B E H A V I O R A L  O B J E C T I V E S

A F T E R  R E A D I N G  T H I S  N E W S L E T T E R  T H E  L E A R N E R  W I L L  B E  A B L E  T O:

1. Discuss factors which contribute to the development of pressure ulcers, as well as the mechanism of injury.

2. Describe assessment and staging of pressure ulcers, as well as appropriate documentation.

A pressure ulcer, also referred to as a decubitus ulcer, bedsore or a pressure sore, is a significant cause of morbidity and mortality in the elderly population. The National Pressure Ulcer Advisory Panel (NPUAP) defines a pressure ulcer as any lesion caused by unrelieved pressure resulting in damage to the underlying tissue. The wounds are thought to develop as a result of excessive pressure to the skin. The constant pressure against the skin reduces the blood supply to that area, ulceration occurs and the affected tissue, as well as in many cases, fat and muscle dies.

This newsletter will discuss factors which contribute to the development of pressure ulcers, as well as the mechanism of injury. Assessment and staging of pressure ulcers will be described, as well as appropriate documentation.

PRESSURE ULCERS

The most common places for pressure ulcers to occur are over bony prominences, such as elbows, heels, hips, ankles, shoulders, back, and the back of the head. The sacrum/coccyx area at the base of the spine has consistently been documented as the most common site of pressure ulcers. The heels come in a close second.

The principal mechanism of injury with pressure ulcer development is tissue ischemia resulting from pressure compressing the microvessels, thus altering circulation. The average person adjusts his or her position, while awake and when sitting or lying down, at least every 20 seconds. This is in response to the discomfort from capillary closure caused by pressure on that part of the body. However, due to common age-related changes, including immobility, decreased activity, and decreased sensory perception, the loss of ability or stimulus to change positions can commonly occur.

For example, patients with altered mental status, such as dementia or Alzheimer's or those with immobility may not be stimulated to move. Capillary collapse results from pressure, which leads to tissue redness and ischemia.

Moisture, shearing and friction, as well as age-related physical changes to the skin, often contribute to pressure ulcer development. Moisture can increase the skin's vulnerability to damage from pressure. Moisture softens the skin and increases the risk of breakdown. Common sources of moisture include sweat, urine and feces. Incontinence in elderly patients is more common than in other age-groups, another factor placing them at high risk for pressure ulcers.

Shearing and friction injuries occur when skin is pulled across a coarse surface, such as pulling a patient up in bed. Friction irritates the skin and causes redness. Shear injuries occur when forces pull underlying tissue layers one way and the skin the opposite way. A shear happens beneath the skin surface. Some important sources of shearing and friction injuries are dragging or sliding a patient across the bed sheets, such as to pull him or her up in bed, allowing the patient's unprotected elbows or heels to rub against the bed surface and raising the head of the bed more than 30 degrees, which increases shearing forces over the lower back and tailbone (unless ordered by the physician).

Two-thirds of pressure sores that develop in hospitalized patients occur in patients older than 70 years. Age-related changes in the elderly directly increase the risk of injury from friction and shearing to the skin. With aging, the epidermis, the first layer of skin, thins by 50%. The area of contact between the epidermis and the dermis, the second layer of skin, also decreases with aging, resulting in easy separation of these layers. Aging also results in a decreased amount of subcutaneous tissue and a redistribution of fat to the abdomen and thighs. As a result of a loss of padding supplied by subcutaneous tissues, there is a greater risk of skin shearing. Additionally, elasticity decreases and vessels degenerate with aging, resulting in reduced blood flow to the skin.

