

## Relieve the Pressure and Reduce Harm

While remarkable medical advances allow health care professionals to work modern-day miracles, an ancient medical problem still threatens to harm or even kill some patients. Documented in autopsies of Egyptian mummies, pressure ulcers — commonly called bedsores — have plagued patients and their caregivers for centuries. Today, new understanding about what causes pressure ulcers and how to prevent them is enabling some hospitals to virtually eliminate this age-old problem.

Once considered an occasional and unfortunate by-product of hospital care, pressure ulcers are now seen as a preventable source of unnecessary harm. The Institute for Healthcare Improvement believes there's strong evidence to support dramatic reductions in pressure ulcers if hospitals implement proven best practices. These are being made widely available through IHI's [5 Million Lives Campaign](#).

The basic definition of pressure ulcers — damage to the skin or underlying tissue caused by unrelieved pressure — has remained constant, but the tools and techniques of skin care have changed in recent years. This is due in part to a sharper focus on the problem by organizations such as the National Quality Forum and Centers for Medicare & Medicaid Services, both of which have recently called for greater efforts to [eliminate hospital-acquired pressure ulcers](#). The Joint Commission also lists preventing pressure ulcers as a [National Patient Safety Goal](#) for 2007.

What have also changed are the products available to help prevent pressure ulcers and the overall approach to maintaining skin integrity. Recalls long-time nurse Mary Brunton, MSN, RN, CNA-BC, Director of Practice and Professional Development at Baystate Health System in Springfield, Massachusetts, "In nursing school I learned that if a patient had a red spot, I should rub it. Now we know that's the worst thing to do."

### A Wound You Never Forget

Pressure ulcers are most common on bony prominences with little protective fat or muscle (such as heels, hips, shoulders, and tail bones), and they develop when patients stay in one position for too long without shifting their weight. Any patient who is bedridden or wheelchair-bound is especially vulnerable, but even patients who sit in a regular chair without moving much are susceptible. The constant pressure against the skin reduces blood flow to contact areas. The skin begins to break down and the tissue dies, often in a matter of hours. Friction and shear — caused by sliding down in the bed, for example, or being moved improperly from a stretcher to a bed — can exacerbate the problem.

Categorized by severity according to a scale developed and periodically updated by the Washington, DC-based [National Pressure Ulcer Advisory Panel](#), pressure ulcers range from Stage I — the earliest sign of skin redness — through Stage IV, deep craters that damage muscle and bone, and sometimes tendons and joints, often requiring surgery.

"You never forget the worst pressure ulcer you've ever seen," says Kathleen Tierney, RN, BSN, CWOCN, a nurse clinician at Baystate Medical Center, a member organization of IHI's [IMPACT network](#). Tierney, who works as an inpatient consultative wound care nurse, says of pressure ulcers, "Any nurse who has seen one is highly motivated to prevent them."

But individual motivation has yet to translate into widespread success because the prevalence of pressure ulcers in health care facilities is actually increasing, with some 2.5 million patients being treated for pressure ulcers in US acute care facilities annually. Pressure ulcer incidence rates vary considerably by clinical setting — ranging from 0.4 percent to 38 percent in acute care, from 2.2 percent to 23.9 percent in long-term care, and from 0 percent to 17 percent in home care.

All sedentary patients are vulnerable, but elderly and severely compromised patients whose skin can fail just as other organs do are especially at risk. Pressure ulcers slow patients' recovery and prolong their hospital stays. Worse, nearly 60,000 US hospital patients are estimated to die each year from complications due to hospital-acquired pressure ulcers. The total annual cost for treating pressure ulcers in the US is estimated at \$11 billion.

(For references, please see IHI's 5 Million Lives Campaign [How-to Guide: Prevent Pressure Ulcers](#).)

### Prevention Requires Focus

Research shows that most pressure ulcers are preventable. Nursing leaders who have introduced effective prevention programs say that leadership, training, and relentless focus on making skin care a priority are all key.

In an increasingly complex hospital environment with sicker patients yet shorter stays, it's been important to build vigilance right into daily care processes. Bevette Griffin, RN, CWON, head of the enterostomal therapy department at OSF St. Francis Medical Center in Peoria, Illinois, says her hospital's comprehensive pressure ulcer prevention program — Save Our Skin — was created to do this. "We needed to help our nursing staff view skin as a priority."

