James A. Haley Veterans Hospital: Reducing Severe Injury from Falls in Two Medical Surgical Units; Institute for Healthcare Improvement Collaborative

July 1, 2006 to July 31, 2007

Final Report
Abstract

The primary measurable goal set for our organization in this project was to dramatically reduce injury from falls on medical-surgical units so that injury from falls (i.e. moderate, major, and death) is reduced to 1, or less, per 10,000 patient days ($10^{-4}$ Reliability Level). Several indicators were chosen by IHI faculty to facilitate consistent reporting among the facilities participating in this collaborative of 11 hospitals covering a variety of specialties. Our VA Medical Center's enduring commitment to patient safety is demonstrated throughout our organization as an environment of innovation and excellence. We have contributed to practice, education and research surrounding technology integration and evidence-based practices in fall prevention, as one example. VA holds distinction in fall and injury prevention, in particular hip fracture prevention. Thus, our tests of change focused on new opportunities to engage unit based leadership and staff on combining innovations for vulnerable populations.

Based on this innovative work, we selected injury prevention associated with anticoagulation and over age of 85 patients due to the risk for loss of function and life. Our approach was to target known populations which enabled new opportunities for teams to test reliability and sustainability of clinical interventions for patient safety. This report summarizes our tests of change, lessons learned and outcomes. Our test unit teams consisted of nurse managers and staff who tested bundled interventions specific to an injury associated with falls (such as fracture and hemorrhage), that had not been previously tested in a medical surgical inpatient setting through this multi-factorial intervention approach.
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Measurable Goals

1. What measurable goals did you set for this project and what indicators did you use to measure your performance? To what extent has your project achieved these goals and levels of performance? Briefly describe what the project actually did to meet its goals. If the goals of the project have not been met, explain what happened and why. If there were additional accomplishments, describe them, and explain how and why the activities that led to these accomplishments were undertaken. Be as specific as possible. Cover the areas described below that are applicable to your project:

The primary measurable goal set for our organization in this project was to dramatically reduce injury from falls on medical-surgical units so that injury from falls (i.e. moderate, major, and death) is reduced to 1, or less, per 10,000 patient days (10^-4 Reliability Level). Several indicators were chosen by IHI faculty to facilitate consistent reporting among the facilities participating in this collaborative of 11 hospitals covering a variety of specialties. The indicators reported to the collaborative included:

- Falls incidence per 1,000 patient days
- Falls resulting in minimal injury per 10,000 patient days
- Falls resulting in moderate injury per 10,000 patient days
- Falls resulting in major injury per 10,000 patient days
- Falls resulting in death per 10,000 patient days
- Days between injurious falls
- Descriptive analysis of characteristics of the last 22 injurious falls in the Acute Care setting at the James A. Haley Veterans’ Hospital

During the project period, fall injury rates (i.e., minimal, moderate, major and death) were reported per 1,000 patient days. Upon the conclusion of the collaborative, the rates were converted to 10,000 patient days. This change enabled teams to more readily evaluate their progress towards the project goal of reducing injury from falls (i.e. moderate, major, and death) on medical-surgical units to 1, or less, per 10,000 patient days (10^-4 Reliability Level). For the James A. Haley Veterans’ Hospital, these data were reported for both the individual medical-surgical units participating in the collaborative (5-South and 7-North) and the acute care nursing units.

This project focused on reducing moderate to severe physical injury. Categories of harm (injury), established based on expert consensus, (National Quality Forum, www.qualityforum.org) were used:

- No harm
- Minimal harm: results in application of a dressing, ice, cleaning of a wound, limb elevation, or topical medication
- Moderate harm: results in suturing, steri-strips, fracture, or splinting
- Major harm: results in surgery, casting, or traction
- Death: (as a result of the fall)

**Goals Achieved and Levels of Performance**

**1A. To What Extent Has Your Project Achieved These Goals & Levels of Performance**

The following section presents the indicators used to measure performance against the project goals. The work of the collaborative ran from June 2006 to May 2007, and data were available through March 2007 for this project. Aggregated baseline data were available for part of 2003, 2004 and 2005. Monthly numerator (i.e., injurious falls by type) and denominator (i.e., patient days) data were available for 2006.

