
PRESSURE ULCERS



The Agency for Health Care Policy and Research (AHCPR) convened a multidisciplinary panel of clinicians and experts to review the literature and build a scientific basis of knowledge for the “Clinical Practice Guideline #3: Pressure Ulcers in Adults: Prediction and Prevention” (1992). This panel defined pressure ulcers as “any lesion caused by unrelieved pressure resulting in damage of underlying tissue” (Panel for the Prediction and Prevention of Pressure Ulcers in Adults, 1992).

A universal staging system for pressure ulcers which was proposed by the National Pressure Ulcer Advisory Council and recommended in the Health Care Financing Administration’s (HCFA) RAI Version 2.0 manual, is based on the depth and type of tissue damage:

Stage I

Nonblanchable erythema of intact skin, the heralding lesion of skin ulceration. Discoloration of the skin, warmth, edema, induration, or hardness also may be indicators in individuals with darker skin.

Stage II

Partial-thickness skin loss involving the epidermis, dermis, or both. The ulcer is superficial and presents clinically as an abrasion, blister or shallow crater.

Stage III

Full-thickness skin loss involving damage to or necrosis of subcutaneous tissue that may extend down to, but not through, underlying fascia. The ulcer presents clinically as a deep crater with or without undermining of adjacent tissue.

Stage IV

Full-thickness skin loss with extensive destruction, tissue necrosis, or damage to muscle, bone, or supporting structures (e.g., tendon or joint capsule). Undermining and sinus tracts also may be associated with Stage IV pressure ulcers.

The MDS is frequently used as a source of data in long-term care and pressure ulcer incidence is often used as a measure of quality of care. In an effort to clarify some of the questions regarding coding of pressure ulcers in MDS section M. The RAI manual instructions have recently been revised (CMS, 2002).

Prevalence and Incidence of Pressure Ulcers

Pressure ulcers have been identified across all health care settings. The prevalence in nursing homes varies from 1-30% depending on the type of nursing home and types of pressure ulcers included in the count. Using national data collected during nursing homes’ annual survey process, an average of 6.6% nursing home residents have a pressure ulcer. The incidence of pressure ulcers also varies from 0-31% with

13% of residents, on average, developing a pressure ulcer over a two-year period.

The Problem

Pressure ulcers have been documented as a significant problem across the lifespan and across all health care settings, as well as a significant source of pain and human suffering. The elderly may be at greater risk to develop pressure ulcers due to the changes in the skin related to aging (Knox et al., 1994) as well as the many comorbidity factors present in this population. Millions of dollars are spent annually on the prevention and treatment of pressure ulcers. In addition, pressure ulcers have been used as an indicator of quality of care and their development in long-term care residents has constituted grounds for litigation.

Population

Current literature identified multiple factors that put individuals at risk to develop pressure ulcers. Some of these factors include immobility, incontinence, inadequate dietary intake, chronic illness, altered level of consciousness, altered sensory perception, and history of pressure ulcer. It is also recognized that many pressure ulcers result from a failure of micro-circulation with impaired blood flow to the skin. This may occur in hypotension, sepsis, and shock (Braden and Bryant, 1990). Research discussed by Braden and Bryant (1990) looks at other factors that may also contribute to pressure ulcer risk. These include hemodynamic changes such as low blood pressure (systolic < 100, diastolic < 60), elevated body temperature, and increased blood viscosity and high hematocrit which contributes to tissue damage. Cigarette smoking is also cited as a contributing factor.

Stotts and Wipke-Tevis (1997) identify multiple concomitant factors that impair healing, such as diabetes, peripheral vascular disease, uremia, and immunocompromise. Treatment for another condition such as chemotherapy, radiation, and immunosuppressive therapy may also impede wound healing.

Systematic risk assessment will help to identify those nursing home residents at risk to develop pressure ulcers. Several risk assessment tools exist. The Braden Scale, created by Barbara Braden, RN, PhD, FAAN, and Nancy Bergstrom, RN, PhD, FAAN in 1987, is the most commonly used pressure ulcer risk scale. The Norton Scale, created by Doreen Norton, was the first scale developed and is commonly used in Europe (Norton et al., 1975). Risk assessment on admission was found to be highly predictive of pressure ulcer development in all settings and most predictive when completed again 48-72 hours after admission; periodic reassessment is therefore appropriate (Bergstrom et al., 1998). The Braden and Norton scales are valid and reliable tools; it would be prudent for the clinician to review validity and reliability research of any other tools chosen for use.

