



Pressure Ulcer Reduction and Elimination





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## A Instructions and Objectives

### Instructions:

Read the article. Complete the registration information and the program evaluation form on page 21. Complete the post test on page 23. Mail or fax both forms by November 2011 to: Clinical Education Manager, Medical Affairs, Covidien, 15 Hampshire Street, Mansfield, MA 02048, Fax (508) 261-6015. A certificate of successful completion will be sent to registrants who have (1) submitted the completed forms; and (2) achieved a score of at least 70%. Please allow up to four weeks for the certificate to arrive.

### Objectives:

**Upon completion of this educational activity, participants should be able to:**

1. Discuss the impact of the Deficit Reduction Act of 2005 and subsequent legislature as it applies to reimbursement for care of pressure ulcers not present on patient admission to acute care facilities.
2. List the characteristics for each of the six stages of pressure ulcers.
3. Cite at least five risk factors for pressure ulcer development.
4. Describe at least one standardized scale for determining risk of pressure ulcer development.
5. Describe the difference between static and dynamic support surfaces.
6. Identify three steps for implementation of a successful pressure ulcer prevention program.

# 1 CMS Guidelines

## The Deficit Reduction Act of 2005

On February 8, 2006 the President signed the Deficit Reduction Act of 2005 (DRA) in support of legislation to bring mandatory spending under control.

Mandatory spending refers to entitlement programs such as Medicare, Medicaid and Social Security. It is estimated these three programs combined are growing at a significant pace and are expected to be almost 60% of the entire Federal budget by 2030.<sup>1</sup> The DRA is intended to slow the growth of spending on these programs while maintaining the commitment to beneficiaries.

In response to the DRA the Secretary of the Department of Health and Human Services was required to identify, by October 1, 2007, at least two conditions that are:

1. High cost, high volume, or both
2. Identified as a complicating condition or major complicating condition that, when present as a secondary diagnosis at discharge, results in payment at a higher rate; and
3. Reasonably preventable through application of evidence-based guidelines

For discharges occurring on or after October 1, 2007, hospitals will not receive additional payment for cases in which one of the selected conditions was not present on admission.<sup>2</sup>

## Centers For Medicare And Medicaid Services

CMS is the Centers for Medicare & Medicaid Services. It is the federal agency responsible for administering the Medicare, Medicaid, SCHIP (State Children's Health Insurance), HIPAA (Health Insurance Portability and Accountability Act) and several other health-related programs.

As part of the Deficit Reduction Act of 2005, the CMS initially identified eight preventable adverse events in 2007 and an additional nine in 2008. One of these adverse events pertains to pressure ulcers and is the focus of Covidien's **Pressure Ulcer Reduction and Elimination** program.

## Inpatient Prospective Payment System

The new Hospital-Acquired Conditions (HAC) payment provision applies only to IPPS hospitals. At this time, the following types of hospitals are exempt from the HAC payment provision<sup>3</sup>:

- Critical Access Hospitals (CAHs)
- Long-Term Care Hospitals (LTCHs)
- Maryland Waiver Hospitals
- Cancer Hospitals
- Children's Inpatient Facilities
- Inpatient Rehabilitation Facilities (IRFs)
- Psychiatric Hospitals

The Inpatient Prospective Payment System (IPPS) establishes set rates based on the patient's diagnosis. The Medicare law requires CMS to pay acute care hospitals for inpatient stays under these guidelines using established DRG (Diagnosis Related Groups) categories. In FY 2008 the 538 DRGs were replaced by 745 MS-DRGs (Medicare Severity Diagnosis Related Groups).

The new MS-DRGs are payment categories that take into account the principal diagnosis as well as the severity of the patient's illness. This allows for more accurate payments to hospitals and also gives hospitals a financial incentive to more thoroughly assess and respond to a patient's medical needs at admission and throughout their stay in the hospital.

Under the IPPS the hospital receives a single payment rate for the case based on the MS-DRG assigned at discharge. This payment is considered full payment for all costs incurred by the hospital in treating the patient, other than physician services which are paid separately.<sup>4</sup>

Prior to this change hospitals could potentially be paid at a higher rate based on a secondary diagnosis. Such was the case for hospital acquired pressure ulcers, essentially rewarding a hospital for providing poor care.

## Coding

In the acute care arena, delivering quality healthcare depends on capturing accurate and timely medical data. Medical coding professionals fulfill this need as key players in the healthcare workplace.

Health information coding is the transformation of verbal descriptions of diseases, injuries, and procedures into numeric or alphanumeric designations.

Since the implementation of the federal government's first prospective payment system in 1983, there has been a great deal more emphasis placed on medical coding. Currently, reimbursement of hospital and physician claims for Medicare patients depends entirely on the assignment of codes to describe diagnoses, services, and procedures provided. As the basis for reimbursement, appropriate medical coding has become crucial as healthcare providers seek to assure compliance with official coding guidelines.

Historically, an acute care facility could be paid at the higher reimbursement amount based on a submitted primary or secondary diagnosis code. What this meant was, a hospital could be reimbursed at a higher level for a pressure ulcer even if the pressure ulcer was not present on admission.

In an effort to contain costs, the CMS introduced a plan to reject payment of the higher diagnostic category when such events occur as a secondary diagnosis in an acute care facility. In other words, the acute care facility can be reimbursed at the higher diagnostic category if the condition was present on admission (POA) and documented as such. If the condition was acquired during the patient's hospital stay, the payment of the higher diagnostic category will be rejected. This change in reimbursements has led to the clinical community being more focused on the prevention of hospital-acquired conditions, such as pressure ulcers.