During the time period since the Reducing Injury from Falls collaborative began work, the following results have been seen:

- Our fall and injury rates demonstrate that our organization is a leader in multifactorial interventions to improve the quality and safety of care associated with falls in high risk populations. The overall hospital fall rate has incrementally decreased to below 2 per 1,000 patient days. In the acute care setting, this rate has fallen steadily over past four years and is below 3 per 1,000 patient days now.
- Our organization is a national leader through the development of innovative tools with the National Center for Patient Safety.
- Our injury rate demonstrated high reliability at the 10⁻⁴ level with movement towards better performance with an injury rate less than .05 per 10,000 patient days.
- Unit specific trends in reducing injury from falls were identified.
- The number of days between falls with moderate or worse injury ranged from 1 day to 176 days, with an average of 89.5 days between falls.
- Patient perception of the overall quality of care has consistently ranged from 90-100 for the past nine months (using positive score on NRC+Picker).

We did meet the project goal of one or less fall with moderate or worse injury per 10,000 patient days for one test unit (5-South, 0.0) and Acute Care (0.30) during the study time period from June 2006 to March 2007. We also experienced the following successes:

- No episodes of moderate or worse injury from a fall in over 6 months (through June 2007).
- While the other test unit (7-North) did not reduce the moderate or worse injury from falls rate to 1 moderate or worse injury per 10,000 patient days for the study period from June 06 to March 07, they did experience only 1 episode of moderate or worse injury from a fall which resulted in a rate of 1.69 per 10,000 patient days.
- This was the only moderate or worse injurious fall to occur in the acute care setting from the beginning of the project in June 2006 through June 2007.
1B. Briefly describe what the project actually did to meet its goals.

A descriptive, retrospective review of the past 22 injurious falls that occurred in the acute care setting was conducted to provide a starting point for the two pilot units. The results of this review guided the implementation of several tests of change to try and reduce injury from falls on the units (Table 1). Ninety-one percent (20 of 22) patients who experienced an injury already had a falls risk intervention implemented at the time of their fall. As Table 1 shows, traditional falls risk indicators (e.g., toileting and mobility issues, previous history of falls) were present for the majority of the patients who were injured after a fall in the acute care setting. Additionally, only two of the cases reviewed had less than two of the falls and injury risk characteristics, so the patients had multiple factors affecting their risk for a fall and the subsequent injury they experienced from that fall.

<table>
<thead>
<tr>
<th>Falls and Injury Risk Characteristics Identified with Injurious Falls (% will be over 100% due to cases with multiple identifiers)</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Previous fall</td>
<td>18</td>
<td>81.8</td>
</tr>
<tr>
<td>Mobility (includes any mention of needing an assist to walk, use of an assistive device)</td>
<td>15</td>
<td>68.2</td>
</tr>
<tr>
<td>Toileting issues (includes any mention of altered elimination status, or falling while toileting, attempting to toilet)</td>
<td>15</td>
<td>68.2</td>
</tr>
<tr>
<td>Altered mental status/confusion</td>
<td>8</td>
<td>36.4</td>
</tr>
<tr>
<td>Drugs (benzodiazepines, anti-convulsants, anti-hypertensives)</td>
<td>8</td>
<td>36.4</td>
</tr>
<tr>
<td>Age (Over 85)</td>
<td>3</td>
<td>13.6</td>
</tr>
<tr>
<td>Blood (anti-coagulants, blood disorder)</td>
<td>3</td>
<td>13.6</td>
</tr>
<tr>
<td>Weakness</td>
<td>2</td>
<td>9.1</td>
</tr>
<tr>
<td>Bones (Osteoporosis)</td>
<td>1</td>
<td>4.5</td>
</tr>
</tbody>
</table>

The various tests of change are described in the sections below.

After Action Reviews (AAR) and Safety Huddles.

After Action Review is a knowledge transfer technique adapted from the military to immediately assess a situation or event in order to understand what occurred, why it may have occurred and what corrective action will be implemented to improve the situation. In this case, the AAR or Safety Huddle was performed by the staff after becoming aware of a patient fall or after a close call. During these brief meetings, staff asked what happened, what should have happened, what accounted for the difference, and what could be done to prevent another occurrence. The Safety Huddles, which were transformed during the project period to meet the needs of the test units, became vehicles for examining specific patient safety incidents (e.g., not just falls), and for ensuring that falls precautions were consistently applied in the shift-to-shift hand-off process. Incorporation into the hand-off process also provided the opportunity for staff to reassess a patient’s status.
Teach-back education interventions with patients.

Teach backs were used by asking the patient to state what they understood regarding fall prevention instructions and how they would apply this information:

1) Patients with a history of falls were educated on their increased risk for falling and injury from falling.
2) Patients on anticoagulants were educated about their increased risk for bleeding after a fall.
3) Patients at risk were asked to agree to call for help, even when they thought they did not need assistance.

Toileting prior to administration of high risk pain medications.

