

## Clinical Excellence Series

# Eliminating Facility-Acquired Pressure Ulcers at Ascension Health

Wanda Gibbons, R.N., M.H.A.  
Helana T. Shanks, R.N.  
Pam Kleinhelter, R.N., M.S.N.  
Polly Jones, L.C.S.W.

*This article is the third of a series that charts the journey of one health care system, Ascension Health, toward the clinical transformation of inpatient care—and no preventable injuries or deaths.*

**P**ressure ulcers are areas of localized tissue destruction caused by the compression of soft tissue over a bony prominence and an external surface for a prolonged period of time. Pressure ulcers are staged from I through IV to classify the degree of damage observed.<sup>1</sup> Pressure ulcers can develop within 24 hours of skin injury or appear as late as five days postinjury.<sup>2</sup>

Hundreds of articles have been written regarding the prevention and treatment of pressure ulcers. Several groups, including the Wound Ostomy and Continence Nurses (WOCN) Society and the National Pressure Ulcer Advisory Panel (NPUAP) have reviewed the literature regarding etiology, risk factors, prevention, and treatment of pressure ulcers. Best practice guidelines have been published on the basis of their expert reviews.<sup>1,3</sup> The WOCN Society estimates that more than 1 million persons in the United States develop pressure ulcers each year.<sup>4</sup> The incidence of pressure ulcers has been estimated to range from 0.4% to 38% of patients in acute care settings, with 48%–53% of these pressure ulcers occurring while the patient is hospitalized.<sup>3</sup> The 2005 International Pressure Ulcer Prevalence Study, sponsored by Hill-Rom, reported a pressure ulcer prevalence of 15.2% and a hospital-acquired pressure ulcer prevalence of 7.3%.<sup>5</sup> For the purposes of its initiative, St. Vincent's Medical Center defined a facility-acquired pressure ulcer as any pressure ulcer that was not documented within 24 hours of admission.

## Article-at-a-Glance

**Background:** In 2004, as part of Ascension Health's "Healthcare That Is Safe" initiative, St. Vincent's Medical Center, as an alpha site, was charged with defining best practices to eliminate facility-acquired pressure ulcers. A comprehensive plan, including the "SKIN" (Surfaces, Keep the patients turning, Incontinence management, Nutrition) bundle, was developed.

**Results:** The incidence of pressure ulcers decreased from > 2% to < 1% from December 2004 through February 2006. No new Stage III or IV facility-acquired pressure ulcers occurred between August 2004 and February 2006. Weekly SKIN operations meetings and use of the SKIN process tool ensured that all at-risk patients were receiving appropriate interventions.

**Reporting and Spread:** The alpha site work and SKIN bundle were presented to all 67 Ascension Health acute care facilities at a rapid-design-format Pressure Ulcer Summit in mid 2005. All acute care facilities agreed to a single model of care using the SKIN bundle and common measures of quality and performance.

**Discussion:** The St. Vincent's alpha site initiative in pressure ulcer prevention, enabled it to identify at-risk populations, implement appropriate actions, and achieve positive, measurable, meaningful results.

**Conclusion:** The SKIN program was adopted and is being implemented throughout Ascension Health.

**Table 1. Ascension Health Priorities for Action**

- Preventable Mortality
- Adverse Drug Events
- Joint Commission National Patient Safety Goals and Core Measures
- Nosocomial Infections
- Perioperative Complications
- Falls
- Pressure Ulcers
- Perinatal Safety

The mean cost per hospital admission for patients who develop a pressure ulcer has been reported to be \$37,288,<sup>6</sup> which translates to a cost of \$2.2 to \$3.6 billion each year in acute care settings.<sup>7</sup> However, the financial cost paints only a partial picture of the effects of pressure ulcers. The human cost can be painful, debilitating, or even deadly. Many readers will recall the media coverage of the death of Christopher Reeve. In spite of paralysis from a previous injury, his death was attributed to a systemwide infection as a result of a pressure ulcer.<sup>8</sup>

### St. Vincent's Medical Center: The Alpha Site Initiative

A faith-based, mission-driven health care provider, St. Vincent's Medical Center is a 528-bed licensed facility and the largest hospital provider of adult inpatient services in northeast Florida, with a 19.3% market share. This translates into 26,600 admissions, 2,200 deliveries, and 64,000 emergency department (ED) visits annually.

