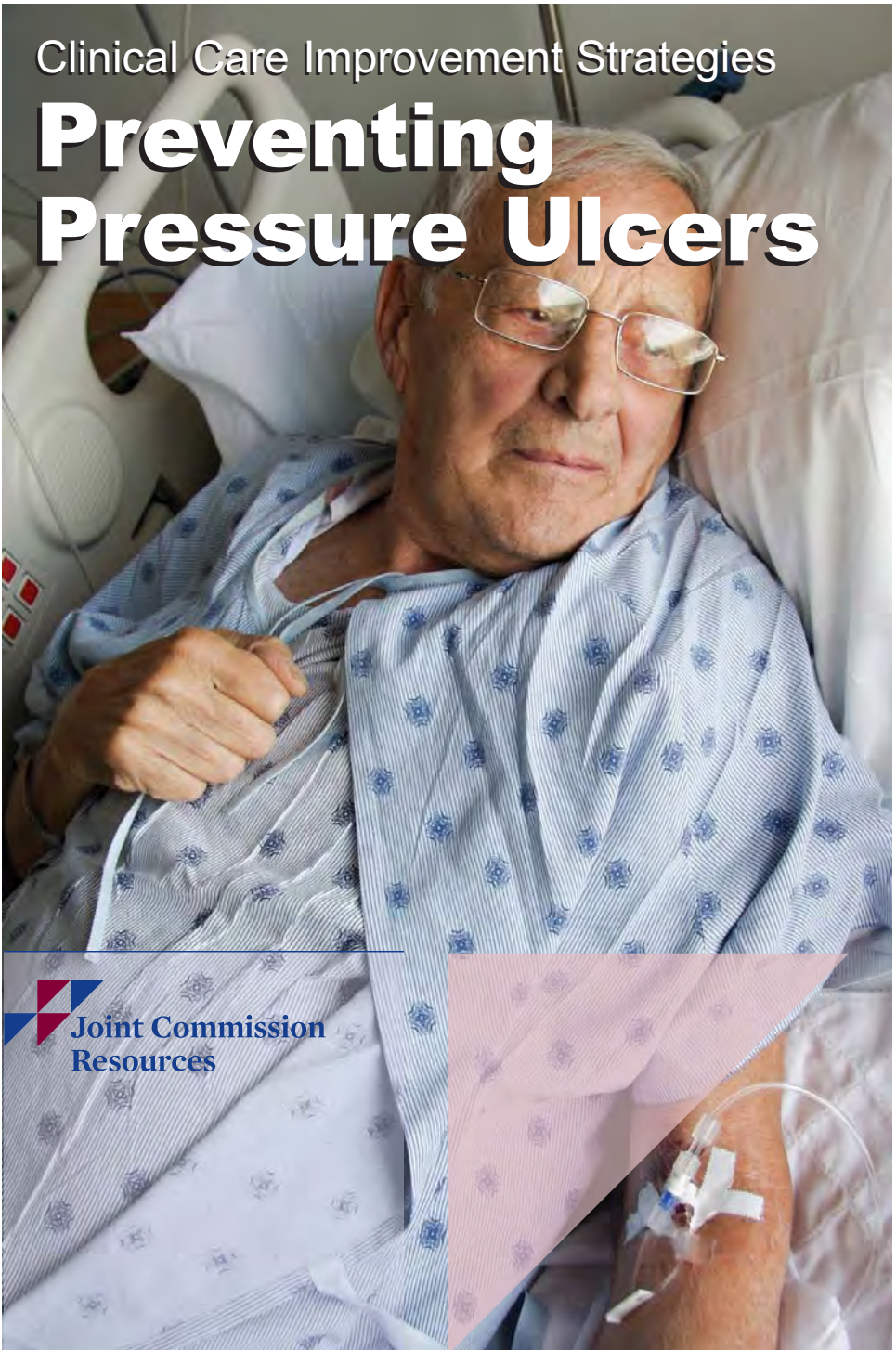


Clinical Care Improvement Strategies

Preventing Pressure Ulcers



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INTRODUCTION

This publication compiles the recent statistics on the current state of pressure ulcers in various health care settings, summarizes evidence-based research conducted around pressure ulcers, and reports on what other organizations have been doing to prevent pressure ulcers from occurring. The purpose is to provide the research, strategies, and success stories for preventing pressure ulcers in one central location so that health care organizations can create or amend their pressure ulcer prevention programs with ease and efficiency.

The intended audience is health care organizations that want to do the following:

- Significantly decrease pressure ulcer prevalence and incidence rates or prevent patients from experiencing pressure ulcers altogether
- Improve patient safety and satisfaction by reducing harm and pain caused to patients by pressure ulcers
- Reinforce staff education and improve staff compliance with pressure ulcer prevention protocols
- Comply with The Joint Commission's National Patient Safety Goal 14 to help prevent health care–associated pressure ulcers (applicable only to long term care)
- Reduce costs associated with treating pressure ulcers, given that the Centers

for Medicare & Medicaid Services (CMS) is no longer paying for “never events” such as health care–acquired Stage III and Stage IV pressure ulcers

- Better understand how to collect data for prevalence and incidence studies

This publication is directed toward health care organizations that provide care for the adult patient populations that are most at risk for pressure ulcers across various health care settings. These health care settings with at-risk patients for pressure ulcers include acute care, long term care, rehabilitation, assisted living, home care, and hospice organizations. Although other patient populations and health care settings (such as pediatrics, labor and delivery, ambulatory care, mental health care) may have patients who are at risk for pressure ulcers, this publication does not address those areas. However, the strategies can still be applied to those areas with some consideration for the population's unique needs.

Why Preventing Pressure Ulcers Is Important

Because the consensus by experts is that pressure ulcers are 95% preventable and some experts will even say that *all* pressure ulcers are preventable, the presence of pressure ulcers in an organization reflects on that organization's

quality of patient care. Furthermore, preventing pressure ulcers is a patient safety issue. When patients develop pressure ulcers, they are at increased risk for further complications, such as sepsis, osteomyelitis, cellulitis, infectious arthritis, urethral fistulas, and renal failure.¹⁻³ In addition, pressure ulcers can cause stress to the patient's immune system, result in unnecessary pain for the patient, and limit the patient's functional abilities.⁴ The catastrophic effects of pressure ulcers should not be underestimated because they lead to many patient deaths. Between 1990 and 2001, researchers analyzed the 27 million reported deaths in the United States and found that pressure ulcers were listed as a cause in 114,380 (0.4%) of the deaths (in 18.7% of these cases the pressure ulcer was the primary cause of death).⁵ Overall, a pressure ulcer adds one more item to a potentially ever-growing list of problems for a patient and can escalate the patient's decline and create the need for more intensive medical services.⁴

In terms of the health care organization's bottom line, pressure ulcers result in both increased length of stay and hospital costs and increased nursing care time.⁶ It costs as much as \$70,000 to treat one full-thickness pressure ulcer, which has led to the \$11 billion price tag associated with pressure ulcers each year in the United States alone.⁷

Challenges to Preventing Pressure Ulcers

Preventing pressure ulcers remains a challenge for many health care organizations, given that it has been estimated that 2.5 million patients are treated for pressure ulcers in the United States each year.⁷ Unfortunately, organizations have faced many obstacles to preventing pressure ulcers that are largely out of their control, such as the following:

- Limited evidence-based research to declare which pressure ulcer prevention strategies actually reduce or prevent pressure ulcers. (This issue has improved to some degree with the help of increased research on pressure ulcer prevention and due to the efforts of patient safety and quality improvement organizations such as the National Pressure Ulcer Advisory Panel and the Wound, Ostomy and Continence Nurses Society.)
- Lack of guidance on the use of specialty support surfaces and whether they actually prevent pressure ulcers (because there are not many well-designed randomized controlled trials on support surfaces).⁷
- Inaccurate data from prevalence and incidence studies (because there is a lack of good data sources for describing pressure ulcers, inconsistent use of major terms regarding pressure ulcers, and widespread uncertainty on how to conduct prevalence and incidence studies in an accurate and standardized way).⁸

These obstacles hinder an organization's progress in creating an evidence-based pressure ulcer prevention program, but they do not even take into account the internal problems the organization may face when motivating staff to implement evidence-based strategies for preventing pressure ulcers. Nor do they include the struggles organizations may face in allocating enough resources, time, and money toward an effective pressure ulcer prevention program. For instance, if units are understaffed, nurses and nurse assistants will not have the time to turn patients every two hours or apply the appropriate skin care products to patients with dry or excessively moist skin.

Scope of This Publication

The following is a brief overview of the three chapters in this publication:

- Chapter 1 describes the current state of pressure ulcers, including prevalence and incidence rates throughout various health care settings. This chapter also explains the etiology of pressure ulcers and describes which patients are most at risk for pressure ulcers. Finally, this chapter explores how pressure ulcers affect patient safety and satisfaction.

- Chapter 2 discusses the many accrediting, governmental, and patient safety and quality improvement organizations that have supported health care organizations in their drive to prevent pressure ulcers by developing standards of care or publishing evidence-based practices, creating prevention programs, and disseminating success stories from other health care organizations.
- Chapter 3 compiles the evidence-based strategies that organizations need in order to create and maintain a pressure ulcer prevention program that effectively and consistently reduces the number of patients who experience pressure ulcers in the organization.

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CHAPTER 1

The Current State of Pressure Ulcers

Much to the detriment of our patients, pressure ulcers continue to be a problem in the United States and throughout the rest of the world. It has been estimated that 2.5 million patients are treated for pressure ulcers in the United States each year.¹ And the effects of pressure ulcers on patient mortality should not be underestimated. Between 1990 and 2001, researchers analyzed the 27 million reported deaths in the United States and found that pressure ulcers were listed as a cause in 114,380 (0.4%) of the deaths (in 18.7% of these cases the pressure ulcer was the primary cause of death).² Most often, these pressure ulcers became infected and led to fatal septic infections from which patients could not recover.² Finally, it costs as much as \$70,000 to treat one full-thickness pressure ulcer, which has led to the \$11 billion dollar price tag associated with pressure ulcers each year.¹

“From a historical perspective, pressure ulcers have plagued man for

centuries,” says Diane Deitz, M.S.N., A.C.N.P., C.W.O.N., wound committee chair of the Wound, Ostomy and Continence Nurses Society, Mount Laurel, New Jersey. “It is only within the last 20 or so years that research has focused on the causes, prevention, and treatment of pressure ulcers. During this time period, health care organizations have become increasingly astute in promoting awareness of pressure ulcers, as well as implementing prevention strategies.”

“I think health care organizations have made a great deal of progress in the past 20 years,” says Barbara Braden, Ph.D., codeveloper of the Braden Scale and dean, University College and Summer Sessions, Creighton University, Omaha, Nebraska. “It seems that most organizations use some sort of risk assessment and have policies and protocols in place for preventing pressure ulcers. Most do some sort of prevalence study and watch their pressure ulcer rates carefully.”

“Despite all of these improvements and the increasing awareness of the need for pressure ulcer prevention, the number of pressure ulcers developing in American hospitals has not fallen dramatically in the past decade,” says Joyce M. Black, Ph.D., R.N., associate professor, College of Nursing, University of Nebraska Medical Center, Omaha, Nebraska. “While the reasons are many, two of the more important issues are the severity of patient illness and the nursing shortage.”

The prevention, occurrence, and treatment of pressure ulcers has been studied in great detail by researchers who want to find out how to prevent pressure ulcers. Because pressure ulcer prevalence and incidence rates continue to persist, it is evident that health care workers still need to make pressure ulcer reduction a care priority.

Incidence and Prevalence of Pressure Ulcers

The prevalence* and incidence† of pressure ulcers have been difficult to

* **Prevalence** is defined as the number of cases at a specific point in time, or the number of persons with pressure ulcers who exist in a patient population at a given point in time. (This number includes patients who were admitted with existing pressure ulcers as well as patients who develop pressure ulcers during their stay in the health care organization.)

† **Incidence** is defined as the number of new cases appearing in a population or the number of persons who were initially ulcer free and developed a pressure ulcer within a particular time. (This number includes health care–acquired pressure ulcers.)

quantify due to variations in the following:

- Basic definitions of pressure ulcer stages
- Formulas for calculating prevalence and incidence rates
- Population characteristics
- Sources of data (for example, direct examination of patients, administrative databases, medical record abstraction, and patient self-report)³

Despite these difficulties, the National Pressure Ulcer Advisory Panel (NPUAP) conducted a comprehensive review of the incidence and prevalence data published from 1990 to 2000. Their review found wide variations in the range of *incidence rates* across various settings, including the following results³:

- General acute care: 0.4% to 38%
 - Critical care: 8% to 40%
 - Operating room: 4% to 21.5%
- Long term care: 2.2% to 23.9%
- Rehabilitation: 4% to 6%
- Home care: 0% to 17%

The NPUAP’s review of *prevalence rates* showed the following results³:

- Acute care: 10% to 18%
- Long term care: 2.3% to 28%
- Home care: 0% to 29%

In March 1999 Hill-Rom facilitated a one-day national pressure ulcer prevalence survey at 356 acute care facilities across the United States. They found the overall pressure ulcer prevalence rate to be 14.8%, with a health care–acquired pressure ulcer prevalence rate of 7.1%.⁴ In 2005 Hill-Rom sponsored an

International Pressure Ulcer Prevalence study and found the overall pressure ulcer prevalence rate to be 15.2% and the hospital-acquired pressure ulcer prevalence rate to be 7.3%.⁵ Another study of acute care hospitals found the pressure ulcer prevalence rate to be 14% in 2001 and 2002 and the incidence rate to be 7% in the years 2001, 2003, and 2004.⁶ In 2006 the Healthcare Cost and Utilization Project (HCUP),* which is sponsored by the Agency for Healthcare Research and Quality, reported that there were 503,300 hospital stays during which pressure ulcers were noted, which is a 78.9% increase from 1993 when there were about 281,300 hospital stays related to pressure ulcers.⁷ During this same time period, the total number of hospitalizations increased by only 15%.⁷

Furthermore, the Centers for Disease Control and Prevention (CDC) conducted a National Nursing Home Survey in 2004 and found that about 159,000 current U.S. nursing home residents (11%) had pressure ulcers (Stage II pressure ulcers being the most common).⁸ Overall, the CDC study found that 1 out of every 10 nursing home residents had a pressure ulcer. Finally, the Centers for Medicare & Medicaid Services paid for the costs associated with 257,412 Medicare patients who

developed Stage III and IV pressure ulcers in 2007.⁹

In 1998 the American Nurses Association created the National Database of Nursing Quality Indicators (NDNQI®) as a mechanism to collect data on the quality of nursing care at the unit level.¹⁰ Currently, more than 1,100 organizations submit data every quarter on the following nursing-sensitive indicators: falls, falls with injury, restraints, nursing care hours per patient day, skill mix, percentage of nursing hours supplied by agency staff, pressure ulcer prevalence, hospital-acquired pressure ulcer prevalence, nurse satisfaction, nurse education and certification, and so on.¹⁰ As a result of this national data collection, health care organizations can benchmark and compare themselves to other health care organizations regarding the various nursing-sensitive indicators. As of 2006, the NDNQI benchmark for all pressure ulcers (which includes hospital and community-acquired pressure ulcers) was 10.93%, and the NDNQI benchmark for hospital-acquired pressure ulcers was 5.21%.¹¹

What Causes Pressure Ulcers?

Pressure ulcers are usually caused by prolonged periods of uninterrupted pressure on the skin, soft tissue, muscle, and bone.⁷ Furthermore, the NPUAP defines *pressure ulcers* as “localized injury to the skin and/or underlying tissue usually over a bony prominence, as a result of pressure,

* In the 1990s, the Agency for Healthcare Research and Quality started the Healthcare Cost and Utilization Project, which is a federal, state, and private collaboration to collect hospital discharge data and then screen for problems in quality patient safety.

What Should You Call It— Pressure Ulcer, Bed Sore, or Decubitus Ulcer?

Previously, pressure ulcers have also gone by the terms *bed sore* and *decubitus ulcer*. Most experts have finally settled on the term *pressure ulcer* because bed sores and decubitus ulcers are essentially misnomers.¹⁶ For instance, a bed sore suggests that patients can get pressure ulcers only while lying in bed. Decubitus ulcer comes from the Latin word *decub*, which means “lying down.”¹⁶ Thus, the term *pressure ulcer* is more accurate as it relates to the actual cause of the problem.

or pressure in combination with shear and/or friction.”¹² Thus, pressure ulcers are caused by three main elements¹³:

- *Pressure* of the bones against the skin and underlying (deeper) tissues
- *Shear force*, wherein the layers of the skin slide over one another or over deeper tissues (such as when patients slide down in the bed or chair)
- *Friction*, or rubbing of the skin against an external surface



For a video clip on the etiology of pressure ulcers, visit <http://www.jcrinc.com/EBPUM09/Extras>.

As a result of this pressure on the skin and underlying tissues, the capillaries are compressed and oxygen and nutrients cannot be effectively supplied to the tissue, which causes ischemia, hypoxia, and then necrosis.^{14,15}

Pressure ulcers most commonly occur at bony prominences, such as the sacrum, coccyx, elbows, hips, knees, and heels. The most susceptible sites for pressure ulcers depend on patient position, wherein the following bony prominences are most at risk when the patient is in the following positions¹⁷:

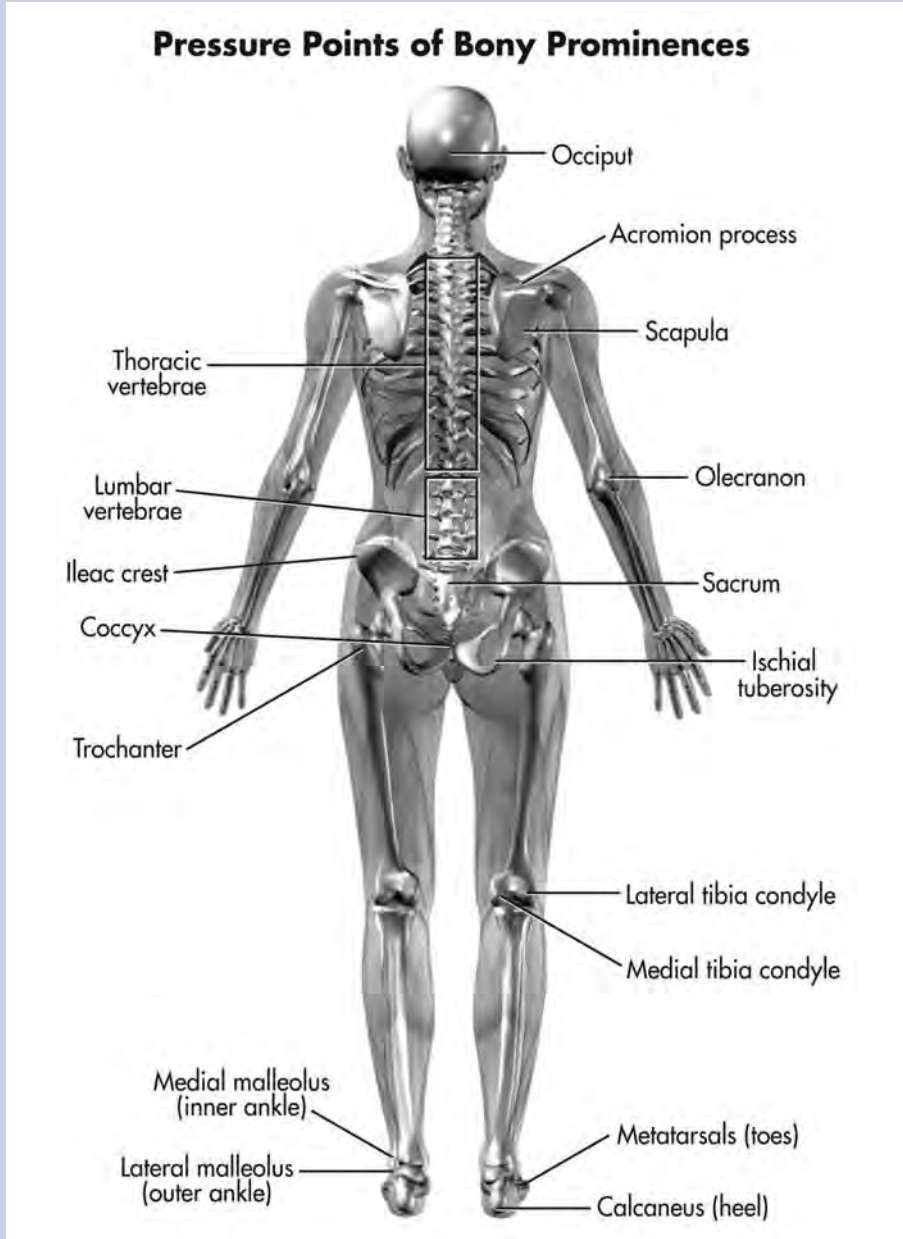
- **Supine position (on the back):** Back of the head, scapula (back of the shoulders), elbows, sacrum, coccyx, and heels
- **Sitting position:** Scapula (shoulder blades hitting the back of the chair), buttocks, heel, and ball of foot
- **Lateral (on the side):** Ear, scapula (side of shoulder), iliac crest and trochanter (hip area), knees (both the outer part of the knee that faces the surface the patient is lying on and the inner part of the knee that is weighed down by the patient's other knee), and inner and outer parts of the ankles

See Figure 1-1 on page 5 for an illustration of the common sites for pressure ulcers.

