indicated that the risk factors for falls in general—particularly, altered mental status and mobility impairment—had a better correlation with harm from fall than did the harm-from-fall risk factors identified by the IHI team.

Therefore, the collaborative team "concluded that the best way to reduce harm from falls is to prevent the fall from happening.... The most successful implementations during the course of this grant were of fall-prevention strategies, not harm-prevention strategies."

Afterward

In 2009, the Madison Patient Safety Collaborative dissolved, mainly as the result of limited resources, according to Mary Zimmerman, M.S.N., R. N., patient safety officer at Meriter. However, fall prevention continued to be an important focus, she said. As a result of their work during the project, the Madison hospitals initiated a variety of steps and tools, including comfort and safety *rounding*, *teach back*, repositioning of bed alarms and use of floor pads.

At Meriter, one of the concrete changes that came out of the RWJF project—specifically from the face-to-face team meeting at the end—was increased use of low beds and floor pads, Zimmerman said.

SENTARA HEALTHCARE-SENTARA VIRGINIA BEACH GENERAL HOSPITAL

Developing and Testing a Tool to Identify Patients at High Risk for Harm From a Fall

Sentara Healthcare, an integrated health care organization with eight acute care hospitals in Virginia, initiated a program in 2001 to prevent inpatient falls and fall-related injuries. Between 2004 and 2005, the system reduced hospital falls by 10 percent.

For RWJF's *Prevention of Hospital Falls* program, staff from two of the system's hospitals—Sentara Virginia Beach General Hospital and Sentara Norfolk General Hospital—developed and tested a tool to identify patients at high risk for harm from a fall. They used that tool along with the existing fall risk assessment scale, the Conley Scale. The team also implemented additional interventions to prevent injuries from falls.

In addition to conducting its own tests, the Sentara team—because of the system's experience in fall prevention—served as a mentor to the other hospital teams participating in the project.

Interventions

The team piloted the high risk to harm tool and prevention interventions on a unit (4E) of the Virginia Beach hospital, and a unit (6K) of the Norfolk hospital was the control.

In addition to the risk-for-harm tool, the piloted measures included:

- A safety *huddle* at the beginning of each shift to identify patients at highest risk for injury, including fall-related injury
- Amending the *handoff* report tool at shift changes to incorporate "risk for harm" from a fall
- A follow-up review of any fall by a fall-prevention expert and other unit staff to document the circumstances
- A "safe exit" strategy to transfer patients from bed to bathroom, including posting visual aides in the room to cue the patient to the safe side of the bed from which to exit
- Purple blankets to identify patients at high risk for harm.

Results

Sentara did not report a specific fall or harm rate for the pilot and control units but reported, "Neither of these units had a serious injury from a fall during the study period."

The main impact of the project was identification of a "new type of risk"—a high risk for harm—and the need for new types of interventions for those patients, the team told RWJF. Post-project plans called for revision and continued testing of the risk-for-harm assessment tool (an algorithm) and other new interventions.

Afterward

The Institute for Healthcare Improvement posted a [report on the Sentara project](#) on its Web site. The report includes graphs indicating that the Virginia Beach hospital's rate of all falls and its rate of falls associated with moderate and more severe injuries declined in the months following the close of the RWJF project.

"Both of the hospitals have sustained the improvements and continue to work actively on reducing falls and falls with injury," Stephanie S. Jackson, D.N.P., R.N., manager of patient care services in the education department of the Norfolk hospital, said in late 2009.

UNIVERSITY OF TEXAS MD ANDERSON CANCER CENTER

Testing New Measures to Prevent Falls on a Neurosurgery, Neurology and Rehabilitation Unit

At the [MD Anderson Cancer Center](#) in Houston, falls constituted the second most frequently reported incident category after medication errors. The specialized therapies, drugs and surgeries used to treat cancer can have side effects that increase the risk of harm from falls, including altering the patient's cognition.