As the nation's largest Catholic and nonprofit health system, Ascension Health comprises more than 105,000 associates serving in 20 states and the District of Columbia. In 2002, Ascension Health articulated a call to action to "provide 100% access to safe, effective care in ways that satisfy patients, associates, and physicians." In 2005, Ascension Health's strategic direction sharpened the focus of this call to action to provide "Healthcare That Works, Healthcare That Is Safe and Healthcare That Leaves No One Behind, for Life." Nine alpha sites were established to define best practices to eliminate potentially preventable complications occurring in its health

care facilities.<sup>9</sup> These initiatives have been incorporated into eight priorities for action (Table 1, left).

St. Vincent's Medical Center volunteered, and was selected, to develop the process for the prevention of pressure ulcers. We had focused on reducing pressure ulcer prevalence and incidence in 2000–2003, when we observed increasing costs for specialty-bed rentals associated with the treatment of pressure ulcers. On the basis of this recent experience and strong support from our nursing staff, we thought the alpha initiative would be a natural fit for our organization. In addition, we considered pressure ulcer prevention an opportunity for nurses to drive a process to positively affect patient outcomes and increase our pride in professional nursing practice.

Because Ascension Health comprises facilities offering services ranging from acute care to long term care, we described the initiative as "facility" focused, rather than "hospital" focused. We planned to disseminate the results and benefits of the initiative throughout Ascension Health.

The initiative for the prevention of facility-acquired pressure ulcers was a strategic priority for St. Vincent's Medical Center. It was clearly reflected in the goals, reward systems, and measurements of our organization, and the successful completion of the initiative would positively affect the variable compensation for all eligible associates. More importantly, this initiative was designated as one of a small set of priorities by the organization's board of directors. Individual performance goals for the chief executive officer (CEO), chief operating officer (COO), chief nursing officer (CNO), nursing directors, and managers were aligned with the pressure ulcer prevention effort. Because the prevention of pressure ulcers is primarily a nursing-driven process, the CNO [W.G.] assumed executive sponsorship of the initiative.

As shown in the time line for the pressure ulcer initiative, the leadership team was established in February 2004 (Table 2, page 490). The team was composed of the CNO, a nurse manager [P.K.], an educator [H.S.], a pharmacist, a dietitian, two staff nurses, two WOCN registered nurses (RNs), a nurse in performance improvement, and a long term care nursing educator.

After forming the team, the next step was to review the current policies and procedures and conduct a literature review of best practices, in preparation for an "expert"

**Table 2. Pressure Ulcer Prevention Program Time Line\***

February 2004	May 2004	June 2004	July 2004	August 2004	September 2004	October 2004	November 2004	December 2004
Formation of Pressure Ulcer Team	Review of literature Prevalence Study	Expert meeting	Bundle developed	First 3 units "go live"	Operations management meetings started	Further roll-out to units Test surfaces in OR/ED Change in products	All units completed Replaced 162 surfaces or mattresses	Continuation of weekly SKIN operations meetings Prevalence study

\* The program was rolled out to all units in December 2004. OR, operating room; ED, emergency department.

meeting held in June 2004. Representatives from the Institute for Healthcare Improvement and Ascension Health, as well as WOCN experts from across the United States met with the team to create a blueprint for the change package, which included promising ideas, a time line and key concepts. For example, the facility already used a risk assessment tool, the Braden Scale for Predicting Pressure Sore Risk,<sup>10</sup> in daily assessments, and the expert meeting confirmed the need to continue its use.

After the expert meeting, we developed the "SKIN" bundle in July 2004 because we had no bundle—that is, synergistic group of interventions—to guide the initiative. This bundle addressed interventions related to the Surfaces, or mattresses and cushions on which the patients lay or sit, the need to **K**eeP the patients turning or moving, the need to manage **I**ncontinence, and the importance of **N**utrition and hydration. Henceforth, we referred to the alpha initiative leadership as the SKIN team.