Medical equipment, rather than the patient's bones, may also be a source of pressure on a patient's skin and tissues. For example, pressure ulcers have occurred on patients' lips due to pressure

Figure 1-1.

Common sites of pressure ulcers.



Source: RD411.com: *Common Sites of Pressure Ulcers*. <http://rd411.com> (accessed Jul. 1, 2010).

from endotracheal tubes, patients' ears due to nasal canulas, or on patients' thighs due to the hard surfaces of urinary catheters.

Which Patients Are Most at Risk for Pressure Ulcers?

Although the essential cause of pressure ulcers is prolonged and uninterrupted pressure on the skin and soft, underlying tissues, the extent to which each patient can withstand that pressure without experiencing an actual pressure ulcer varies. That is, every patient's limits of tissue tolerance to pressure vary, making him or her more or less susceptible to pressure ulcers.¹⁸

Some of the factors that make patients more at risk for developing pressure ulcers are related to the patient's mobility, activity, and sensory abilities (that is, the patient's ability to avoid prolonged periods of pressure on the skin). These factors include the patient's ability to do the following¹⁸:

- Sense and respond to the discomfort caused by prolonged periods of pressure on the skin, including the following:
 - Patients with spinal cord injuries who cannot feel their legs would not be able to reposition themselves based on feelings of discomfort in their lower extremities.
 - Patients with diabetes mellitus may have poor sensation due to neuropathies.

- Patients who are sedated for any reason may not be able to sense discomfort.
- Patients who have suffered a stroke may lack feeling or completely ignore one side of their body.
- Change positions or move on their own while in bed or sitting in a chair
- Ambulate independently or with assistance. (If the patient is able to bear some weight and can at least get out of bed or out of a chair from time to time, they will be less at risk for pressure ulcers.)

Other risk factors affect how tolerant the patient's skin might be to withstanding any period of prolonged pressure. These risk factors include the following^{18,19}:

- Excessive moisture on the skin (such as from urine or feces with incontinent patients, perspiration, or drainage from wounds or fistulas)
- Malnutrition (including a lack of protein and vitamins, such as vitamin C)
- Advanced age. (As people age, elastin production decreases and tissues stiffen, making tissue damage from pressure more likely).
 - According to recent data from the HCUP, 72% of adult hospital stays with a secondary diagnosis of pressure ulcers occurred among patients age 65 or older (with a mean age of 71.9 years).⁷
- Low body weight. (Bony prominences become more pronounced in an underweight person.)

- Increased body temperature. (Metabolism increases when body temperature increases, which makes tissue damage more likely.)
- Low blood pressure, impaired circulation, or anemia
- Multiple comorbidities. (When the body is stressed by other diseases or complications, such as infections, it is not able to dedicate all its resources to fighting off a pressure ulcer.)
 - These multiple comorbidities might include infection, diabetes mellitus, peripheral vascular disease, chronic obstructive pulmonary disease, malignancies, fractures (particularly hip fractures), stroke, spinal cord injuries, or respiratory issues requiring mechanical ventilation and sedation.
 - See Table 1-1 on page 8 for recent data from the HCUP on the top 10 most common principal reasons for hospitalizations during which pressure ulcers were also present.
- Altered mental status. (Patients with dementia or confusion may not respond to bodily discomfort or pain in a normal way.)
- Increased length of stay
- History of a previous pressure ulcer that has now healed

Several risk assessment tools, such as the Braden Scale and the Norton Scale, exist to guide health care workers in their assessment of a patient's risk for developing pressure ulcers. Information on these risk assessment tools will be

discussed in further detail in Chapter 3.

Although patients can present with many risks for pressure ulcers, it is still the health care provider's job to combat those risks by implementing effective strategies to prevent pressure ulcers. Health care organizations should view all pressure ulcers as preventable and recognize that the incidence of any pressure ulcers in the organization is indicative of the quality of care given to patients in the organization.⁷ In fact, some experts criticize pressure ulcer researchers for focusing too much on patient risk factors and risk assessment scales and not enough on staff competence for preventing pressure ulcers completely.²⁰ For example, experts such as Olshansky believe that when patients develop pressure ulcers it is not because they had too many risk factors but because the health care providers failed to relieve the patients' pressure.²⁰ This is not a new belief because Florence Nightingale believed that pressure ulcers developed as a result of poor nursing care, writing that "if he has a bedsore, it's generally not the fault of the disease, but of the nursing."²¹ Thus, when patients develop pressure ulcers, it is up to the health care providers to admit their shortcomings, analyze where they may have gone wrong, and try to do better for the next patient. The strategies presented in Chapter 3 will help health care providers relieve their patients' pressure regardless of the patients' risk factors.

Table 1-1. Top 10 Most Common Principal Reasons for Hospitalizations During Which Pressure Ulcers Were Also Present (Among Adults 18 Years and Older, 2006)*

Rank	Principal Condition	Number of Hospitalizations Related to Pressure Ulcers	Percentage of all Hospitalizations related to Pressure Ulcers with This Principal Diagnosis	Percentage of Hospitalizations for This Condition That Also Include Pressure Ulcers
1	Septicemia (except in labor)	80,400	16.1%	13.5%
2	Pneumonia	31,500	6.3%	3.0%
3	Urinary tract infections	28,200	5.6%	5.8%
4	Rehabilitation care, fitting of prostheses, and adjustment of devices	23,100	4.6%	5.1%
5	Respiratory failure, insufficiency, arrest	21,500	4.3%	5.8%
6	Congestive heart failure, nonhypertensive	20,800	4.1%	1.9%
7	Complication of device, implant, or graft	19,300	3.9%	3.2%
8	Aspiration pneumonitis, food/vomit	18,400	3.7%	10.7%
9	Acute and unspecified renal failure	14,700	2.9%	4.3%
10	Fluid and electrolyte disorders	12,700	2.5%	3.0%
Total hospitalizations for top 10 principal conditions		270,600	54.0%	4.8%

*Pressure ulcers noted as a secondary diagnosis.

Source: Russo C.A., Steiner C., Spector W.: *Hospitalizations Related to Pressure Ulcers Among Adults 18 Years and Older, 2006*. Healthcare Cost and Utilization Project Statistical Brief #64. December 2008. Agency for Healthcare Research and Quality. Dec. 2008. <http://www.hcup-us.ahrq.gov/reports/statbriefs/sb64.pdf> (accessed May 4, 2009).

Pressure Ulcers as a Patient Safety and Satisfaction Issue

Health care providers tend to become fixated on a patient's problems with major organ systems, such as the cardiac system or the respiratory system, and they sometimes fail to remember that the skin is actually part of the integumentary system, or the organ system that protects the body from damage. In fact, the integumentary system is the largest organ system in the body. Intact skin protects the patient from pressure ulcers; if pressure ulcers develop, they can put patients at risk for serious complications, such as sepsis, osteomyelitis, cellulitis, infectious arthritis, urethral fistulas, and renal failure.²² "When a pressure ulcer develops, it can significantly add to the burden of the existing illness or condition," says Deitz. "This burden may be physical, impeding mobility and recovery from the existing condition, or psychological. Either can have an effect on the patient's functional status, putting him or her at risk for injury or negative outcomes." Thus, health care providers should recognize that pressure ulcers represent a major patient safety issue and make every effort to protect the skin from harm so that it can continue to provide its function of protection for the patient.

"Pressure ulcers constitute a break in our natural barrier to infection—the skin," says Braden. "Patients with pres-

sure ulcers are prone to sepsis, and a large percentage of patients with full-thickness pressure ulcers will die during a hospitalization. Certain types of ulcers (such as heel ulcers) will often result in loss of a limb. For some patients (such as spinal cord injured patients), the healing process will require substantial immobilization that results in other complications, loss of work and income, and further disability."

Preventing pressure ulcers is also a patient satisfaction issue. Although pressure ulcers may not always lead to serious complications such as sepsis, they can be extremely painful and time consuming for patients and caregivers. Consider the 70-year-old male patient who develops community-acquired pneumonia that leads to sepsis and is treated in the hospital for more than two weeks. Before admission, he was living with his 66-year-old wife, and both of them were basically ambulatory and independent. If he develops a pressure ulcer at the hospital, not only will he incur a great deal of undue pain and be at risk for more serious complications, but he may also require increased nursing care at a rehabilitation facility. And when he returns to his home, he and his wife will have to assume the care of his pressure ulcer. This increased care may involve helping the man turn every two hours, changing dressings as needed, and providing any pain medication to treat the pain caused by the pressure ulcer. In addition, this man

will be at increased risk for pressure ulcers in the future because the scar tissue that heals over a previous pressure ulcer is more prone to tissue ischemia and ulceration.²³ Patients who suffer from major illnesses in the hospital will

often have some extended recovery and rehabilitation time after discharge, but health care providers should make every effort to prevent the patient from going home with further, avoidable complications, such as pressure ulcers.

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Standards of Care

Because pressure ulcers are a persistent issue in health care organizations throughout the United States and the rest of the world, many accrediting, governmental, and patient safety and quality improvement organizations have supported health care organizations in their drive to prevent pressure ulcers by developing standards of care or publishing evidence-based practices, creating prevention programs, and disseminating success stories from other health care organizations. Such organizations and some of their contributions to pressure ulcer prevention include the following:

- The Joint Commission—
<http://www.jointcommission.org>
 - Included the prevention of health care–associated pressure ulcers in the list of National Patient Safety Goals, with which health care organizations must comply to receive Joint Commission accreditation*

- Centers for Medicare & Medicaid Services (CMS)—

<http://www.cms.hhs.gov>

- Designated Stage III and IV pressure ulcers as “never events”[†] that will no longer be paid for by CMS
- Requires long term care organizations to submit data on pressure ulcers through the minimum data set (MDS)
- Requires home care agencies to submit data on pressure ulcers through the OASIS (Outcome and Assessment Information Set) data set

* *National Patient Safety Goal 14 for preventing health care–associated pressure ulcers is applicable only to long term care organizations at this time.*

[†] *Never events are errors in medical care that are clearly identifiable, preventable, and serious in their consequences for patients, and that indicate a real problem in the safety and credibility of a health care facility. Examples include surgery on the wrong body part, mismatched blood transfusion, a major medication error, or a severe pressure ulcer acquired in the hospital.*

- National Pressure Ulcer Prevention Panel (NPUAP)—
<http://www.npuap.org>
 - Updated the pressure ulcer staging guidelines, retaining the original four stages and including an additional two stages on deep tissue injury and unstageable pressure ulcers
 - Created the Pressure Ulcer Scale for Healing tool (PUSH tool) to help organizations accurately document pressure ulcer healing without using the reverse staging system
 - Created the Shear Force Initiative to evaluate, disseminate, and shape future research on the role of shear in causing pressure ulcers
 - Started the Support Surface Standards Initiative to develop uniform terminology, test methods, and reporting standards for specialty support surfaces that can help prevent pressure ulcers (such as mattresses, beds, and overlays)
- Wound, Ostomy and Continence Nurses Society (WOCN)—
<http://www.wocn.org>
 - Created a Guideline for the Prevention and Management of Pressure Ulcers
 - Provides guidance and information on how to become a certified wound, ostomy, and continence nurse
- National Quality Forum (NQF)—
<http://www.qualityforum.org>
 - Created the Nursing Care

- Performance Measures in 2003 to highlight patient-centered outcome measures such as hospital-acquired pressure ulcers
 - Initiated the National Voluntary Consensus Standards for Developing a Framework for Measuring Quality for Prevention and Management of Pressure Ulcers
 - Institute for Healthcare Improvement (IHI)—**<http://www.ihl.org>**
 - Included the prevention of pressure ulcers as one of the 12 interventions that make up the 5 Million Lives Campaign
 - Advancing Excellence in America's Nursing Homes Campaign—
<http://www.nhqualitycampaign.org>
 - Included the reduction of high-risk pressure ulcers as one if its key indicators of nursing home quality
- Some of these patient safety and quality improvement organizations and their contributions to the prevention of pressure ulcers will be discussed in further detail throughout the rest of this chapter.

The Joint Commission's National Patient Safety Goal 14

In January 2006 The Joint Commission created National Patient Safety Goal 14 to help prevent health care-associated pressure ulcers. This goal is applicable only to long term care organizations, but other health care organizations may want to ensure that

they meet the elements of performance of this goal as well.

The main components of National Patient Safety Goal 14 are the following:

- Assess each patient's risk for developing pressure ulcers (on admission and periodically thereafter depending on the patient's need and/or the organization's protocol).
- If a patient is at risk for developing a pressure ulcer, take action to prevent that patient from developing a pressure ulcer (such as by changing the patient's support surface, repositioning the patient every two hours, or ensuring that the patient is free from moisture).
- Ensure that all staff involved in the patient's care know how to accurately assess a patient's risk for developing pressure ulcers and then know what interventions to apply depending on that patient's level of risk.

As long as long term care organizations are compliant with these three components (staff education and risk assessment followed by meaningful interventions to prevent pressure ulcers), they will be compliant with National Patient Safety Goal 14.

CMS Never Events, Minimum Data Set, and OASIS

Never Events

In October 2008 CMS identified eight preventable hospital-acquired con-

ditions (or never events) for which Medicare and Medicaid will no longer pay (that is, CMS will no longer reimburse health care organizations for the extra costs associated with these never events).¹ One of these eight conditions includes Stage III and Stage IV hospital-acquired pressure ulcers. In terms of reimbursement, CMS gives an example of two patients with the same principal diagnosis of stroke (MS-DRG 064 for intracranial hemorrhage or cerebral infarction). Both patients also have a secondary diagnosis of a Stage III pressure ulcer, but one of these patients entered the hospital with the pressure ulcer and the other patient developed the pressure ulcer during the course of his care. The patient who entered the hospital with the pressure ulcer would be reimbursed for the primary diagnosis as well as the secondary diagnosis, totaling a payment of \$8,030.28, while the patient who developed the hospital-acquired pressure ulcer would only be reimbursed for the primary diagnosis, totaling a payment of \$5,347.98.¹

As seen by the above example, hospitals will be reimbursed for the care associated with pressure ulcers that were present on admission.² But this means that health care providers must be diligent in their assessment and documentation of new patients to ensure reimbursement for pressure ulcers that were present on admission. Even if staff members know the pressure ulcer was not caused by the hospital, the hospital will not be reimbursed

unless some sort of documentation exists to prove its existence on admission. (Now CMS requires hospitals to report primary and secondary diagnoses that are present on admission when submitting claims for discharges.³)

To ensure payment for patients who present with pressure ulcers on admission, hospitals should note the following in terms of documentation²:

- *Present upon admission* is defined as the time that the order for inpatient admission occurs (any pressure ulcer that develops during an outpatient encounter, including when the patient is in the emergency department, observation, or outpatient surgery, are considered to be present on admission).
- Medical record documentation from *any* provider involved in the patient's care can be used to prove that the patient had a pressure ulcer on admission (however, the term *provider* means a physician or any qualified health care practitioner who is legally accountable for establishing the patient's diagnosis).
 - Nurse documentation cannot be used to establish the diagnosis (however, nurse documentation of pressure ulcers present on admission can be used to code the assignment of the stage of the pressure ulcer).
 - Providers do not have a time frame for identifying or documenting a pressure ulcer to be present on

admission. The provider should use his or her best judgment in determining whether the pressure ulcer was present on admission.

- If the patient is discharged with a hospital-acquired pressure ulcer, and then later is readmitted with a different diagnosis, the pressure ulcer will be considered present on admission for the second admission.
- If the patient has an unstageable pressure ulcer or suspected deep tissue injury on admission that evolves into a Stage III or Stage IV pressure ulcer, it should be coded as a Stage III or Stage IV pressure ulcer.
- There are no clinical criteria for unavoidable pressure ulcers.

Minimum Data Set

CMS uses the MDS to help nursing homes standardize their patient assessments and organize each patient's individualized care plans.¹ This data collection tool requires nursing homes to collect information on pressure ulcers, including whether the pressure ulcer was present on admission, if risk assessments (such as the Braden or Norton scales) had been used to predict the patient's risk for developing a pressure ulcer, and to describe the unhealed pressure ulcers that the patient currently has. The MDS tool follows the pressure ulcer staging system developed by the NPUAP, including Stages I–IV and unstageable pressure ulcers, as well as suspected deep tissue injuries.¹

OASIS (Outcome and Assessment Information Set)

Any home health agency seeking Medicare certification is required to submit data on pressure ulcers through OASIS.⁴ Like the MDS, OASIS also follows the NPUAP's pressure ulcer staging system for reporting pressure ulcers.

NPUAP's Pressure Ulcer Staging Guidelines

In February 2007 the NPUAP updated the pressure ulcer staging system with the goal of reducing inaccurate staging of pressure ulcers associated with perineal dermatitis or due to deep tissue injury.⁵ As a result, two additional stages on suspected deep tissue injuries and unstageable pressure ulcers were added to the four preexisting pressure ulcers that are staged I through IV. These changes were incorporated after five years of reviewing current research and consulting expert opinions.⁵ After the new staging system was approved, other organizations (including the CMS, The Joint Commission, the IHI, the WOCN, the Agency for Healthcare Research and Quality, and the NQF) adopted and/or supported the NPUAP's new staging system and correlating definitions. The following figures (Figure 2-1 through 2-7 on pages 18–24) depict the six pressure ulcer stages (as well as one picture of normal and intact skin)

and should help health care providers better understand the pressure ulcer staging system.



For information on nutrition in relation to pressure ulcers visit <http://www.jcrinc.com/EBPUM09/Extras> for *The Role of Nutrition in Pressure Ulcer Prevention and Treatment: National Pressure Ulcer Advisory White Paper*.