Based on the retrospective analysis of 22 falls injuries in which pain medication was frequently identified as a factor, toileting prior to administration of high risk pain medications was implemented.

High risk falls precautions

Patients with a history of falls, osteoporosis, Morse scale score of 50 or greater, on anticoagulants, or have a low platelet count were automatically placed on high-risk falls precautions. As the level of risk increases (low, moderate, then high risk), the precautions are cumulative- so that interventions are additive as the level of fall risk increases. Thus, high risk for fall precautions include universal fall precautions, low risk fall precautions and lastly high risk falls precautions. Specifically, these high risk precautions are:

- Move patient to room close to nurses station
- Provide chair and/or bed alarm
- Place bedside mat on floor at side of bed unless contraindicated
- Every one hour observation with toileting and comfort rounds (should include positioning, offering fluids, snacks when appropriate and ensuring patient is warm and dry).
- Consider low bed
- Evaluation by Interdisciplinary Team
- For patient at risk for head injury, consult Rehab Medicine for consideration of helmet (Examples of patients at risk for head injury are those on anticoagulants, patients with severe seizure disorder, and history of falling and hitting head).
- Hip protectors for patients are risk for hip fracture
- High risk red nonskid socks
- Visual identifiers of patient risk for falls

This test of change also included methods for interdisciplinary communication of a patient’s heightened fall risk through the use of door swivels and yellow wrist bands.
Comfort care & safety rounds

Both units introduced comfort care & safety rounds as one of their tests of change. This intervention was tested based on the results of researchers Meade, Bursell, and Ketelsen (2006), hourly rounds in acute care reduced falls (P=0.01), and by 60% one year later in the follow-up hospitals. One test unit, 5-South, tried multiple approaches (e.g., team, buddy and individual) in order to implement the comfort and safety rounds. The following tasks were included in the rounds:

- Check on patient and ask them about any pain or discomfort they are experiencing
- Make sure that they have water and are clean and check the bed & room for any hazards
- Make sure the call light, urinal and phone within reach for the patient
- Check the lighting & temperature of the room & make sure environment comfortable
- Turn the patient, change dressings

The other test unit, 7-North, first implemented Toileting & Turning (T2) rounds every two hours. These rounds were initially tested to reduce the risk of falls due to toileting needs when a patient attempts to toilet without help. However, this test of change failed due to attempts to document the rounds. Yet, staff committed to this intervention, learned from the trial and expanded the hourly rounds to general safety rounds that focused on multiple patient care needs, rather than turning and toileting. This trial was an intermediate step to achieve the comfort care and safety rounds that focused on multiple patient care needs, rather than just toileting. In the spirit of innovation, all trials provide opportunities to learn.

Other Initiatives:

- Reasons for call light use: 7-North recorded the reasons for call light usage in an effort to better anticipate the needs of patients in order to reduce the number of attempts by the patients to get out of bed unassisted. This initiative prompted nurses on the unit to begin early morning hygiene routines earlier to assist patients when they first woke up.
- Better accessibility for hip protectors: Hip protectors were regularly issued to new patients on the test units. However, replacements were not readily accessible to staff which resulted in the intervention being inconsistently applied. By the end of the project period, both test units had replacement hip protectors stored on the units for easy accessibility.

Additional Accomplishments

Since 2004, the Tampa VA Nursing Service has benefited from a Fall Prevention Program in acute and critical care. The Program Team members are interdisciplinary and

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operate from a strategic plan that has improved our fall risk assessment reliability, standardized interventions, expanded signage, and integrated technology to prevention hip fractures. The IHI Project helped complement the work of the existing Fall Prevention Program for short stay patients. The pilot teams targeted strategies to identify and screen acute care patients for risk of injury and implement injury prevention strategies. Nursing staff rapidly implemented hip protectors, bedside floor mats, assistive devices and “safety & comfort” rounds at least every two hours and often every hour. The falls collaborative members shared knowledge constructed from data collection and reporting, data analysis, small tests of change, and conclusions.

On May 17, 2007 a prototype change package was presented by the IHI staff along with a story board by each collaborative participant. This innovative change package is ground breaking work because it facilitates moving beyond the status quo of preventing falls to preventing fall-related injuries. Four major criteria have emerged from the collaborative as a testable group of interventions that can be “bundled together” as multi-factorial interventions that can next be tested using research methods.