With the team in place, we were ready to go "live" with the first three nursing units in August 2004.

### Preparation for the Alpha Site Initiative Culture Modification

Before the start of the pressure ulcer prevention program, St. Vincent's incidence of pressure ulcers was lower than national norms and Ascension Health averages. Specifically, the facility-acquired pressure ulcer prevalence was 5.7%, compared with the Ascension Health average of 7.6% and a national average of 7.7% in the 2004 Hill-Rom International Pressure Ulcer Prevalence Survey.<sup>11</sup> However, to reach the target—the elimination of facility-acquired pressure ulcers—we determined that several

aspects of the organizational culture needed modification. Some staff believed that pressure ulcers were unavoidable in complex, critically ill patients—that maintaining heart and lung functions overshadowed the need for skin care and pressure ulcer prevention. We could not be satisfied with this traditional view. We changed the expectation from "critically ill patients will leave the organization alive" to "critically ill patients will leave the organization alive and without a pressure ulcer." The culture changes were incorporated during hand-off communications, in which the caregivers began to include the status of patients' skin.

Not only did we raise the bar on our expectations of what we considered acceptable with regard to pressure ulcers, we also made it clear to the staff this initiative would endure as the start of a ground-breaking change in patient care. A significant impetus to the culture change was the empowerment of the staff. From the first in-service and throughout the initiative, caregivers at the bedside influenced the process. Their knowledge and experience were valued and their pride was enhanced as they improved patient outcomes and built a national model for best practice.

To the degree that staff empowerment influenced culture change, the nursing leadership maintained this culture change. Nursing directors, nurse managers, clinical resource coordinators, and unit champions attended the weekly SKIN operations meetings—debriefings with the nursing leadership—where pressure ulcer incidence was reviewed. In addition, SKIN operations meetings provided a forum in which knowledge and experience were shared and techniques for promoting staff accountability were discussed.

## Internal Research/Rationale for Pilot Units

Before we educated staff and implemented the SKIN bundle, we reviewed charts of 30 patients who had developed pressure ulcers in the previous six months. The review revealed an increased risk for patients with one or more co-morbidities among four diagnoses: congestive heart failure, sepsis, respiratory failure, and renal failure. Of the 30 patients, 22 had a history of cardiovascular disease. Partly on the basis of these findings, we chose the eight-bed open heart recovery unit, the 28-bed cardiovascular progressive care unit, and the 14-bed coronary care unit as the pilot units.

According to chart reviews, for 87% of the time, a nutritional consult had been ordered for patients with pressure ulcers, but the nutritional recommendations were followed only 35% of the time. We therefore instituted an immediate practice change. Dietitians previously wrote their recommendations in the multidisciplinary progress notes, where they could be lost in the shuffle of paperwork, so St. Vincent's revised its process and created medical-staff-approved standing orders for dietitians.

Once we completed the chart review and identified the pilot units, we began implementation and measurement of the program. We educated the staff, refined implementation of the program, and recorded and reported the results, as described in the following section.

## Implementation and Measurement of the Alpha Site Initiative

### Education Process

The education plan for the pressure ulcer prevention initiative included the following components:

- Identification of core responsibilities for each member of the team responsible for pressure ulcer prevention
- Development of educational offerings for each audience, for example, clinical staff, unit champions/experts, and the executive team
- Development of the SKIN bundle
- Teaching skin as an organ system
- Presentation of the initiative as a nursing-driven process, emphasizing pride of practice.

The clinical components of staff education included the etiology and risk factors that predispose patients to develop pressure ulcers and interventions to minimize risk. Nurses' knowledge of skin assessment using the

Braden scale, staging of pressure ulcers using the NPUAP Guidelines,<sup>3</sup> and selection of appropriate surfaces were reinforced. We taught the staff to develop and implement an individualized plan of skin care and to accurately document pertinent data.