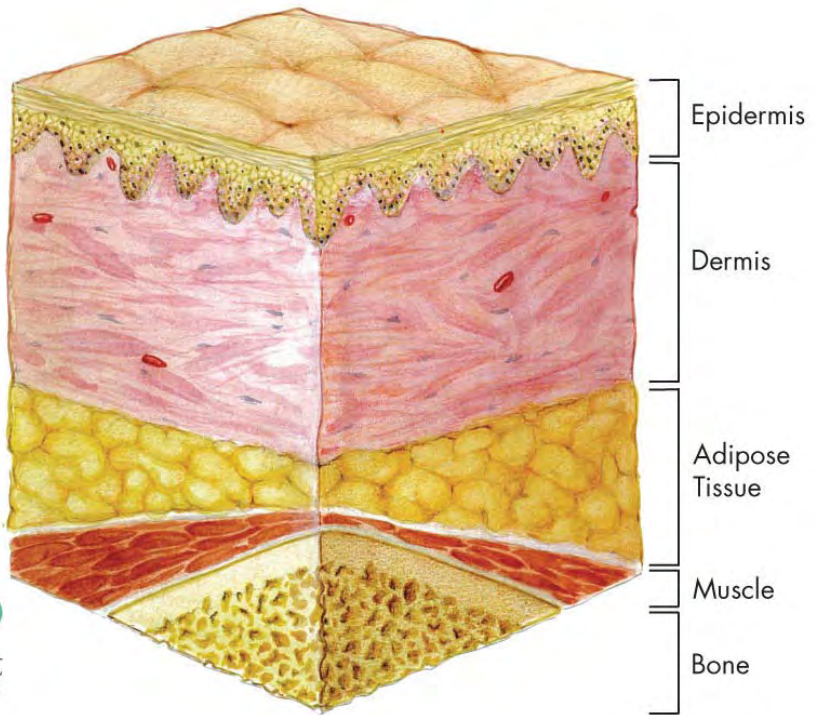
NQF's Performance Measures

Nursing Care Performance Measures

In January 2004 the NQF created the Nursing-Sensitive Care Performance Measures, which resulted in 15 NQF-endorsed consensus standards for evaluating nursing-sensitive indicators, such as hospital-associated pressure ulcers.⁶ These measures were identified through the established NQF Consensus Development Process. Organizations can use these measures to help evaluate and prioritize any nursing care issues and identify nursing research needs. In 2005, with funding from the Robert Wood Johnson Foundation (RWJF), The Joint Commission took the lead role in developing uniform, standardized technical specifications for the nursing care performance measures. This resulted in the creation of *the Implementation Guide for the NQF Endorsed Nursing-Sensitive Care*

Figure 2-1.

Normal and Intact Skin

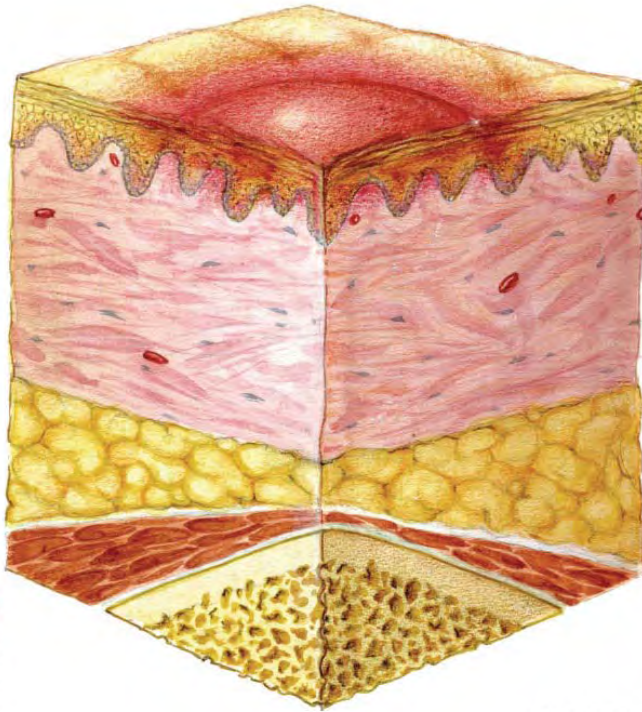


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Figure 2-2.

Stage I Pressure Ulcer

Intact skin with non-blanchable redness of a localized area usually over a bony prominence. Darkly pigmented skin may not have visible blanching; its color may differ from the surrounding area. Stage I may be difficult to detect in individuals with dark skin tones. The area may be painful, firm, soft, warmer, or cooler as compared to adjacent tissue. May indicate “at risk” persons (a heralding sign of risk).



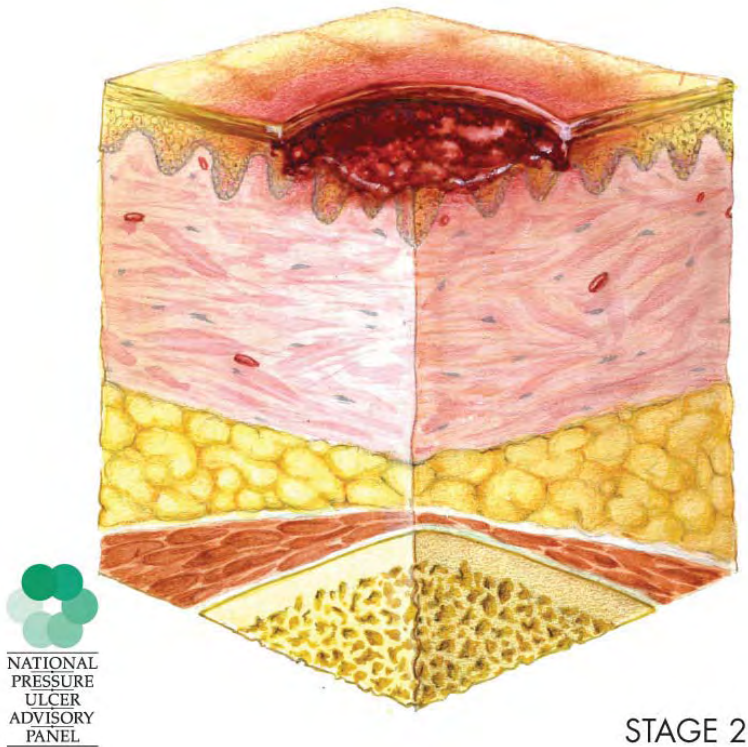
STAGE 1

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Figure 2-3.

Stage II Pressure Ulcer

Partial thickness loss of dermis presenting as a shallow open ulcer with a red pink wound bed, without slough. May also present as an intact or open/ruptured serum-filled blister. (That is, the ulcer presents as a shiny or dry shallow ulcer without slough or bruising.*) This stage should not be used to describe skin tears, tape burns, perineal dermatitis, maceration, or excoriation.



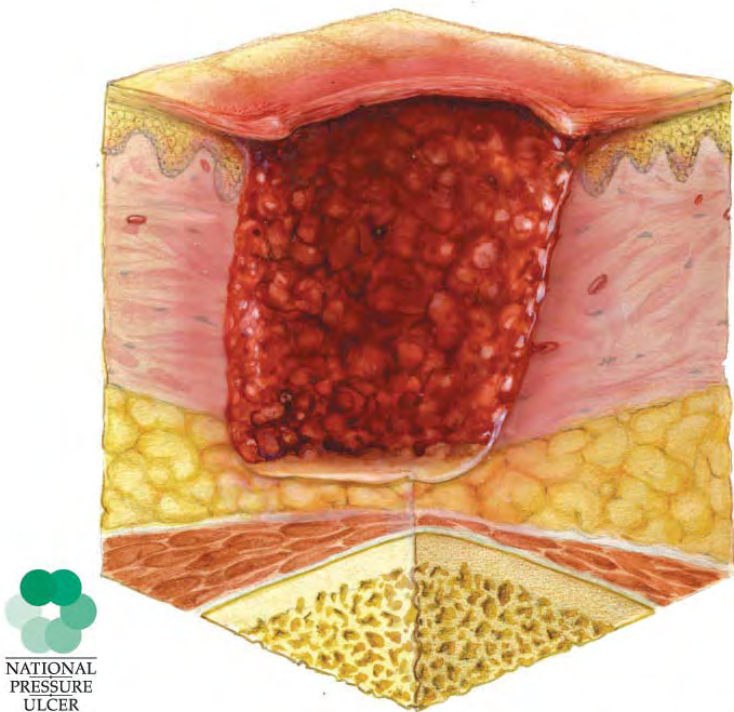
* Bruising would indicate a suspected deep tissue injury (see Figure 2-7 on page 24).

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Figure 2-4.

Stage III Pressure Ulcer

Full thickness tissue loss. Subcutaneous fat may be visible but bone, tendon, or muscle is not exposed. Slough may be present but does not obscure the depth of tissue loss. May include undermining and tunneling. The depth of a Stage III pressure ulcer varies by anatomical location, wherein the bridge of the nose, ear, occiput, and malleolus do not have subcutaneous tissue, and Stage III ulcers can be shallow. In contrast, areas of significant adiposity can develop extremely deep Stage III pressure ulcers. Bone and tendon are not visible or directly palpable.



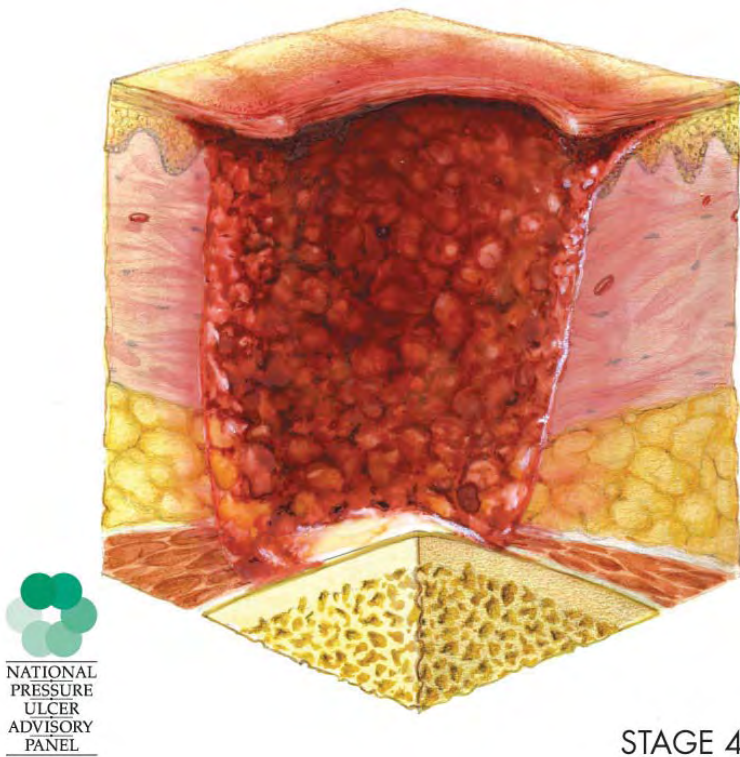
STAGE 3

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Figure 2-5.

Stage IV Pressure Ulcer

Full thickness tissue loss with exposed bone, tendon, or muscle. Slough or eschar may be present on some parts of the wound bed. Often includes undermining and tunneling. Similar to Stage III pressure ulcers, the depth of a Stage IV pressure ulcer varies by anatomical location. Stage IV ulcers can extend into muscle and/or supporting structures (for example, fascia, tendon, or joint capsule) making osteomyelitis possible. Exposed bone/tendon is visible or directly palpable.



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Figure 2-6.

Unstageable Pressure Ulcer

Full thickness tissue loss in which the base of the ulcer is covered by slough (yellow, tan, gray, green, or brown) and/or eschar (tan, brown, or black) in the wound bed. Until enough slough and/or eschar is removed to expose the base of the wound, the true depth (and therefore, the stage), cannot be determined. Stable (dry, adherent, intact without erythema or fluctuance) eschar on the heels serves as “the body’s natural (biological) cover” and should not be removed.



NATIONAL
PRESSURE
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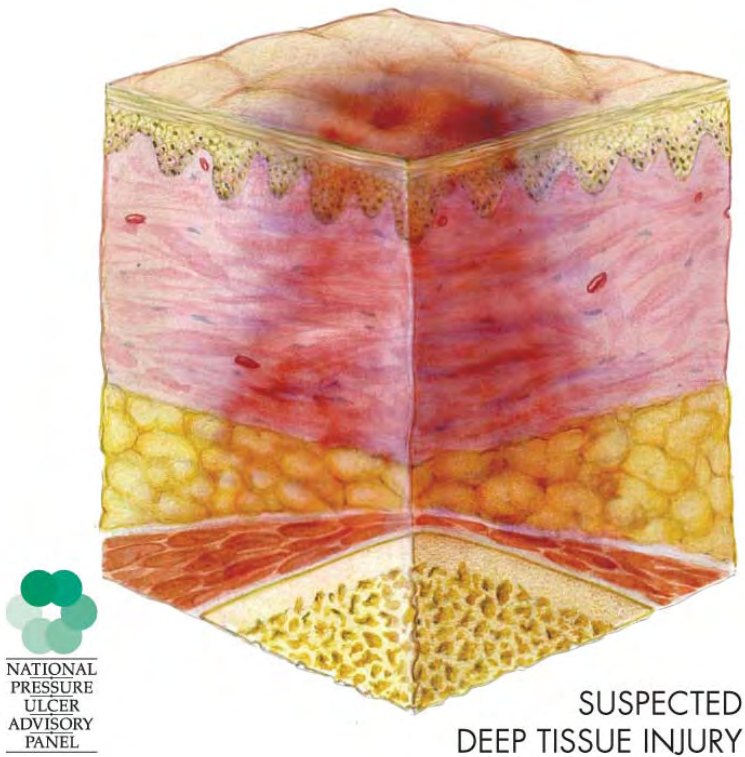
UNSTAGEABLE

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Figure 2-7.

Suspected Deep Tissue Injury (DTI)

Purple or maroon localized area of discolored intact skin or blood-filled blister due to damage of underlying soft tissue from pressure and/or shear. The area may be preceded by tissue that is painful, firm, mushy, boggy, warmer, or cooler as compared to adjacent tissue. Deep tissue injury may be difficult to detect in individuals with dark skin tones. Evolution may include a thin blister over a dark wound bed. The wound may further evolve and become covered by thin eschar. Evolution may be rapid, exposing additional layers of tissue even with optimal treatment.



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Performance Measures, which is offered for free at http://www.jointcommission.org/PerformanceMeasurement/MeasureReserveLibrary/nqf_nursing.htm. For example, the implementation guide instructs health care organizations on how to collect data on the total number of patients who have hospital-acquired Stage II or greater pressure ulcers during a prevalence study. In January 2007 The Joint Commission received additional funding from the RWJF to test the NQF–endorsed Nursing-Sensitive Care Performance Measure Set for reliability, feasibility, and impact on quality of care in a group of volunteer hospitals. The results of this testing will allow The Joint Commission to update the implementation guide. (As of this printing, release of the updated implementation guide is scheduled for October 2009.)

Framework for Measuring Quality for the Prevention and Management of Pressure Ulcers

The purpose of National Voluntary Consensus Standards for Developing a Framework for Measuring Quality for Prevention and Management of Pressure Ulcers is to endorse preferred practices and performance measures for pressure ulcers and to identify areas requiring additional research. The NQF plans to create reporting tools to address the following⁷:

- Preventing and healing pressure ulcers

- Measuring the incidence and prevalence of pressure ulcers (as well as the pros and cons of both)
- Performing analysis at multiple levels, including providers, systems, communities, and geographical areas
- Determining who is accountable for the pressure ulcer as the patient moves across settings of care (that is, determining whether the pressure ulcer was present on admission or did it occur in the intensive care unit or on the medical-surgical floor)
- Measuring and staging of pressure ulcers, including temporarily “unstageable” and scoring systems
- Multiple lesions and deep tissue injury in evolution
- Harmonizing measure specifications across settings of care

In this way, quality measures addressing pressure ulcers can be aligned and standardized across various health care settings, and all health care providers will be able to better understand the full effect of pressure ulcers on patients.⁷

IHI’s 5 Million Lives Campaign

In December 2006 the IHI announced the 5 Million Lives Campaign, a continuation of the Campaign to Save 100,000 Lives, with the intent of improving patient safety and transforming the quality of care in America’s hospitals.⁸ The goal was to reduce five million incidents of harm across all participating hospitals over a

two-year period (from December 2006 to December 2008). To date 4,050 hospitals have joined the campaign.⁹ To reduce the five million incidents of harm, the IHI promotes 12 interventions, and one of those interventions is to prevent pressure ulcers by reliably using science-based guidelines for their prevention.⁸ To support hospitals in their efforts to meet the goals of the 12 interventions, the IHI offers “How-to Guides,” tools, examples from mentor hospitals, process and outcome measures, and discussion boards. (The resources aimed at preventing pressure ulcers can be found at <http://www.ihi.org/IHI/Programs/Campaign/PressureUlcers.htm>.)

The six key elements for IHI’s intervention to prevent pressure ulcers are as follows¹⁰:

1. Conduct a pressure ulcer admission assessment for all patients.
2. Reassess risk for all patients daily (the complexity and acuity of hospitalized patients necessitate daily reassessment).
3. Inspect skin daily.
4. Manage moisture.
5. Optimize nutrition and hydration.
6. Minimize pressure.

Advancing Excellence in America’s Nursing Homes Campaign

In September 2006 Advancing Excellence in America’s Nursing Homes

launched a coalition-based campaign to monitor key indicators of nursing home quality, including how well nursing homes reduce high-risk pressure ulcers.¹¹ Nearly 45% of the nation’s nursing homes have registered for the campaign. The campaign’s goal was to reduce the national average for high-risk pressure ulcers below 10% by ensuring that nursing home residents receive appropriate care to prevent and minimize pressure ulcers. The national prevalence of pressure ulcers decreased slightly from September 2005 through March 2008, including the 18 months after the Advancing Excellence campaign was launched. Unfortunately, the national average for high-risk pressure ulcers has not yet been reduced below 10%.¹¹

The Fight to Prevent Pressure Ulcers

Many accrediting, governmental, and patient safety and quality improvement organizations have gotten involved in the fight to prevent pressure ulcers among patients in various settings. They have helped disseminate evidence-based practices, set standards of care, and prescribed methods for measuring the prevalence and incidence of pressure ulcers. Chapter 3 will describe these evidence-based practices in further detail and will also offer strategies for implementing and meeting these practices.

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Preventing Pressure Ulcers in Your Organization

The consensus by experts is that pressure ulcers are 95% preventable, and some experts will even say that *all* pressure ulcers are preventable.^{1,2} With these expectations, it is important for health care organizations to consistently implement pressure ulcer prevention strategies and ensure that health care providers have the time and resources to enact the strategies. Periodic measurement of pressure ulcer prevalence and incidence rates should occur so that health care leaders can assess staff compliance with pressure ulcer prevention strategies and see how effective the strategies are at preventing pressure ulcers. Organizations that have enacted pressure ulcer prevention programs that are modeled after evidence-based guidelines have demonstrated successful outcomes. For example, several organizations have reported 50% or greater reductions in health care–associated pressure ulcers.³ “The organizations that are successful at reducing and even eliminating pressure

ulcers are reliably implementing each strategy 100% of the time,” says Kathy D. Duncan, R.N., faculty, Institute for Healthcare Improvement (IHI), Cambridge, Massachusetts.

This chapter provides evidence-based, practical strategies for preventing pressure ulcers. When these strategies are used as part of an overall pressure ulcer prevention program that is reliably and consistently implemented by health care providers, organizations should see health care–associated pressure ulcer rates decrease. The following strategies will be discussed in this chapter:

- Accurately identify patients at risk for pressure ulcer development using reliable risk assessment scales.
- Provide thorough staff education on risk assessments and prevention protocols.
- Perform diligent and continuous skin assessments.
- Relieve each patient’s pressure.
- Ensure that patients are as active as possible.

- Keep skin clean, dry, and moisturized.
- Ensure adequate nutrition and fluids.
- Continuously reinforce the importance of pressure ulcer prevention.
- Measure staff compliance with pressure ulcer prevention protocols and give feedback.
- Conduct prevalence and incidence studies to assess your organization's pressure ulcer rates.
- Get patients and family members involved in pressure ulcer prevention.

