10.4: Pressure Injuries

The remainder of this chapter will focus on applying the nursing process to a specific type of wound called a pressure injury. **Pressure injuries** are defined as, “Localized damage to the skin or underlying soft tissue, usually over a bony prominence, as a result of intense and prolonged pressure in combination with shear.” (Note that the 2016 NPUAP Pressure Injury Staging System now uses the term “pressure injury” instead of the historic term “pressure ulcer” because a pressure injury can occur without an ulcer present.) Pressure injuries commonly occur on the sacrum, heels, ischia, and coccyx and form when the skin layer of tissue gets caught between an external hard surface, such as a bed or chair, and the internal hard surface of a bone.

**Shear** occurs when tissue layers move over the top of each other, causing blood vessels to stretch and break as they pass through the subcutaneous tissue. For example, when a patient slides down in bed, the outer layer of skin remains immobile because it remains attached to the sheets due to friction. However, the deeper layer of tissue (attached to bone) moves as the patient slides down. This opposing movement of the outer layer of skin and the underlying tissues causes the capillaries to stretch and tear, which then causes decreased blood flow and oxygenation of the surrounding tissues resulting in a pressure injury. [1]

**Friction** refers to rubbing the skin against a hard object, such as the bed or the arm of a wheelchair. This rubbing causes heat, which can remove the top layer of skin and often results in skin damage. See Figure 10.13 [2] for an illustration of shear and friction forces in the development of pressure injuries.
Hospital-acquired or worsening pressure injuries during hospitalization are considered “never events” meaning they are a serious, preventable medical errors that should never occur and require reporting to The Joint Commission. Additionally, the Centers for Medicare and Medicaid Services (CMS) and many private insurers will no longer pay for additional costs associated with “never events.” Pressure injuries can be prevented with diligent assessment and nursing interventions.

Staging

When assessed, pressure injuries are staged from 1 through 4 based on the extent of tissue damage. For example, Stage 1 pressure injuries have the least amount of tissue damage as evidenced by reddened, intact skin, whereas Stage 4 pressure injuries have the greatest amount of damage with deep, open ulcers affecting underlying tissue, muscle, ligaments, or tendons. See Figure 10.14 for images of four stages of pressure injuries. Each stage is further described in the following subsections.

Stage 1 Pressure Injuries

Stage 1 pressure injuries are intact skin with a localized area of nonblanchable erythema where prolonged pressure has occurred. Nonblanchable erythema is a medical term used to describe an area of reddened skin that does not turn white when pressed. See Figure 10.15 for an illustration of a Stage 1 pressure injury.
Stage 2 Pressure Injuries

**Stage 2 pressure injuries** are partial-thickness loss of skin with exposed dermis. The wound bed is viable and may appear like an intact or ruptured blister.\(^8\) See Figure 10.16\(^9\) for an illustration of a Stage 2 pressure injury.

Stage 3 Pressure Injuries

**Stage 3 pressure injuries** are full-thickness tissue loss in which fat is visible, but cartilage, tendon, ligament, muscle, and bone are not exposed. The depth of tissue damage varies by anatomical location. See Figure 10.17\(^10\) for an illustration of a Stage 3 pressure injury.

Undermining and tunneling may occur in Stage 3 and 4 pressure injuries. **Undermining** occurs when the tissue under the wound edge becomes eroded, resulting in a pocket beneath the skin. **Tunneling** refers to passageways underneath the skin surface that extend from a wound and can take twists and turns.

**Slough** and eschar may also be present in Stage 3 and 4 pressure injuries. Slough is inflammatory exudate that is usually light yellow, soft, and moist. **Eschar** is dark brown/black, dry, thick, and leathery dead tissue. If slough or eschar obscures the wound so that tissue loss cannot be assessed, the pressure injury is referred to as unstageable.\(^11\) In most wounds, slough and eschar must be removed by debridement for healing to occur.
Stage 4 Pressure Injuries

Stage 4 pressure injuries are full-thickness tissue loss, like in Stage 3 pressure injuries, but also have exposed cartilage, tendon, ligament, muscle, or bone. Osteomyelitis (bone infection) may also be present. See Figure 10.18 for an illustration of a Stage 4 pressure injury.

Unstageable Pressure Injuries

Unstageable pressure injuries are full-thickness skin and tissue loss in which the extent of tissue damage within the ulcer cannot be confirmed because it is obscured by slough or eschar. If slough or eschar were to be removed, a Stage 3 or Stage 4 pressure injury would likely be revealed. However, dry and adherent eschar on the heel or ischemic limb is not typically removed. See Figure 10.19 for an illustration of an unstageable pressure ulcer due to the presence of eschar (on the left side of the wound) and slough (on the right side of the wound).
Deep Tissue Pressure Injuries

Deep tissue pressure injuries consist of persistent nonblanchable and deep red, maroon, or purple discoloration of an area. These discolorations typically reveal a dark wound bed or blood-filled blister. Be aware that the discoloration may appear differently in darkly pigmented skin. Deep tissue injury results from intense and/or prolonged pressure, as well as shear forces at the bone-muscle interface. The wound may evolve rapidly to reveal the actual extent of tissue injury, or it may resolve without tissue loss. [16] [17] See Figure 10.20 for an illustration of a deep tissue injury.

[Image: Figure 10.20 Deep Tissue Pressure Injury]

Video Review of Assessing Pressure Injuries [18]


15. “Unstageable- Darkly Pigmented_Skin.jpg” and “unstageable-halfslough___1__.jpg” provided by National Pressure Injury Advisory Panel are used with permission for educational purposes. Access for free at https://npiap.com/page/PressureInjuryStages.


17. “DTPI-Darkly Pigmented Skin” and “deep_tissue_pressure_injury_.jpg” provided by National Pressure Injury Advisory Panel are used with permission for educational purposes. Access for free at https://npiap.com/page/PressureInjuryStages.

18. RegisteredNurseRN. (2018, March 7). Pressure ulcers (injuries) stages, prevention, assessment | Stage 1, 2, 3, 4 unstageable NCLEX. [Video]. YouTube. All rights reserved. Video used with permission. https://youtu.be/MDIPk1UE6k.