- Age greater than 85
- Presence of osteoporosis, or conditions that are risk factors for osteoporosis, such as but not limited to history of fall-related fracture, corticosteroid use, smoking, heavy alcohol use, current low bone mass, Vitamin D deficiency, presence of certain chronic medical conditions (such as Cancer, Renal Failure), an inactive lifestyle, low lifetime intake of calcium, a family history of osteoporosis,
- Presence of blood diseases, bleeding disorders or use of anticoagulants that increase of bleeding
- Recent surgery with a fresh suture line that could dehisce with a fall, especially lower limb amputation, and abdominal and thoracic surgeries

**Challenges**

2. **Did the project encounter internal or external challenges? How were they addressed? Was there something RWJF could have done to assist you? Describe each challenge and the actions you undertook to address it.**

No challenges were encountered except to revise our rating scale for injury for the duration of this project so that we could compare our data with other participating sites. The Veterans Healthcare Administration uses a different injury rating scale than the National Quality Forum.

Our approach to data management and statistical analyses was unique compared to the other participating sites. We utilized our RWJF funding to support a data manager who created the database, managed the data, completed statistical analysis, drafted reports, and posted final reports to the IHI extranet website.

The lack of an injury screening or risk assessment tool continues to be a problem for clinical practice in acute care. Many project participants expressed this limitation.
The literature, however, provided direction for identifying vulnerable populations for action. Future efforts should be on validating fall injury risk screening and assessment tools, and incorporation of these tools into electronic medical record systems.

**Other Sources of Support**

3. **Have there been other sources of support?** Please summarize them, including how much funding each entity provided, and when these funds were received. Also include in-kind support and what was given (e.g., office space, computer equipment). Indicate if the total support for the project was more than expected or less than requested.

*In-kind Support.* JAHVH provided in-kind support for this project with the time for everyone except Ms. Hahm to participate. Ms. Hahm's salary was supported by RWJF funding. However, JAHVH funded air travel and per diem for Ms. Hahm to attend the final harvest meeting, May 17, 2007. IHI funded her hotel lodging.

*Nurses are clearly designated as leaders and experts of the initiative.* The Falls Committee Chair is the ACNS/Acute Care, Ms. Innette Sarduy. She is the leader of the clinical program. Dr. Pat Quigley is a clinical expert on falls, part of the Falls Collaborative Faculty and manager of grant funds received for our participation in the Collaborative. She additionally leads an annual national Falls Conference, has presented widely on this topic, published numerous works and has ongoing research on falls. Two Nurse Managers, Wanda Gibson and Sonia Collazo led unit based changes on medical units. Dr. Susan White, ACNS/QI, facilitated team processes and web conference calls and presented at two state conferences to disseminate learnings.

*Interdisciplinary collaboration* was evident with Ms. Bridget Hahm, an epidemiologist who coordinated data reporting and analysis for the falls collaborative to the IHI extranet project website. Risk Manager, Kyna Tyndall was integral to data collection, analysis, and assignment of injury for falls on all units in the system. Patient Safety Manager, Fanny Rice, assisted with data analysis, application of the toolkit and other preventive measures. Finally, Informatics staff provided or developed technology for documentation and data collection such as our CPRS post fall template.

*Our initiative began on two medical nursing units- 5S and 7N.* These units participated in the bimonthly calls, reported on the extranet, performed tests of change, and communicated using a list serve. Testing of a prototype tool to assess risk of injury from falls developed through the IHI Collaborative was limited to these pilot units in order to focus discussions. This project builds on our culture of innovation that integrates technology at the point of care. For over 3 years, our acute care units have combined technology to create a safe environment, focusing on minimizing extrinsic fall risk factors. Thus, we have height-adjustable beds, bed and wheelchair alarms, floor mats and hip protectors as appropriate. As a result, the 5S
and 7N nursing teams have served as experts to other non-VA organizations in this project.

Lessons Learned

4. What lessons did you learn from undertaking this project?

a) What lessons does the success or shortfall of the project have for other grantees attempting similar efforts?
   - Involve more staff nurses in discussions, not just the Nurse Managers.
   - Because challenges exist to regularly convene the project teams for ongoing implementation of this project, collect data, and respond to progress creativity is required to sustain communication among team members.

b) What would you recommend to grantees to emulate and/or to avoid?
   - Identify accountability and responsibility for data collection and reporting at the onset of the program and provide resources for this person.
   - Standardize data collection rates that minimize changes or additional burden to current data collection methods (ie 10,000 patient days or 1000 patient days).
   - Ensure that any pre-developed spread sheets are developed by an expert so that the automatic data displays are easy to read.
   - Provide notes from conference calls in a summary fashion of next actions and timelines.
   - Take the lessons learned to the next level for tool development and validation of risk for fall injury.