[STRATEGY]

Accurately Identify Patients at Risk for Pressure Ulcer Development Using Reliable Risk Assessment Scales

Most experts agree that the most important key to preventing pressure ulcers is to first identify those patients at risk for developing them. In addition, many of the patient safety and quality improvement organizations that were discussed in Chapter 2 include a risk assessment as at least one component of their recommendations for reducing pressure ulcers. “Organizations need to be aware of the fact that patients identified to be at risk for developing pressure ulcers can begin that process in a relatively short period of time,” says Diane Deitz, M.S.N., A.C.N.P., C.W.O.N., wound committee chair of the Wound, Ostomy and Continence Nurses Society (WOCN), Mount Laurel, New Jersey. “It becomes crucial, therefore, to have procedures in place to identify at-risk

patients as soon as possible after their entry into the health care system (regardless of that portal of entry) and to implement appropriate prevention strategies as soon as feasible. Prevention also depends on reassessment of risk status on a regular basis as even the most stable patient can become at risk for pressure ulcers quickly, especially in the acute care setting.”

The point of this risk assessment is to help health care providers recognize when to apply interventions that will meet a particular patient's specific needs for pressure ulcer prevention. As is standard in nursing care models, one would first assess the patient for his or her risk and then apply interventions that are proven to prevent those identified risks from occurring. For example, if the patient is incontinent, interventions that protect the skin from excessive moisture should be applied to reduce the risk of skin breakdown and pressure ulcers.

Not only do risk assessment tools help identify those patients at risk and prevent them from experiencing any harm or pain caused by pressure ulcers, but these tools can also reduce care costs.⁴ Organizations see cost savings because treating and maintaining any pressure ulcers that develop during a patient's length of stay can be very expensive.⁴ In addition, a formal risk assessment program can help nurses better allocate the right resources and supplies to the right patients, depending on

the patient's level of risk for pressure ulcers.⁴ In this way, patients who are not at risk for a pressure ulcer will *not* be incorrectly assessed to need a special (and expensive) support surface.

It has been estimated that more than 40 different risk assessment tools have been created to help health care providers accurately assess a patient's risk for developing pressure ulcers.⁵ The abundance of such tools signifies the importance that researchers and experts place on risk assessment as a means of preventing pressure ulcers. In addition, many risk assessment tools have been created because of the differing needs of various clinical areas (for example, acute care patients will have different assessment needs than patients in pediatric care). Researchers have evaluated these risk assessment tools for their reliability and validity, including the sensitivity and specificity of the tools (*see* the box on page 32 for definitions of these terms).

Several researchers have identified three scales suitable for assessing a patient's risk of developing a pressure ulcer: the Braden Scale, Norton Scale, and Waterlow Scale.⁶⁻⁸ Therefore, the discussion in this strategy will focus on these three scales. The Braden Scale is most commonly used in the United States and has the strongest evidence supporting its validity and reliability.^{6,7,9,10} The Norton Scale shows stronger evidence for validity and reliability than the Waterlow Scale but not as strong as the Braden Scale.^{6,7,9}

Table 3-1 on page 41 shows a comparison of the risk factors for pressure ulcers assessed by the Braden, Norton, and Waterlow scales.

Braden Scale

The Braden Scale is the most commonly used pressure ulcer risk assessment tool in health care organizations throughout the United States. (*See* Figure 3-1 on page 33 to view the Braden Scale.) This scale is made up of six subscales that address the main factors associated with pressure ulcer development^{4,10}:

1. Mobility
2. Activity level
3. Sensory perception
4. Exposure to moisture
5. Nutritional status
6. Exposure to friction and shear forces

Scores on the Braden Scale can range from 6 to 23, and the lower the number the higher the patient is at risk for developing pressure ulcers. Researchers have found that a cutoff score of 18 separates the patients at risk for developing pressure ulcers from those not at risk for developing pressure ulcers.^{4,6,7,9,11} Therefore, if a patient scores an 18 or less on the Braden Scale, health care providers should implement interventions to prevent pressure ulcers based on the patient's specific risks identified at each subscale. (For more information on how to use the Braden Scale, *see* Sidebar 3-1, "Advice from Barbara Braden on How to Use the Braden Scale," pages 34–35.)

The Braden Scale is most often used for the following reasons:

- It has undergone extensive reliability and validity testing and often results with high percentages in sensitivity and specificity.^{6,9,10} For example, the Braden Scale has demonstrated sensitivities that range from 70% to 100% and specificities that range from 64% to 90%.⁶
- It can be used in a variety of clinical settings and among multiple adult patient populations, including diverse ethnic groups.^{10,11} The settings that the Braden Scale is most often applicable to include acute care, nursing home, hospice, and home care.⁶ “It’s certainly not intended for pediatrics, outpatient mental health where patients are ambulatory, or labor and delivery,” says Barbara Braden, Ph.D., codeveloper of the Braden Scale and dean, University College and Summer Sessions, Creighton University, Omaha, Nebraska. “Some rehabilitation settings say it doesn’t provide much variation because most of the people in spinal cord rehab will be at least chair-bound and will have sensory issues. And many spinal cord rehab settings apply pressure ulcer prevention strategies to everyone; if that’s true, then I don’t think you need the scale.”
- Nurses report that the scale is easy to use.^{10,11}
- When the Braden Scale is used as part of a risk assessment process along with the appropriate preven-

tion protocols, health care organizations see a dramatic decrease in pressure ulcer incidence and prevalence. For example, two nursing homes implemented the Braden Scale as part of a complete pressure ulcer prevention program and saw an 87% decrease in the incidence of pressure ulcers in the larger nursing home and a 76% decrease in incidence in the smaller nursing home.¹² In addition, a large, tertiary care intensive care unit saw pressure ulcers in critically ill patients decrease from 33% to 9% after implementing a pressure ulcer prevention program that involved the Braden Scale for risk assessment.¹³

Some researchers, including Braden herself, have found that the Braden Scale tends to overpredict the likelihood that patients will develop pressure ulcers (which can be seen by the lower percentages for specificity of the scale).^{4,10} But the Norton and Waterlow Scales also are criticized for overpredicting the likelihood of pressure ulcers.^{6,7,9} In addition, the scale has been criticized because it requires detailed knowledge of the patient that may not always be known to the provider, particularly at admission.¹⁴ For example, providers need to know the patient’s “usual food intake pattern,” which entails knowing how many servings of protein the patient eats a day. And the patient may be too sick to accurately provide this information on admission, or family members or friends may not be present to provide this information either.

Terminology for Evaluating the Reliability and Validity of Risk Assessment Tools

Reliability: the repeatability of risk ratings by the same (intra-rater) or different (inter-rater) wound care professionals (that is, the consistency of the results of the risk assessment tool when it is administered by the same or different users); expressed as a percentage.

Validity: a measure of the risk assessment tool's accuracy (for example, how accurately the risk assessment tool predicts which patients will develop pressure ulcers); often expressed in terms of sensitivity and specificity.

Sensitivity: the percentage of patients who developed pressure ulcers who were also predicted to develop pressure ulcers by the risk assessment tool (sensitivity screens for an excess of false negatives or patients who developed pressure ulcers and were not predicted to develop pressure ulcers).

- You want a risk assessment tool to be sensitive enough to identify those patients who are at risk for developing pressure ulcers so that you can apply appropriate strategies for preventing those predicted pressure ulcers from occurring. A tool that is not sensitive enough may underpredict the number of patients at risk for developing pressure ulcers, and then the organization would be responsible for the costs associated with healing the pressure ulcer.

Specificity: the percentage of people who don't develop pressure ulcers and were also not predicted to develop pressure ulcers based on the risk assessment tool (specificity screens for false positives or patients who don't develop pressure ulcers but were predicted to develop pressure ulcers).

- If a tool scores low percentages for specificity, it may be overpredicting the number of patients at risk for developing pressure ulcers, which means that organizations might be wasting time, supplies, equipment, and resources on patients who are not at risk for developing pressure ulcers.

Sources: Braden B.J., Maklebust J.: Preventing pressure ulcers with the Braden: An update on this easy-to-use tool that assesses a patient's risk. *Scale. Am J Nurs* 105:70–72, Jun. 2005; and Bolton L.: Which pressure ulcer risk assessment scales are valid for use in the clinical setting? *J Wound Ostomy Continence Nurs* 34(4):368–381, Jul.–Aug. 2007.

Figure 3-1.

Braden Scale for Predicting Pressure Sore Risk

Patient's Name _____		Evaluator's Name _____		Date of Assessment _____	
SENSORY PERCEPTION ability to respond meaningfully to pressure-related discomfort	<p>1. Completely Limited Unresponsive (does not moan, flinch, or grasp) to painful stimuli, due to diminished level of consciousness or sedation. OR limited ability to feel pain over most of body</p> <p>2. Very Limited Responds only to painful stimuli. Cannot communicate discomfort except by moaning or restlessness OR has a sensory impairment which limits the ability to feel pain or discomfort over 1/2 of body.</p> <p>3. Slightly Limited Responds to verbal commands, but cannot always communicate discomfort or the need to be turned. OR has some sensory impairment which limits ability to feel pain or discomfort in 1 or 2 extremities.</p> <p>4. No Impairment Responds to verbal commands. Has no sensory deficit which would limit ability to feel or voice pain or discomfort.</p>				
MOISTURE degree to which skin is exposed to moisture	<p>1. Constantly Moist Skin is kept moist almost constantly by perspiration, urine, etc. Empress is directed every time patient is moved or turned.</p> <p>2. Very Moist Skin is often, but not always moist. Linen must be changed at least once a shift.</p> <p>3. Occasionally Moist Skin is occasionally moist, requiring an extra linen change approximately once a day.</p> <p>4. Rarely Moist Skin is usually dry. Linen only requires changing at routine intervals.</p>				
ACTIVITY degree of physical activity	<p>1. Bedfast Confined to bed.</p> <p>2. Chairfast Ability to walk severely limited or non-existent. Cannot bear own weight and/or must be assisted into chair or wheelchair.</p> <p>3. Walks Occasionally Walks occasionally during day, but for very short distances, with or without assistance. Spends majority of each shift in bed or chair</p> <p>4. Walks Frequently Walks outside room at least twice a day and inside room at least once every two hours during waking hours</p>				
MOBILITY ability to change and control body position	<p>1. Completely Immobile Does not make even slight changes in body or extremity position without assistance</p> <p>2. Very Limited Makes occasional slight changes in body or extremity position but unable to make frequent or significant changes independently.</p> <p>3. Slightly Limited Makes frequent though slight changes in body or extremity position independently.</p> <p>4. No Limitation Makes major and frequent changes in position without assistance.</p>				
NUTRITION usual food intake pattern	<p>1. Very Poor Never eats a complete meal. Rarely eats more than 1/2 of any food offered. Eats 2 servings or less of protein (meat or dairy products) per day. Takes fluids poorly. Does not take a liquid dietary supplement OR is NPO and/or maintained on clear liquids or N's for more than 5 days.</p> <p>2. Probably Inadequate Rarely eats a complete meal and generally eats only about 1/2 of any food offered. Protein intake includes only 3 servings of meat or dairy products per day. Occasionally will take a dietary supplement. OR receives less than optimum amount of liquid diet or tube feeding</p> <p>3. Adequate Eats over half of most meals. Eats a total of 4 servings of protein (meat, dairy products per day. Occasionally will refuse a meal, but will usually take a supplement when offered OR is on a tube feeding or TPN regimen which probably meets most of nutritional needs</p> <p>4. Excellent Eats most of every meal. Never refuses a meal. Usually eats a total of 4 or more servings of meat and dairy products. Occasionally eats between meals. Does not require supplementation.</p>				
FRICITION & SHEAR	<p>1. Problem Requires moderate to maximum assistance in moving. Complete lifting without sliding against sheets is impossible. Frequently slides down in bed or chair, requiring frequent repositioning with maximum assistance. Spasticity, contractures or agitation leads to almost constant friction</p> <p>2. Potential Problem Moves feebly or requires minimum assistance. During a move skin probably slides to some extent against sheets, chair, restraints or other devices. Maintains relatively good position in chair or bed most of the time but occasionally slides down.</p> <p>3. No Apparent Problem Moves in bed and in chair independently and has sufficient muscle strength to lift up completely during move. Maintains good position in bed or chair.</p>				
					Total Score

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Sidebar 3-1. Advice from Barbara Braden on How to Use the Braden Scale

Barbara Braden, Ph.D., codeveloper of the Braden Scale and dean, University College and Summer Sessions, Creighton University, Omaha, Nebraska, finds that the Braden Scale helps to guide nurses in their pressure ulcer risk assessment in a simple way. “It covers a lot of risk areas so that nurses can quickly find red flag areas that may require a more in-depth assessment,” says Braden. Nurses’ scores for each subscale as well as the overall risk assessment score should guide them in their preventive strategies. “First of all, you assess by subscale and layout prevention protocols by subscale. Then, you assess the level of risk (how low the overall score is), and that tells you the intensity of the intervention that you need,” states Braden. “For example, if a patient is at low to moderate risk and is able to turn on his or her own, the patient may just need to be taught or reminded to turn more often. If the patient is at high risk, he or she might need to have a formal turning schedule and a specialized bed. Furthermore, you wouldn’t go into a full incontinence protocol unless the patient scores something below a 4 on the moisture subscale.” If a health care organization has developed policies around enacting specific pressure ulcer prevention strategies based on the patient’s subscale scores and overall level of risk, those policies should be made easily available to nurses so they can make those policies a part of their habitual routines.

Braden notes the following issues nurses and health care organizations have had when using the Braden Scale:

- Nurses stop reading the definitions of each subscale, or health care organizations do not provide the definitions of each subscale in their electronic documentation systems. “Then, the nurses don’t have access to the meaning of each subscale and cannot accurately score the patient for each subscale,” Braden says.
- Nurses will copy the Braden Scale risk assessment score from the previous nurse. “So you’ll see the patient get the same score of 18 even though the patient has been rushed to the intensive care unit and undergone many changes,” says Braden.
- Nurses are often able to easily recognize the patients who are at least risk and those who are at the highest risk, but it’s the patients in the middle risk areas that are difficult to assess. “The nurse should first assess if the patient is at one end of the spectrum or the other, and if the patient is not at either end, he or she should ignore the highest and lowest ratings and focus on the middle ratings when assessing the patient,” Braden says.

(continued on page 35)

Sidebar 3-1. (continued)

To help educate nurses and other health care providers on using the Braden Scale correctly, Braden has created a 30-minute education video as well as a companion CD-ROM, which are available at <http://www.bradenscale.com/>. The CD-ROM provides case studies and competency tests to help health care providers apply and assess their knowledge. “When I first educated our nursing staff on how to use the Braden Scale as part of a complete pressure ulcer prevention program,” Braden says, “I gave a lecture that covered the etiology of pressure ulcers (using the conceptual schema that I came up with for the Braden Scale) and how to score patients for pressure ulcer risk using the Braden Scale. Then I had the nurses break up into groups by unit and discuss a patient that had been on the floor for a while and come up with a risk assessment score for that patient. Thereafter, everyone had mandatory reeducation after two weeks to refresh the information they had just received and discuss any problems they had using the Braden Scale. Every six months, we did a prevalence study and looked at compliance with risk assessment and protocol implementation as well. We tried to demonstrate that on the units where there was a high degree of compliance with risk assessment and protocol implementation there was a lower incidence rate of pressure ulcers. That feedback is important to the nurses who are doing a good job with pressure ulcer prevention, but it is also important for the nurses who are not complying with the prevention protocol,” Braden states.

Norton Scale

In 1962 the Norton Scale was developed for the elderly population in the United Kingdom. (*See* Figure 3-2 on page 36 to view the Norton Scale.) It consists of the following five subscales⁷:

1. Physical condition (good, fair, poor, very bad)
2. Mental condition (alert, apathetic, confused, stupor)
3. Activity (ambulant, walk/help, chair-bound, bedridden)
4. Mobility (full, slightly, limited, very limited/immobile)
5. Incontinence (not, occasional, usually-urine, doubly)

The total score ranges from 5 (high risk) to 20 (low risk), with the cutoff point at 14. A patient at or below the cutoff point is at increased risk for developing a pressure ulcer.¹⁴

Although the Norton Scale often shows good sensitivity and specificity in its validity testing, it has been criticized for the following reasons¹⁴:

- Nutrition is not assessed as a risk factor in the scale.
- The scale does not provide descriptions of its five risk components so users may incorrectly assess a patient’s risk without sufficient training.

Figure 3-2.

Norton Scale

The Norton Scale

NOTE: Scores of 14 or less rate the patient as 'at risk'

	Physical Condition	Mental Condition	Activity	Mobility	Incontinence	Total Score
	1 Good 2 Fair 3 Poor 4 Very bad	1 Alert 2 Apathetic 3 Confused 4 Stupor	1 Ambulant 2 Walk/help 3 Chairbound 4 Bedridden	1 Full 2 Slightly 3 Limited 4 Very limited, Immobile	1 Not 2 Occasional 3 Usually-urine 4 Doubly	1 2 3 4
Name:	Date:					
Name:	Date:					
Name:	Date:					
Name:	Date:					
Name:	Date:					
Name:	Date:					
Name:	Date:					
Name:	Date:					

Source: Doreen Norton, Rhoda McLaren, and A.N. Exton-Smith. *An Investigation of Geriatric Nursing Problems in the Hospital*. London. National Corporation for the Care of Old People (now the Centre for Policy on Ageing); 1962. Adapted with permission of the publisher.

Source: Norton D.: Calculating the risk: Reflections on the Norton Scale, 1989. *Adv Wound Care* 9:38–43, Nov.–Dec. 1996. Reprinted with permission.

Waterlow Scale

Because experts found that the Norton Scale left out important risk assessment elements for pressure ulcers, Judy Waterlow headed the development of the Waterlow Scale in 1985 in Southwest England. In 2005 the Waterlow Scale was updated after a five-year research project was conducted. It is now the most widely used pressure ulcer risk assessment tool in Europe. (See Figure 3-3 on pages 38–39 to view the Waterlow Scale.) The Waterlow Scale was designed to serve three purposes¹⁴:

1. To provide a risk assessment for pressure ulcers
2. To make recommendations for preventive measures depending on the patient's specific risk areas
3. To list the pressure ulcer grading system supported by the European Pressure Ulcer Advisory Panel

The scale is made up of two risk sections, the normal and special risk section. The normal risk section includes the following risk assessment factors:

- Build/weight for height
- Skin type/visual risk areas (healthy, tissue paper dry, edematous, clammy/diaphoretic, discolored, broken spots)
- Sex (females are scored higher than males because Waterlow felt females were at extra risk due to anatomical differences because it is much more difficult to keep women clean, dry, and free from the effects of urinary incontinence)¹⁵
- Age

- Malnutrition screening tool (assesses whether the patient has recently lost weight, how much weight was lost, and if the patient is eating poorly or lacks appetite)
- Contenance (complete/catheterized, urine incontinent, fecal incontinent, or urinary and fecal incontinent)
- Mobility (fully, restless/fidgety, apathetic, restricted, bedbound, chair-bound)

The special risks that the Waterlow Scale also assesses for include the following:

- Terminal cachexia
- Multiple organ failure
- Single organ failure
- Peripheral vascular disease
- Anemia (hemoglobin < 8)
- Smoking
- Diabetes, multiple sclerosis, stroke
- Motor/sensory
- Paraplegia
- Orthopedic/spinal
- In the operating room for a certain number of hours
- Medications, such as cytotoxics, long-term/high-dose steroids, anti-inflammatories

The cut-off point for the Waterlow score is at 10 for high risk.^{6,14} The scale also defines that a score of 10+ puts the patient at risk for pressure ulcer development, 15+ puts the patient at high risk, and 20+ puts the patient at very high risk. By defining the risk scores within the scale, it allows nursing staff to immediately recognize the level of risk patients

Figure 3-3.

Waterlow Pressure Ulcer Prevention/Treatment Policy

An example of the Waterlow Pressure Ulcer Scale and classifications, front.