Based on the results of either of these scales or a facility-preferred scale, care plans including preventative measures specific to the areas of risk should be formulated. It is important to create these individualized care plans within 24 hours, as many pressure ulcers develop within 24 to 48 hours and most within 2 to 3 weeks.

Prevention

The AHCPR guidelines provide evidence-based pressure ulcer prevention strategies that should be included in the care plans of

residents found to be at risk for development of pressure ulcers. Studies conducted in acute and long-term care and reports by Bergstrom (1998) demonstrate that adherence to these pressure ulcer risk-reduction strategies can significantly lower the prevalence of pressure ulcers.

Early interventions to address these risks may include:

Protecting skin against the effects of pressure, friction, and shear:

- ▲ Reduce pressure over bony prominences
- ▲ Individualize turning and repositioning plans for residents in bed or chair: every 2-hour turn schedules for residents and every 1-hour repositioning in the chair
- ▲ Position with the head of the bed no higher than 30 degrees
- ▲ Avoid positioning directly on the great trochanter
- ▲ Provide special attention to floating heels to keep them off the bed
- ▲ Manage tissue load
- ▲ Using pressure-reducing mattresses and overlays – check for “bottoming out” to ensure appropriateness of mattress choice
- ▲ Protect skin from mechanical injury via slide board, turn sheet, trapeze, and/or lubricant use
- ▲ Increase mobility
- ▲ Consult PT/OT

Protecting skin from moisture:

- ▲ Cleanse skin with warm water and mild soap to prevent drying
- ▲ Cleanse skin after soiling
- ▲ Use non-alcohol based moisturizers
- ▲ Use skin protectants or barriers
- ▲ Massage is contraindicated over bony prominences

- ▲ Institute bowel or bladder training programs
- ▲ Use briefs or absorbent underpads to wick moisture away from skin

Encouraging optimal nutrition and fluid intake:

- ▲ Conduct nutritional consultation
- ▲ Consider resident preferences and special needs
- ▲ Provide assistance and adequate time
- ▲ Offer snacks and fluids between meals
- ▲ Consider administration of vitamin and/or protein supplements
- ▲ Consider tube feeding/parenteral fluids per resident choice
- ▲ Assess laboratory data that may indicate nutritional status (i.e., CBC, albumin, prealbumin, transferrin levels)

Also:

- ▲ Educating staff, residents, and families and enlist everyone’s support in reduction of pressure ulcers
- ▲ Assessing skin daily for early identification of developing pressure areas. Institute an immediate plan to treat these areas, reassess the prevention plan and make changes as needed

Treatment

The development of a pressure ulcer requires local wound treatment as well as a critical review of the individual pressure ulcer prevention care plan and the entire system to identify where the system broke down; the preventative regime must be intensified when a pressure ulcer develops. A proliferation of wound care products on the market may make the treatment choice confusing. However, if the clinician has a basic understanding of the physiology of

wound healing, this knowledge can help to guide treatment choices.

When there is insult or injury to the skin, a cascade of healing events occur (Hess, 1995; Kane and Krasner, 1997). The stages of wound healing include:

Inflammatory Phase

Begins at the time of injury and may continue for 4 to 6 days. The process of homeostasis controls bleeding and phagocytosis is accomplished by leukocytes. Thus, wound assessment at this phase would reveal edema, erythema, and heat. Pain may also be present.

Proliferative Phase

This phase may continue from days 4 to 24 and is identified by restoration of vascularization, proliferation of granulation tissue, and formation of a protective epithelial barrier.

Maturation Phase

This phase may continue from day 24 to 2 years post-injury. Remodeling of collagen fibers and maturation of scar tissue continue until approximately 70% of the original tensile strength is regained.

Wound Assessment

A comprehensive wound assessment and documentation of this assessment should be done when the wound is initially identified and at specific intervals thereafter. The AHPCR Treatment Guideline (Bergstrom et al., 1994) recommends that pressure ulcer assessment be conducted “at least weekly.”

Criteria to be included in this assessment include:

- ▲ Site/location of wound(s).

