**Patient Falls**

**Achieving Sustained Reduction in Patient Falls** • 151

**Fall Reduction Strategies: Using a Rapid Cycle FOCUS-PDSA Process to Reduce Patient Falls** • 161

**Defined:**
A patient fall is 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, and occurs on an eligible reporting nursing unit. All types of falls are to be included whether they result from physiological reasons (fainting) or environmental reasons (slippery floor). Include assisted falls, such as when a staff member attempts to minimize the impact of the fall.

Exclude falls by:
• Visitors
• Students
• Staff members
• Patients on units not eligible for reporting
• Patients from eligible reporting unit; however, patient was not on the unit at time of the fall (e.g., patient falls in radiology department)

**Injury Falls:**
Injury level classified as None, Minor, Moderate, Major, or Death.

**Formula:**
- Total Falls: \( \frac{\text{Number of Patient Falls} \times 1000}{\text{Total Number of Patient Days}} \)
- Injury Falls: \( \frac{\text{Number of Patient Injury Falls} \times 1000}{\text{Total Number of Patient Days}} \)
Achieving Sustained Reduction in Patient Falls

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The Memorial Hermann Healthcare System,
Texas Medical Center

Editor’s Pick

INSIGHTS & IDEAS FROM THIS FACILITY

Staff education on the importance of risk assessment and a range of prevention strategies that can be tailored to each patient’s circumstance lead to reduction in fall rates.

Permission must be requested in writing from ANA to reuse or reprint ANA benchmarks published in this book.
## Facility and Unit Summary

**Facility**  
Memorial Hermann—Texas Medical Center (MH-TMC), Houston, TX  
[www.memorialhermann.org/locations/texasmedicalcenter](http://www.memorialhermann.org/locations/texasmedicalcenter)

**Facility setting**  
MH-TMC serves the greater Houston area with strengths in heart, neuroscience, orthopedics, women’s health care, general surgery, and organ transplantation. A certified Level I trauma center, providing 24-hour emergency and trauma care to more than 40,000 patients a year, with air ambulance service, provides emergency rescue and air transport services to a multicounty area.

**Teaching status**  
Primary teaching hospital for the University of Texas Medical School at Houston

**Ownership status**  
Not-for-profit

**Community demographics**  
Primary service area is Brazoria, Fort Bend, Harris, Liberty and Montgomery counties of South Texas. Within the primary service area the largest ethnic groups are Caucasian (37.5%), Hispanic (36.3%), and Black/African American (18.1%), with an estimated overall population of over 4 million people. Approximately 7.4% of service area population over age 65.

**Hospital-staffed beds**  
594 adult patient beds

**Case mix index (CMI)**  
2.16

**Indicators used**  
Patient fall rates

**System or unit improved**  
Three units improved (Critical Care Medical ICU (MICU), Cardiovascular Intermediate Care Unit (CVIMU), and 6 East Jones—Ortho-Trauma (Surgical))

**Indicator improved**  
Patient fall rates

**QI documents used**  
NDNQI benchmark fall rates

**NDNQI® participation**  
Since January 2003

**Magnet™ status**  
Submitting application in 2009

**Governance model**  
Shared Governance (formal, council-based)
Awards and recognition

- Pathway to Excellence designation from American Nurses Credentialing Center—2008
- Center ranked 39th in Urology—2007
- Thomson 100 Top Hospitals Performance Improvement Leader—2007
- Thomson 100 Top Hospitals: Cardiovascular Benchmarks for Success study (Heart and Vascular Institute)—2007
- VHA Leadership Awards—for clinical excellence and for community benefit—2007
- Texas Health Care Quality Improvement Award of Excellence—2007