As a participating hospital in the Robert Wood Johnson's (RWJF) *Transforming Care at the Bedside* (TCAB) national program, the hospital implemented strategies to reduce falls. For the *Prevention of Hospital Falls* initiative, a team incorporated successful approaches developed in TCAB and tested new measures on Purple 3, a 27-bed neurosurgery, neurology and rehabilitation unit. The initiative was managed by the Institute for Healthcare Improvement (IHI) in Boston, Mass.

The goal was to reduce falls resulting in moderate or more serious injuries to one or fewer per 10,000 patient days and to spread successful measures to all medical-surgical units as part of the hospital's ongoing TCAB activity. See Appendix 1 in [Program Results](#) for categories of injuries.

Interventions

The interventions tested and adopted included:

- *Teach back* method of patient and family education

- Enhanced patient and family education on the potential harmful consequences of not following fall precautions. The education emphasized that family members should call staff for help instead of trying to assist the patient themselves.
- Visual cues to alert staff to patients with a history of falling or on anticoagulant medicine
- Toileting *rounds*, focusing on the times of day when, according to data, falls were most frequent

Results

The Purple 3 pilot unit achieved the goal of one or fewer harmful falls per 10,000 patient days. The unit also reduced its rate of *all falls* per 1,000 patient days. Those results "would suggest that some of the interventions tested and implemented may have contributed," according to the team report.

M.D. Anderson's report to RWJF indicated that while the nature of the work "does not enable us to know if any one intervention was more significant than another," the team "speculated" that two measures were helpful:

- Proactive use of safety/toileting rounds. The falls data showed that most falls involve toileting and mobility issues.
- Better communication among caregivers about the highest-risk patients and situations. The project resulted in increased staff sensitivity to patients who are anticoagulated and have bone issues related to a disease process or medications.

Lessons Learned

- "Constant attention to falls is required," the team report stated. Simply "putting into place a program or policy is not adequate" unless they are accompanied by "'champions' who keep falls in everyone's awareness."

Afterward

Beverly A. Nelson, Ph.D., R.N., the hospital's director of nursing programs, said the project helped the institution continue its focus on reducing falls and harm from falls. As a specific example, she cited the ongoing use of a project tool developed by the Institute for Healthcare Improvement (the agency overseeing the project on RWJF's behalf) to collect and analyze falls data.

Nelson, as chair of the hospital's falls advisory team, reviews monthly falls data. When a unit experiences an increase in falls and harm from falls over several months, she triggers

an intensive analysis of the unit's recent falls, using the tool to collect data and "drill down" to identify underlying factors.

"It's fair to say that this has been a lasting contribution to our methods and processes for fall and harm reduction," she said.

Prepared by: Michael H. Brown

Reviewed by: Mary Nakashian, Marian Bass and Molly McKaughan

Program officer: Rosemary Gibson

Program area: Quality/Equality

APPENDIX 1

Hospital Patient Falls: A Short Primer

Patient fall: The wording varies among organizations, but the following definition—from the Joint Commission's 2005 *Implementation Guide for the National Quality Forum Endorsed Nursing-Sensitive Care Performance Measures* (updated in 2009)—captures the essence: "An unplanned descent to the floor (or extension of the floor, e.g., trash can or other equipment) with or without injury to the patient."

Fall Rate: The prevalence or rate of falls—generally expressed as the number of falls per 1,000 patient days—varies among hospitals and even among departments within a hospital. However, the following provides a guide to the frequency of falls:

- Drawing on earlier studies, researchers at Washington University in St. Louis reported that hospital fall rates range from 2.3 to 7 falls per 1,000 patient days. At the Barnes-Jewish Hospital in St. Louis, the research team's study hospital, the rate was 3.38 falls per 1,000 patient days during the 2002–2003 study period. [Hitcho et al. "Characteristics and Circumstances of Falls in a Hospital Setting: A Prospective Analysis." *Journal of General Internal Medicine*, 19(7): 732–739, 2004.]
- Separately, a team working to reduce falls in Ascension Health hospitals, the nation's largest nonprofit hospital system, reported that better performing hospitals had a fall rate for all falls in the 2.5 to 3.5 range per 1,000 patient days. The team adopted this "better performers range" as the benchmark for its falls-reduction efforts. [Lancaster et al. "Preventing Falls and Eliminating Injury at Ascension Health." *Joint Commission Journal on Quality and Patient Safety*, 33(7): 367–375, 2007.]