## Cost of Pressure Ulcers

In FY 2007, CMS reported 257,412 cases of preventable stage III and stage IV pressure ulcers as secondary diagnoses. The average cost for each case was \$43,180 per hospital stay<sup>5</sup>. This equates to an expense of more than \$11 billion annually. The goal of the Deficit Reduction Act of 2005 is to work towards reducing this additional expense

## 2 Pressure Ulcer Stages

Pressure ulcers (also known as bedsores, pressure sores and decubitus ulcers) are areas of damaged or dead skin and tissue that develop when tissues are compressed between bony prominences and hard surfaces due to impaired mobility. The sustained pressure cuts off circulation to vulnerable parts of the body and is usually caused by sitting in a wheelchair or lying on a bed. This can sometimes happen even after a short period of time (2 to 6 hours). Without good blood flow to those areas, the affected tissue (skin) dies. Other causes of pressure ulcers include friction (e.g., rubbing against clothing or bedding) or shearing forces (which develops when pressure holds skin in place while the deep fascia and muscle slide in the opposite direction, causing deeper tissue damage). The parts of the body affected most are generally bony prominences (i.e. the sacrum, back, buttocks, hips, back of the head, elbows and heels.)

Pressure ulcers fall into one of six stages based on their severity. The National Pressure Ulcer Advisory Panel (NPUAP) has defined each stage as follows:

### Suspected Deep Tissue Injury

Damage to the skin and soft tissue may present itself as a purple or maroon area of discolored skin or blood-filled blister. The damaged tissue can be caused by pressure and/or shear. This tissue may be preceded by an area that is painful, firm, mushy, boggy, or warmer or cooler than adjacent areas. This type of sore may be difficult to detect in darker tone skin.

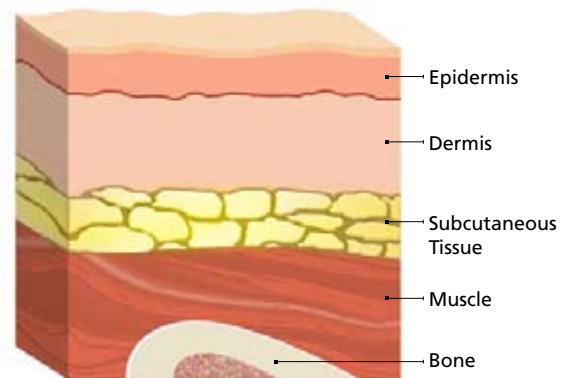
### Stage I

Skin is intact with non-blanchable redness of a localized area. When compared to an adjacent or opposite area on the body, you will see changes in one or more of the following: skin temperature (warmth or coolness), tissue consistency (firm or boggy feel), and/or sensation (pain/itching). The ulcer appears as a defined area of continuous redness in lightly pigmented skin, whereas in darker skin tones, the ulcer may appear with continuous red, blue or purple color. Stage I pressure ulcers are shallow and go away shortly after the pressure is relieved.

### Stage II

At this stage, some skin loss has already occurred—either in the epidermis, the outermost layer of skin, in the dermis, the skin's deeper layer, or in both. The wound is shallow and may present as a blister, abrasion or shallow crater and the surrounding tissues may show red or purple discoloration. It presents as a shiny or dry shallow wound without dead tissue or bruising. If treated promptly, stage II sores usually heal fairly quickly.

### The Skin



### Stage III

By the time a pressure ulcer reaches this stage, the damage has extended to the tissue below the skin, creating a deep, crater-like wound. There is skin loss, including damage to or death of the subcutaneous tissue below the skin. Skin loss may extend down to, but not through, the thin layer that separates the fat tissue from the muscle and bone below it. The ulcer presents as a deep wound with or without damage of adjacent tissue. Subcutaneous fat may be observed or noticeable but bone, tendon or muscle is not exposed.



### Stage IV

In the most serious and advanced stage, there is full-thickness skin loss with severe damage to tissue, muscle, bone or supporting structures (e.g., tendon, joint capsule, etc.). Undermining and tracts may also be associated with these pressure ulcers. The depth of the ulcer varies by location. Stage IV wounds are extremely difficult to heal and can lead to lethal infections.



### Unstageable

Some pressure ulcers may be covered by dead tissue (yellow, tan, gray, green, brown or black) making it difficult to see the base of the wound. In this case it is difficult to identify the true depth and stage of the wound. Because of this, these wounds are classified as unstageable until enough dead tissue is removed to expose the base of the wound. Stable (dry, adherent, intact without redness or boggy) dead tissue on the heels serves as the body's natural (biological) cover and should not be removed.



**Patients with pressure ulcers do not always progress from lower to higher stages. Sometimes the first sign is a Stage III or IV ulcer.** When pressure ulcers develop quickly, the subcutaneous tissue can die before the skin erodes. Any small ulcer could potentially have a deep base.

The depth of a stage III or stage IV pressure ulcer varies by location. Pressure ulcers in the area of the nose, ear, head and ankle can be shallow since these areas do not have subcutaneous tissue.

This staging system is applicable only to pressure ulcers and should not be used to describe wounds from other causes.