UNIT PROFILE

<table>
<thead>
<tr>
<th></th>
<th>MICU (Medical)</th>
<th>CVIMU (Surgical)</th>
<th>6 EAST JONES—ORTHO-TRAUMA (Surgical)</th>
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<tbody>
<tr>
<td>Size and type</td>
<td>16-bed medical intensive care unit</td>
<td>17-bed cardiovascular surgery intermediate care unit with physiologic monitoring</td>
<td>33-bed orthopedic and trauma floor unit</td>
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<td>Staff summary (FTEs)</td>
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<td>Licensed vocational nurses</td>
<td>0.9</td>
<td>0.9</td>
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<td>Registered nurses</td>
<td>32.4</td>
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<td>42</td>
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<td>Unit clerks</td>
<td>2.7</td>
<td>2.3</td>
<td>6.3</td>
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<tr>
<td>Patient care assistants</td>
<td>4.5</td>
<td>5.5</td>
<td>17.2</td>
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<tr>
<td>Clinical manager</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
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<tr>
<td>Staff skill mix</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% RNs</td>
<td>70%</td>
<td>75%</td>
<td>60%</td>
</tr>
<tr>
<td>% LVNs</td>
<td>5%</td>
<td>5%</td>
<td>10%</td>
</tr>
<tr>
<td>% Certified</td>
<td>15% CCRN</td>
<td>—</td>
<td>2% TNCC</td>
</tr>
<tr>
<td>% ADNs</td>
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<td>53%</td>
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<tr>
<td>% BSN</td>
<td>75%</td>
<td>47%</td>
<td>60%</td>
</tr>
<tr>
<td>% MSN</td>
<td>5%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Nurse–patient ratios</td>
<td>RN–patient 1:1 to 1:3</td>
<td>1:4</td>
<td>1:5 to 1:6</td>
</tr>
<tr>
<td>Organizational structure</td>
<td>Chief Patient Care Officer, Associate Patient Care Officer, Nursing director, Nursing managers</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Patient Falls
Achieving Sustained Reduction in Patient Falls
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The Memorial Hermann Healthcare System, Texas Medical Center

Introductory Summary

One of the largest healthcare systems in the greater Houston/Galveston metropolitan area of South Texas, the Memorial Hermann Healthcare System (MHHS) consists of 14 community hospitals, a substance abuse center, and dozens of specialty and outpatient centers. As the MHHS presence in the Texas Medical Center, the MH-TMC campus consists of 594 adult patient beds and is the primary teaching hospital for the University of Texas Medical School at Houston. As one of only two certified Level I trauma centers in the greater Houston area, the hospital provides 24-hour emergency and trauma care to more than 40,000 patients a year. Memorial Hermann Life Flight® air ambulance service operates a fleet of six helicopters, providing emergency rescue and air transport services to a multicounty area. For over 100 years, MHHS has provided health services to residents of Houston and surrounding communities. As an indicator of the commitment to quality improvement held by MHHS, in August 2007 the MH-TMC facility was named to the list of Thomson 100 Top Hospitals: Performance Improvement Leaders and is the only facility in Houston to hold a place on that list. Also in 2007, MH-TMC received two Voluntary Hospitals of America (VHA) Leadership Awards, for clinical excellence and for community benefit, as well as the Texas Health Care Quality Improvement Award of Excellence.

Quality improvement has been a driving force for MH-TMC for several years. It is a continuous process and can be found in initiatives that span all levels of the campus. New construction, electronic medical records, and direct patient care are all centered on providing high quality and creating excellent patient outcomes. At MH-TMC, quality outcomes are not just talked about, but are lived, breathed, and practiced.

The Starting Point

In the fall of 2004, the Joint Commission released patient safety goals for hospitals for 2005. Included on this list for the first time was Goal 9: Reduce the risk of patient harm resulting from falls (JCAHO, 2004). Discussion in the Quality and Safety Excellence Council, a subset of the Clinical Practice Steering Council, called for the formation of a subcommittee to address patient falls in early 2005. To ensure a multidisciplinary approach to fall prevention, membership on this committee included representatives from clinical nursing staff, nursing education, physical therapy, pharmacy, facilities management, performance improvement, and
nursing management. The fall reduction committee was charged with reviewing historical fall data for the facility and comparing it with national data, reviewing current literature, reviewing current facility practice, and developing best practice recommendations for implementation.

The fall reduction committee had compared fall rates of each of the nursing units to NDNQI benchmarks for the unit type. To gain further insight into patient population risk, they scrutinized the data more closely for specific unit differences in patient acuity. To capture data across the continuum of care, units were divided by acuity into three categories:

- Critical care—included all intensive care units
- Intermediate care—included all intermediate and step-down units
- General acute care—included all general floor level of care units

By using these three categories, different types of patient fall risks were identified readily in different patient populations. Data examined included all aspects of the fall, including patient location, age, gender, diagnosis, and activity at the time of the fall. Additional considerations were previous history of falling, medications during hospitalization, witnessed or unwitnessed fall, level of consciousness prior to and at the time of the fall, lighting of surroundings, and any impairment in mobility.

Sample data from one representative unit in each of the acuity categories gave the following data for fall rates in the last 6 months of 2004 (see Table 1).