Save Our Skin (SOS) combines training programs with visual reminders (such as stickers on the charts of at-risk patients) and regular reporting and sharing of data across units about the prevalence of pressure ulcers. There is an SOS nurse champion assigned to every adult unit, and an SOS skin care team meets monthly to review progress and provide additional support or training in areas still experiencing problems with pressure ulcers. Griffin also consults with unit managers to help them make and maintain progress. The effort has worked: OSF St. Francis, another member of IHI's IMPACT network, reduced the incidence of hospital-acquired pressure ulcers from 9.4 percent in 2001 to 1.8 percent in December 2006.

At another IHI IMPACT member organization, Ascension Health, the largest not-for-profit health system in the US with more than 60 hospitals in 20 states and the District of Columbia, nursing leaders and skin care experts developed the **SKIN** Bundle, a series of steps that are implemented for at-risk patients. The name itself is an acronym that prompts nurses to remember four key elements of good skin care: **S**urface selection, **K**eeP turning patients, **I**ncontinence management, and **N**utrition.

"You have to keep skin care on the radar screen," says Polly Jones, LCSW, CPHQ, Director of Clinical Excellence at Ascension. One way her organization is doing that, she says, is by developing two multi-media learning courses — on bed functions such as built-in alarms, turn-assist devices, and pressure redistribution features; and on the SKIN Bundle — that will be available to staff for ongoing education.

Giving bedside nurses training and primary responsibility for pressure ulcer prevention is a culture change in many institutions, says Karen LeMaster, MS, APRN, BC, PCCN, RN, CNA, BC CNS, certified nurse specialist at Genesis Medical Center in Davenport, Iowa. LeMaster is part of the team spearheading the hospital's pressure ulcer intervention. "Before we rolled out our prevention program, most unit nurses believed that preventing pressure ulcers was the job of the wound ostomy nurses," she says. "But now they know they are the first line of defense." She acknowledges that for some nurses this feels like one more responsibility in an already challenging job. "But it's also a relief, because it acknowledges that bedside nurses know best how to take care of their patients."

## Six Key Steps

Experts say there are two main tasks in preventing pressure ulcers: identifying patients who are particularly at risk, and using a combination of equipment and vigilance to relieve pressure on vulnerable parts of the body. In its 5 Million Lives Campaign How-to Guide for preventing pressure ulcers, IHI recommends the following six essential steps to meet these goals.

### 1. Conduct a pressure ulcer admission assessment for all patients

Hospitals with a strong focus on preventing pressure ulcers assess all patients on admission for their risk of skin breakdown, and reassess throughout their hospital stay.

Mary Brunton at Baystate Medical Center says that when her hospital got serious about preventing pressure ulcers, it instituted guidelines that help clinicians know when to reassess patients. "We assess all patients on admission, and again every 24 to 48 hours depending on the patient's risk factors," she says.

The most commonly used instrument for assessing risk is the Braden Scale, which guides clinicians to evaluate patients based on two broad factors: the intensity and duration of pressure, and the skin's likely tolerance to it. Clinicians score patients in each of six sub-categories — sensory perception, moisture, activity, mobility, nutrition, and friction/shear — on a scale of one (highest risk) to four (lowest risk), except for friction/shear which ranges from one to three. The sum of the individual scores is the Braden Scale score; the *lower* the score, the higher the patient's risk for developing a pressure ulcer.

"A Braden score of less than 18 triggers specific preventive steps outlined in our guidelines," says Suzy Scott-Williams, MSN, RN, CWOCN, surgical QI/research liaison nurse at the Veterans Administration Medical Center in Memphis, Tennessee. Scott-Williams has focused on pressure ulcer prevention for more than 20 years. "In 1988 I worked at the Veterans Administration (VA) Hospital in Little Rock, Arkansas, and by changing our policies, procedures, and equipment we were able to reduce pressure ulcers by 60 percent," she recalls.

At the VA Medical Center in Memphis, where the current pressure ulcer prevalence rate is less than one percent, Scott-Williams has championed some of the lessons she learned in Little Rock, starting with the importance of comprehensive risk assessment for patients throughout the hospital. "You have to teach everyone about pressure ulcer prevention, assessment, treatment, product use, and home care needs," she says. And by everyone, she means "inpatient, outpatient, physical therapy, and even pharmacy staff."



VA Medical Center  
 Perioperative Pressure Ulcer Assessment and Prevention: Efficacy Study of a Multi-Layer Pressure Relief Pad in the Operating Room  
 (Click image for larger view)

Documenting all the information is another challenge. At Genesis Medical Center in Davenport, Iowa, for example, an evaluation revealed that while most staff were reasonably proficient at scoring each element in the Braden Scale, they were not always sure how to document skin abnormalities accurately. "We have selectable terms in our electronic documentation system, but some people were having trouble with the terminology," says certified nurse specialist Karen LeMaster. "Unless you've really learned it, you might not know the difference, say, between skin that's macerated [softened through prolonged exposure to moisture] and fluctuant [fluid-filled]."