## CAUSES OF PRESSURE ULCERS

Since pressure ulcers develop when tissues are compressed between bones and hard surfaces, the susceptible areas vary depending on the level of impaired mobility. For a patient who is wheelchair bound (see Illustration A), pressure ulcers are most likely to develop on the:

- **Tailbone (coccyx) or buttocks (ischium)**
- **Shoulder blades or spine**
- **Backs of arms and legs where they rest against the chair**
- **Heels/feet**

For a patient who is bed-bound (see Illustration B), pressure ulcers may occur on:

- **Back of the head (occipital bone)**
- **Rims of the ears**
- **Shoulders or shoulder blades**
- **Hipbones, lower back or tailbone**
- **Knees, heels, ankles and toes**

A patient who is immobilized by injury, illness or paralysis is under constant threat of developing pressure ulcers. Since they are unable to shift weight in their chairs, turn in the bed or make other subtle movements, they can experience problems related to inactivity.

Pressure ulcers usually result from constant pressure on the body. They are especially common in those areas that do not have muscle or fat, which provide added padding over a bone. Areas such as the heels, tailbone (coccyx), spine, hips, shoulder blades and elbows are at risk. This is due to the decreased blood flow to these areas which are trapped between bone and an underlying surface such as a wheelchair or bed. The restriction of blood flow deprives the tissue of oxygen and other nutrients causing damaged or dead skin and tissue. The damage can be irreversible.

In geriatric or fragile skin the pressure that cuts off circulation of the blood can come from the smallest pressure such as wrinkled clothing or sheets, crumbs in the bed or a chair that is slightly tilted. Tubes, drains, cords or other objects in the bed can also contribute to pressure ulcers. Even moisture such as perspiration or urine can soften the skin and make it more vulnerable to injury.

Illustration A

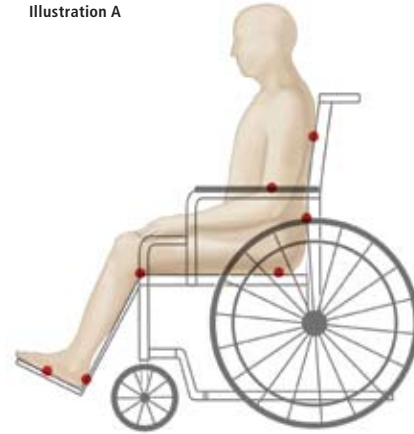
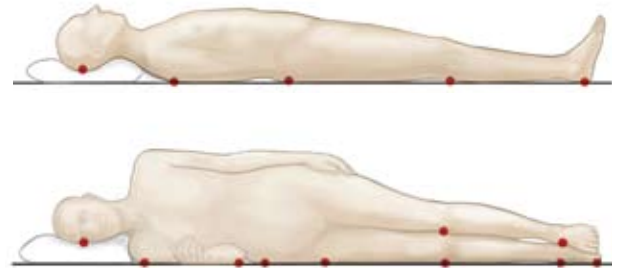


Illustration B



Although it is recommended to shift a patient's position to help prevent pressure ulcers, you also need to be aware that friction may also be a contributor to injury. The friction that occurs by turning a patient from side to side can damage the skin as well. For this reason, it is important to provide the greatest of care when turning a patient.

Shear is another cause of skin damage and occurs when the skin is moved in one direction while the underlying tissue or bone moves in another. Raising the head of a bed more than 30 degrees or sliding down in a bed or chair is likely to cause shearing which stretches and tears cell walls and tiny blood vessels. The coccyx and sacrum can be especially affected since the skin in this area is already thin and fragile. For this reason it is recommended the head of a bed not be raised more than 30 degrees unless otherwise medically indicated.

## 3 Pressure Ulcer Risk Assessment

As part of the admission process, each patient should undergo a comprehensive risk assessment which includes an inspection of the skin. Complete the assessment for skin breakdown, and measurement and documentation (including photography if possible) of any existing pressure ulcers. In addition, identify any risk factors that may contribute to the development of pressure ulcers.

Identifying existing skin issues as well as at-risk patients should be completed using a validated risk assessment tool. This will allow for the timely implementation of the proper treatment and/or prevention strategies. Proper documentation should be kept on file for reference. Based on the results of the assessment be sure to implement the appropriate intervention(s) immediately.

The Institute for Healthcare Improvement recommends putting the following processes into place to ensure the proper pressure ulcer admission assessment of all patients.<sup>6</sup>

- **Improve processes.** Risk assessment should be completed within four hours of patient admission.
- **The admission record needs a visual cue** to complete the total skin and risk assessments.
- **A standard risk assessment tool** (e.g. Braden Scale, Norton Scale, etc.) should be adopted.
- **Develop methods to visually alert staff** of an at-risk patient. This will signify an at-risk patient to all staff and allow for prompt implementation of prevention strategies.
- **Build shared pride in progress** by posting data such as “Days Since Last Pressure Ulcer”.

### Risk Factors

If a patient is immobilized, even for a brief time, he/she can potentially develop pressure ulcers. Several risk factors to consider that may increase the risk of pressure ulcers include:

- **Old age** – The majority of pressure ulcers occur in patients over 70. Due to the fact that geriatric skin is thinner and more fragile, they are more susceptible to damage from even minor pressure.
- **Poor blood flow** – Sustained pressure cuts off circulation to vulnerable parts of the body. Without adequate blood flow to those areas, the affected tissue will die.
- **Loss of sensation** – In cases of spinal cord injuries or disease, an inability to feel pain means the patient is not aware of the need to change position or that a pressure ulcer is forming.
- **Weight loss or thinness** – Since fat and muscle help cushion the bones, thin patients or those who are losing weight will be more susceptible to developing pressure ulcers.
- **Malnourishment** – A poor diet, especially one deficient in protein, zinc and vitamin C may contribute to the development of pressure ulcers.
- **Urinary or fecal incontinence** – Wetness, as from urinary incontinence, can cause the skin to break down. In addition, the bacteria from fecal matter can cause serious local infections and may also lead to life-threatening systemic complications such as sepsis and gangrene.
- **Smoking** – Nicotine impairs blood flow and reduces the amount of oxygen in your blood, which makes smokers more prone to pressure ulcers than nonsmokers. Smokers also tend to develop more severe wounds and heal more slowly. This risk increases with the number of years and amount of cigarettes smoked.
- **Cognitive impairment** – Patients whose mental awareness is lessened by disease, trauma or medications are often less able to take the actions needed to prevent or care for pressure ulcers.