Although the data indicated fall rates in this sample at MH-TMC to be at or below NDNQI averages, it was felt that a reduction in fall rates could be achieved and sustained with a hospitalwide focus to identify at-risk patients and proactively implement interventions to prevent falls.

**The Evidence Base**

A review of the literature proved to be of minimal assistance, as many studies were not generalizable to different patient populations. One significant finding identified in the literature was the consistent use of a valid tool for fall risk assessment. Research published in the *International Journal of Nursing Practice* (McFarlane-Kolb, 2004) partially validated the use of the Morse Fall Scale as a tool that was easily adaptable and transferable for use in detecting fall risk in different patient populations. Because the information developed via literature review failed to provide solid recommendations on best practice, it was decided to examine successful practices in use at regional facilities.

An examination of current practice to prevent patient falls at MH-TMC included the use of a fall assessment form that was developed internally by the nursing management team and Nursing Education Department. However, there was no clear-cut standard practice for fall prevention and interventions done on an individual unit basis.

### TABLE 1.

<table>
<thead>
<tr>
<th></th>
<th>Critical Care (MICU)</th>
<th>Step-Down Care (CVIM)</th>
<th>Surgical Ortho-Trauma (6EJ)</th>
</tr>
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<tbody>
<tr>
<td>MH-TMC</td>
<td>0.98</td>
<td>n.d.</td>
<td>1.77</td>
</tr>
<tr>
<td>NDNQI</td>
<td>1.23</td>
<td>3.06</td>
<td>2.66</td>
</tr>
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</table>

n.d. = no data.
The Intervention Plan

The fall reduction committee returned to the Quality and Safety Excellence Council with the following recommendations for immediate implementation.

First, the Morse Fall Scale assessment should be completed on admission and every 24 hours.

Second, when patients are identified to be at risk for a fall, nursing staff has an assortment of interventions to select from to tailor the intervention plan to the individual needs of the specific patient. Those interventions include the following:

- Falling star decal placed on door of patient’s room for patients with a Morse score of > 25
- Two falling star decals placed on door of patient’s room for patients who have experienced a fall during their current hospital stay (to heighten awareness)
- Yellow patient armband to identify fall risk patients
- Placement of patients at risk of falling in proximity to each other for frequent observation
- Placement of patients at risk of falling near nursing station in centralized units
- Involvement of family as caregivers, and encouraged family presence 24 hours/day
- Use of one-on-one sitters as deemed necessary
- Hourly rounding, offering frequent hydration and scheduled bathroom assistance
- Adequate lighting in room and bathroom
- Fall risk status discussed in shift change report and team shift huddles every 12 hours

In conjunction with these recommendations, the fall reduction committee also requested that an intense staff education program be developed to ensure that the Morse assessment is completed in a timely fashion and accurately and that the appropriate interventions are implemented.

The education task was the responsibility of the Nursing Education Department for development and roll-out to nursing units. As a means to give up-to-date feedback to staff regarding the effectiveness of interventions, a monthly nursing report card was posted on the hospital shared computer drive so staff could compare units in the hospital to NDNQI data.

The Outcomes

In 2007, all three units demonstrated a downward trend after aggressive screening and implementation of the fall prevention initiative commenced (see Table 2).

While trends weren’t always in the same direction from year to year, between the last half of 2004 and 2007, fall rates had been reduced by half in MICU and by 29% in the surgical unit 6 East Jones (see Figure 1). Fall rates varied widely from year to year on the CVIMU, but 2007 rates were 8% lower than 2005. In 2007, all three units showed patient fall rates below their particular NDNQI comparison group as well as below the 2004 rates, just before the patient fall reduction committee was created.

| TABLE 2. Falls per 1,000 Patient Days, for Selected MH-TMC Units, 2004–2007 |
|-----------------------------|----------------|----------------|----------------|
|                             | Q3/Q4-04       | 2005           | 2006           | 2007           |
| Critical Care MICU          | 0.98           | 1.42           | 1.51           | 0.49           |
| Step-Down, CVIMU            | n.d.           | 1.93           | 3.47           | 1.79           |
| Surgical, Ortho-Trauma (6 East Jones) | 1.77           | 3.12           | 2.59           | 1.25           |