WATERLOW PRESSURE ULCER PREVENTION/TREATMENT POLICY
RING SCORES IN TABLE, ADD TOTAL. MORE THAN 1 SCORE/CATEGORY CAN BE USED

BUILD/WEIGHT FOR HEIGHT		SKIN TYPE VISUAL RISK AREAS		SEX AGE		MALNUTRITION SCREENING TOOL (MIST) (Nutrition Vol.15, No.6 1999 - Australia)	
AVERAGE BMI = 20-24.9	0	HEALTHY	0	MALE	1	A - HAS PATIENT LOST WEIGHT RECENTLY	B - WEIGHT LOSS SCORE
ABOVE AVERAGE BMI = 25-29.9	1	TISSUE PAPER DRY	1	FEMALE 14 - 49	2	YES - GO TO B	0.5 - 5kg = 1
OBSESE BMI > 30	2	OEDEMATOUS	1	50 - 64	1	NO - GO TO C	5 - 10kg = 2
BELOW AVERAGE BMI < 20	3	CLANNY/PYREXIA	1	65 - 74	2	UNSURE - GO TO C AND SCORE 2	10 - 15kg = 3
		DISCOLOURED	2	75 - 80	3		> 15kg = 4
		BROKEN/SPOTS GRADE 2-4	3	81 +	4	C - PATIENT EATING POORLY OR LACK OF APPETITE	UNSURE = 2
					5	NO = 0, YES = SCORE = 1	
CONTINENCE		MOBILITY		SPECIAL RISKS			
COMPLETE/ CATHETERISED	0	FULLY	0	TISSUE MALNUTRITION	◆	NEUROLOGICAL DEFICIT	◆
URINE INCONT.	1	RESTLESS/FIDGETY	1	TERMINAL CACHEXIA	5	DIABETES, MS, CVA	4-5
FACIAL INCONT.	2	APATHETIC	2	MULTIPLE ORGAN FAILURE	8	MOTOR/SENSORY	4-6
URINARY + FACIAL INCONTINENCE	3	RESTRICTED BEDBOUND e.g. TRACTION CHAIRBOUND e.g. WHEELCHAIR	4	SINGLE ORGAN FAILURE (RESP, RENAL, CARDIAC.)	5	PARAPLEGIA (MAX OF 6)	4-5
			5	PERIPHERAL VASCULAR DISEASE	5	MAJOR SURGERY or TRAUMA	
				ANAEMIA (Hb < 8)	2	ORTHOPAEDIC/SPINAL	5
				SMOKING	1	ON TABLE > 2 HR#	5
				MEDICATION - CYTOTOXICS, ANTI-INFLAMMATORY	1	ON TABLE > 6 HR#	8
						LONG TERM/HIGH DOSE STEROIDS	
						MAX OF 4	
SCORE							
10+ AT RISK							
15+ HIGH RISK							
20+ VERY HIGH RISK							

Scores can be discounted after 48 hours provided patient is recovering normally

© J. Waterlow 1985 Revised 2005*
* Obtainable from the Nook, Stoke Road, Hangleida TAUNTON TA3 5LX
* The 2005 revision incorporates the research undertaken by Queensland Health.

www.jelly-waterlow.co.uk

(continued on page 39)

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Figure 3-3. (Continued)

Waterlow Pressure Ulcer Prevention/Treatment Policy

An example of the Waterlow Pressure Ulcer Scale and classifications, back.

<p>REMEMBER TISSUE DAMAGE MAY START PRIOR TO ADMISSION, IN CASUALTY. A SEATED PATIENT IS AT RISK ASSESSMENT (See Over) IF THE PATIENT FALLS INTO ANY OF THE RISK CATEGORIES, THEN PREVENTATIVE NURSING IS REQUIRED. A COMBINATION OF GOOD NURSING TECHNIQUES AND PREVENTATIVE AIDS WILL BE NECESSARY. ALL ACTIONS MUST BE DOCUMENTED.</p>	
<p>PREVENTION PRESSURE REDUCING AIDS Special Mattress/beds:</p>	<p>10+ Overlays or specialist foam mattresses. 15+ Alternating pressure overlays, mattresses and bed systems. 20+ Bed systems: Fluidised bed, low air loss and alternating pressure mattresses Note: Preventative aids cover a wide spectrum of specialist features. Efficacy should be judged, if possible, on the basis of independent evidence. No person should sit in a wheelchair without some form of cushioning. If nothing else is available - use the person's own pillow. (Consider infection risk) 10+ 100mm foam cushion 15+ Specialist Gell and/or foam cushion 20+ Specialised cushion, adjustable to individual person Avoid plastic draw sheets, inco pads and tightly tucked in sheet/sheet covers, especially when using specialist bed and mattress overlay systems Use diivet - plus vapour permeable membrane.</p>
<p>Cushions:</p>	
<p>Bed clothing:</p>	
<p>NURSING CARE General</p>	<p>HAND WASHING. frequent changes of position, lying, sitting. Use of pillows Appropriate pain control High protein, vitamins and minerals Correct fitting technique - hoists - monkey poles Transfer devices Real Sitteepskin - bed cradle 100mm(4ins) cover plus adequate protection</p>
<p>Pain Nutrition Patient Handling Patient Comfort Aids Operating Table Theatre/A&E Trolley</p>	
<p>WOUND GUIDELINES</p>	<p>General hygiene, NO rubbing, cover with an appropriate dressing</p>
<p>WOUND ASSESSMENT</p>	<p>odour, exudate, measure/photograph position</p>
<p>GRADE 1</p>	<p>WOUND CLASSIFICATION - EPUAP Discolouration of intact skin not affected by light finger pressure (non-blanching erythema). This may be difficult to identify in darkly pigmented skin</p>
<p>GRADE 2</p>	<p>Partial thickness skin loss or damage involving epidermis and/or dermis The pressure ulcer is superficial and presents clinically as an abrasion, blister or shallow crater</p>
<p>GRADE 3</p>	<p>Full thickness skin loss involving damage of subcutaneous tissue but not extending to the underlying fascia The pressure ulcer presents clinically as a deep crater with or without undermining of adjacent tissue</p>
<p>GRADE 4</p>	<p>Full thickness skin loss with extensive destruction and necrosis extending to underlying tissue.</p>
<p>Dressing Guide</p>	<p>Use Local dressings, formulary and/or www.waterlowwounds.com</p>
<p>IF TREATMENT IS REQUIRED, FIRST REMOVE PRESSURE</p>	

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Can Any Scale Accurately Predict a Patient's Risk for Developing a Pressure Ulcer?

After some researchers reviewed all the different reliability, validity, sensitivity, and specificity scores for various types of pressure ulcer risk assessment scales, they concluded that no one scale can accurately predict a patient's risk for developing pressure ulcers.⁵ However, researchers also acknowledge that it is difficult to prove whether a risk assessment scale accurately identifies patients who will develop pressure ulcers because these scales naturally trigger health care providers to implement preventive strategies. So if the scale predicts that the patient will be at high risk for a pressure ulcer, preventive strategies will be enacted. If pressure ulcers are, in fact, prevented, then the scale will appear to be a poor predictor of pressure ulcers and will also have lower sensitivity scores.⁵ Determining true sensitivity and specificity would mean withholding preventive strategies and allowing pressure ulcers to develop in high-risk patients, which would be ethically unacceptable.⁵

Because so many complications exist in accurately assessing each scale's predictive ability, one would think that researchers would explore whether these scales are effectively preventing pressure ulcers. But according to a systematic review by Moore and Cochrane in 2008, no such studies have evaluated whether pressure ulcer risk assessment tools reduce pressure ulcers in any health care setting.¹⁶ And at this point, some researchers are unconvinced that risk assessment scales actually decrease pressure ulcers.⁹

are at for developing pressure ulcers.¹⁴

Many studies have found the Waterlow Scale to be highly sensitive for predicting pressure ulcers, but at the same time it has the lowest specificity. This means that the scale often overpredicts the number of patients who will develop pressure ulcers.^{8,9,14} Researchers have also criticized the scale for its lack of explanatory comments for each of the risk assessment areas, which makes it easy for health care providers to misjudge each patient's actual level of risk. Finally, in an effort to make this pressure ulcer risk

assessment scale more comprehensive, Waterlow added more risk component areas. Many researchers felt that this made the tool more complicated and ambiguous.¹⁴

[STRATEGY] **Provide Thorough Staff Education on Risk Assessments and Prevention Protocols**

Without sufficient staff education and training, even the most well-intentioned pressure ulcer prevention programs will

fail. Health care providers need to know how, when, and why they are implementing pressure ulcer prevention strategies. Organizations that employ certified wound, ostomy, and continence (WOC) nurses have great educational resources at their disposal. WOC nurses can develop and lead an educational curriculum for staff, conduct periodic in-services when

further education needs are identified, and also educate all new staff members at orientation.

Before creating a staff education program, organization leaders may want to distribute surveys to the staff members who will receive the education so as to measure their baseline knowledge on pressure ulcer prevention. This can help

Table 3-1. Comparison of the Pressure Ulcer Risk Assessment Scales

Risk Factors	Braden Scale	Norton Scale	Waterlow Scale
Sensory Perception	X		
Moisture/Incontinence	X	X	X
Activity	X	X	X
Mobility	X	X	
Nutrition	X		X
Weight			X
Friction and Shear	X		
Physical Condition		X	X
Mental Condition		X	
Gender			X
Age			X
Medications			X
Recent Surgery/Trauma			X

Sources: Joint Commission Resources: Assessing a patient’s risk for pressure ulcers: Compliance tips for National Patient Safety Goal 14. *Perspectives on Patient Safety* 8:9–10, Oct. 2008; and Balzer K., et al.: The Norton, Waterlow, Braden, and Care Dependency Scales: Comparing their validity when identifying patients’ pressure sore risk. *J Wound Ostomy Continence Nurs* 34:389–398, Jul.–Aug. 2007.

leaders focus the education on the areas where staff members indicate they have the weakest knowledge regarding pressure ulcer prevention. Central DuPage Hospital (CDH) in Winfield, Illinois, distributed skin assessment and documentation surveys to nurses and nurse assistants before creating its education program on pressure ulcer prevention.¹⁷ The results revealed that nurses and nurse assistants had varying practices or knowledge when it came to skin assessment, documentation, and applying interventions to prevent pressure ulcers. An example of the skin assessment and documentation survey can be found in Figure 3-4 on page 43.

When organizations implement structured and comprehensive staff education programs on pressure ulcer prevention, the National Pressure Ulcer Advisory Prevention (NPUAP) Panel suggests including the following information¹⁸:

- Etiology of pressure ulcers and their risk factors
- Risk assessment scales and how they should be used
- Skin assessment
- Selection and use of support surfaces
- Nutritional support
- Bowel and bladder management programs
- Individualized skin care programs
- Demonstration of positioning techniques to decrease the risk of skin breakdown
- Documentation requirements for risk

assessment scales, skin assessment, and implementation of prevention strategies

The NPUAP also offers a competency-based curriculum that provides more detail on each of the educational points listed above as well as a case study to test staff knowledge (go to http://www.npuap.org/PDF/treatment_curriculum.pdf).

When initiating a quality improvement (QI) project to reduce the incidence of pressure ulcers at The Miriam Hospital in Providence, Rhode Island, the WOC nurse created a continuing education unit component for staff.¹⁹ The staff education program covered the Braden Scale for assessing pressure ulcer risk, other potential risk factors for pressure ulcers, interventions for preventing pressure ulcers, and documentation of a pressure ulcer skin assessment (including a discussion of the NPUAP staging system). After staff members were formally educated, the QI project leader maintained a “shoulder-to-shoulder” presence on the units during all three shifts so as to serve as an informal educator and role model for staff.¹⁹ The QI project leader helped nurses assess patients’ skin accurately, completed Braden scores with nurses and provided feedback as necessary, and helped develop a plan of care for prevention and treatment for patients based on risk assessment scores.

To assist with staff education, many health care organizations have created

Figure 3-4.

Skin Assessment and Documentation Survey

Assessment Question	Answer
1. How often are you to perform and document skin assessment according to the policy?	
2. What do you do to prevent skin breakdown?	
3. What is the skin risk assessment tool used at this organization? How often do you use it?	
4. What do you do if the risk assessment score is 18 or below?	
5. What do you do if a patient develops a pressure ulcer?	
6. What do you need to include in your documentation should you discover a pressure ulcer on your patient?	
7. After a pressure ulcer is discovered, how often do you need to document regarding this issue and who is responsible for the documentation?	
8. What would you consider a health care–acquired pressure ulcer?	
9. When do you prepare an occurrence report related to skin care issues?	
10. If the wound, ostomy, and continence (WOC) nurse recommends a skin care treatment, do you need a physician order to implement the plan of care?	
11. How often do you remove anti-embolism compression stockings from patients?	
12. How often do you reposition bedridden patients?	

Adapted from Chicano S.G., Drolshagen C.: Reducing hospital-acquired pressure ulcers. *J Wound Ostomy Continence Nurs* 36:45–50, Jan.–Feb. 2009. Reprinted with permission from Central DuPage Hospital (CDH) in Winfield, IL.

skin care teams that are made up of one or two nurse champions from every unit who agree to serve as peer-to-peer educators for nurses. These skin care teams are usually led by WOC nurses, who also facilitate further education for the nurse champions who will then take the information back to their units to share with their coworkers. These nurse champions may also participate in quarterly or semi-prevalence studies, wherein they will gain further knowledge about skin assessment and pressure ulcer prevention techniques. (See more on prevalence studies on pages 68–70.)

For example, Northwest Community Hospital in Arlington Heights, Illinois, created the “Skintastics” team to help disseminate information on new skin care protocols, participate in prevalence studies, and provide peer-to-peer education on the units.²⁰ When WOC nurses choose new products to help reduce pressure ulcers or improve overall skin care, they e-mail the Skintastics team members with information on the new product or feature the product at one of their quarterly Skintastics meetings.²⁰ Thereafter, the Skintastics team members take that information back to their units and increase overall staff knowledge of skin care protocols. The Skintastics team members also provide feedback to the WOC nurses on how these new products are working and updates on whether staff members are having difficulty implementing pressure ulcer prevention protocols.

OSF St. Francis Medical Center in

Peoria, Illinois, designates a Save Our Skin (SOS) champion to serve as a skin care resource for each nursing unit.²¹ The SOS champion is either a staff nurse or nurse assistant, and he or she acts as a resource for skin breakdown prevention and helps coordinate pressure ulcer prevention protocols with the unit manager. These SOS champions attend housewide monthly meetings, cochaired by two WOC nurses, with other SOS champions from various units. At these meetings, SOS champions and WOC nurses discuss new products for skin care, pressure ulcer prevention issues, and examples of success stories with pressure ulcer prevention.²¹



For a video case study of how St. Vincent Hospital, Worcester, Massachusetts, handles pressure ulcer prevention, visit <http://www.jcrinc.com/EBPUM09/Extras>.

[STRATEGY] Perform Diligent and Continuous Skin Assessments

When going through risk assessment scales, such as the Braden Scale, Norton Scale, or Waterlow Scale, health care providers have to consider several issues that may be affecting the patient, such as mobility, friction, shear, nutrition, and moisture. But a major part of an overall risk assessment also involves physically looking at the patient’s skin. If the

Who Is Responsible for Preventing Pressure Ulcers?

For the most part, nurses take the lead role in preventing pressure ulcers, but they certainly are not solely responsible for the job. “Organizations should target all departments that interact with patients for training and specify what each individual department members will do to prevent pressure ulcers,” says Irene Jankowski, A.P.R.N., B.C., M.S.N., C.W.O.C.N., 2009 nurse safety scholar-in-residence at Joint Commission Resources and adult nurse practitioner and wound, ostomy, continence specialist at Beth Israel Medical Center, New York. For example, Jankowski suggests that transporters can help patients change positions more frequently when they know the patient will be on a stretcher for longer than an hour, or staff in the radiology department can use transfer sheets to avoid shearing patients who need to be transferred from one surface to another for CT scans or magnetic resonance imaging (MRIs). In addition, respiratory therapists can prevent pressure ulcers when the patient’s skin comes into contact with respiratory equipment, such as endotracheal tubes, nasal cannula oxygen tubing, and noninvasive ventilation masks. Finally, nursing assistants can play a large role in pressure ulcer prevention by turning patients every two hours, helping with skin care, or even feeding patients who are unable to feed themselves.

patient’s skin is frail, dry and scaly, warm, boggy to the touch, or reddened (but blanching), health care providers know that he or she is at risk for breakdown. For example, when staff members perform a head-to-toe skin assessment and see that a patient’s sacrum or coccyx has intact, reddened skin that blanches, it’s a red flag that this patient is at great risk for progressing to a Stage I pressure ulcer. In fact, pressure ulcers can form after two hours of uninterrupted pressure on the skin.^{7,22}

Head-to-toe skin assessments for pressure ulcers should focus on the bony prominences where pressure ulcers usually form, such as the back of

the head, shoulders, hips, elbows, sacrum, coccyx, ankles, and the heels. (See Figure 1-1 on page 5 for a diagram of the common sites of pressure ulcer development depending on the patient’s position.) But depending on the patient and how he or she is positioned, pressure ulcers can form almost anywhere, particularly if the patient’s skin is pressed against any piece of medical equipment, such as an endotracheal tube, nasal cannula oxygen tubing, a urinary catheter, a ventilation mask for noninvasive ventilation, or even the side rails of the bed.²³ Although it seems obvious, nurses should turn on the lights and look

directly at the patient's bare skin, which means removing underwear or diapers to evaluate the sacrum and coccyx and taking off the socks or anti-embolism compression stockings to inspect heels and ankles.²³ (See Sidebar 3-2 on page 47 for more about assessing for and preventing pressure ulcers on the heels.) If nurses appear to be struggling with their skin assessments or have trouble discerning the stage of the pressure ulcer, make sure they have access to a WOC nurse or a member of an organizationwide skin care team who can provide added guidance and one-on-one education. In addition, health care providers need to look for other clues for potential breakdown when assessing patients of darker skin tones for pressure ulcers (see Sidebar 3-3 on page 49 for more information on assessing patients with darker skin tones for skin breakdown).

The NPUAP recommends that all at-risk patients be assessed for pressure ulcers at the time of admission to the health care organization and at regular intervals thereafter depending on the type of patient care setting. This assessment should include a risk assessment scale as well as a head-to-toe skin assessment for pressure ulcers. Depending on the following settings, assessments should occur at the following intervals²⁸:

- **Acute care:** assess at least every 24 hours or sooner if the patient's condition changes.

- **Long term care:** assess weekly for four weeks then quarterly and whenever the resident's condition changes.

- **Home care:** assess at every nurse visit.

"Patients in acute care change so fast so you have to assess them daily," says Joyce M. Black, Ph.D., R.N., associate professor, College of Nursing, University of Nebraska Medical Center, Omaha. "At the University of Nebraska Medical Center, we assess patients twice a day so that the patient's needs get addressed sooner. In long term care, the resident's risk is the highest during the first month. After a month, the patient has a set routine and staff have gotten to know the patient better, so the risk is reduced."

"In long term care, I recommend pairing the skin assessment with weekly or monthly weights, which is already habituated with the staff," says Braden. "They are getting patients up to a scale or putting them in a Hoyer lift scale, so at that time, they can assess how much the patient moves, see how moist their skin is, or check for any reddened areas on bony prominences. And when staff members are looking at the weight, they should be thinking about how well the patient eats."

The Agency for Healthcare Research and Quality (AHRQ), with support from the California Health Care Foundation, developed a pressure ulcer reduction program for long term care organizations, nicknamed the On-Time program. This initiative looked at the

Sidebar 3-2. Don't Forget the Heels

When most health care providers think of pressure ulcers, they immediately consider their development on the sacrum and coccyx. But pressure ulcers commonly occur on the heels as well, especially for those patients who have diabetes mellitus with peripheral neuropathy, peripheral vascular disease, stroke, or paraplegia, or who are on vasopressor medications that decrease lower extremity perfusion.²⁴ In fact, the national incidence of health care–acquired heel pressure ulcers increased from 19% to 30% during the past decade, and heel ulcers account for about one third of all pressure ulcers.²⁴

The first step in effectively relieving pressure from the heels is to assess the heels regularly. Often, providers remember to turn patients over and look at the sacrum and coccyx, but the heels may be forgotten, especially if patients are wearing anti-embolism compression stockings. Sometimes a mirror is helpful to look at the heels. Providers can hold a mirror under the heel so that they do not have to turn the patient's foot in an uncomfortable position. While holding the mirror under the heel, the provider can check to see if any reddened areas on the heel blanch.