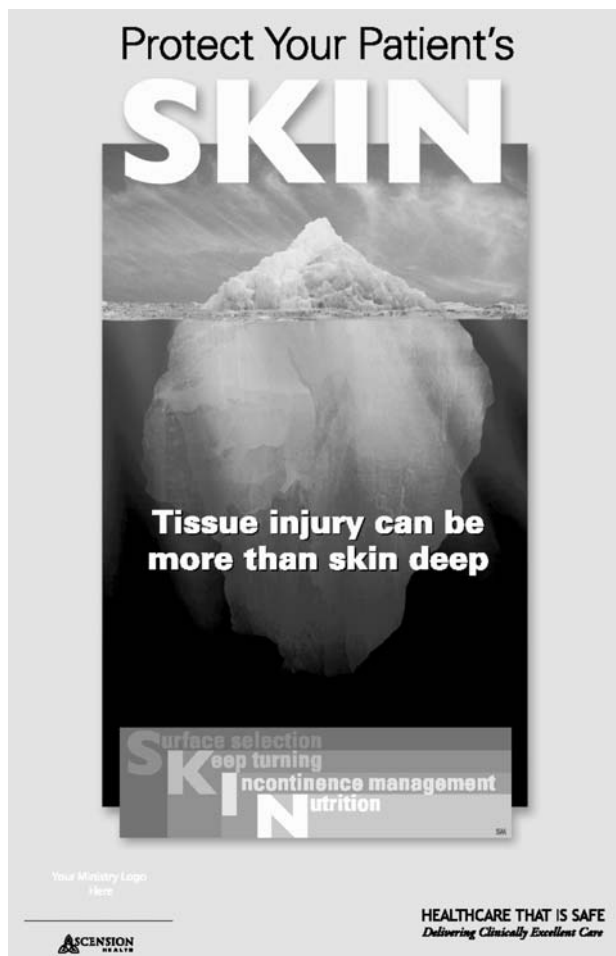
A brief presentation to clinical staff introduced the SKIN bundle and included the elements listed above. The educators also provided the background, structure, rationale, and results anticipated with implementation of the SKIN bundle. Education began with the three pilot units, followed by a staggered rollout of the initiative to all nursing units. Additional education in the rollout included bedside teaching of the application of all elements of the SKIN bundle, newsletters highlighting individual components of the bundle, self-study modules related to assessment and prevention of pressure ulcers, placement of a poster (Figure 1, page 492) in prominent areas on the individual nursing units, and pocket reference cards of the Braden scale and staging. For all patients with a Braden score of  $\leq 18$ , which indicates greater risk of developing a pressure ulcer, a reminder of the SKIN bundle was placed on their nursing documentation clipboards (Figure 2, page 493).

Routine ongoing education efforts in the pressure ulcer prevention initiative included education of new staff in orientation and continuing education for all staff regarding updates or changes in process. We assessed educational needs versus compliance issues when we identified a decline in performance indicators. For unexpected spikes in incidence in which the SKIN bundle was documented, we conducted chart reviews in an effort to isolate and address causative factors. Factors not addressed in the SKIN bundle, for example, poor tissue perfusion, were addressed through continued literature searches, discussion, and planning.

### Implementation Refinements

After the pressure ulcer prevention program was introduced to the units, the unit leadership was expected to monitor and report compliance with the SKIN bundle and related issues in a weekly SKIN operations meeting. A tool developed to monitor progress (Figure 3, 494) proved to be very beneficial to the process because any issues with products or processes were brought forward and investigated. For example, on the basis of

## Poster for Skin Initiative



**Figure 1.** This poster was placed in prominent areas on the individual nursing units at St. Vincent's Medical Center.

the work of the SKIN operations meetings, St. Vincent's changed compression stockings, adopting a product less likely to contribute to breakdowns on the dorsum of the foot. In addition, we adopted a fecal incontinence collection system and adult diapers and disposable underpads that contained less plastic. The Operating Room (OR) and ED trialed the use of different surfaces for patients at higher risk of developing pressure ulcers. The OR adopted special surfaces for patients whose OR times were expected to be three hours or more. The ED attempted to place patients on special surfaces when long ED waits were expected. Our compliance with the SKIN bundle also increased.