Project Impact

5. What impact do you think the project has had to date? Who can be contacted a few years from now to follow up on the project? Describe what you believe to be the impact of the project, providing evidence for all statements (e.g., publication in major journals, citations of the project in literature, major press coverage, adoption of the model by other organizations).

Initiative shows promise of usefulness to VHA. The process of assessing injury or injury from falls and using a standardized method to quantify injury can be easily applied VHA wide using the definitions from NQF which are readily available. Assessing risk for injury provides the evidence for nurses to provide specific interventions to reduce injury (e.g. hip protectors). The method of graphically displaying results of fall rates associated with level of injury provides an illustration of the organization’s reliability in the process.

Initiative impacts multiple areas. Since the members on the Tampa VA collaborative are also on the Falls Committee, the information, changes and reporting spread quickly to other units in the hospital, the nursing home and home care. Monitoring injury from falls applies to all patients in acute care, long term care and ambulatory...
patients. Data reporting and segmentation has been expanded to these other settings. Our newest data displays have incorporated levels of injury so that we can assess falls and injury at a glance by facility, bed section, and individual nursing unit. Annotations to the run charts provide key points in our process improvement journey.

*Initiative impacts facility wide.* Using a standardized scale to assess level of injury has been applied in our risk management monitoring and is now shared in our reporting of monthly data. In 2007 the home care falls reporting system was also standardized to include level of injury.

*Demonstrated process improvement.* Compared with results from other high performing organizations in the IHI Collaborative, the Tampa VA is a benchmark and performing at the $10^{-4}$ or $10^{-5}$ level for moderate and major injury levels.

*Demonstrated impact on patient/staff experience.* Positive patient outcomes are demonstrated in reducing adverse events to patients and improving patient perception with the overall quality of care. Staff has increased insight into the patient characteristics associated with injuries resulting from falls and continue to test new ideas to reduce both falls and injury. Staff has been actively engaged in tests of change on the units.

*Demonstrated impact on nursing-sensitive quality indicator.* The following Tampa VA data are reported and benchmarked with NDNQI and the 11 hospitals in the IHI collaborative:

- Fall rates per 1,000 patient days have continually declined over the past 3 years and our performance is better than the NDNQI mean and often better than benchmark.
- The fall injury rate in our medical and surgical units is better than NDNQI mean benchmarks. The percent of falls with moderate or greater injuries is better than NDNQI benchmarks in all but one unit (stepdown) not part of the pilot.
- Monitoring of time interval between falls with moderate or major injury has been initiated to provide additional ways to measure reduction in injurious falls.
- Comparison with participants in the IHI Collaborative demonstrates that the Tampa VA leads performance in both of fall rate and injurious fall rate.

*Demonstrated long-term integration into structures and processes.* Data collection, reporting, analysis and improvement now routinely include fall rate, and injury rates segmented into categories of injury. Assessment for risk of injury is the next step to be addressed for improvement.

For future information, please contact Dr. Pat Quigley, Project Director, at Patricia.Quigley@med.va.gov, phone: 813-558-3912
Post Grant Plans and Project Dissemination

6. What are the post-grant plans for the project if it does not conclude with the grant? Include a description of the following that are applicable:

This project is concluding with the termination of the grant; however, the program components have been strategically added to the work of the existing Tampa VA Fall Prevention Program.

7. With a perspective on the entire project, what have been its key publications and national/regional communications activities? Did the project meet its communications goals?

Nursing leaders have formally disseminated information on this initiative in a variety of venues.

- Reducing injury from falls was presented at a state conference of the Florida Organization of Nurse Executives (FONE) best practice meeting in October 2006.
- Descriptions of our fall and injury data and our benchmarking process was presented by Ericka Lewis at the first National Database of Nursing Quality Indicators (NDNQI) conference held in Las Vegas in January 2007.
- A poster was presented at the 4th Annual Florida Magnet Nursing Research Conference in St. Petersburg in February 2007.
- In May 2007, a poster storyboard was presented nationally at an IHI conference to provide outcomes of the year-long collaborative, led by Dr. Pat Quigley and Bridget Hahm, MA, MPH, on behalf of the team.
- Wanda Gibson, MSN, RN presented Reducing Injury from Falls in Acute Care James A. Haley Hospital Update at the February 2007 national meeting of the IHI Transforming Care at the Bedside meeting in Houston, TX.

Office of Nursing Service: Innovation Award. In May, 2007, this project team was submitted to the VHA’s Office of Nursing Service for the 2007 Innovation Award Program. We are awaiting response to our submission.