Unfortunately, the heel is one of the most difficult areas of the body from which to relieve pressure. Studies have shown that support surfaces, including specialty beds, mattresses, and overlays, do not relieve pressure to the heel region.²⁴ New products have come out to address this issue, including a heel protector boot that is made of soft foam and helps “float” the heels to protect them from pressure, friction, and shear.²⁴ Some WOC nurses also recommend placing a pressure ulcer preventive hydrocolloid dressing on the heels to protect them from friction and shear,* but providers must remember to take off these dressings from time to time to assess the heels for any breakdown.²⁵ At the very least, nurses can “float” the heels off the mattress using pillows placed lengthwise under each calf, but certain patients may not be able to maintain this position for long.²⁶

Although anti-embolism compression stockings may do wonders to prevent deep vein thrombosis (DVT), they can have devastating effects on the skin if not worn or sized properly and if patients have peripheral arterial disease or diabetic neuropathy.²⁷ In fact, if patients are wearing anti-embolism compression stockings incorrectly (including having the wrong size), they may be at increased risk for DVT and are definitely at increased risk for skin breakdown.²⁷ A recent study found that nurses applied anti-embolism compression stockings incorrectly 29% of the time and chose the wrong size 26% of the time.²⁷ Anti-embolism compression stockings are used incorrectly when they are wrinkled, loose, rolled down, binding, cut, or altered

(continued on page 48)

* Note that the hydrocolloid dressings on the heels do not protect the heels from pressure, just from friction and shear.

Sidebar 3-2. (continued)

in any way. In addition, nurses should pay attention to the manufacturer's size chart when choosing a size for the patient. Patients should not wear thigh-length anti-embolism compression stockings if their thigh circumference is greater than 25 inches.

To protect the skin of patients with anti-embolism compression stockings, organizations should do the following²⁷:

- Ensure that correctly sized anti-embolism compression stockings are placed on patients.
- Check that the anti-embolism compression stockings fit correctly (assess for wrinkles or overlapped areas, loose or binding areas, or parts that have rolled down).
- Remove anti-embolism compression stockings at least every 12 hours (take this opportunity to wash and moisturize the skin and to assess the heels for breakdown).
- Check the legs for increased swelling, and reevaluate if the patient needs a larger stocking size.
- If possible, apply anti-embolism compression stockings postoperatively (some organizations have policies to apply anti-embolism compression stockings two hours before surgery, but this has not been shown to reduce DVTs, and patients can develop pressure ulcers in as few as two hours; in addition, nurses may not be able to remove anti-embolism compression stockings during the operation to effectively assess circulation).
- Remove anti-embolism compression stockings if their use is contraindicated (for example, patients with severe arteriosclerosis or other ischemic vascular disease, massive edema of the legs or pulmonary edema, extreme leg deformity, and local leg conditions such as dermatitis should not wear anti-embolism compression).

biggest challenges that long term care organizations faced when trying to prevent pressure ulcers and developed specific strategies to combat those challenges. For example, many long term care organizations struggle to effectively use observations from certified nursing assistants (C.N.A.s) to assess a patient's level of risk for developing a pressure ulcer. C.N.A.s often spend the most

time with residents, and with experience and training, they can document certain factors that may place residents at risk for developing pressure ulcers. But even if the C.N.A.s can accurately document risk factors for pressure ulcers, they need an efficient communication pathway to members of the care team who formulate the patients' care plans (such as nurses and dieticians). To help guide

Sidebar 3-3. Assessing Patients with Darker Skin

Patients with darker skin tones are at higher risk for developing pressure ulcers, and those pressure ulcers often are more severe.^{7,29} The reason for this increased risk is that providers are unable to recognize when patients with darker skin tones are at risk for skin breakdown or even when patients have Stage I pressure ulcers.²⁹ For example, providers cannot check patients with darker skin tones for blanching as they can with patients who have lighter-colored skin. This reaction is not seen in dark skin because the pigmentation obscures it.³⁰ In addition, providers should not be looking for redness to indicate that a pressure ulcer is forming in patients with darker skin tones; instead, they should look for persistent blue, purple, or gray hues. Because providers cannot use the blanch test to check for potential pressure ulcers, and skin discoloration caused by pressure ulcers may be hard to detect in patients with darker skin, they should assess for the following³⁰:

- Skin temperature (warmth or coolness)
- Tissue consistency (firm or boggy feel)
- Sensation (pain or itching)

The NPUAP has incorporated these assessment elements for patients with darker skin tones into their pressure ulcer staging system. (See Chapter 2, pages 17–24, for more information on the NPUAP pressure ulcers staging system.)

C.N.A. documentation and enhance communication between C.N.A.s and the care team in long term care, the On-Time program created a documentation flow sheet, which includes information such as the patient's weight, meal intake, bathing schedule, performance of activities of daily living (ADLs), bowel and bladder management, and mobility and activity. Armed with a C.N.A.'s structured observations through the documentation flow sheet, the care team can recognize those patients who might be at risk for developing pressure ulcers as soon as possible and then initiate further assessments and interventions to prevent

those pressure ulcers from forming. For more information about the On-Time Quality Improvement for Long-Term Care and to access free resources, go to <http://www.ahrq.gov/RESEARCH/ontime.htm>.

[STRATEGY] **Relieve Each Patient's Pressure**

A key to relieving each patient's pressure is recognizing when the patient needs to be on a support or pressure redistribution surface, whether that be a specialty bed, mattress, or an overlay or a chair cushion when the patient is sitting.

Unfortunately, this is the most expensive part of pressure ulcer prevention, but it should not be misinterpreted as the *only* part of pressure ulcer prevention. Organizations that buy specialty support surfaces for all patients cannot then just ignore all the other strategies for preventing pressure ulcers that are discussed in this chapter. Staff should still turn at-risk patients every two hours even if they are on a specialty support surface. That being said, organizations that have supplied support or pressure redistribution surfaces for all patients have seen improvement in their pressure ulcer rates. For example, Baystate Medical Center in Springfield, Massachusetts, used pressure redistribution surfaces on 100% of patients and saw their health care–acquired pressure ulcer rate decrease to 2.1 per 1,000 patient days.³¹ Bryan LGH Medical Center in Lincoln, Nebraska, put pressure redistributing beds in every patient room of the facility and has consistently seen pressure ulcer incidence rates below 3% for the last two years.³¹ Health care organizations do not need to purchase pressure redistribution surfaces for *all* patients. Instead, they can educate staff to recognize when patients need these specialty support surfaces (such as when the patient’s Braden Scale risk assessment score falls below 18) and provide specialty support surfaces only for the at-risk patients.

Because there are many different types of pressure redistribution surfaces,

and the terminology used to describe them can be confusing, purchasing these beds and mattresses is not a simple process. For example, there are static and dynamic support surfaces, and then dynamic support surfaces are further separated into alternating/low air loss mattresses and air-fluidized beds. Worse, manufacturers are not held to any standards when describing the attributes of their beds. “When you order a low air loss bed, a standard of quality is not guaranteed among manufacturers, and it’s difficult to find out which beds are of the best quality for the cost,” says Black.

The NPUAP created the Support Surface Standards Initiative (S3I) to help standardize the language used when referring to the attributes of mattresses, beds, and cushions and to ensure that manufacturers are describing their products appropriately and in a way that enables comparison between them. For example, the NPUAP defines a *support surface* as “a specialized device for pressure redistribution designed for the management of tissue loads, microclimate, and other therapeutic functions.”³² For more NPUAP–defined other terms related to support surfaces, go to http://www.npuap.org/NPUAP_S3I_TD.pdf and *see* the box above. The NPUAP is currently working on a guide that will serve as a consumer report for the comparison of various manufacturers’ beds.

Three categories of support surfaces have been defined by the Centers for

Definitions of Features Related to Support Surfaces

A feature is a functional component of a support surface that can be used alone or in combination with other features. Here are definitions of several common features associated with support surfaces:

- **Air Fluidized:** provides pressure redistribution via a fluid-like medium created by forcing air through beads as characterized by immersion and envelopment
- **Alternating Pressure:** provides pressure redistribution via cyclic changes in loading and unloading as characterized by frequency, duration, amplitude, and rate of change parameters
- **Lateral Rotation:** provides rotation about a longitudinal axis as characterized by degree of patient turn, duration, and frequency (used only for patients with respiratory issues)
- **Low Air Loss:** provides a flow of air to assist in managing the heat and humidity (microclimate) of the skin
- **Zone:** a segment with a single pressure redistribution capability
- **Multi-Zoned Surface:** a surface in which different segments can have different pressure redistribution capabilities

Source: National Pressure Ulcer Advisory Panel: *Terms and Definitions Related to Support Surfaces*. Jan. 29, 2007. http://www.npuap.org/NPUAP_S3I_TD.pdf (accessed May 21, 2009).

Medicare & Medicaid Services (CMS) for reimbursement purposes. One category is under the “static” division and two categories are under the “dynamic” division. The categories are defined as the following⁷:

Static: support surfaces that do not require electricity (also known as “non-powered”*)

- Include air, foam (convoluted and solid), gel, and water overlays and mattresses
- Should be used for patients who are at low risk for pressure ulcer development

* *Through the Support Surface Standards Initiative, the National Pressure Ulcer Advisory Panel has suggested to move away from the terms static and dynamic when referring to support surfaces and instead move to the terms non-powered and powered, respectively.*

Dynamic: support surfaces that are powered by electricity or pump (also known as “powered”)

- **Alternating pressure and low air loss mattresses:** good for patients at moderate to high risk for pressure ulcers or who have full-thickness pressure ulcers
- **Air fluidized beds:** contain silicone-coated beads; when air is pumped through the bed, the beads become liquid; used for patients at high risk for pressure ulcers or those with non-healing or numerous full-thickness pressure ulcers

Researchers conducted a systematic review of 49 randomized controlled trials that looked at the role of various categories of support surfaces in preventing pressure ulcers.³³ They found that using a specialty support surface prevented more pressure ulcers than a standard hospital mattress, but they could not definitively say that one category of support surface (static or dynamic, and alternating pressure, low air loss, or air fluidized) prevented more pressure ulcers than another.*³³ Another study evaluated the effectiveness of three different support surfaces (two dynamic and one static foam mattress) and found that an equal number of patients developed pressure ulcers on each surface.⁷ Finally, a 2009

* Reddy et al. note that many of the randomized controlled trials that were reviewed had methodological limitations. They noted that there was a need for well-designed randomized controlled trials that follow standard criteria for reporting whether interventions actually reduce the risk of pressure ulcers in patients.

Cochrane Review (a second update that reviews an additional 11 trials) found that higher-specification foam mattresses rather than standard hospital foam mattresses should be used to reduce the risk of pressure ulcer development.³⁴ In addition, this Cochrane Review found that the benefits of higher-tech constant low pressure and alternating pressure mattresses remain unclear, but are still better than the standard hospital mattress.^{†34} These are important findings because there are large differences in costs between the various categories of support surfaces, and health care organizations should not have to pay a great deal for an air fluidized bed when a low air loss or an alternating pressure or even a static foam mattress would serve the same purpose in preventing pressure ulcers.

Specialized Seat Cushions for Patients in Chairs or Wheelchairs

When patients can get out of bed and up into chairs or wheelchairs, a chair cushion should be used to help redistribute pressure on the patient’s buttocks. Researchers reviewed four randomized controlled trials that evaluated the use of

† However, the authors of the Cochrane Review note that the confidence with which they can draw firm conclusions from their review of randomized clinical trials is greatly tempered by the following:

- The poor quality of many of the trials
- The lack of replication of most comparison trials
- The fact that the “standard” hospital mattress is often not clearly defined

specialized seat cushions (foam or gel) for pressure ulcer prevention and found no difference in the pressure ulcer incidence among the study groups.³³ However, *one* study compared specialized foam cushions with a combination foam/gel cushion and found the latter to be significantly more effective.³³

A Connecticut hospital found that chair cushions were not being used consistently for orthopedic patients sitting up in chairs.³⁵ To increase the use of seat cushions, this hospital taped static air cushions to the 20 reclining chairs on the unit. Housekeeping staff were taught how to clean the seat cushions so that they could be reused properly. The hospital collected outcome data over six weeks through staff reporting, the skin care hotline, unit-based representatives, and rounds. Their data showed a decrease in seating surface pressure ulcers during the time period when chair cushions were readily supplied, and staff did not have to remember to order the cushions or go to a supply room to find them.³⁵

Operating Room Patients at Risk for Pressure Ulcers

Another population that is at great risk for pressure ulcers includes patients who spend long hours on their backs in the operating room. A prevalence study of 1,128 patients who underwent a surgical procedure lasting three hours or longer found the pressure ulcer prevalence rate to be 8.5%.³⁶ The study also

found that as the length of surgery increased, so did the percentage of patients who formed pressure ulcers.³⁶ The Association of periOperative Registered Nurses states that procedures longer than 2½ to 3 hours significantly increase the risk for pressure ulcers.³⁷ Challenges to preventing pressure ulcers in the OR include the following³⁷:

- Patients are under anesthesia.
- Long periods of immobility
- Inability of patients to perceive pain and discomfort
- Inability to access patients' skin for assessment because of sterile drapes

One way to combat pressure ulcers in the OR is to provide at-risk patients with pressure redistribution pads or overlays during surgery. A 2009 Cochrane Review found that putting pressure redistributing overlays on the operating table has been shown to reduce postoperative pressure ulcer incidence.³⁴

At OSF St. Francis Medical Center in Peoria, Illinois, the nurses assess all patients preoperatively for pressure ulcer risk.³⁷ If any of these patients are identified to be at risk, a special sticker that says "Save Our Skin" is placed on the patient's chart to remind other nurses to continue to take precautions. However, all OR patients are treated as if they are at risk for pressure ulcers as all OR beds have pressure ulcer prevention mattresses.³⁷ Nurses also document all positioning aids and padding used for the patient during surgery. Then, when patients move onto the postanesthesia care unit,

Is Sheepskin Making a Comeback?

Most pressure ulcer prevention guidelines, including those supported by the NPUAP and the WOCN, discourage the use of sheepskin as a means to prevent pressure ulcers.²⁸ Although sheepskin has always been touted for its good pressure-relieving properties and moisture-absorbing capacities, its use has been discouraged because it could not retain its pressure-relieving properties after frequent washings. There were also hygienic problems because sheepskin cannot tolerate washing with water above 40°C.³⁸ Now, Australian Medical Sheepskin has been developed, and it is made of high-density wool piles and is tanned and processed in such a way that it has an increased resistance to urine and does not lose its moisture-absorbing and pressure-relieving properties even after 60 washes at 80°C.³⁸ Furthermore, a 2009 Cochrane Review found two randomized controlled trials that indicated that Australian standard medical sheepskins prevented pressure ulcers.³⁴ Another randomized controlled trial testing the cost-effectiveness and ability of Australian Medical Sheepskin to prevent pressure ulcers is planned for 750 nursing home patients in the Netherlands as well.³⁸ In light of these recent improvements with sheepskin and the recent research, perhaps sheepskin will be a cost-effective alternative overlay for patients at risk for pressure ulcers.

the nurses check the patients' skin for any pressure ulcers. If a patient is found to have pressure ulcers after surgery, a nurse will evaluate that patient and include him or her in a report that he or she compiles for quarterly Six Sigma meetings.³⁷

External Pressure from Medical Equipment Pressing on the Skin

Not only can patients get pressure ulcers from sitting or lying down in the same position for long periods of time, they can also get pressure ulcers from medical equipment pressing on their skin. Culprits include urinary catheters, endotracheal (ET) tubes, nasal cannula oxygen tubing, and noninvasive ventila-

tion (NIV) masks for continuous positive airway pressure (CPAP) or bi-level positive airway pressure (BiPAP). One hospital in Connecticut found an increase in pressure ulcers on the forehead, cheeks, and ears in their respiratory patients after introducing NIV therapy.³⁵ As a result, the organization trained respiratory therapists and nurses to inspect the patient's skin before fitting masks for NIV therapy and to apply hydrocolloid dressings to areas of the skin that will be at risk for breakdown while the mask is on. After training, the hospital greatly reduced these types of pressure ulcers.³⁵ Respiratory therapists should also work with nurses to prevent pressure ulcers from forming

around ET tubes and nasal cannula oxygen tubing. For example, pads can be placed on the nasal cannula oxygen tubing that comes into contact with the ears and the sides of the face. ET tubes should also be retaped to different positions (either the right or left side or center of the mouth) every day so as not to cause undue pressure on the lips. Finally, nurses and other staff members participating in direct patient care should be watchful of urinary catheters and other medical equipment that may be at risk for putting too much pressure on the patient's skin. Even the side rails of the bed can be a source of potential pressure on the patient's skin.

[STRATEGY]

Ensure that Patients Are as Active as Possible

Not every health care organization can afford specialized beds for pressure redistribution, but it does not cost anything to ensure that staff turn patients every two hours or reposition those patients in chairs every hour. "It's so important to get patients mobilized or active," says Black. "People who are up walking around don't get pressure ulcers. Get these patients turned every two hours or up into the chair—even if it's only for short periods of time, it's better than bed rest."

The NPUAP and other organizations recommend the following²⁸:

- Reposition bedridden patients at least every two hours.
- When considering the turning schedule for patients in bed, be aware that every two hours may not be adequate for the patient, or it may be too often for the patient, depending on his or her overall condition.³⁹
- Use lifting devices (for example, bed linen or trapeze) to move patients rather than drag them during transfers and position changes. This will reduce the risk of friction and shear (*see* more on friction and shear in Sidebar 3-4 on page 56).
- Maintain the head of the bed at or below 30° or at the lowest degree of elevation consistent with the patient's medical condition to reduce shear and friction forces.
- Use pillows or foam wedges to keep bony prominences, such as knees and ankles, from direct contact with each other (particularly when the patient is lying on his or her side).
- Avoid positioning directly on the trochanter when using the side-lying position; use the 30° lateral inclined position by placing a pillow along one side of the patient's back and buttocks.
- Reposition chair-bound patients every hour and teach patients (who are able) to shift their weight every 15 minutes while sitting in the chair.
 - Consider postural alignment, distribution of weight, balance and stability, and pressure redistribution when positioning patients in chairs and wheelchairs.

Sidebar 3-4. Protect Patients from Friction and Shear

Friction occurs when the skin rubs against a stationary object, such as a bed or chair, and shear occurs when the layers of the skin slide over one another or over deeper tissues (such as when patients slide down in the bed or chair).^{18,40} Friction is more of an external force while shear is associated with an internal force.⁴⁰

To protect patients from friction, Memorial Medical Center in Springfield, Illinois, uses lubricants on the skin, such as corn starch, creams, and ointments.⁴¹ In addition, hydrocolloid dressings can be applied to the heels to protect them from friction and shear.²⁵ To protect patients from shear force, the NPUAP recommends the following^{40,42}:

- When repositioning patients, use a lift sheet or trapeze to prevent dragging the patient across the bed.
- Reduce the chance of patients sliding down in bed by keeping the head of the bed less than 30° when the patient is not eating or drinking or if the patient's pulmonary condition does not require him or her to be placed at 30° or higher. For example, evidence-based practice for reducing ventilator-associated pneumonia includes keeping the patient at or above 30°, and patients with congestive heart failure and pulmonary edema may not be able to tolerate the head of bed being less than 30°. If the head of the bed needs to be raised, also raise the legs of the bed (engage the knee gatch) to prevent the patient from sliding down the bed.
- Use nonconstrictive cotton socks to reduce shear or friction on the heels.
- Place pads or hydrocolloid dressings on the elbows or the heels to prevent friction or shear to the skin.