The Institute for Healthcare Improvement (IHI) team overseeing RWJF's Preventing Patient Injuries From Falls adopted Ascension Health's "better performers range" as a gauge for outcomes at the eight project sites.

Injury Severity: The Joint Commission's Implementation Guide classifies fall injuries according to the following scale:

Injury Level	
None	Patient had no injuries resulting from the fall
Minor	Results in application of a dressing, ice, cleaning of a wound, limb elevation or topical medication
Moderate	Results in suturing, application of steri-strips/skin glue or splinting
Major	Results in surgery, casting, traction, or required consultation for neurological or internal injury
Death	Results in death as a result of the fall

This was the classification system used in the RWJF Preventing Patient Injuries From Falls initiative. The participating hospitals focused on reducing fall-related injuries at the three most severe levels—moderate, major and death.

APPENDIX 2

Overview of Transforming Care at the Bedside (TCAB)

Launched in 2003 by RWJF and the Institute for Healthcare Improvement (IHI), *Transforming Care at the Bedside* (TCAB) was a national program to develop new interventions to improve the hospital work environment, with the goal of improving the quality of care provided by nurses at the bedside.

The program engaged front-line hospital staff in efforts to:

- Improve the reliability 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

RWJF funded three TCAB phases, all directed by IHI:

- Phase I (2003–2004) involved prototype projects at three hospitals.
- Phase II (2004–2006) supported pilot projects at 13 hospitals.
- Phase III (2006–2008) continued work at 10 of the 13 pilot sites.

In 2007, RWJF gave the American Organization of Nurse Executives two years of funding totaling \$1.5 million to disseminate the tools and lessons of TCAB to hospitals nationwide. During 2007–2009, the organization worked with improvement teams at 67 hospitals to introduce and apply the tools in their hospitals.

Meanwhile, the IHI folded the TCAB process and name into its educational offerings for the provider community, adding what it called the *Transforming Care at the Bedside Collaborative* to its improvement programs.

APPENDIX 3

Assumptions Underlying Preventing Patient Injuries from Falls as Implemented

In an unpublished 2007 manuscript entitled *Preventing Injury from Falls*, the Institute for Healthcare Improvement (IHI) program team grouped the assumptions underlying the program in two categories, as follows:

Category I: Assumptions Regarding Risk of Injury

- Most hospitals assess patients for risk of falls, but not for risk of injury from falls.
- Patients need to be assessed for risk of injury from falls.
- Risk screening tools only determine risk for anticipated physiological falls (i.e., those that are predictable due to presenting known risk factors). However, other types of falls exist, including accidental falls (i.e., those caused by environmental factors, such as slipping and tripping) and unanticipated physiologic falls (i.e., those that are unpredictable and result from unknown physiological factors).
- At present, no injurious fall risk assessment instrument exists.
- Known factors such as osteoporosis, anticoagulation, and advanced age increase risk for injury if a fall occurs.
- Assessing patients at risk for injury from falls might streamline the need to assess patients for risk of falls.

Category II: Assumptions Regarding Interventions to Prevent Injury from Falls

Severe fall-related injury can be prevented.

- Interventions to prevent injury (individually and in combination) have not been widely tested.
- A set of interventions for inpatients within medical-surgical units who are at risk for injury will reduce injury from falls.
- Interdisciplinary approaches to fall reduction and injury prevention are essential to success.
- Hospital teams that prevent injury from falls will discover additional ways to reduce the risk of falls.