- ▲ Stage of pressure ulcer (other type of wounds are not staged but, may be described as full or partial thickness).
- ▲ Size: including length, width, and depth measured in centimeters.
- ▲ Appearance of the wound bed includes a description of the type of tissue present. When there is a combination of tissue types, each type should be identified by the percentage present (i.e., 50% granulation tissue and 50% fibrinous slough).
- ▲ Undermining can be assessed by gently probing the wound base with a cotton swab. Measure depth in centimeters and describe location in relation to the face of the clock.
- ▲ Drainage/exudate should be described as to the amount, color or type consistency, and odor of exudate.
- ▲ Peri-wound tissue should be palpated and described if erythematous, indurated, edematous, fluctuant, macerated, or warm.
- ▲ Pain or tenderness should be assessed.

Maklebust and Sieggreen (1996), list the three essential components of local pressure ulcer care as cleaning, debridement, and dressings.

Cleaning

The first principle of cleaning is to avoid further harm. Products such as hydrogen peroxide, acetic acid, and providone iodine have been identified as being cytotoxic (Bergstrom et al., 1994). Cleaning agents should be gentle to newly proliferating cells, physiologic and safe.

Debridement

Necrotic tissue in the wound bed slows healing and increases the bacterial burden as organisms grow and multiply in devitalized tissue. Debridement may be accomplished

through several methods (Bergstrom, 1997; Hess, 1995; Kane and Krasner, 1997):

Sharp debridement

This requires that a physician or wound care specialist surgically remove necrotic tissue. This is a quick but often painful method and may be inappropriate for residents who are on anticoagulants or have bleeding tendencies. It is usually the method of choice for debridement of infected wounds.

Mechanical debridement

One of the oldest treatments available is mechanical debridement through wet-to-dry dressings. A gauze dressing moistened with 0.9% normal saline is loosely packed into the wound, allowed to dry and then removed from the wound pulling necrotic tissue with it. This method of debridement is non-selective, often pulling viable tissue along with the devitalized tissue. It may also be a painful process for the resident. Whirlpool treatments are another type of mechanical debridement.

Chemical debridement

Debridement may be accomplished with the use of topical enzymatic preparations. The wound bed should first be gently cleansed with an isotonic solution (normal saline). Chemical debridement agents should only be applied to devitalized tissue.

Autolytic debridement

Autolytic debridement uses the body's own ability to liquefy or digest devitalized tissue through autolysis. This method is selective to only necrotic tissue and is usually not painful, but may take longer than

other methods. The process is hastened by covering the wound with a transparent film dressing, a hydrocolloid dressing, hydrogel, or alginate.

It may not be appropriate to debride necrotic heel ulcers if they have no signs of infection. However, daily assessment and palpation of these ulcers for bogginess, erythema, warmth, or drainage is necessary.

Choice of a debridement method should be based on the resident's individual treatment goals and overall condition.

Dressings

Dressing choices should be based on the principles of moist wound healing (Field and Kerstan, 1994). A comprehensive wound assessment will guide the clinicians selection of a dressing that is "the safest and most effective, user-friendly and cost-effective dressing possible" (Goode and Thomas, 1997).

Dressing should enable the clinician to meet some general treatment goals for pressure ulcers at each stage.

Stage 1

Protect tissue integrity and prevent further damage.

Stage 2

Keep wound bed moist and periwound tissue dry. Minimize trauma and pain.

Stages 3 and 4

Keep wound bed moist. Absorb excessive exudate. Debride necrosis/devitalized tissue. Loosely pack dead space. Protect delicate granulation

tissue. Keep peri-wound tissue dry.
Minimize pain.

The thousands of wound care products on the market can be grouped into several categories:

- ▲ Transparent film dressings
- ▲ Hydrocolloids
- ▲ Hydrogels in sheets, amorphous gel, impregnated gauze, and strands
- ▲ Foam dressings
- ▲ Alginates

Healing

Many wound care experts have expressed concern that the MDS 2.0 required providers to backstage wounds in order to show healing. Krasner (1997) points out that “in reality, the ulcer heals by granulating, contracting, and reepithelializing, never returning to a Stage 1...” CMS’ MDS 2.0 Q&A Addendum 2 (CMS, 2001) addresses the question of backstaging and says “CMS is considering incorporating the PUSH scale in a future iteration of the MDS.”

The Pressure Ulcer Scale for Healing (PUSH Tool), developed by the National Pressure Ulcer Advisory Panel (NPUAP) allows the clinician to graph changes in a pressure ulcer over time, indicating healing or deterioration of the wound. In the December 2002 revision of the RAI manual, CMS states that “Facilities certainly may adopt the NPUAP standards in their clinical practice. However, the NPUAP standards cannot be used for coding on the MDS.”

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