Another potential issue involving friction and shear is the use of lateral rotation beds. "The lateral rotation bed can cause real problems for the skin because it causes shearing, wherein the patient's skin folds on itself as the bed is turning the patient from side to side," says Barbara Braden, Ph.D., codeveloper of the Braden Scale and dean at Creighton University, Omaha, Nebraska. "And the reason you can turn the patient this way and that is because friction keeps the patient in place (but not totally in place). The patient's skin will stick to the bed, but the body and the bones will sink in a different direction, which causes shearing injuries. For example, the patient will turn to the left, but his or her butt and hips move downward. If patients are on rotating beds, nurses need to provide enough padding so that patients don't shear."

- When patients are sitting in a chair or wheelchair, apply the 90-90-90 rule, wherein the patient's back should be flush against the back of the chair, with the feet resting flat on the floor, stool, or footrest; the feet should be at a 90° angle to the lower legs; the lower legs should be at a 90° angle to the thighs; and the thighs should be at a 90° angle to the hips.³⁹

“You also have to consider the patients who refuse to adhere to the plan of care for turning from side to side or lifting up from a wheelchair,” says Black. “Some patients become combative when nurses try to turn them because they are comfortable. This particular situation obviously makes the process of keeping the skin intact more difficult.”

To help comply with the NPUAP's guidelines for repositioning and turning patients, some organizations have found it helpful to play special music over the loudspeaker or in-house paging system every two hours to remind caregivers to turn patients.²¹ Others have used a “turn clock” to remind staff when to turn the patient and which way to turn the patient every two hours (*see* examples of turn clocks at <http://www.ihl.org/IHI/Topics/MedicalSurgicalCare/MedicalSurgicalCareGeneral/Tools/PreventingPressureUlcersTurnClockTool.htm>). Finally, at Hackensack University Medical Center in Hackensack, New Jersey, staff on the cardiac unit go around to each patient's room every

hour and have sitting patients stand up and march.²³

[STRATEGY] **Keep Skin Clean, Dry, and Moisturized**

Not much research has been conducted on the effect adequate skin care has on the prevention of pressure ulcers; however, a consensus of expert opinions agrees that keeping the skin clean and protected from excess moisture or dryness will help prevent pressure ulcers.⁷ In this way, the skin is protected from irritants or excessive moisture that can increase frictional forces and lead to breakdown.⁷ Thus, when the skin is healthy and intact, it is better able to do its job of protecting the body from damage, particularly damage that may occur in the form of pressure ulcers.

When taking care of the patient's skin, nurses (and nurse assistants) should know the following tips^{7,23,28}:

- Avoid using hot water on the skin.
- Use only mild cleansing agents that minimize skin irritation and dryness.
- Avoid low humidity because it promotes scaling and dryness.
- Avoid vigorous massage over reddened, bony prominences because this can lead to deep tissue trauma.
- Use lubricants to moisturize dry skin, particularly after bathing (this may help prevent friction).
- For patients who produce excessive amounts of sweat, particularly in the skin folds, use a knitted polyester

fabric that is impregnated with silver complex to wick sweat out of the skin folds and away from the body.

Patients who are incontinent are at greater risk for pressure ulcers because urine and fecal matter play a major role in skin breakdown. Perineal skin damage caused by incontinence occurs in as many 33% of hospitalized patients and 41% of adults in long term care.⁴³

When patients are incontinent, nurses (and nurse assistants) should apply the following practices^{20,28,43}:

- Use lotions, cleansing towels, or cleansing sprays that contain dimethicone, which is a water repellent chemical that acts as a skin barrier to the next exposure to urine or stool so that the patient doesn't experience a caustic burn.
- Use absorbent pads so that moisture is wicked away from the skin after an incontinent episode.
- Avoid the use of diapers, which tend to hold urine and fecal matter close to the skin.
- Use fecal collecting devices (such as rectal tubes or pouches) to collect loose or liquid stools from bedridden patients.
- Urinary catheters should not be used immediately on all patients who are incontinent of urine unless they are at risk for major skin breakdown or need to protect a nearby operative site.
- For males who are incontinent of urine, consider using external catheters to divert urine away from the skin.

To ensure that patients receive adequate skin care, organizations need to teach staff about the importance of skin care and explain which skin care products should be used, depending on each patient's specific situation. For example, the Miriam Hospital in Providence, Rhode Island, puts skin carts on all units, which provides the organization's variety of skin care products in a central location for staff.¹⁹ In this way, staff have easy access to skin care products and do not have to search for them or order them. Thereafter, some skin care products should be kept at the bedside so as to reduce workload for nurses and remind them to provide skin care regularly. Hennepin County Medical Center in Minneapolis, also places skin care carts on all its units, but it also includes a skin care guide on the carts so that staff members have a quick reference on all the products and understand the purpose of the products.⁴⁴

[STRATEGY] **Ensure Adequate Nutrition and Fluids**

Although adequate nutrition and hydration is included in the best practices for preventing pressure ulcers, research is unclear about malnutrition and its actual association with pressure ulcer development.⁷ For example, one study found that high-risk patients who were undernourished on admission to the hospital were twice as likely to develop pressure ulcers when compared to adequately

nourished patients admitted at the same time.⁷ But in another study, 59% of residents were undernourished and 7.3% were *severely* undernourished on admission to a long term care facility, and pressure ulcers occurred in only 65% of the *severely* undernourished residents, and no pressure ulcers occurred in the undernourished residents.⁷

Furthermore, only one randomized clinical trial out of five trials found that nutritional supplementation was beneficial in preventing pressure ulcers (older, critically ill patients benefited the most from two oral supplements plus the standard hospital diet).³³

The way to perform nutritional assessments is also controversial, wherein some researchers recommend testing serum albumin or prealbumin levels, while others say that current dietary protein intake is a more important predictor for pressure ulcer development than a lab value.⁷ In addition, the CMS cites weight loss as an important indicator for pressure ulcer development. If organizations use serum albumin or prealbumin levels as a means to identify patients at risk for pressure ulcer development based on malnutrition, an albumin of 3.5 mg/dL or less and prealbumin levels less than 15 mg/dL are usually indicative of malnutrition.¹⁹ As part of the Braden Scale risk assessment tool, nurses also need to observe how well patients are eating, noting the percentage of the meals they eat, how many proteins they take in, and whether or

not they drink a dietary supplement.

Despite no overwhelming evidence for improving nutrition as a means to prevent pressure ulcers, most guidelines support improving patients' nutrition (considering that good nutrition also improves patients' overall health and helps them overcome their illness). To improve patients' nutrition, organizations can apply the following tips^{28,45}:

- Consult a registered dietician when patients appear to be malnourished.
- Find foods that are nutritious but that also appeal to the patient's appetite.
- Consider nutritional supplementation for critically ill patients when it is consistent with their overall goals of care.
- Offer patients a glass of water when turning them every two hours to improve their hydration.

Successfully encouraging patients to eat and drink can be difficult, and nurses need to keep in mind that it is completely within the patient's right not to eat. This situation may occur more often in long term care, especially when patients lack the motivation to eat. "In these cases, staff needs to be aware of residents who are not eating or drinking enough and then meet with the resident (and family members) to find acceptable alternative food items or nutritional supplements between meals or to decide how aggressive staff should be when it comes to ensuring the resident eats and drinks," says Black.

[STRATEGY]

Continuously Reinforce the Importance of Pressure Ulcer Prevention

To ensure that the prevention of pressure ulcers remains a priority for staff, organizations need to visually and verbally reinforce the importance of pressure ulcer prevention. Otherwise, organizations will see a spike of compliance after any form of staff education on pressure ulcer prevention, but then compliance will dwindle without constant reinforcement. Therefore, it is important to build reinforcement mechanisms and communication triggers into the plan for preventing pressure ulcers.

Organizations should include patients' Braden Scale scores as well as any actual skin issues as a standard part of hand-off communications when nurses change shifts.⁴⁶ During handoff communication, nurses may discuss why they may have come up with differing Braden Scale scores for the same patient, and then there is an opportunity for peer-to-peer education to take place on how to use the Braden Scale properly. When patients are transferred to different units within the organization or to different organizations, handoff communication on pressure ulcer prevention and skin assessments should include the following information⁴⁵:

- Risk factors identified
- Description of the skin condition before discharge and details of unhealed ulcers (including stage, site,

size, dressing, and schedule for dressing changes) as well as healed ulcers

- Type of bed or mattress the patient uses or what the patient will require
- Type of seating cushion the patient uses
- Summary of relevant laboratory results (such as albumin, prealbumin, or hemoglobin)
- Need for ongoing nutritional support
- Any past or current episodes of incontinence

Other ways organizations can build communication triggers into the staff work processes include the following suggestions:

- Hang posters that remind staff members of the organization's pressure ulcer prevention protocols. For example, St. Vincent's Medical Center in Jacksonville, Florida, posted signs that were titled "Skin Risk Alert: Skin Bundle Interventions in Effect" and itemized the organization's approved pressure ulcer prevention protocols using the acronym SKIN to stand for Surface, Keep Turning, Incontinence, and Nutrition. (See Figure 3-5, "SKIN Risk Alert Reminder," on page 62.)
- Provide information on pressure ulcer prevention in easily accessible places. For example, OSF St. Francis Medical Center in Peoria, Illinois, created pressure ulcer pocket guides for staff, which contain an abbreviated version of the organization's pressure ulcer prevention protocol along with helpful tips for preventing pressure ulcers.²¹

■ Place stickers on the patient’s chart or on the door of the patient’s room to alert staff that the patient is at risk for pressure ulcers. For example, when nurses at OSF St. Francis Medical Center assess patients and find them at high risk for developing pressure ulcers, they place a “Save Our Skin” sticker on the patient’s chart or a “Save Our Skin” sign on the patient’s door.²¹ In this way, any staff member caring for the patient or entering the patient’s room (whether it be respiratory therapists, x-ray technicians, transporters, or physicians) will know that the patient is at high risk for developing pressure ulcers. In addition, placing signs on the door of the patient’s room will remind nurses and nurse assistants which patients need to be turned every two hours or which patients need their heels elevated to prevent heel ulcers. The nurses at Memorial Medical Center in Springfield, Illinois, created a small sign with a red dot in the center and taped it to the patient’s door to alert all caregivers and transport staff that the patient was at risk for pressure ulcers and to apply pressure ulcer prevention protocols, such as using draw sheets to transfer a patient from one surface to another.⁴¹ Finally, Central DuPage Hospital (CDH) in Winfield, Illinois, uses a stamp of a stop sign with the word *SKIN* replacing the word *STOP* (see Figure 3-6, “Stop Skin Sign Alert,” on page 63). The stop skin sign alert is stamped on the

patient’s Kardex along with the patient’s identified risk factors for developing pressure ulcers. CDH found that the stop skin sign alerts improved communication among nurses and nurse assistants regarding each patient’s pressure ulcer risk and prevention strategies.¹⁷

■ Use electronic documentation systems to remind staff to implement pressure ulcer prevention protocols based on Braden Scale risk assessments. CDH included automatic triggers in their electronic documentation system to help nurses identify the appropriate pressure ulcer prevention interventions based on the results of their Braden Scale risk assessment score.¹⁷ See a screenshot of the electronic documentation system with the automatic triggers in Figure 3-7 on page 64.

[STRATEGY] **Measure Staff Compliance with Pressure Ulcer Prevention Protocols and Give Feedback**

Another way to ensure that staff members keep up their efforts to prevent pressure ulcers is to continuously measure compliance with the pressure ulcer prevention protocols. This type of data collection focuses on process measures, wherein organization leaders measure how often staff members comply with the organization’s protocols for preventing pressure ulcers. For example, leaders would collect data on whether or not Braden Scale risk

Figure 3-5.

SKIN Risk Alert Reminder

SKIN RISK ALERT SKIN BUNDLE INTERVENTIONS IN EFFECT!

SURFACE:

- Be 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

Reprinted from Gibbons W., et al.: Eliminating facility-acquired pressure ulcers at Ascension Health. *Jt Comm J Qual Patient Saf* 32:488–496, Sep. 2006.

Figure 3-6.

Stop Skin Sign Alert

ADMITTING HEIGHT: _____ FT _____ INCHES		SPECIMENS _____		DATE SENT _____
ADMITTING WEIGHT _____ KG		DATE ORD. _____		
PATIENT HISTORY / NURSING ALERTS				
DATE _____				
<i>Left heel ulcer and sacral area</i>				
<i>Wound/Ostomy</i>				
<i>Immobility</i>				
<i>Nutritional needs</i>				
DATE _____				
CULTURE RESULTS _____				
RESTRAINTS _____				
TYPE: _____				
DATE: _____		DATE: _____		TIME: _____
TYPE: _____				
DATE: _____		DATE: _____		TIME: _____
EXPIRES: _____				
DATE: _____		DATE: _____		TIME: _____
CONSULTATION / SPECIALTY _____				
NUMBER _____				
ALLERGIES _____				
FORM NO. 1012228 (REV. 10/05)				
ROOM NUMBER _____		PATIENT STICKER _____		ADMITTING PHYSICIAN AND NUMBER _____

Reprinted with permission from Central DuPage Hospital, Winfield, IL.

Figure 3-7.

Automatic Triggers for Pressure Ulcer Prevention Interventions in the Electronic Documentation System

The screenshot displays a software interface for documenting patient care. A red box highlights the 'Assessment and Documentation' section, which includes a timeline of events from 02/09/2007. The timeline shows an 'ADL' event at 03:00 and 'Heels assessed' at 04:00. Below the timeline, a list of assessment findings is shown, including 'Skin: Skin conditi' and 'Heels bilateral'. A yellow box labeled 'Interventions' points to a list of interventions such as 'Skin color', 'Turgor', 'Mucous Memb', and 'Abnorm Odors'. The interface also features various navigation and control buttons like 'Expand All', 'Collapse All', 'Add Selection', and 'Show All'.

Reprinted with permission from Central DuPage Hospital, Winfield, IL.

assessments were completed according to organization protocol or whether at-risk patients were being turned every two hours or had been placed on a specialty mattress. This type of measurement does not look at how many pressure ulcers are occurring (or being prevented) within the organization; that type of data would be collected in prevalence and incidence studies (*see* the next strategy for more information).

For example, a group of Connecticut hospitals decided to collect data on the following performance measures based on their review of the literature and the AHRQ's pressure ulcer prevention guidelines³⁵:

- Identification of high-risk patients
- Skin assessments of high-risk patients
- Use of pressure-reducing device in bed- or chair-bound patients
- Repositioning every two hours in bed-bound or every hour in chair-bound patients
- Nutritional consults in malnourished patients

Organizations can choose to collect data on other elements of the pressure ulcer prevention protocol, especially if leaders are finding that staff members lack compliance with certain pressure ulcer prevention protocols, such as using appropriate skin care products with incontinent patients.

Most often, organizations assess staff compliance with pressure ulcer prevention protocols by looking at staff documentation of interventions in patient

charts (whether those charts are paper or electronic). The "Save Our Skin" (SOS) champions* at OSF St. Francis Medical Center help with ongoing data collection by doing the following tasks²¹:

- Monthly audit of patient charts when Braden Scale score is 18 or less to ensure compliance with pressure ulcer prevention protocols
- Medical record review for all incidents of pressure ulcer development to determine whether they were avoidable
- Distribution of quarterly pressure ulcer data to all nursing unit managers, directors, and nurse administrators

Most organizations do not have the time, resources, or staff to collect data in real time and observe that the pressure ulcer prevention protocols are actually being carried out; however, WOC nurses, nurse administrators, and other skin care champions on the unit may be able to make anecdotal observations about staff compliance with the protocols. If organizations can configure their electronic documentation systems to automatically collect data on how often nursing interventions are documented for patients with Braden Scores below a certain level, that could provide excellent data on compliance with process measures while saving staff time and resources.

If organizations are going to dedicate staff time and resources toward data collection of process measures, it is

¹ *See more about the "Save Our Skin" (SOS) champions in the strategy about staff education on pages 60–61.*

also important to provide feedback to staff on their compliance. Displaying charts or signs on the unit that show the level of compliance with the pressure ulcer prevention protocols helps nurses and nurse assistants know whether they need to step up their efforts or keep up the good work. Stony Brook University Medical Center in Stony Brook, New York, reviews its progress with pressure ulcer prevention at nursing shared governance committee meetings, quality meetings, and unit staff meetings.⁴⁷ In addition, unit-specific data on pressure ulcer rates is posted for the staff to review.⁴⁷ If the data on process measures is paired with the organization's prevalence and incidence rates for pressure ulcers, staff and leaders will know if the organization's interventions to prevent pressure ulcers are actually working. For example, if there is high staff compliance with pressure ulcer prevention protocols and low pressure ulcer incidence rates, staff members know that their interventions are working and will have positive reinforcement to keep up the good work. However, if staff compliance is high but pressure ulcer incidence rates remain high, staff and leaders should take a closer look at the data, looking at each individual health care–acquired pressure ulcer and analyze why it may have occurred. Perhaps this analysis will show that the organization's pressure ulcer prevention protocols are lacking in certain areas or that in one patient's particular case, the

organization's prevention protocols were not consistently implemented.

To help analyze health care–acquired pressure ulcers, Memorial Medical Center in Springfield, Illinois, created a Pressure Ulcer Tracking Form (see Figure 3-8 on page 67). The form is completed by staff nurses, and it helps them gather pertinent information about the patient care unit, medical diagnosis, patient-specific risk factors for developing the pressure ulcer, anatomic location of the pressure ulcer, and any preventive interventions that were documented prior to finding the pressure ulcer.⁴¹ After the nurse completes the form, he or she sends it to the WOC nurse, the registered dietitian, and risk management staff. So far, this form has helped Memorial Medical Center discover several potential gaps in care, including delays in consultation visits, inefficient monitoring of trends in pressure ulcer incidence, and lack of staff compliance with appropriate preventive measures.⁴¹

[STRATEGY]

Conduct Prevalence and Incidence Studies to Assess your Organization's Pressure Ulcer Rates

Prevalence and incidence studies focus on outcome measures, wherein organizations can see how their pressure ulcer prevention interventions have affected the actual number of pressure ulcers that are present in the organization.

Prevalence and *incidence* are defined in the following ways³:

Figure 3-8.

Pressure Ulcer Tracking Form

Patient Label Sticker

Hospital Acquired Pressure Ulcer Tracking Form (Stage II or Greater)

Unit: _____

Date Completed: _____

Step I Instructions:

Complete a separate form for each pressure ulcer that develops during patient's hospitalization. Upon completion Fax one copy to Risk Management (8-5583) and one copy to the Wound Team (8-3325), maintain the original for the UBC to determine what practice areas need to be addressed to prevent further development.

Key Codes for Risk Factors – Circle each risk factor.

A: Agitated	IF: Incontinence fecal
Alb: Albumin < 3.0 (last 30 days)	MS: Multisystem failure
Ams: Altered Mental Status	N: Inactive, bedrest or not getting OOB
B: Braden < 18	O: Obesity
C: Contracted	P: Prealbumin < 10 (last 72 hours)
CH: Chair Bound	S: Sensory Loss
D: Dehydration	SH: Shear
DM: Diabetic	SP: Unstable Spine
E: Edema	TF: Tube Feeding
F: Fragile Skin	U: Incontinence Urine
I: Immobile	V: PVD/Poor circulation

Has the patient had a procedure which placed them on a firm surface for a prolonged period. (i.e., surgery, interventional radiology, cardiac cath, etc.) **NO**___ **Yes**___ **Length of Time**_____

Diagnosis: _____

Last Braden Score: _____ Date: _____

Pressure Ulcer Site: _____ Stage: _____

What prevention measures were in place? _____

Treatment: _____

Currently being followed by Wound Care Team? Yes _____ No _____

Step II

Fax copy to: 8-4111 (Wound Team) **AND** 8-5583 (Risk Management) **AND** 8-5517 (Foods & Nutrition) **Original: Your UBC**

Step III:

UBC Response Date: _____

Action plan/Standard of Practice: _____

Step IV

Re-Fax identified Action Plan: 8-4111 (Wound Team) AND 8-5583 (Risk Management) after UBC has reviewed and determined plan for resolution.