- **Restraints** – Restraints will render a person physically unable to move and may cause pressure points.
- **Medication** – certain pain meds eliminate the pain associated with prolonged pressure causing the patient to be unaware of the need to change position or that a pressure ulcer is forming.
- **Other medical conditions** – Diabetes and vascular disease affects circulation which may increase the risk of tissue damage due to the reduction of blood flow to parts of the body.

Clinical assessment is sufficient to identify patients at risk, and there are several scales available to help. The Braden Scale and the Norton Scale for Predicting Pressure Sore Risk are two of the most widely used tools. They both query subsets of information which are assigned numerical ratings. The ratings will help determine the risk score/level. There is clinical research in support of the reliability and validity of both scales.

Facilities should not rely on the results of these two scales exclusively. It is important to consider nonmodifiable risk factors that could also lead to pressure ulcers. These could include heart disease, uncontrolled diabetes, renal disease, non-compliant patients and other afflictions.

## Braden Scale

The Braden Scale, consisting of six subscales, is the most commonly used pressure ulcer assessment tool in the United States. The six subscales are:

1. **Sensory perception**
2. **Moisture**
3. **Activity**
4. **Mobility**
5. **Nutrition**
6. **Friction/shear**

It is based on the 2 primary causes of pressure ulcers:

1. **Intensity and duration of pressure** (addressed by the sensory perception, activity and mobility subscales)
2. **Tissue tolerance of pressure** (addressed by the moisture, nutrition and friction/shear subscales)

Each subscale contains a numerical range of scores with 1 being the lowest. The subscales range from 1 to 4 on all categories except friction/shear which ranges from 1 to 3. The overall Braden Scale score is derived by totaling the numerical ratings from the 6 subscales. The lower the Braden score, the higher the risk for developing a pressure ulcer. The results can be categorized as described on following page.

## Total Braden Score:

### 19 to 23

**Not at risk** – Continue to perform periodic risk assessments.

### 15 to 18

**Mild risk** – Instill a protocol of frequent turning and repositioning. Provide a pressure-reducing support surface if the patient is bedridden or wheelchair-bound. Manage moisture, nutrition, and friction and shear to avoid the development of a pressure ulcer. If other risk factors are present, advance to the next level of risk.

### 13 to 14

**Moderate risk** – Instill a protocol of frequent turning and repositioning. Provide a pressure-reducing support surface if the patient is bedridden or wheelchair-bound. Provide foam wedges for 30-degree lateral positioning. Manage moisture, nutrition and friction and shear to avoid the development of a pressure ulcer. If other risk factors are present, advance to the next level of risk.

### 10 to 12

**High risk** – Instill a protocol of frequent turning and repositioning. Incorporate small shifts in position with turning. Provide a pressure-reducing support surface; protect the patient's heels. Provide foam wedges for 30-degree lateral positioning. Manage moisture, nutrition and friction and shear to avoid the development of a pressure ulcer.

### 6 to 9

**Very high risk** – Follow the points for a high risk patient. Add a pressure-relieving surface if the patient has intractable pain, severe pain exacerbated by turning or additional risk factors such as immobility and malnutrition.

The Braden Scale is available to download at no charge by visiting [www.bradenscale.com/bradenscale.htm](http://www.bradenscale.com/bradenscale.htm).

## Norton Scale for Predicting Pressure Sore Risk

The Norton Scale for Predicting Pressure Sore Risk has five subscales:

### 1. Physical condition

### 2. Mental condition

### 3. Activity

### 4. Mobility

### 5. Incontinence

Each subscale has a numerical ranking. Total scores can range from five to twenty. There is also a Norton Plus Scale that considers diagnoses of diabetes or hypertension, low hemoglobin and hematocrit, low albumin levels, febrile illnesses, five or more medications, and changes in mental status over the past 24 hours. Points are deducted for these.

## Frequencies of Assessment

The frequencies of assessments are dependent on the stability of the patient's condition, the severity of the illness and the patient's prognosis. Since a patient's condition can change rapidly, most acute care facilities choose to reassess often. For a patient whose condition is stable, reassessment can be done daily. For a patient whose condition is unstable, reassessment should be done at least every shift.

The Institute for Healthcare Improvement recommends putting the following processes into place to ensure daily inspection of the skin.<sup>7</sup>

- **Adapt documentation tools** to prompt daily skin inspection. Document findings and implement prevention strategies as necessary.
- **Education of all staff** to examine the skin whenever assisting the patient. Any change in skin integrity should be communicated to the staff and appropriate interventions put in place.

## 4 Pressure Ulcer Prevention

Nurses cannot control the number of patients who are admitted to an acute care facility with pressure ulcers. They can, however, reduce the number of patients who acquire them while in the hospital since pressure ulcers often develop in patients with suboptimal care.