## Results

Before beginning the alpha site work, St. Vincent's monitored pressure ulcers per 1,000 discharges, reported data for facility- and community-acquired pressure ulcers, and maintained a database with pertinent data on all pressure ulcers. As we progressed with the alpha initiative, we found that these metrics did not provide robust data that met the goal of timely, easily accessible, and meaningful data at both the organization and unit level. Hence, we modified the metric to the number of pressure ulcers per 1,000 *patient days*, with the pressure ulcer allocated to the unit on which it initially was observed. St. Vincent's calculates facility acquired pressure ulcer ratios on a weekly, monthly and quarterly basis. We also conduct a quarterly prevalence survey and an annual incidence survey to validate the ongoing measures.

The downward trend of pressure ulcer incidence in St. Vincent's was evident (Figure 4, page 495), decreasing from > 2% to < 1% from December 2004 through February 2006. In a comparative survey, we found that the incidence of facility-acquired pressure ulcers per 1,000 patient days decreased from 2.40 in January–September 2004 to 1.81 in April–September 2005. These data were statistically significant at a 95% confidence level. More importantly, no new Stage III or IV facility-acquired pressure ulcers occurred between August 2004 and February 2006, the most recent month for which data were available. One of the staff's initial frustrations was that the number of pressure ulcers did not quickly reduce to and sustain at zero. In fact, following the initial staff education, the number of reported facility-acquired pressure ulcers temporarily increased. Anecdotal evidence suggested that the staff were assessing skin regularly and identifying ulcers earlier in the skin breakdown process, factors that could increase reported incidence. Despite the initial increase in incidence, the staff thought the pressure ulcers were smaller and healing faster. Through the weekly SKIN operations meetings and use of the SKIN process tool, we knew that 100% of the at-risk patients were being evaluated for appropriate interventions, including nutrition orders. Further data analysis revealed substantial decreases in pressure ulcers by location (Table 3, page 496).

## Reporting and Spread

The alpha site work and SKIN bundle were presented to nursing colleagues from all 67 Ascension Health acute care facilities at a rapid-design-format Pressure Ulcer Summit in St. Louis on May 31–June 1, 2005. Under the leadership of the facility CNOs, each facility was invited to send five nurses. Attendees included CNOs, clinical educators, wound experts, front-line nurse managers, and clinical staff nurses. The summit's specific goals were as follows:

- Create and adopt the preferred practice(s) to eliminate facility-acquired pressure ulcers and define best practice for the care of all pressure ulcers
- Create a project time line
- Define measurement criteria, goals, and definitions.

We described St. Vincent's model and experiences with pressure ulcer prevention, and colleagues from the other facilities had an opportunity to share their best practices and enhance the program.

Summit participants voiced unanimous support for a standardized pressure ulcer assessment, prevention, and treatment program throughout Ascension Health. All acute care facilities agreed to a single model of care using the SKIN bundle and common measures of quality and performance—and committed to implementing the SKIN bundle by January 1, 2006.

Subsequent meetings were held to address aspects of the SKIN bundle for pediatric and long term care populations. The final recommendations and a tool kit were distributed to all Ascension Health facilities in November 2005. The tool kit included best practices, implementation techniques, and tools for use in changing practices, as well as Ascension Health Nursing-branded materials for use in the pressure ulcer prevention journey at each

## SKIN Risk Alert Reminder to Nurses

### SKIN RISK ALERT SKIN BUNDLE INTERVENTIONS IN EFFECT!

#### SURFACE:

- Do sure patient is on correct type of mattress.
- Do not use multiple layers of linens under patient.
- Keep linens free of wrinkles.
- Be sure patient is not lying on tubing, telephones or call bells.

#### KEEP TURNING:

- Reposition patient at least every two hours when in bed.
- "Self" is not acceptable for documenting repositioning.
- Document the actual position the patient is observed in.
- Shift patient's weight at least every hour if up in chair.
- Use a chair pad when patient up in a chair.

