In 2002, Ascension Health, the largest Catholic and largest not-for-profit health care system in the country, articulated a call to action with a commitment to provide 100% access to safe, effective care. As part of its Healthcare That Is Safe strategy, Ascension Health identified eight priorities for action and adopted a goal of clinically excellent care with no preventable injuries or deaths by July 2008. Even though Ascension Health experienced lower-than-expected fall rates, preventing falls was one of the goals adopted at Ascension Health’s Clinical Leadership Forum in December 2003.

Falls are the leading cause of injury deaths among adults age 65 years and older and are the most common adverse event reported in hospitals. Recent statistics released by the Centers for Disease Control and Prevention indicated a 55% increase in falls for this age group from 1993 to 2003. Although most of those falls occur outside the hospital, estimates of the number of patients who fell in general hospitals ranged from 2.1 to 4.7 per 1,000 patient bed days during the 1980s, according to Morse. Hitch and colleagues reported a fall rate of 3.29 per 1,000 patient days in 2002, which increased to 3.38 during a three-month study period in 2003. One half of all adults who fracture a hip cannot return home and never regain their former level of function. This inability to remain self-sufficient is primarily due to a fear of falling again that causes the person to limit activity; the resulting reduction in mobility and physical fitness in turn increases the risk of falling.

Ava D. Lancaster, R.N., B.S.N., M.H.S.A., C.I.C., C.P.H.R.M.
Annette Ayers, R.N., B.S.N., M.H.A.
Brenda Belbot, R.N., B.S.N.
Virginia Goldner, R.N., B.S.N., M.A.O.M., C.N.A.
Linda Kress, R.N., B.S.N.
Donna Stanton, R.N., B.S.N.
Polly Jones, L.C.S.W., C.P.H.Q.
Lora Sparkman, R.N., B.S.N.

Background: For Ascension Health’s Healthcare That Is Safe strategy, eight hospitals served as alpha sites in the program to prevent falls and eliminate falls with injury.

Methods: The alpha sites implemented four key strategies: (1) assessment and re-assessment of patient risk factors for falls, (2) visual identification of patients at high risk, (3) communication of patient fall risk status, and (4) education of patients, families, and staff about fall prevention.

Results: The recommendations of the alpha initiative spread rapidly throughout Ascension Health and preceded measurement of the fall ratio. Even so, a 9.9% systemwide reduction in acute care fall rates from January to October 2006 was observed, and the average rate of falls with serious injury was less than 0.10 per 1,000 patient days. Compared with national rates, falls with serious injury at Ascension Health were less than 10% of the expected rate.

Discussion: Although it is not possible to prevent all falls in acute care facilities, decreasing the number of falls and the risk of serious injury from falls is possible. Key steps caregivers can take to prevent falls and fall injuries include establishing a trusting relationship with patients and their significant others; frequently reorienting patients to their environments, reminding those at high risk of falls not to get out of bed without help; checking on patients frequently and keeping their personal articles within reach; and protecting patients from falls at all entry points into the health care system.

Article-at-a-Glance
The high incidence of falls among the elderly and their susceptibility to injury are primarily associated with comorbid conditions and declining physiologic processes. In 2003, 85% of persons who died from falls were aged 75 years and older. From 1988 to 1999, hospital admissions for fractures resulting from falls in those older than 65 years increased from 230,000 to 330,000, and by the year 2040 this number is expected to be 500,000 or greater. In 1991 costs associated with hip fractures alone were estimated at $4.7 billion and are expected to reach a cost of $240 billion by the year 2040. In 2000, direct medical costs totaled $179 million for fatal falls and $19 billion for nonfatal fall injuries. These costs do not include those associated with patient dissatisfaction and those due to litigation from patients or their families when injuries occur.

Saint Thomas Hospital, a 541-bed adult acute care medical-surgical tertiary referral hospital in Nashville, Tennessee, offers a range of services, including cardiac, vascular, neurologic, and orthopedic specialty services. During Summer 2001, Saint Thomas Hospital risk management personnel and members of the safety committee became concerned about the number of falls and falls with serious injury—50–60 falls each month, 2 or 3 of which were resulting in serious injury (requiring surgical intervention or treatment, such as fractures, head injuries, and lacerations with sutures).