Identification of high-risk patients is the starting point, followed by vigilant attention to proper skin care and hygiene. Since hospitals will no longer be reimbursed for the cost of pressure ulcers acquired during a hospital stay, the prevention of a pressure ulcer may be more cost effective than treatment. Although pressure ulcers are easier to prevent than treat, the process is not easy. It can take weeks to heal a wound, even if they are early stage pressure ulcers. Since healing can be difficult, prevention of pressure ulcers should be the goal.

Prevention and treatment of pressure ulcers can be challenging to nurses when it comes to patients with comorbidities who are at a higher risk for developing pressure ulcers. For this reason, these patients should be assessed often in an effort to identify any changes to the skin.

The first step is to develop a plan to prevent the onset of pressure ulcers including:

- **Providing frequent position changes**
- **Using supportive devices**
- **Avoiding friction and shear**
- **Managing moisture and incontinence**
- **Checking the skin daily**
- **Providing a nutritious diet**
- **Delivering proper skin care**

### Providing Frequent Position Changes

Pressure ulcers are formed as a result of a combination of the intensity and duration of pressure between a hard surface and the bony prominences of the body. For this reason, frequent repositioning of the patient will improve blood flow.

### Wheelchair Bound Patient

A patient's position should be shifted every 15 to 30 minutes while in a wheelchair. If the patient is able, ask the patient to shift their position. If the patient is unable, a pressure-release wheelchair, which tilts to redistribute pressure, may be used. If the patient does not have a pressure-release wheelchair, their position will need to be changed manually.

All wheelchairs need cushions that reduce pressure and provide maximum support and comfort. Be especially cognizant of foot rests and pedals as well as armrests. There are several types of cushions available including foam, gel and water- or air-filled cushions. Although they help to redistribute pressure, they do not prevent pressure ulcers. For this reason, it is important to continue the repositioning regimen.

### Bed Confined Patient

A patient who is confined to a bed needs to be repositioned at least once every two hours even during the night. Some general guidelines to follow are:

- **Use protective padding including pillows, gel cushions or foam wedges** between bony prominences (e.g. knees, ankles and heels) when a patient is on their side
- **Use pillows placed lengthwise under the legs** to float the heels and foam or sheepskin heel protectors to minimize friction when supine
- **Avoid raising the head of the bed more than 30 degrees** unless otherwise medically indicated
- **Use a pressure-reducing mattress or bed**
- **Change bedding and clothing frequently**; use soft, clean sheets that are free from wrinkles and particulate matter
- **If feet reach the baseboard, use protective padding**

## Using Supportive Devices

Supportive devices, such as pressure-reducing cushions, foam, air or gel mattresses or specialty beds will decrease the pressure around the bony prominences. The use of “doughnuts” should be avoided since they increase the pressure on the skin in contact with the doughnut.

## Avoiding Friction And Shear

Friction is the force of rubbing two surfaces against one another. Shear is the result of gravity pushing down on the patient’s skin tissue and the resistance between the patient and the wheelchair or bed. Shear causes damage to the tissue layers that slide against each other as well as the underlying blood vessels.

## Managing Moisture and Incontinence

Minimize the exposure of the skin to moisture due to perspiration, wound drainage and incontinence.

Urinary incontinence causes the perineal skin to be over hydrated, which puts the skin at risk for erosion and impairment. Fecal incontinence is more damaging because of the presence of bacteria and digestive enzymes. It is important to use incontinence products that are absorbent and wick moisture away from the skin.

The skin should be sponged clean with warm water and a mild soap and thoroughly dried at time of soiling and at routine intervals. Be careful to pat the skin dry (not rub) and use appropriate moisture barrier creams or skin protective wipes. Avoid using adhesive tape tabs as they can irritate and tear fragile skin.

## Inspecting the Skin Daily

An integral part of preventing pressure ulcers is to practice daily skin checks. Inspect the skin thoroughly at least once a day, paying special attention to the feet, heels, hips, spine, lower back, buttocks, tailbone, shoulder blades, elbows, head and ears. Watch for signs of skin damage or infection such as:

- **Drainage from a sore**
- **Yellowish stains or blood on clothing, sheets, etc.**
- **Foul odor**
- **Redness of the skin that does not go away after the pressure is removed**
- **Cracked, blistered, scaly or broken skin**
- **Warmth in the surrounding skin**
- **Painful or tender pressure points especially at bony prominences**

The heels pose a significant risk for the development of pressure ulcers due to the small surface area and the underlying bony prominence. Use pillows placed lengthwise under the patient’s calves to elevate the heels off the surface.

## Providing A Nutritious Diet

Various studies and statistics indicate that proper nutrition is beneficial in the quest to prevent pressure ulcers. A healthy diet can be supportive to preventing skin breakdown and in aiding wound healing. Address nutritional deficits by requesting a consultation with the Dietician who can identify the patient’s dietary needs. It is essential the patient gets enough calories, protein, vitamins and minerals. In addition, the patient must maintain good hydration.

## 5 Pressure Ulcer Care

Prognosis is excellent for early-stage ulcers (stage I and II) with timely, appropriate treatment; however, neglected and late-stage ulcers (suspected deep tissue, stage III, IV and unstageable) pose risk of serious infection and nutritional stress and are difficult to heal. Treating pressure ulcers is challenging since skin and other tissues have already been damaged or destroyed and open wounds are slow to close. As a result, healing is never ideal.