Patient Falls

Achieving Sustained Reduction in Patient Falls
The benefit from a reduction in fall rates for patients at MH-TMC is clear. Decreased fall rates equate to lower risk of injury to patients. Previous studies have found that injuries occurred to patients in 30% of falls, and severe injuries in 4% to 6% of patient falls (Morse, 2002; Schwendimann, Buhler, De Geest, & Milisen, 2006). Injuries from falls resulted in an increased length of stay (LOS) of 12.3 days, or 61%. According to Titler et al. (2005), a safety reduction program saves $432 per fall prevented. Financial costs related to possible litigation related to a fall or any postdischarge cost could be extremely significant and vary by case. A hospital could be forced to pay a settlement if a patient or the patient's family sued the hospital and won on grounds of negligence related to a fall. Using the adjusted Bates estimates for calculation, the cost of each patient fall, regardless of injury, would be $612 per patient fall in 2007 dollars. Given this information, cost avoidance may be calculated for the reduction of patient falls at MH-TMC. For the baseline year of 2004, the three units under review had a total of 34 patient falls, with an associated cost of $20,793. In 2005, these same units had 47 total falls, with an estimated cost of $28,742. In 2007, there were 25 falls, with an associated cost of $15,289. Although these figures might appear small, they are based on falls from three patient care units, or 157 patient beds, in a hospital with 594 patient beds.

The Continuous Process

While proud of these results, the team knew that quality improvement was a journey and not a destination, so continuous quality improvement was pursued. The Patient Fall Reduction Program Committee meets biweekly and reviews all incidents of falling, looking for trends and opportunities for improvement. The data are analyzed on a monthly basis and presented to the overall facility quality improvement council. Recommendations are then communicated to the clinical director, manager, and nursing staff of each unit that has an upward trend in fall data. Those units identified with upward trends will initiate the “fall bundle” to decrease their rates the next month.

During the committee’s annual review of 2007 data it was determined that the majority of falls at MH-TMC occurred on the inpatient rehabilitation unit. The fall risk for patients with intrinsic risk factors can be predicted most accurately by the use of a risk assessment tool (Rutledge & Matteucci, 2008). Thus, patients housed on an inpatient rehabilitation unit are not only at increased intrinsic risk, but could also benefit from the implementation of prevention protocols if identified as at risk through the use of the Morse Fall Scale. As a result, the most recent recommendations from the fall reduction committee to be used housewide included:

FIGURE 1.
Trends in Fall Rates Selected Units in MH-TMC, Q3/Q4–04 through 2007 (per 1,000 patient days)

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1. Bates et al. (1995) estimated additional costs to be $4,233 per patient who fell. That study was based on data collected from January 1987 through March 1991. Using 1989 as the midpoint of that period, the authors have adjusted his results to 2007 dollars, using the ratio of the consumer price index for 1989 and 2007.
• Morse Fall Scale reevaluation every 12 hours (increased from every 24 hours)
• “High risk for fall” medication alerts
• Bowel and bladder protocol for assistance getting to and from the bathroom
• Bed exit alarms
• Low Boy beds for high-risk patients
• Busy vests to occupy patients as a deterrent to exiting the bed
• Night lights for high-risk patients
• Florescent floor tape to identify the pathway to the bathroom
• Double nonskid socks (beige) for all patients at risk for falls
• Double nonskid socks (red) for all patients who have experienced a fall during their hospital stay, to heighten staff and family awareness
• Implementation of a “fall bundle” for all patients with a Morse score greater than 25 and a separate bundle for patients with a Morse score greater than 50

Lessons Learned

The past 3 years have demonstrated that there is no single change in patient care that is successful in preventing patient falls. Each occasion of a fall is as different as the patient and circumstances involved. Each patient must be assessed and frequently reassessed to identify circumstances that place the patient at risk and to select the best interventions to prevent falls.

Conclusions and Implications

The most well–designed interventions for fall prevention are ineffective if they are not selected and implemented appropriately. At MH–TMC, three factors were key to its success: an engaged workforce, comparative data, and continuous feedback. At the heart of the fall reduction program is an engaged workforce. The bedside nurse must recognize that he or she is the first line of defense for patients against a fall injury. When the nurse is vigilant in assessment and intervention, the risks to the patient are decreased. Comparative data provided the impetus for change. While the use of unit-to-unit comparisons is motivating, the inclusion of national benchmarking can be even more so.

Of special interest is the fact that during this process improvement, a reduction goal was never identified to staff. Data for all units were published with comparison to NDNQI unit-type data. The comparisons themselves motivated the staff to do better. A final factor is ongoing feedback. Fall data are frequently discussed at staff meetings, nurse council meetings, and performance improvement councils, and opportunities are explored and shared throughout the facility. In response, the staff took the responsibility for fall reduction at the bedside and achieved laudable results.

References


**Background Resources**