Improvement efforts during the second quarter of fiscal year 2002 (FY02) led to an overall decrease in the number of falls and a 42% decrease in falls with serious injury. On the basis of this experience, Saint Thomas Hospital volunteered and was chosen as the initial alpha site for falls prevention, along with the three other hospitals in Saint Thomas Health Services.

Before the initial meeting of an expert panel in Nashville in May 2004, St. John Hospital and Medical Center, Detroit; Providence Health Center, Waco, Texas; and two Ascension Health hospitals in Tucson—Carondelet St. Joseph’s Hospital and Carondelet St. Mary’s Hospital—joined the alpha group. These eight hospitals worked together to determine best practices for preventing falls in acute care settings.

Implementation

Kick-off Meeting

The falls prevention alpha project began with a kick-off meeting in Nashville in May 2004, which included experts from across the United States and representatives from the eight alpha sites.

The participants reviewed selected literature on falls and fall prevention strategies, including precipitating factors and available assessment tools, and the eight alpha sites described their current fall prevention programs.

To align with Ascension Health’s July 2008 deadline, the alpha sites set a goal to prevent falls and eliminate falls with injury within four years. They developed recommendations for preventing falls and eliminating falls with injury, and defined the metrics for measuring progress toward those goals. A comprehensive change package, introduced in August 2004, promoted strategies for falls risk assessment, prevention of falls and fall injuries, and environmental safety.

Interventions

Interventions with potential for preventing falls were categorized as promising ideas; a partial list of promising ideas recommended by the alpha sites is presented in Table 1 (below). The alpha sites agreed to implement the key strategies and to test some of the promising ideas during the trial period, which began in September 2004.

The alpha sites formed interdisciplinary fall prevention teams. Depending on the size of the alpha site, the teams were composed of representatives from some or all of the following areas: nursing, facilities, pharmacy, risk management, physical therapy, and environmental services. Alpha

<table>
<thead>
<tr>
<th>Table 1. Partial List of Promising Ideas Recommended by the Alpha Sites</th>
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<tbody>
<tr>
<td>1. Creation of elimination protocol</td>
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<tr>
<td>2. Pharmacy oversight of high-risk medications</td>
</tr>
<tr>
<td>3. Use of low beds</td>
</tr>
<tr>
<td>4. Prepackaging of components used for falls prevention tool kits</td>
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<tr>
<td>5. Use of bed alarms</td>
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<tr>
<td>6. Collaboration with physicians to reduce falls (e.g., medication orders such as sedatives)</td>
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<tr>
<td>7. Diversion therapy (e.g., aprons, lacing boards)</td>
</tr>
<tr>
<td>8. Staff scripting (e.g., what to say to patients when entering and leaving the room)</td>
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</table>
sites tested strategies and promising ideas, with the five larger facilities testing primarily on one or two patient care units and the three smaller facilities testing the ideas in all acute patient care areas.

In August 2005, with nearly a year’s experience in the initiative, the alpha sites modified the original strategies, resulting in the following four key strategies, which were recommended for application throughout Ascension Health:

1. Assessment and reassessment of patient risk factors for falls
2. Visual identification of patients at high risk
3. Communication of patient fall risk status
4. Education of patients, families, and staff about fall prevention

In addition, the alpha sites adopted a single falls definition and made tactical recommendations for implementation of the strategies (Table 2, page 370).

**Operational Definitions and Measures**

The fact that some of the eight alpha sites either had achieved or were working toward Magnet designation by the American Nurses Credentialing Center (ANCC) Magnet Recognition Program®11, which uses the definition employed by the National Database of Nursing Quality Indicators (NDNQI) of the American Nurses Association (ANA), led the alpha group to adopt that definition: “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.”12

Data collected on units that NDNQI has deemed ineligible for data submission on acute care patient falls—obstetric, pediatric, skilled nursing, neonatal, behavioral health, and ambulatory care—were not included in the alpha site data.

All falls were included in the fall counts, whether they resulted from physiological causes (for example, fainting) or environmental causes (slippery floor). Falls involving a staff member’s attempt to minimize the impact of a fall were categorized as assisted falls and were also included in the collected data. The definition used for patient days was inpatient days plus total days of observation patients on inpatient units. Falls of inpatients in procedure or treatment areas were not included in the data because they were not part of the NDNQI definition.