#### INCONTINENCE:

- Offer toileting assistance every two hours.
- If incontinent, give perineal care every two hours and as needed for stool incontinence.
- Apply a moisture barrier after incontinence care.
- If not incontinent, apply moisture barrier every 8 hours.
- Avoid diapers unless needed for containing excessive amounts of stool, patient is ambulatory and incontinent or saturates linens with most urinary incontinence episodes or patient requests diaper.

#### NUTRITION:

- If patient has a nutritional deficit or is high risk for a nutritional deficit, order a nutrition consult. Look at what the patient has been taking in for nutrition and also look at albumin levels.
- Consider recent weight loss as well.
- Consider hydration status.
- Carry out nutrition orders and record supplement and meal intake

Assess skin every eight hours. Document breakdown description on Skin Flow Sheet daily

#### Document all of your interventions

*Not a permanent part of the medical record*

**Figure 2.** The S (Surface), K (Keep Turning), I (Incontinence), and N (Nutrition) risk reminder was placed on nursing clipboards for patients at risk of pressure ulcers.

facility (Figure 1) and a logo referring to Ascension Health's goal, "Journey to Zero Preventable Injuries or Deaths by 2008." Results from early-adopter sister health facilities have been positive.

Meanwhile, at St. Vincent's, we continued to monitor all facility-acquired pressure ulcers, conducting quarterly prevalence studies, and identifying other opportunities to reduce and eliminate facility-acquired pressure ulcers. The local experts expressed concern about fragile skin in the elderly and the impact of hypoperfusion in complex medical and surgical patients. We began to develop a skin fragility assessment tool, evaluate hypoperfusion and its

## SKIN Bundle Compliance Tool

Patient Identifier	Braden Score ≤ 18	LOS > 24 hours	<b>S</b> Surface Type	<b>K</b> Turning documented every 2 hours	<b>K</b> Heels off bed documented	<b>I</b> Incontinence care documented	<b>N</b> Nutritionally at risk	<b>N</b> Nutritional consult completed	<b>N</b> Nutritional orders written	<b>N</b> Nutritional orders carried out	Comments

**Figure 3.** The pressure ulcer prevention monitoring tool was developed for compliance in documentation of the SKIN bundle.

time between orientation and the integration of pressure ulcer prevention principles into practice for novice nurses hired in September 2005. In addition, we observed differences in data synthesis when the clerical assistant changed during this same period—differences that also likely contributed to the pressure ulcer rate increase.

Once the rollout was completed, maintaining weekly SKIN operations meetings fostered accountability from front-line supervisors, managers, and directors and continued success with the initiative. Promoting prevention of pressure ulcers as a nursing-driven process empowered nurses at all levels and encouraged staff to be proactive in

impact on the prevalence of pressure ulcers, and pay special attention to skin pigmentation.

### Discussion

The St. Vincent's alpha site initiative in pressure ulcer prevention was based on internal and external research. This research-based design enabled St. Vincent's to identify at-risk populations, implement appropriate actions, and achieve positive, measurable, meaningful results. In addition, leadership support at all levels was essential, from the executive sponsor to the front-line supervisor, to ensure the initiative's success. In the beginning stages of an initiative such as this, the work is time- and resource-intensive. When the team was given uninterrupted time from other responsibilities to launch the initiative, the message was clear: there is leadership support.

Key lessons of the St. Vincent's initiative pertained to staffing. First, although we incurred some incremental costs as nonproductive time for education, St. Vincent's did not add staff for this initiative. Rather, the initiative was a focus of the leadership, who were committed to supporting the staff as they adopted the SKIN bundle. The dedication of the existing staff was responsible for the initiative's results. The second staffing lesson pertained to slight increases in the pressure ulcer rates in March and September 2005. We attributed these increases to overcapacity in March 2005 and to the natural lag