APPENDIX 4

Program Team Members

(Current as of the time of the grant; provided by the grantee organization; not verified by RWJF.)

The following staff and consultants of the Institute for Healthcare Improvement guided the special initiative on patient falls and the *Transforming Care at the Bedside* (TCAB) program. (Titles were current at the time of the initiative.)

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Pat Quigley, Ph.D., M.P.H.
Deputy Director

Jane Taylor, Ed.D.
Improvement Advisor
Institute for Healthcare Improvement

APPENDIX 5

Participating Hospitals Receiving RWJF Grants

(Not every grantee used the full \$19,000 awarded by RWJF. The dollar figures reflect the actual amount RWJF disbursed to each grantee.)

Allina Health System (Minneapolis, Minn.)

Developing innovative interventions to reduce harm from falls at hospitals

Amount: \$ 18,200

Dates: October 2006 to September 2007

ID# 058130

Contact

Julie Sabo, M.N., R.N.

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Iowa Health System (Des Moines, Iowa)

Testing and implementing promising new diagnostics measures and ideas in Iowa hospitals to significantly reduce falls

Amount: \$ 19,000

Dates: July 2006 to June 2007

ID# 057553

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James A. Haley Veterans' Hospital (Tampa, Fla.)

Hip fracture for vulnerable patients in acute care

Amount: \$ 19,000

Dates: August 2006 to July 2007

ID# 057527

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Kaiser Foundation Hospitals (Roseville, Calif.)

Evidence-based program designed to decrease patient falls and fall-related injuries

Amount: \$ 19,000

Dates: July 2006 to June 2007

ID# 057583

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Long Island Jewish Medical Center (New Hyde Park, N.Y.)

Identifying the best assessment tool to substantially decrease or eliminate harm from falls

Amount: \$ 18,987

Dates: July 2006 to July 2007

ID# 057607

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Meriter Hospital Inc. (Madison, Wis.)

Using a multihospital approach to develop innovative ideas to reduce falls and collaboratively disseminate information

Amount: \$ 19,000
Dates: July 2006 to July 2007
ID# 057539

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Sentara Healthcare-Sentara Virginia Beach General Hospital (Virginia Beach, Va.)

Validating a combination of interventions to reduce falls and prevent injury in the Sentara Healthcare System

Amount: \$ 19,000
Dates: August 2006 to July 2007
ID# 057540

Contact

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University of Texas M.D. Anderson Cancer Center (Houston)

Testing interventions to prevent falls in a comprehensive care center

Amount: \$ 18,894
Dates: September 2006 to August 2007
ID# 057536

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APPENDIX 6

Limitations in Interpreting Program Results

The IHI team identified the following as limitations in interpreting program results:

- This was a quality improvement program and not a research program designed to meet the requirements of rigorous research and evaluation. More conclusive evidence is necessary before there can be full confidence in the effectiveness of the tested interventions, said Patricia Rutherford.
- The program's relatively short time span limited the testing of interventions to four or five months at most sites. "Given the relative rarity of [serious] injury due to falls within a particular medical-surgical unit, this time frame is likely to be too short to assess the true effects of the prototype change package," said Rutherford.
- Variation in the content and time period of the data collected and reported by the sites further clouded evaluation of the interventions.
- Lack of time prevented exploration of whether the implemented changes had unanticipated consequences or introduced burdens on staff or patients.
- The program focused on physical injury from falls and did not address emotional impacts or concerns, such as fear of falling, which can have a destructive as well as protective effect.
- The program addressed cognitive impairment in only a limited fashion. Patients with cognitive impairment have complex needs, and those needs were not explored.
- The program focused on just four risk populations of patients and did not test the interventions among other vulnerable groups, such as pediatric patients and wheelchair users.

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