The alpha sites developed a five-point injury scale on the basis of the literature1,13 as follows:

1. No apparent injury: no injury as a result of the fall
2. Minor: bruises, abrasions, etc., as a result of the fall
3. Moderate: injury that causes tube displacement, or results in a fracture, or a laceration that requires sutures
4. Major: injury that requires surgery or a move to an intensive care unit for monitoring; life threatening (for example, head injury)
5. Death

Falls with a rating of 3, 4, or 5— which were considered “serious” by Ascension Health—were reported as falls with serious injuries per 1,000 patient days.

The sites also agreed on a research-based “better performers range” for fall index to benchmark hospital performance. The range selected was 2.5–3.5 falls per 1,000 patient days. Although the literature showed significant variation in fall indices for adult acute care, it consistently showed that the better performers were in this range.14

Ascension Health incorporated this injury scale into its event reporting system.

**Spread of Fall Prevention Practices**

The alpha sites made recommendations on best fall prevention practices to the Ascension Health Clinical Excellence Team (CET) in preparation for spreading these practices across all Ascension Health facilities. The team approved and adopted the recommendations and standardized definitions. During the alpha study period, it was announced that fall prevention would be a new joint
Commission National Patient Safety Goal for 2005, and hospitals throughout Ascension Health began working immediately to put fall prevention strategies in place. Approximately 80% of theAscension Health hospitals joined a voluntary falls affinity group and began participating in meetings and monthly conference calls to learn from each other. With the culmination of the alpha sites’ work and the involvement of the falls affinity group, all hospitals were asked to start submitting falls data (monthly raw numbers of falls, falls with serious injury, and patient days) to the system office beginning in January 2006.

**Confirmed Strategies**

Although all four strategies were implemented at the eight alpha sites, implementation of the tactical recommendations shown in Table 2 (above) varied, except with regard to the patient assessment tool. All sites employed the Hendrich II Fall Risk Model© (Hendrich II; Figure 1, page 371), which assesses a patient’s risk factors for falling. If a patient accumulates enough points based on the risk factors, the patient is deemed at “high risk” for falling. Any patient with a score of ≥5 is considered at high risk for falls.

### Table 2. Four Key Strategies and Tactical Recommendations to Prevent Falls and Fall Injuries in Acute Care at Ascension Health*

<table>
<thead>
<tr>
<th>Assessment and Re-assessment of Patient Risk Factors for Falls</th>
<th>Visual Identification of Patients At High Risk</th>
<th>Communication of Patient Fall Risk Status</th>
<th>Education of Patients, Families, and Staff About Fall Prevention</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Hendrich II Fall Risk Model</td>
<td>▪ Ruby Red Slippers, IRIS, SAFE, LAMP, Falling Star</td>
<td>▪ Verbal–Nursing &amp; ancillary change of shift or caregiver report</td>
<td></td>
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<tr>
<td>▪ Frequency Defined</td>
<td>▪ Prepackage visual cue kits: socks, armbands, door sign, stickers, poster</td>
<td>▪ Recent history of falls at home or in the facility</td>
<td></td>
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<tr>
<td>– Admission</td>
<td></td>
<td>▪ Computer notification to other departments of fall risk status</td>
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<tr>
<td>– Change of Caregiver</td>
<td></td>
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<td>– Change in Condition</td>
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* IRIS, I Require Intensive Surveillance; LAMP, Look at Me Please; SAFE, Stay Alert for Fall Event (see Table 4).

1. **Assessment and Re-assessment of Patient Risk Factors for Falls**

The alpha site hospitals ranged in size from 600 beds to a small critical-access hospital. All participants agreed to the need for a research-based tool to assess patients’ fall risk. Although other risk models were discussed, consideration of the literature and of the experiences of some of the alpha team members led to the selection of the Hendrich II. In October 2006, the NDNQI added the tool as a reporting option for fall risk assessment.

Although this research-based tool lends itself well to manual documentation, the alpha sites made the recommendation to Ascension Health that (1) all electronic medical records incorporate the Hendrich II and that (2) documentation as to whether the risk assessment was performed by nursing staff should be required. Saint Thomas Hospital was one of the first Ascension Health hospitals to implement the Hendrich II in its electronic medical records.