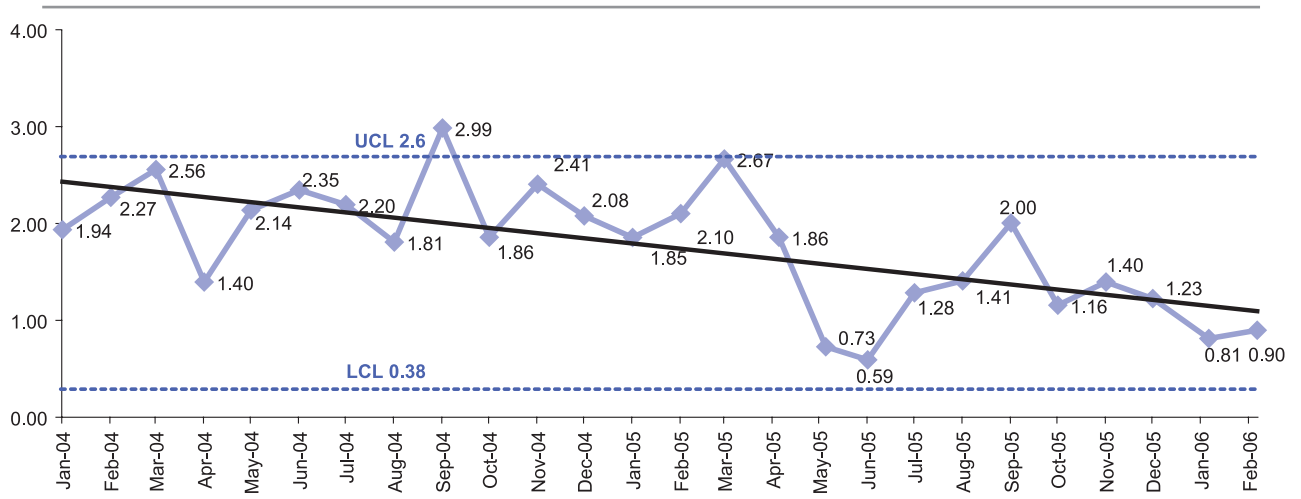
seeking improved outcomes for their patients.

As we educated the staff, we learned that we cannot assume that the knowledge base within disciplines is equal. Thus, we started with the basics for all staff, then developed advanced education for the SKIN champions. We learned that educational offerings should be short, focused, and offered at multiple times and through a variety of venues with the information presented as thoroughly to the last group as to the first.

Communication was a vital component of this initiative's success. When selecting the individuals who made up the team responsible for planning, educating, disseminating, and monitoring this process, we considered communication skills to be as important as clinical expertise. Soliciting input from staff both in the planning stages and in the rollout emphasized empowerment and pride of practice.

A key learning was that pilots do not have to be perfect. The pilot's operational processes may be affected, for example, by delays in initiating a pilot study, gathering data, or implementing treatment regimes. But we persevered. We made decisions, then tested and refined those decisions during the pilot. To help us stay on task, we identified target dates and used a time line. To help us stay motivated, we continually celebrated our successes, particularly during those weeks in which we achieved the goal of zero facility-acquired pressure

## Facility-Acquired Pressure Ulcer Ratio by Month



**Figure 4.** The reduction in facility-acquired pressure ulcer rate by month per 1,000 patient days, January 2004–February 2006, St. Vincent’s Medical Center, is shown.

ulcers. We presented gift certificates and threw pizza or ice cream parties for everything from the most improved unit to the unit that held the record for no new pressure ulcers.

Organizations undertaking a pilot such as ours should expect a spike in the reported skin breakdown once the initiative is underway. As discussed earlier, such an increase in incidence is likely related to the staff’s increased awareness, education, and reporting. The numbers will decrease with time. To further facilitate that downward trend, we considered other factors that may negatively affect pressure ulcer incidence, for example, protocols that require patients to sit for several hours as part of a treatment regimen, or areas in which patients may spend extended periods lying or sitting, such as radiology or dialysis. The SKIN team began to develop plans to provide pressure relief in these situations.

In addition to changing the treatment interventions, we learned that product reviews must be part of an initiative to eliminate facility-acquired pressure ulcers. Involving clinical staff, including WOCNs, helped us to analyze new or current skin care products and adjunctive equipment.