*****This is NOT a permanent part of the chart. Do NOT send form to Health Information Management (Medical Records).**

Revised August 2006

Reprinted with permission from Memorial Medical Center in Springfield, IL.

- *Prevalence* is defined as the number of cases at a specific point in time, or the number of persons with pressure ulcers who exist in a patient population at a given point in time. (This number includes patients who were admitted with existing pressure ulcers as well as patients who develop pressure ulcers during their stay in the health care organization.)

$$\frac{\text{\# of persons with a pressure ulcer}}{\text{\# of persons in a population at a particular point in time}} \times 100$$

(for example, on the day of the prevalence study)

- *Incidence* is defined as the number of new cases appearing in a population or the number of persons who were initially ulcer free and developed a pressure ulcer within a particular time. (This number includes health care–acquired pressure ulcers.)

$$\frac{\text{\# of persons developing new pressure ulcers}}{\text{\# of persons in a population at the beginning of the time period defined for the study}} \times 100$$

(for example, at the beginning of the month-long study or year-long study)

Despite the best intentions of researchers and health care organizations, they still struggle to measure prevalence and incidence rates accurately. “One of our real problems is that the measurement of our progress has been imperfect, so it is not easy to tell what

kind of progress we have made or to compare our progress to those of other institutions,” said Braden. When conducting its nationwide prevalence and incidence studies, the NPUAP found a lack of good data sources for describing pressure ulcers, inconsistent use of major terms regarding pressure ulcers, and widespread uncertainty on how to conduct prevalence and incidence studies in an accurate and standardized way.³ Without standardization of data collection and analysis methods, it is difficult to gauge any progress with pressure ulcer prevention, and organizations are unable to benchmark or compare themselves to other organizations or national data. Several patient safety and quality improvement organizations are working to improve the accuracy and standardization of data collection, including the National Quality Forum, The Joint Commission, the NPUAP, the WOCN, and the American Nurses Association’s National Database of Nursing Quality Indicators (NDNQI®).

Further discussion on prevalence and incidence, including their benefits and drawbacks, follows.

Prevalence Studies

Most organizations collect and report quarterly data on pressure ulcer prevalence through the NDNQI.* The NDNQI provides a tutorial for

* In 1998, the American Nurses Association created the National Database of Nursing Quality Indicators (NDNQI) as a (continued)

conducting prevalence studies at <https://www.nursingquality.org/ndnqipressureulcertraining/module3>. Overall, the elements involved in a pressure ulcer prevalence study include the following:

- A formal group of team members should assemble to conduct quarterly prevalence studies. This team can include WOC nurses, skin care champions from each unit in the hospital, and support staff who can help turn patients during assessments. Depending on the size of the organization, several small teams may go to different units to collect data and then come back together to compile their data for the entire organization. If there are several small teams, a WOC nurse or someone who has received additional education and training in pressure ulcer identification and staging should be on each team.
- The team needs to be familiar with NDNQI guidelines for conducting a pressure ulcer prevalence study, be able to assess the skin and common pressure points for pressure ulcers (and know how to stage pressure ulcers or differentiate pressure ulcers from other

types of wounds), and differentiate between community-acquired and facility-acquired pressure ulcers based on staff documentation.

- On the day of the prevalence study, the leaders (usually the WOC nurses) should generate a list of patients who are eligible for the study (these patients represent the “Unit Census on Day of Study”).
 - Patients who should be excluded are those for whom the exam would be inappropriate (for example, the patient is too unstable to turn), those who are not on the unit during the survey (for example, the patient is away for tests or procedures), and any patient who refuses. Leaders should count up the number of excluded patients and then subtract the excluded patients from the “Unit Census on Day of Study” to get the “Number of Patients Surveyed.”
- A standardized data collection form should be used to ensure that the appropriate data are collected on each patient (data collection elements should include the patient’s age, gender, Braden score, time since last pressure ulcer risk assessment, pressure ulcer prevention interventions applied to the patient, number of pressure ulcers and whether the ulcers are community acquired or facility acquired). Northwest Community Hospital in Arlington Heights, Illinois, generates data collection forms for each eligible patient before the prevalence study

*mechanism to collect data on the quality of nursing care at the unit level. Currently, more than 1,100 organizations submit data every quarter on nursing-sensitive indicators such as the following: falls and falls with injury, restraints, nursing care hours per patient day, skill mix, percentage of nursing hours supplied by agency staff, pressure ulcer prevalence, hospital-acquired pressure ulcer prevalence, nurse satisfaction, nurse education and certification.*⁴⁸

(see an example of the data collection form in Figure 3-9 on page 71). This computer-generated form pulls patient information from the electronic documentation system, such as the patient's name, age, gender, height and weight, last albumin level, previous Braden Scale scores, and when those scores were assessed. Automatically providing some of the patient information on the form saves team members time during the prevalence study because they do not have to stop to look up this information.

- When looking for evidence that pressure ulcer prevention interventions were implemented, team members can either observe the patient directly (for example, is the patient on a specialty mattress or overlay or is there a turning schedule posted by the patient's bed?) or look at the nursing documentation in the patient's chart (for example, does the record indicate that the patient is turned every two hours or is the patient receiving supplemental nutrition?).
- When differentiating between community-acquired and facility-acquired pressure ulcers, team members should use the following definitions:
 - *Community-acquired*: the presence of a pressure ulcer on admission to the facility as documented by the initial assessment, **or** the prevalence study was done on day one of the patient's hospital stay, and the pressure ulcer is already present.

- *Facility-acquired*: a new pressure ulcer that developed after admission to the facility (first review the patient's initial assessment record for documentation of a pressure ulcer at the same site; if no pressure ulcer was identified, then it is a facility-acquired pressure ulcer). Facility-acquired pressure ulcers can be further broken down to unit-acquired pressure ulcers to identify which unit was actually responsible for the pressure ulcer.

- After the team members have assessed all the eligible and willing patients for pressure ulcers, they will come together to compile the data and submit it to NDNQI.

Incidence Studies

As you can see from the NDNQI prevalence study described above, organizations are instructed to collect data on community-acquired pressure ulcers and facility-acquired pressure ulcers. The facility-acquired pressure ulcers can be considered a rough estimate of the organization's incidence rate because incidence is the number of pressure ulcers that appear after admission. Organizations use this data rather than determining the actual incidence rate because it can be extremely labor intensive to conduct incidence studies.³ For example, data collection for incidence studies involves daily assessments of patients for pressure ulcers and then an assessment of all admitted patients prior

Figure 3-9.

Data Collection Tool for Prevalence Studies



Pressure Ulcer Prevalence Study

Data as of 05/19/2009 15:00

3N

ERTEN, CATHIETEST2

351-02

32 Years F

Weight (latest) 60.00

HEIGHT 69in

Admit Date/Time 04/13/2009 15:03

Lab Result Date/Time	Albumin Result

Braden Score Date/Time	Braden Score	Flag
		*

* Flag indicates result more than 1 day after admit

Is Patient in Restraints? Yes No

Is Patient at risk? Yes (Braden <=18) No (Braden > 18)

Evidence of pressure ulcer prevention?

No Yes Not at risk

Type

Pressure redistribution surface (waffle, air, pillows, boots)

Repositioning (posted schedule, chart documentation)

Nutritional Support (supplements, diet consult)

Other (moisture or friction/shear reduction)

Pressure Ulcers

No Ulcers

Location	Code	Location	Code	Location	Code	Location	Code
Ankle	ANK	Occiput	OCC	Foot	FOO	Sole	SOL
Buttocks	BUT	Ribs	RIB	Heel	HEE	Spine	SPI
Chin	CHI	Sacrum/Co	SAC	Ischium	ISC	Thigh	THI
Ear	EAR	Scapula	SCA	Knee	KNE	Toes	TOE
Elbow	ELB	Shoulder	SHO	Leg, Lower	LEG	Trochanter	TRO
				Nose	NOS	Other	OTH

Location (see codes)	Not					Deep Tissue Injury	Noted w/i 24 hrs of admission Y/N	Hospital acquired? Y/N
	Stage 1	Stage 2	Stage 3	Stage 4	Stageable			

IF NOSOCOMIAL, COMPLETE SECTIONS BELOW

Was patient transferred from another Unit? No ___ Yes ___

If yes, which Unit? _____

Date admitted to current unit _____

Did patient have surgery? No ___ Yes ___

Length of time on table: _____

IF IN CRITICAL CARE: Exact type of mattress _____

Other observations or comments:

AHRQ Patient Safety Indicators

The AHRQ created patient safety indicators (which are a subset of the AHRQ quality indicators) to provide information on potential in-hospital complications (such as pressure ulcers) and adverse events.⁵¹ These indicators make up a software tool that can be applied to any hospital inpatient administrative data to help hospitals identify potential adverse events that might need further study (distributed free by the AHRQ at http://www.qualityindicators.ahrq.gov/psi_download.htm).

Pressure ulcers listed as a secondary diagnosis are tracked by the number of cases per 1,000 discharges with a length of stay greater than four days.⁵² This indicator helps quantify the number of pressure ulcers that are *likely* to be health care associated. Hospitals with pressure ulcer rates greater than 23 cases per 1,000 population-at-risk should conduct further research to more accurately assess their pressure ulcer incidence or prevalence rates and consider reeducating staff regarding pressure ulcer prevention protocols.⁵²

to discharge over the entire period of time the study is being conducted (for example, one month or one year).⁴⁹ A limitation of incidence studies is that they do not account for pressure ulcers that may occur in patients admitted to the organization after the study population has been defined.³

Besides using the NDNQI's method for coming up with estimated incidence rates, organizations can apply the IHI's method of measuring incidence of pressure ulcers per 100 admissions and/or incidence of pressure ulcers per 1,000 patient days.⁵⁰ Organizations can collect this type of data by creating forms that help track and document the development of new pressure ulcers (similar to the Pressure Ulcer Tracking Form in Figure 3-8 on page 67). Then this form would be submitted to the unit's charge nurse, WOC nurse, risk management

staff, or some central body where reviewers can compile the data for the measurement period (either 100 admissions or 1,000 patient days).⁵⁰

[STRATEGY] Get Patients and Family Members Involved in Pressure Ulcer Prevention

Key players in the prevention of pressure ulcers are the patient and his or her family members. Who else is more motivated to prevent pressure ulcers than the patient who might experience discomfort, pain, and further complications from the pressure ulcer or the family members who may have to provide extra care to treat the pressure ulcer? In hospitals, patient education can take place when health care providers are turning patients or doing daily skin assessments. They can let the patient and family members know

what they are doing, why the patient is at risk for pressure ulcers, and how to keep preventing the pressure ulcer. Another opportunity for patient education may be during the quarterly prevalence studies when every patient in the hospital is assessed for pressure ulcers. This information may be invaluable to the patient or family member, particularly when the patient returns home, because he or she can apply at home the prevention strategies that health care providers have demonstrated.

Patient education may take on a greater role when health care providers visit patients in the home for home care or hospice care. Because home health care providers do not usually spend 24 hours a day with the patient, they need to direct their efforts toward educating the patient and family members/caregivers on the necessary strategies for preventing pressure ulcers. For example, the nurse may have to teach the patient and/or family members and caregivers how to inspect the patient's skin every day for reddened areas on bony prominences, to change positions every two hours when lying in bed or every hour when sitting in a chair, to keep the skin clean and dry particularly after episodes of incontinence, and to eat a balanced diet and drink enough fluids. Home care and hospice nurses are faced with added barriers when it comes to preventing pressure ulcers because the implementation of pressure ulcer prevention strategies is often dependent on patient or family

member/caregiver compliance and ability. When the patient is an 80-year-old, 6-foot-tall, 250-pound male who has limited mobility and needs to be turned every two hours in bed, and the caregiver is the patient's wife who is a 78-year-old frail woman, there will be obvious challenges in implementing the pressure ulcer prevention strategies. In fact, one study of hospice patients found that men were two times more likely than women to develop pressure ulcers.⁵³ The researchers attributed this statistic to the fact that men are more difficult to maneuver when repositioned by their female caregivers, and they may be less willing to admit the need for additional formal care.⁵³ Furthermore, hospice nurses need to view the benefits of implementing all the necessary pressure ulcer prevention strategies in light of the patient's overall care goals, especially if that patient is quickly nearing death. In these cases, it may be more painful to continuously reposition the patient every two hours.⁵³ Finally, home care and hospice nurses must be sensitive to the fact that family members may experience guilt and a sense of failure in their caregiving abilities if they cannot perform all the necessary pressure ulcer prevention strategies or if the patient ends up developing a pressure ulcer.⁵³

Regardless of the care setting, all patients and family members need the same education to successfully prevent pressure ulcers. Yuma Regional Medical Center in Yuma, Arizona, created a helpful pressure ulcer prevention brochure to

educate patients and family members (*see* Figure 3-10 on pages 75–76 for a sample of the brochure). Health care providers can reinforce written information on preventing pressure ulcers by explaining the following to patients⁵⁴:

- How pressure ulcers develop (include the concept of friction and shear, wherein patients can shear their skin by sliding down in the bed or by dragging themselves across the bed or into a chair)
- The signs that a pressure ulcer might be developing
- Ask if they need help repositioning themselves properly in bed or in the chair.
- When patients turn off of their backs in bed, they should not lie directly on their hip bones. Instead, have the patients assume a 30° side-lying position by tucking a pillow under the back and buttocks area so that the weight rests on the fleshy part of the buttocks rather than the hip bone.
- When patients sit in chairs, they should shift their weight slightly every 15 minutes using one of the following three methods, depending on their strength:
 - Placing their hands on the arm rest and lifting their body off the chair
 - Pressing their elbows on the arm rest to lift one side of the body off the chair and then repeating on the opposite side
 - Shifting their weight by leaning far over to one side and then repeating

this maneuver on the opposite side

- Expect to use a seat cushion designed to redistribute pressure when sitting in a chair or wheelchair (this seat cushion should not be donut shaped).
- Keep the head of the bed at 30° or less to prevent shearing. Patients should raise the head of the bed only during meals and when drinking fluids. (Note that patients who experience increased respiratory problems when the head of the bed is lowered too much may not be able to comply with this strategy.)
- Call for help if they experience an incontinent episode so that their skin can be cleaned and dried as soon as possible.
- Use moisturizers to keep the skin from drying out (always apply moisturizer immediately after a bath as well).
- Eat a balanced diet, including many proteins (nutritional supplements may be necessary to meet nutrition needs).



For a list of additional selected resources, visit

<http://www.jcrinc.com/EBPUM09/Extras>.

When patients and family members are involved in pressure ulcer prevention protocols, staff compliance with protocols is improved. Also, patient and family member involvement provides a safety net for the patient. For example, if patients and family members know that the patient should be turned every two hours, they might remind staff when it is time to change positions.

Figure 3-10.

Patient and Family Education Brochure on the Prevention of Pressure Ulcers

Information in this brochure is based on the 1994 AHCPR Clinical Guideline for Prevention and Treatment of Pressure Ulcers.

You and Your Family Can Help Prevent Pressure Ulcers

While you are in the hospital, your caregivers will help you prevent pressure ulcers by:

- ✓ Inspecting your skin everyday for redness or signs that sores may be forming.
- ✓ Keeping your skin clean and dry.
- ✓ Moisturizing your dry skin.
- ✓ Reminding you to move and increase your activity.
- ✓ Changing your position in bed or chair every 1 to 2 hours if you are not able to move yourself without help.
- ✓ Protecting your bony areas with pillows.
- ✓ Keeping your heels off the bed surface with pillows placed under your calves.
- ✓ Keeping the head of your bed as low as possible to prevent you from sliding down in bed.
- ✓ Helping you to get from the bed to the chair or toilet.
- ✓ Using briefs and protective cream to protect your skin from urine or stool.
- ✓ Helping you get a well balanced diet and adequate fluids.
- ✓ Informing your doctor if signs of skin breakdown are noticed.

Clean and Protect

- ✓ Keep your skin clean and dry.
- ✓ Ask for help to get you from the bed to your chair or toilet.
- ✓ Tell your caregivers if you are wet or have had an accident so they can help you get clean and dry.
- ✓ Wear briefs and use protective cream to protect your skin from urine or stool.
- ✓ Moisturize your dry skin.

Nutrition

- ✓ Be sure to eat a balanced diet.
- ✓ Drink enough fluids.

Take an Active Part in Your Care!

If you have any questions or problems, ask your doctor or healthcare provider.

YUMA REGIONAL MEDICAL CENTER
Compassionate care. Growing people. Inspiring communities.

#B504 created 10/03

(continued on page 76)

Reprinted with permission from Yuma Regional Medical Center in Yuma, AZ.

Figure 3-10. (continued)

Patient and Family Education Brochure on the Prevention of Pressure Ulcers

Information in this brochure is based on the 1994 AHCPR Clinical Guideline for Prevention and Treatment of Pressure Ulcers.

Pressure Ulcer "Prevention"

What is a Pressure Ulcer?

- ☐ It is often called a bed sore.
 - ☐ It forms when muscles and soft tissue in your body are squeezed between one of your bones and an outside surface (like a chair or bed).
- #### Are you at risk? Yes, if:
- ☐ You don't move.
 - ☐ You stay in the bed or a chair most of the time.
 - ☐ You lose bladder or bowel control.
 - ☐ You do not eat a balanced diet or drink enough fluids.
 - ☐ You are overweight or underweight.
 - ☐ You have thin, dry, or fragile skin.
 - ☐ You need help getting from the bed to a chair or the toilet.
 - ☐ You are confused or restless.
 - ☐ You take steroids.
 - ☐ You take medications that make you sleepy.

Where do pressure ulcers begin?

- ☐ Tail bone
- ☐ Spine
- ☐ Hip bones
- ☐ Back of head
- ☐ Heels
- ☐ Ears
- ☐ Ankles
- ☐ Anywhere
- ☐ Elbows

What else do you need to know?

- ☐ Your skin is your body's largest organ.
- ☐ Urine or stool on your skin can cause your skin to break down quickly.
- ☐ When you lose control of your bladder or bowel, it is very important to:
 - Practice good hygiene.
 - Keep skin clean and dry.
- ☐ Dragging yourself across the bed or chair can tear your skin.

How can you keep your skin healthy?

- ☑ Keep skin clean and dry.
- ☑ Moisturize dry skin.
- ☑ Eat a well balanced diet.
- ☑ Drink plenty of fluids.
- ☑ Get plenty of rest.
- ☑ Be as active as possible.

What can YOU do at home and while in the hospital to prevent pressure ulcers?

Inspect your skin daily

- ☑ Look for red areas where pressure ulcers often form (tailbone, hips, heels, ankles, elbows, etc.)

Increase Activity

- ☑ Change your position often.
- ☑ If possible, walk and exercise, or get physical therapy to increase movement and activity.

Reduce Pressure

- ☑ Change your position every 1 to 2 hours in bed, more often in a chair.
- ☑ Try to find comfortable positions that also avoid putting pressure on red or sore spots.
- ☑ Use pillows to protect bony parts.
- ☑ Avoid donut-shaped pillows.
- ☑ Float your heels off your bed or chair surface with a pillow placed under your calves.
- ☑ Rest with the head of your bed as low as possible to prevent sliding down in bed.



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With education, family members taking care of patients in the home will be more diligent at assessing bony prominences prone to breakdown or will know the importance of cleaning patients immediately after an inconti-

nent episode. Overall, patients and family members should not just be the object of care but should be part of the health care team and involved in all aspects of pressure ulcer prevention.

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