Patients with pressure ulcers should be referred to nutrition services for high-protein diets to encourage wound healing. They can also be assigned to a specialty bed designed for preventing and treating pressure ulcers.

Treating pressure ulcers may take some time. Stage I and II pressure ulcers may heal with conservative measures while some stage III and IV wounds may require more aggressive treatment since they are less likely to heal on their own. Wounds identified as “unstageable” are covered by dead tissue, making it difficult to see the base of the wound. For these wounds the necrotic tissue must be removed before it can be staged properly and treated.

There are steps to follow in treating a pressure ulcer. The first step is to relieve the pressure that caused it. This can be done by:

- **Changing Positions Often** – If in a wheelchair, turn or reposition a patient every 15 minutes. For a patient in a bed, turn or reposition them at least every 2 hours. An appropriate dressing over the wound may help prevent friction when moving.
- **Using support surfaces** – Special cushions, pads, mattresses and beds are available to facilitate reduction and redistribution of pressure on an

existing pressure ulcer. They may also help prevent further breakdown in vulnerable areas. Avoid using hard foam and rubber rings which can actually cause pressure points. Instead use foam, gel, air-filled or water-filled devices. Low air loss beds or air-fluidized beds provide good support.

### Other steps for treating pressure ulcers include:

- **Avoid friction and shearing forces** – The skin of at-risk patients can be easily torn during repositioning. For this reason, caregivers should use caution when moving patients. The use of lift devices or positioning pads may be beneficial for those patients who are not able to assist during transfers or position changes.
- **Clean the wound initially and with each dressing change** – this will help prevent infection. A suspected deep tissue injury and stage I pressure ulcer is best cleaned with water and mild soap. An open sore should be cleaned with a saline solution or wound cleanser each time the dressing is changed. Use a pressure that is sufficient to remove bacteria without harming tissue. The use of commercial syringes, squeeze bottles or electrically pressurized systems work best. Continue irrigation until no further debris can be loosened.
- **Avoid iodine, hydrogen peroxide and antiseptic washes.** These may interfere with tissue healing and should be avoided.
- **Provide incontinence care** – use the appropriate incontinence care product, such as a brief or underpad. Be sure to quickly change and cleanse the patient once wet or soiled and provide the appropriate skin care, such as moisture barrier creams.

- **Remove damaged/dead tissue (debridement)** – wounds need to be free of damaged, dead or infected tissue in order to heal properly. There are several ways to approach this based on the patient’s overall condition and the type of wound.

- **Surgical debridement** – a procedure that involves using a scalpel or other instrument to remove dead tissue. This can be painful but is quick and effective. Wounds with exposure of muscle, bones and/or tendons may require surgical closure.
- **Mechanical debridement** – removing dead or contaminated tissue from a wound by physical forces rather than by chemical (enzymatic) or natural autolytic) forces. Examples are wet-to-dry dressings, wet-to-moist dressings, wound irrigation, whirlpool and ultrasound.
- **Autolytic debridement** – uses synthetic occlusive dressings to cover and seal the wound and allow the body’s own enzymes to break down dead tissue. This approach can be used for small wounds with simple accumulation of tissue proteins. This is an ideal solution for wounds that need to be sealed off, such as for protection from feces or urine. If the wound is infected, it should not be occluded.
- **Enzymatic debridement** – applying topical debriding enzymes to break down devitalized tissue. This option is for patients who are not good candidates for surgery or whose caretakers are not able to implement other types of debridement.

As a wound heals, it will get smaller and will have less drainage. New tissue will start to grow at the bottom of the wound and will look red or pink in color. It will also be lumpy and shiny.

- **Apply dressings** – there are a variety of dressings that can be used to protect wounds and speed healing based on the stage and severity of the wound. The goal is to keep the wound itself moist and the periwound (surrounding skin) dry. Dressings should be used for Stage I ulcers to protect from friction or incontinence. Use dressings for all Stage II, III, IV and unstageable ulcers to promote healing. The goal is to keep the wound bed moist to aid in tissue growth factors while allowing some evaporation and flow of oxygen. The surrounding skin needs to be kept dry to facilitate autolytic debridement and to establish a barrier to infection. Be careful not to overdress the wound(s) such that the dressing itself could cause a new pressure point.
- **Healthy diet** – good nutrition is important because it helps the body heal. Consuming a healthy diet including adequate calories, protein, vitamins and minerals can contribute to wound healing. Vitamin C and zinc can be especially helpful.
- **Infection management** – pressure ulcers need to be reassessed often for bacterial infection. Pain and wound deterioration are the most common signs of infection in pressure wounds. Watch also for signs of redness, warmth, increased drainage, swelling and foul odor to identify infection. Signs the infection may have spread into the bloodstream (sepsis) include fever or chills, mental confusion, difficulty concentrating, rapid heartbeat or weakness. Provide appropriate treatment as necessary.

## SURGICAL INTERVENTION

Some pressure ulcers may require surgical intervention to improve the hygiene and appearance of the wound. In addition the surgical procedure can prevent or treat infection, and reduce fluid and protein loss from the wound.

The type of surgery will depend on the location and condition of the wound. In general, deep pressure ulcers can be repaired using a pad of muscle, skin or other tissue that covers the wound and cushions the affected bone. This is referred to as flap reconstruction and has one of the highest complication rates of any surgery. The recovery period is long and arduous and requires commitment from the patient as well as family/friends to be successful.

Although treatment of pressure ulcers is very challenging, it is very rewarding when patients, family and staff members see healing.