We continue to find patients with multiple comorbidities for whom skin breakdown occurred even when all aspects of the SKIN bundle were implemented.

However, we maintain that the goal of zero facility-acquired pressure ulcers is appropriate, attainable, and sustainable. It is what we would expect if one of us or one of our loved ones was hospitalized. In addition, the patient who arrives for treatment with a pressure ulcer should be discharged with no deterioration in the ulcer, and preferably with documented improvement. This is our pledge to patients and one concrete example of what Ascension Health is doing to provide *health care that is safe*.

### Conclusion

Through a comprehensive program to reduce and eliminate facility-acquired pressure ulcers, St. Vincent’s has been free of Stage III and IV facility-acquired pressure ulcers from August 2004 to February 2006. The SKIN program has been shared and spread to all 67 acute care hospitals of Ascension Health. **I**

Wanda Gibbons, R.N., M.H.A., is Vice President, Patient Care Services and Chief Nursing Officer, St. Vincent’s Medical Center, Jacksonville, Florida; Helana T. Shanks, R.N., is Clinical Resource Coordinator; and Pam Kleinhelter, R.N., M.S.N., is Nurse Manager. Polly Jones, L.C.S.W., is Director, Clinical Excellence, Ascension Health, St. Louis. Please address reprint requests to Wanda Gibbons, wanda.gibbons@jaxhealth.com.



**Table 3. Annualized Incidence of Pressure Ulcer by Body Location, St. Vincent's Medical Center, 2004–2005**

Ulcer Location	2004 (estimated annualized)	2005 (estimated annualized)
Abdomen	1	0
Ankle	11	6
Arm	4	6
Back	4	12
Buttocks	112	68
Ear	4	4
Foot	8	6
Heel	36	25
Ischium	7	8
Knee	3	4
Leg	13	2
Occiput	1	2
Sacrum/Coccyx	148	95
Shoulder	1	0
Toes	7	6
Trochanter	0	2
Other	5	10
TOTAL	365	256

## References

1. Wound Ostomy and Continence Nurses (WOCN) Society: *Clinical Practice Guideline Series: Guidelines for Prevention and Management of Pressure Ulcers*. Glenview, IL: WOCN Society, 2003.
2. Ratliff C.R., Rodeheaver G.T.: Pressure ulcer assessment and management. *Lippincott's Primary Care Practice* 3: 242–258, Mar.–Apr. 1999.
3. Cuddigan J., Ayello E.A., Sussman C. (eds.): *Pressure Ulcers in America: Prevalence, Incidence, and Implications for the Future*. Reston, VA: National Pressure Ulcer Advisory Panel, 2001.
4. Eckman K.: The prevalence of dermal ulcers among persons in the U.S. who have died. *Decubitus* 2:36–40, May 1989.
5. Hill-Rom: *Hill-Rom International Pressure Ulcer Prevalence Study*. Batesville, IN: Hill-Rom, 2005.
6. Allman R.: The impact of pressure ulcers on healthcare costs and mortality. *Adv Wound Care* 11(3 Suppl):2, May–Jun. 1998.
7. Beckrich K., Aronovitch S.: Hospital-acquired pressure ulcers: A comparison of costs in medical vs. surgical patients. *Nurs Econ* 17:263–271, Sep.–Oct. 1999.
8. Oldenburg A.: Superhero to the end. *USA Today*, Oct. 11, 2004. [http://www.usatoday.com/life/people/2004-10-11-reeve-obit\\_x.htm](http://www.usatoday.com/life/people/2004-10-11-reeve-obit_x.htm) (last Jun. 22, 2006).
9. Pryor D.B., et al.: The clinical transformation of Ascension Health: Eliminating preventable injuries and deaths. *Jt Comm J Qual Patient Saf* 32:299–308, Jun. 2006.
10. Prevention Plus. *The Braden Scale for Predicting Pressure Sore Risk*. <http://www.bradenscale.com/bradenscale.htm> (last accessed Jun. 26, 2006).
11. Hill-Rom: *Hill-Rom International Pressure Ulcer Prevalence Study*. Batesville, IN: Hill-Rom, 2004.