So the hospital's pressure ulcer prevention team created and delivered training programs and reference tools that include proper terms and descriptions of skin problems, along with pictures. "The reference tool also shows which types of products, such as lotions or wipes, are especially good for which types of skin conditions," says LeMaster.

## 2. Reassess risk for all patients daily

The changing nature of patients' conditions from day to day requires regular reassessment of their risk for pressure ulcers. This is especially true for acutely ill patients, who are at increased risk for skin breakdown. Changes in mobility, incontinence, or nutrition can change patients' risk of developing pressure ulcers, and assessing daily risk allows providers to change prevention strategies accordingly. Experts recommend building this risk assessment into other daily care tasks, and prompting it by adjusting the forms used for daily clinical notes.

## 3. Inspect skin of at-risk patients daily

Because skin can begin to deteriorate within a matter of hours, patients who are at risk for developing pressure ulcers must receive a daily inspection of all skin surfaces.

At Genesis Medical Center, Karen LeMaster says that, during implementation of the new protocols, a clinical nurse specialist and a wound-ostomy nurse visited each unit every day, checking to see that patients' Braden scores are up to date. "They did their own head-to-toe inspection of every patient with a Braden score of 18 or less," says LeMaster, "and consulted with the patients' nurses to offer support and make sure that all the appropriate interventions are in place. Eventually the process of evaluation and intervention became part of the caregivers' routine."

## 4. Manage moisture

Wet skin due to perspiration, incontinence, or wound drainage is more vulnerable to deterioration. Fortunately, new products are helping nurses stay on top of this challenge. Bevette Griffin at St. Francis says, "For incontinent patients, we used to have to wash the skin, dry it carefully, and apply a cream to act as a moisture barrier," a time-consuming process hard for busy nurses to perform quickly. "Now, we use pre-moistened perineal cloths that both clean and protect the skin." Special pads that wick moisture away from the skin have also been shown to be more effective at protecting skin than disposable briefs.

## 5. Optimize nutrition/hydration

Poor nutrition can compromise a patient's ability to heal in many ways, including contributing to skin failure. At Baystate Medical Center, a dietician is assigned to every unit to monitor all patients' nutritional status. "The dieticians are informed about patients who are at risk for pressure ulcers, and they consult with the nurses to determine how to maximize nutrition and hydration for those patients," says nurse clinician Kathleen Tierney.

Because good hydration helps maintain healthier skin, some hospitals have protocols that call for clinicians to offer patients water whenever they turn them.

## 6. Minimize pressure

Minimizing pressure on vulnerable body parts requires a combination of physically repositioning or turning patients at regular two-hour intervals — a labor-intensive but critically important process — and making sure they are resting on pressure-reducing surfaces.

In the midst of a nurse's typically busy day, it can be hard to remember to regularly reposition patients at risk. Hospitals use a range of methods to remind nurses.

"Every two hours we broadcast the Olympic theme song throughout the hospital," says Bevette Griffin at OSF St. Francis, "to remind nurses to turn their patients." Nurses also receive a "friendly reminder" on their pagers every two hours. "It doesn't matter what time a patient arrives on the unit; we get them all on the same schedule."

Baystate Medical Center is in the process of developing a pilot program that would incorporate visual cue signs and badges to remind nurses to turn patients, says nurse clinician Kathleen Tierney. This program will emphasize teamwork: Nurses and technical associates will reposition patients every two hours, turning patients in even-numbered rooms on the even hours, and patients in odd-numbered rooms on the odd hours. Hospitals typically post turn schedules in patients' rooms where nurses can document each time they reposition the patient.

As in other aspects of patient care, getting families involved in repositioning patients — or in simply remembering when it's time — is helpful, says Baystate's Mary Brunton.

How or even whether patients can be repositioned depends on their condition. For bariatric or other large and heavy patients, for example, OSF St. Francis Medical Center calls in a special team. "We have a Lift Team available 24/7," says Hoa Cooper, RN, BSN, MHS, manager of the adult hospitalist service and a Six Sigma Black Belt who led the effort to evaluate and improve the hospital's pressure ulcer prevention program. "They make rounds every two hours, starting in the ICU, helping to shift patients and relieve pressure. They bring special equipment that helps them move the patients." In some instances, staff can take advantage of built-in overhead lifts.