If the pressure ulcer is infected, the infection must be treated. Removal of infected tissue and use of an antimicrobial dressing is best when the ulcer itself is infected. When the infection moves into the blood system or bone, intravenous and/or oral antibiotics may be required.

## SUPPORT SURFACES

Support surfaces include special mattresses, mattress overlays, specialty beds and chair cushions that are used to support the patient's body in bed or in a chair. They are used to redistribute pressure between the patient and the surface. This is achieved by molding to the body to maximize contact and redistribute weight uniformly in an effort to prevent or treat pressure ulcers.

There are two types of support surfaces—static or dynamic. Static surfaces do not require the use of electricity while dynamic surfaces use electricity or a battery pack.

## Static Support Surfaces

If a patient can move around on their own without bearing weight on a suspected or existing pressure ulcer, you can use a static support surface. These surfaces do not require electricity and include mattresses and/or cushions that require the use of air, foam, gel or water.

When using a static support surface, it is important to be sure the patient is not bottoming out. To check, slide a hand, palm up, under the foam mattress beneath the part of the body at risk for a pressure ulcer. There should be at least an inch of material between the patient and the mattress. If not, consider using a different type of static support surface or a dynamic support surface.

In general, static surfaces increase surface support areas and decrease pressure and shear forces. They should be used for high-risk patients who do not currently have a pressure ulcer and for patients with Stage I pressure ulcers. Static support surfaces include:

- **Foam Mattresses** – Made of multiple layers of foam for pressure redistribution. Foam cells protect against friction and shear and distribute pressure evenly. They are designed to be placed directly on an existing bed frame.
- **Gel Overlays** – Distributes pressure uniformly and reduces friction and shear by use of gel bladders inside a foam core. They are designed to be placed directly on an existing mattress.
- **Alternating Pressure Pads** – Inflates and deflates cells to constantly change pressure points. They are designed to be placed directly on top of an existing mattress.
- **Seat Cushions** – Seat cushions allow the patient in a wheelchair increased latitude when repositioning. A good seat cushion should provide pressure redistribution, absorb heat and must be able to maintain its shape. The use of ring cushions (donuts)

should be avoided since they are more likely to cause pressure points. There are several types of seat cushions including:

- Foam cushions, which are lightweight and inexpensive. Typically a foam cushion will last from 6 to 12 months and should be checked regularly to ensure they are providing comfort and pressure redistribution.
- Gel cushions, which are heavy and provide good protection and weight distribution. Gel cushions should be checked regularly to be sure they are maintaining their shape and the user isn't bottoming out.
- Air cushions, which can be inflated to meet the user's comfort point. They are lightweight and waterproof but are subject to leaks and punctures. They should be checked regularly and replaced as necessary.
- Cooling wheelchair pads, which are specifically designed to reduce heat build-up and moisture. They can provide comfort for a number of hours.
- Hybrid cushions – some cushions combine materials like foam and gel or use other available materials to enhance air circulation and reduce heat build-up and moisture.

Research indicates there is no statistical difference in pressure ulcer outcomes from one type of static support surface to another. For this reason, the choice of which type of support surface to use is left to the caregiver.

### Dynamic Support Surfaces

If a patient cannot move around on their own without bearing weight on a suspected or existing pressure ulcer, if they bottom out on a static support surface or if a pressure ulcer is not healing, you should use a dynamic support surface. Dynamic support surfaces are surfaces that require the use of electricity or a battery pack and include:

- **Alternating-air mattresses** – Air cells are alternately inflated and deflated by a pump thereby shifting supportive pressure from site to site. The continuously changing contact points allow blood flow to reach all areas of the body, thereby promoting circulation.
- **Low air-loss mattresses** – Air-permeable mattresses that are continuously inflated with air. Low air-loss mattresses have tiny holes in the surface of the mattress whereby air is pumped through to the patient's skin. The air circulates across the patient's skin to reduce moisture and help maintain a constant skin interface pressure. The air flow helps maintain normal skin temperature and moisture levels, contributing to the healing process of pressure ulcers, yet will not dry out wound dressings. These should be used for patients with Stage I pressure ulcers who develop reddened areas on static surfaces and for patients with Stage III or IV pressure ulcers.
- **Air-fluidized or high-air-loss mattresses** contain silicone-coated beads that liquefy when air is pumped through the bed. The advantages include a reduction of moisture on surfaces and cooling. These are best used for patients with Stage III and IV pressure ulcers or with multiple large pressure ulcers. The risk of using this type of bed is dehydration and overheating if the temperature of the air is not set properly.

When it comes to pressure ulcer care, the patient is always the primary focus. In an effort to gain the most benefit from the use of a low or high air-loss mattress, it is recommended to utilize materials that allow for continuous air circulation without blocking air flow. Specialty mattresses should be used in conjunction with your normal pressure ulcer prevention program and are not a substitute for a turning schedule.

## Implementing A Pressure Ulcer Prevention Program

Hospitals and nursing facilities have experienced significant improvement in the prevention of pressure ulcers by developing and implementing a systematic approach to identifying at-risk patients.

There are several steps an acute care facility can take to achieve this goal.

- **Form a Team – Assemble a multidisciplinary team** to identify a consistent approach to preventing pressure ulcers. The ideal team would include approximately 5 – 7 people who are stakeholders in the process. These people will be the driving force behind identifying and implementing the appropriate process changes. The Institute for Healthcare Improvement recommended team members include the following<sup>8</sup>:

- Team Leader/Champion
- Nursing
- Education
- Performance Improvement
- Dietician
- Materials Management
- Patient/Family member (suggested but not mandatory)

Senior leadership needs to be involved with the team to help overcome any barriers that may be identified during the process and to show management's commitment to the goal. Ad hoc members and sub-teams may need to be pulled into the process to handle various tasks along the way.