ASSESSMENT AND STAGING OF PRESSURE ULCERS: The National Pressure Ulcer Advisory Panel (NPUAP) developed a four-stage system in 1989, which has been continuously revised and now includes assessment findings in dark skinned patients, as well as suspected deep tissue injury and unstageable pressure ulcers. This staging system serves as a guide to the degree of tissue damage, going from redness of the skin to full thickness tissue loss.
The NPUAP staging system is as follows:

**Suspected Deep Tissue Injury:** Localized purple or maroon area of intact skin or a blood filled blister.

**Stage 1:** The skin is intact with non-blanchable redness over a bony prominence. The ulcer appears as a defined area of persistent redness in lightly pigmented skin, whereas in darker skin tones, the ulcer may appear with persistent red, blue, or purple hues. Darkly pigmented skin may also not have visible blanching, as color may differ from the surrounding area. The area may be painful, itchy, firm, soft and/or warmer or cooler as compared to adjacent tissue. Stage 1 indicates “at high risk” persons. The hardness or firmness is called induration and is one of the most common signs of a stage 1 pressure ulcer. Never massage a stage 1 pressure ulcer. It will increase the damage and can cause it to progress to an open (stage 2 or deeper) pressure ulcer.

**Stage 2:** In this stage there is partial thickness skin loss involving the epidermis, dermis, or both. The ulcer is a shallow open dry and shiny ulcer with a reddish-pink wound bed, without sloughing or bruising. This stage should not be used to describe skin tears or tape burns.

**Stage 3:** Full thickness skin loss occurs in this stage, involving damage to, or necrosis of, subcutaneous tissue that may extend down to, but not through, underlying fascia. Subcutaneous fat may be visible, but bone, tendon and/or muscle are not exposed. Sloughing may be present, but does not obscure the depth of tissue loss. The ulcer presents clinically as a deep crater with or without changes to the adjacent tissue. The depth of stage 3 pressure ulcers varies by anatomical location. For example, the ear and occipital area of the head do not have subcutaneous tissue. Therefore, in these areas stage 3 ulcers can be extremely shallow. However, in areas where there is significant subcutaneous tissue, such as the hips or shoulders, stage 3 ulcers can develop significantly deep.

**Stage 4:** There is full thickness loss of all the layers of the skin, leaving exposed bone, tendon or muscle. Slough or eschar may be present on some parts of the wound bed. Stage 4 ulcers can extend into muscle, bone and/or supporting structures, such as the fascia, tendon or joint capsule.

**Unstageable:** Some pressure ulcers, that are covered by slough (yellow, tan, gray, green, or brown) and / or eschar (black, brown, or tan) in the wound bed, are unstageable. Until enough slough and/or eschar is removed to expose the base of the wound, the stage cannot be determined. However, stable, dry and adherent, eschar on the heels serves as the body’s natural, biological cover and should not be removed.

**Documentation:**

After assessing a wound, proper documentation is necessary. A photograph of the wound, with a thorough narrative description, is the most reliable documentation. Simply documenting, for example, “stage 2 pressure ulcer” is not sufficient. Pressure ulcers should be appropriately documented by wound characteristics, such as size, depth, amount of necrotic tissue and amount of exudate.

**Charting** should include the following information on each wound assessment:

- Where is the location of wound(s) - foot, leg, thigh, sacrum, elbow, shoulder, right, left, dorsal, planter, medial, lateral, anterior, posterior, etc.?
- What is the size of the wound including length, width and depth (use a sterile cotton tip applicator to measure depth). DO NOT CROSS CONTAMINATE WOUNDS, such as by using the same gloves, instruments and measuring devices, if the patient has multiple wounds. Based on previous measurements, is the wound improving, getting worse or remaining the same?
- Is there drainage? Is there drainage on it? If so, what does it look like, such as is it serous, purulent, bloody, green, yellow, clear or thick? Yellow purulent drainage could indicate staphylococcus involvement. Green drainage could indicate pseudomonas. Estimate the amount of drainage present.
- Is there any odor from the wound? This can offer a great deal of information on which organism may be contaminating or infecting a wound. Fruity smell points toward staphylococcus organisms. Foul odor (fetal like) points toward gram negative bacteria.
- What percentage of the wound appears to be necrotic tissue? Necrotic tissue should be considered as any tissue that is not beefy red and granular. Where is the necrotic tissue? Drawing a small diagram is helpful.
- Is the wound red, or swollen? Infection should be assessed by looking at the wound and by analyzing lab data, such as white blood cell count (WBC), erythrocyte sedimentation rate (ESR) and c-reactive protein. X-ray examination, deep tissue culture (not swab), and blood cultures are also done. As stated in the AHCPR guidelines, swab cultures do not effectively reveal the infecting organism. Swab cultures only collect the surface contaminating organisms.