Each alpha site worked to develop policies for assessing and re-assessing patients’ fall risk. The policies called for an assessment at admission, followed by re-assessment when there is a change in caregiver or a change in patient condition.
2. Visual Identification of Patients at High Risk. Each alpha site agreed on the need for a method to identify patients assessed as at high risk for falling. Not all sites used the same method to recognize these patients, but visual cues were deemed extremely valuable as a tool for alerting staff to high-risk patients (examples of visual cues can be found in Table 4 [above, right]). Visual cues included signs, buttons and stickers, all of which were agreed on as appropriate for use in a prepackaged falls prevention tool kit. The standard kit also included a sign for the patient room door, patient and family education material, a color-coded armband, and double-treaded socks or slip-resistant shoes. In addition to the standard elements, several of the alpha sites used diversion therapy for confused patients, such as activity aprons, lacing cards, a lock box, and an abacus. Others inserted a gait belt in the package to provide staff a better method of supporting patients during ambulation, such as when patients needed to be lowered to the floor and to prevent serious injury in the event of a fall.

The fall prevention teams at the alpha sites encouraged staff to develop components for their individual visual cue programs in the recognition that their involvement would increase compliance.

3. Communication of Patient Fall Risk Status. Healthcare organizations are becoming increasingly aware of the role played by communication in patient safety. Communication was a root cause of approximately 65% of all sentinel events voluntarily reported to The Joint Commission from 1995 to 2006—and of approximately 62% of all patient falls reported in 2005.16 The alpha sites discussed the importance of communication of fall risk between and among staff and visitors. The consensus was that to prevent falls and keep patients safe, the fall risk assessment score of every patient should be included in all communications about the patient. Examples of communication of patient fall status are provided in Sidebar 2 (page 372).

4. Education of Patients, Families, and Staff about Fall Prevention. Approximately 78% of all patient falls reported as sentinel events to The Joint Commission from 1995 to 2004 were linked to orientation and training issues, decreasing to 30% for 2005 and 32% for 2006.16 In addition, communication issues and availability of information together were listed as root causes of approximately 77% and 83% of patient falls for 1995–2004 and 2005, respec-
These data reinforce the need to ensure that patients and visitors, as well as employees, are informed about the risk of patient falls in acute care and the ways to prevent them. Examples of fall prevention education are provided in Sidebar 3 (page 375).

Results
In the early months of data collection, most of the alpha sites experienced an initial increase in falls indices as well as falls with serious injury indices—for example, as shown in Figure 2 (page 373). On analysis, the alpha sites found that the initial increase was a result of better fall reporting by frontline caregivers, likely because they were educated on the falls program and were introduced to falls analysis and prevention tools and strategies.

As fall prevention education spread throughout Ascension Health and staff competencies related to fall prevention were strengthened, decreases in the system’s already low rates of total falls and falls with serious injury were observed. The total number of falls from reporting hospitals decreased to the “better performers” range of 2.5–3.5 falls per 1,000 patient days, representing a 9.9% decrease in the rate of falls from January to October 2006 (Figure 3, page 373).

The goal of this priority for action was to eliminate falls with injury and to prevent falls. Although falls may occur even if patients are receiving appropriate care, the goal was to ensure that when falls do occur, any chance of injury would be mitigated by appropriate prevention activities, such as those recommended. If 30% of all hospital-based falls result in serious injury, for Ascension Health, with an average of < 3.5 falls per 1,000 patient days, the expected rate of falls with serious injury would be > 1 per 1,000 patient days. However, as demonstrated in Figure 4 (page 374), the average actual rate was < .10 per 1,000 patient days—less than one tenth of the expected rate. The rate of falls with serious injury decreased by 6.4% during the same period.

Discussion
Because of the unpredictable nature of a certain percentage of patient falls, it is not possible to prevent all patient falls in acute care facilities. However, decreasing the number of falls and the risk of serious injury from falls is possible. Assessing and re-assessing patients is paramount to preventing falls. A number of other lessons were learned during this alpha experience.

Patient Care Lessons Learned
Changing or discontinuing a medication could prevent...
a substantial number of falls because polypharmacy is often cited as a causal factor. This is especially important when one considers the number of specialty physicians a patient may see.

In addition to the multiple medications many elderly patients take, the advanced age of many acutely and chronically ill patients and their desire to remain independent provide the impetus for health care organizations to be more resourceful in keeping these patients safe.

Key steps caregivers must take to prevent falls and fall injuries are as follows:

- Establish a trusting relationship with patients and their significant others.
- Frequently reorient patients to their environments, reminding those at high risk of falls not to get out of bed without help.
- Check on patients frequently and keep their personal articles within reach.
- Protect patients from falls at all entry points into the health care system, such as the inpatient facility and the emergency department (ED). For example, Saint Thomas Hospital provided fall prevention education to all inpatients, as well as to ED patients who presented there because of a fall. It also made fall prevention information available to all its ED patients through existing communication avenues, such as the brochure kiosks in central areas.