- **Identify and implement process improvements** – Implement changes on one unit initially and measure the results.
- **Analyze the results** – Identify how successful the changes were and what modifications need to be made. What worked well? What improvements need to be implemented?

- **Implement the changes** – Once you have identified a successful process, roll it out to a larger population. Be sure to provide training to all staff members involved in the process.
- **Celebrate your successes** – Post charts showing the decrease in the number of pressure ulcers. Celebrate with the staff. This is a great way to keep the team motivated and focused.

Before starting, here are some recommended tips<sup>9</sup>:

- **Use pressure ulcer prevalence data to identify the pilot unit;** choose the unit with the highest prevalence of pressure ulcers.
- **Set a schedule to roll out the program** to other units and stick to the schedule. This will show commitment by the facility.
- **Development of a guide for staff** containing helpful tips for at-risk patients.
- **Educate staff as part of the rollout.** Be sure that everyone involved in the process receives the necessary training.
- **Educate the patient and family** in pressure ulcer prevention.
- **Identify one person in each unit to be a resource** for skin breakdown prevention and act as process coordinator.

Based on the updated CMS guidelines regarding the reimbursement for hospital acquired conditions effective as of October 1, 2008, facilities are focused on identifying steps to reduce the number of pressure ulcers acquired during a hospital stay. The dedication and commitment of all levels of staff and a focus on instituting the necessary protocols, resources and applicable education will put you well on your way to achieving this goal.

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## REFERENCED ACRONYMS

**CAH** Critical Access Hospitals

**CMS** Centers for Medicare & Medicaid Services

**DRA** Deficit Reduction Act of 2005

**DRG** Diagnosis Related Groups

**FY** Fiscal Year

**HAC** Hospital-Acquired Conditions

**HIPAA** Health Insurance Portability and Accountability Act

**IPPS** Inpatient Prospective Payment System

**IRF** Inpatient Rehabilitation Facility

**LTCH** Long-Term Care Hospital

**MS-DRG** Medicare Severity Diagnosis Related Groups

**NPUAP** National Pressure Ulcer Advisory Panel

**POA** Present on Admission

**SCHIP** State Children's Health Insurance Program



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## 6 Continuing Education Post Test

### PRESSURE ULCER REDUCTION AND ELIMINATION

1. **In an effort to contain health care spending, The Centers for Medicare & Medicaid Services (CMS) introduced a plan which**
  - a. Rejects payment of a higher diagnostic category for certain conditions such as urinary tract infections and pressure ulcers that occur after admission to an acute care facility.
  - b. Rejects payment of costs associated with prevention of pressure ulcers.
  - c. Increases payment for secondary diagnoses such as pressure ulcers or urinary tract infections even if the condition is acquired after admission to the acute care facility.
  - d. Allows acute care facilities to refuse admission to patients with certain pre-existing conditions such as pressure ulcers and urinary tract infections.
2. **In 2007, what were the annual costs associated with the treatment of pressure ulcers as reported by the CMS?**
  - a. \$190,00
  - b. \$4 billion
  - c. \$11 billion
  - d. \$850,00
3. **A pressure ulcer covered by dead tissue which conceals the base of the wound should be classified as**
  - a. Suspected deep tissue injury
  - b. Unstageable
  - c. Stage IV
  - d. Stage III to IV
4. **Which of the following factors affect a patient's risk for pressure ulcer development?**
  - a. Race, liver function and infection
  - b. Renal function, asthma and serum albumin
  - c. Mobility, intensity and duration of pressure and nutritional status
  - d. Activity, moisture and educational level
5. **How frequently should pressure ulcer assessment be done in acute care facilities?**
  - a. At least every three days.
  - b. Upon admission and weekly thereafter.
  - c. Upon admission and at least daily thereafter.
  - d. Upon admission and prior to discharge.
6. **Which of the following interventions should NOT be used to prevent pressure ulcers?**
  - a. Avoid wrinkles and rough material for bedding.
  - b. Assist patients as necessary to insure frequent shift in position.
  - c. Monitor nutritional intake.
  - d. Keep head of bed at least 60 degrees to allow adequate oxygen exchange.
7. **Open pressure ulcers should be carefully cleansed using which of the following agents?**
  - a. Saline or commercial wound cleanser
  - b. Hydrogen peroxide
  - c. Iodine
  - d. Soap and water
8. **Patients identified as mild risk for pressure ulcer development based upon the Braden Score require which of the following?**
  - a. No further assessment is required.
  - b. Use of a pressure-reducing surface.
  - c. Manage moisture, nutrition, and friction and shear.
  - d. Provide foam wedges for lateral positions.
9. **To maximize the benefit from dynamic support surfaces, you should**
  - a. Use materials that allow for continuous air circulation without blocking air flow.
  - b. Turn off the air mattress at least once every shift for a minimum of 30 minutes.
  - c. Keep patient positioned on his/her back to allow maximum delivery of pressure relief.
  - d. Place thick padding or cushions between the patient and the specialized mattress.
10. **A successful pressure ulcer prevention program should include:**
  - a. Awareness of the current pressure ulcer prevalence in your facility or unit.
  - b. A team of members including nursing, education, dietary, and materials management.
  - c. Education of staff, the patient, and his/her family.
  - d. All of the above.

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