But even with all these advances, says Mary Brunton at Baystate, there are some patients who just can't be turned. "They are too unstable; they are in traction with fractures that make it impossible to move them, or sometimes cardiac surgery patients with pacemakers can't turn because it disturbs the wires and their heart stops beating." In these cases, says Brunton, "you have to make the best choice, and you move them as soon as you possibly can."

Brunton's Baystate colleague Kathleen Tierney says that especially as patients near the end of life, repositioning them may not be an option, and this should be explained clearly to family members. "In some patients with multi-system shutdown, despite our best efforts, they will develop an ulcer. It's important to be up-front with families, to be able to say, 'Your mom doesn't have the capacity to heal, and we will do our best to prevent infection and make her comfortable.'"

Advanced, pressure-reducing surfaces are also helping nurses prevent pressure ulcers, and many hospitals are making it universal by replacing all their beds with these new mattresses. "There used to be a lot of confusion about who belonged on what bed and mattress," says Bevette Griffin at St. Francis in Peoria. "We now have hospital replacement mattresses with air chambers, which has been a huge help to the nursing staff and much better for the patients, because they don't have to wait for the right mattress to be delivered to the floor and placed under them."

Ascension's Director of Clinical Excellence, Polly Jones, says her organization is in the process of replacing all its beds, system-wide. "Foam is no longer the preferred surface, because it's only as good as the first day you put the patient on it. After that, it loses its ability to redistribute weight over time. You need a surface that provides pressure-reducing or pressure-relieving capability," she says. Appropriate surfaces include those that are static (such as air-filled mattresses that do not cycle in time) and dynamic (such as air-fluidized mattresses powered by a pump that regularly alternates pressure relief). Jones says many Ascension Health facilities have purchased bed frames that make it easier for nurses to turn patients.

The VA's pressure ulcer expert Suzy Scott-Williams says that it's also vitally important for hospitals to remember that patients are vulnerable to pressure ulcers throughout the hospital, not just in the ICU or on medical/surgical units. "When I started tracking pressure ulcer rates back in 1989, I noticed that there were more pressure ulcers in surgical patients than in other populations, even long-term care patients," she says. The reason for this, she says, seemed clear. "Say it's an older patient with co-morbidities in for a lengthy surgery. Anesthesia may compromise their perfusion by causing hypotension, and hypothermia causes vasoconstriction which slows down their circulation. They are immobile on a non-compliant surface for an extended time." Scott-Williams contends that all these factors make some patients especially vulnerable to pressure ulcer injury during surgery.

She advocates that hospitals replace the standard two-inch foam surgical pads — which are coated with a laminate material — with pressure redistribution surfaces made specifically for operating rooms. Data from a study she conducted in the VA Medical Center in Memphis showed that patients were eight times more likely to develop pressure ulcers on the standard surgical pads. She also found that positioning items commonly used in surgery — rolled up towels, sandbags, and filled IV bags — may also increase pressure on certain points. Special devices are available for use in surgical suites that redistribute pressure.

At OSF St. Francis, surgical patients are assessed for pressure ulcer risk prior to surgery, and appropriate precautions are taken, says nurse manager Hoa Cooper. "We use special OR mattress pads for patients at risk, which includes all bariatric patients, the frail elderly, anyone with a broken hip, and any patient whose procedure will last more than four hours," she says.

Patients who receive dialysis treatment are also vulnerable, says Scott-Williams. "They sit for a long period of time, and they should be in chairs with pressure redistribution capabilities." The same goes for wheelchairs and even chairs in patients' rooms, she says.

Pressure ulcer prevention champions should have no trouble making the business case for purchasing special pressure relieving equipment, says Scott-Williams, estimating that one Stage IV pressure ulcer can cost \$100,000 to treat, and litigation is at an all-time high. "Awareness is the key," she says. "Surgeons don't see pressure ulcers after surgery, so they don't realize they need to take precautions to prevent them. Some ulcers may not present until five days after surgery. They visit the patient later, and the patient says, 'You saved my life by fixing my heart,' and they won't complain to the surgeon about the sore on their backside." That's why a hospital-wide education campaign is important.

"No one wants to report pressure ulcers," says Scott-Williams. "There is still a culture of shame and blame around them. But we have to look at each incidence objectively and clearly, and recognize that there is so much we can do to prevent them. It's not a glamorous part of nursing, but it is incredibly important. Nursing leaders need to convince hospital leaders to allocate funds for prevention." As a passionate and experienced advocate who helped to convince her hospital leaders to replace all beds with pressure relieving mattresses, Scott-Williams says, "If I can do it, anyone can."

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