**Other Lessons Learned**

In addition to the reduction in falls and falls with serious injury attributable to the implementation of the four key strategies, a significant outcome of the falls and fall injuries prevention initiative was the development of the sup-

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**Figure 2.** Saint Thomas, like most of the other alpha sites, experienced an initial increase in falls and falls with serious injuries, which likely reflected improved fall reporting by frontline caregivers.

**Figure 3.** The total number of falls from reporting hospitals decreased to the “better performers” range of 2.5–3.5 falls per 1,000 patient days, representing a 9.9% decrease in the rate of total falls from January to October 2006.
porting data collection and analysis processes. More than 60 hospitals agreed to common falls and fall injury definitions and data collection methodology, which affords the opportunity to analyze falls data and results in both internal and external benchmarking capabilities. Also, the initiative afforded the alpha sites opportunities to try myriad products and environmental options for preventing falls. For example, one of the targeted interventions for the pressure ulcer alpha initiative (under way at the same time) was the bed surface. Ascension Health began to look at beds and bed surfaces that simultaneously could contribute to the prevention of pressure ulcers and falls. Ascension's Clinical Excellence staff put together a business case to show the efficacy and cost-effectiveness of beds that would decrease both adverse outcomes. Beds with the following features were chosen and will eventually replace all beds throughout Ascension Health:

- Pressure redistribution surfaces
- Built-in alarms to alert staff when patients attempt to get out of bed alone
- Capability of being lowered within 8–10 inches of the floor

Providence Health Center’s fall rates decreased by 9% from July 2006 to November 2006—to an average of 2.43 falls per 1,000 patient days after the new beds were integrated into its facility.

The design of the health care environment can also contribute to patient falls. Health care architects recognize the need to build safer hospitals and patient rooms that are also efficient for staff. With this in mind, the alpha sites evaluated environmental factors related to falls, such as lighting, handrails, and replacement of furniture if wheels did not lock. One facility removed a towel rack from the back of the patient bathroom door because patients tended to use it as a grab bar; it provided no support, often bending or breaking off the door. Motion detectors were tested on one unit to ensure that lighting was adequate at night for patients who got up alone, resulting in a decrease in falls.

**Conclusion**

Although Ascension Health was already a leader in low acute care fall and injury rates, participating alpha sites increased their knowledge of falls and fall prevention. Their experience demonstrated that implementing four key strategies and supporting tactics can result in a reduction in falls, especially falls with serious injury.

Future work in the area of falls prevention in acute care will inevitably reach far beyond this article's scope. Because of the implications of the aging population, every patient care-related process and practice currently in place in acute care facilities is likely to undergo changes to accommodate the growing elderly population. The physical layout of patient rooms, medications prescribed and given, and the way basic care is structured will need to be reviewed frequently to ensure safe patient care.
Sidebar 3. Examples of Fall Prevention Education

Each alpha site developed fall prevention information packets for patients and families. Several sites also developed fall prevention education packets for staff, which are part of annual clinical competency review.

St. John Hospital and Medical Center and Providence Health Center distributed education materials for prevention of falls to all patients at the time of admission. Bedside caregivers reviewed the patient information with the patient and family members and, for patients at high risk of falling, emphasized the need to call for help when getting out of bed. Both hospitals included fall prevention information in their orientation of clinical staff.

Providence Health Center also used whiteboards in patient rooms with a red stop sign on it to remind high-risk patients not to get out of bed without help; staff wrote a note reminding these patients to use their call lights.

Saint Thomas Hospital used the analysis of its outcomes data on falls to design education processes related to the prevention of falls. Individual managers and directors were presented with area-specific data, and monthly hospital-wide data were shared with all clinical and clinical support managers and directors. Progress on a goal of no more than 3 falls per 1,000 patient days was a standing agenda item for most clinical care-related committee meetings.

In addition, Ascension Health hosted a monthly conference call for the Falls Affinity Group (representatives from facilities across the system), with the goals of providing education to staff on ways to prevent falls and providing a venue for sharing success stories that were taking place across the system as hospitals deployed successful fall prevention tactics.


References