Clinical studies indicate that as deep ulcers heal, the lost muscle, fat and dermis are NOT replaced. Instead, the ulcer is filled with granulation tissue composed primarily of endothelial cells, fibroblasts - present in connective tissue, and collagen. Therefore, Stage IV pressure ulcers do not become Stage III, Stage II, and/or subsequently Stage I. An ulcer initially documented as a stage 4 (with detailed wound characteristics) should not be described as a stage 2 or a stage 1 as it heals. The reason is simple. Skin over a healed ulcer is only 70 - 80 percent as strong as undamaged skin. A new health care professional caring for the patient, who previously had a stage 4 pressure ulcer, may look at the latest notes and only see characteristics of a stage 2 ulcer in the assessment and not realize that this patient is at high risk, due to the decreased strength of the newly formed tissue. Instead, documenting that the wound is a healing stage 4 ulcer provides more information and is more appropriate.

An upcoming newsletter will discuss implications for the healthcare provider regarding prevention and management of decubitus ulcers in susceptible patients.
1. Which of the following age-related changes contributes to pressure ulcer development in the hospitalized elderly patient?

   a. The dermis thickens.
   b. Skin elasticity increases.
   c. Vessels degenerate, reducing blood flow to the skin.
   d. There is an increased amount of subcutaneous tissue.

2. You're assessing a sacral wound that is a shallow, open, dry and shiny ulcer with a reddish-pink wound bed. Which NPUAP pressure ulcer stage describes this wound? Stage:

   a. 1
   b. 2
   c. 3
   d. 4

3. Which of the following best describes a Stage 4 pressure ulcer, according to the NPUAP?

   a. Subcutaneous fat is visible.
   b. The wound color has persistent red, blue or purple hues.
   c. Bone and muscle are exposed.
   d. A shiny, shallow, open, dry and reddish-pink wound bed is visible.

4. Which NPUAP pressure ulcer stage applies to a heel ulcer with intact skin and defined persistent redness that feels warm and firm to the touch? Stage:

   a. 1
   b. 2
   c. 3
   d. 4

5. Clinical studies indicate that as deep ulcers heal, the lost muscle, fat and dermis are replaced.

   a. True
   b. False
6. Which of the following locations of a Stage 3 pressure ulcer would not be characteristically deep? The:
   a. ear.
   b. hip.
   c. shoulder.
   d. sacral area.

7. Which of the following are the most common places for pressure ulcers to occur?
   a. Shoulders and the back of the head
   b. Heels and sacrum/coccyx area
   c. Ankles and hips
   d. Back and the elbows

8. When documenting a pressure ulcer, which was previously a Stage 3 wound, and now is filling with granulation tissue, which of the following is NOT appropriate? Charting:
   a. the location of the ulcer.
   b. any drainage and it’s characteristics.
   c. the length, width and depth of the wound.
   d. “Stage 2 wound”.

9. Mrs. Smith has two pressure ulcers - Stage 3 on her sacral area and Stage 4 on her back. When assessing them it is essential that:
   a. cross contamination between the two wounds does not occur.
   b. she be medicated for pain prior to the assessment.
   c. a mask be worn if any odor is detected.
   d. the surface of each wound be swabbed for culture of any microorganisms.

10. Unstageable pressure ulcers means the wound bed is not visible because it is covered by slough or eschar.
   a. True
   b. False