Skin Resource Nurse Education

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"Doctor, I have a suspicious looking mole on my shoulder."

Learning Objectives

- Discuss how to document assessments of wounds.
- Identify a stage I, stage II, stage III, stage IV, unstageable pressure injuries, and deep tissue pressure injuries (DTPIs).
- Identify mucosal membrane pressure injuries.
- Explain the etiology and clinical manifestations of pressure injuries.
- Differentiate pressure injuries from arterial, venous, diabetic, surgical, and trauma wounds.
- Decipher between a bruise and DTPI.
- Identify high risk patients for skin breakdown.
- Initiate various strategies for pressure injury prevention.
SKIN FACTS

- The average adult skin covers about 3000 square inches
- From birth to maturity the skin undergoes a sevenfold expansion
- Weighs about 6 pounds
- Largest organ
- Receives 1/3 the body’s blood volume
- Capable of self regeneration

(Bryant & Nix, 2007)
Skin Functions

• Protection
  • Protection against mechanical assaults
  • Protection against pathogens
  • Protection against Ultraviolet Radiation

• Skin Immune System

• Thermoregulation

• Sensation

• Metabolism

• Communication

(Bryant & Nix, 2007)
Formation of Exudate

- Exudate consists of fluid and leukocytes that move from the circulation to the site of injury.
- Nature and quantity of exudate depend on the type and severity of the injury and tissue involvement.
- Types of Inflammatory Exudate:
  - Serous
  - Sanguinuous
  - Serosanguinuous
  - Fibrinous
  - Hemorrhagic
  - Purulent/pus
  - Catarrhal

Terminology

Lewis, 2010
**Terminology**

- **Necrosis**: Death of tissue
- **Ischemia**: Lack of blood supply
- **Devitalized tissue**: Nonviable tissue
- **Eschar**: Black, brown, or gray necrotic devitalized tissue
- **Gangrene**: Necrosis due to poor blood supply
- **Slough**: Necrotic tissue
- **Erythema**: Redness of the skin
- **Blanching**: Temporary whitening of the skin after pressure applied.
- **Nonblanchable Erythema**: Redness that persists after pressure is applied.
Terminology

- **Wound Bed/Base**: Visible tissue in the open wound
- **Clean Wound**: free of devitalized tissue & purulent drainage
- **Periwound**: is the skin surrounding the wound bed
- **Induration**: Abnormal hardening of tissue
- **Lesion**: Any change in the tissue
- **Maceration**: prolonged exposure to moisture
- **Abrasion**: Epidermis or upper dermis is removed due to external force

(The Association for the Advancement of Wound Care (AAWC), (2012))
## Terminology

- **Dehiscence**: separation of a surgically created incision
- **Denuded**: loss of epidermal layer of the skin
- **Ecchymosis**: Discoloration of the skin (black, blue, purple)
- **Excoriation**: Disruption of the epidermis or dermis from scratching, abrasion, chemical or thermal damage
- **Fistula**: an abnormal opening communicating from organ to skin OR organ to organ (ex. enterocutaneous)
- **Hemosiderin**: brown pigmentation
- **Hypergranulation**: Granulation tissue raised above the wound bed surface

(The Association for the Advancement of Wound Care (AAWC), (2012))
Assessment

- Location
- Category/Stage: reassess weekly
- Size
- Tissue type
- Color
- Surrounding skin (periwound)
- Wound edges
- Undermining/Tunneling
- Drainage/Exudate
- Odor
Tailbone (Coccyx) Location

Wound Classification/Identification

- Etiology of the wound: Patient’s history
- Surgical, nonsurgical (Arterial, venous, diabetic, neuropathic, trauma)
- Acute or chronic
- Partial thickness
- Full thickness

(The Association for the Advancement of Wound Care (AAWC), (2012)

- Classify based on color: red, yellow, black

(Lewis, 2010)
Red Wound

- Red wound
  - Characteristics: pink, red wound bed, granulation tissue
  - Purpose: protect healthy red granulation tissue from trauma
  - Dressing and therapy:
    - Maintain moist wound bed

Examples of dressings:
- Opsite, Tegaderm

(Lewis, 2010)
Yellow Wound

- Yellow wound
  - Characteristics: slough/necrotic tissue
  - Purpose: slough must removed for wound healing
  - dressings and treatment: requires an absorptive dressing to remove exudate and clean the wound bed

Example: Duoderm/Hydrocolloid (Lewis, 2010)
Black Wound

- Black wounds
  - Characteristics: necrotic tissue
  - purpose of treatment: debridement
  - dressings and therapy: prevent infection

(Lewis, 2010)
How to Measure Pressure Injuries or other various wounds

Length x Width x Depth

Measure in centimeters (cm)

**Length**: Head to toe or 12 and 6 ‘o’ clock, longest length

**Width**: Perpendicular to length, 3 and 9 ‘o’ clock, longest width

**Depth**: Measure the deepest area of the wound bed

Lewis, 2010
Tunneling and Undermining

**Tunnel/Sinus Tract:** a narrow pathway/tunnel, extends in one direction [The Association for the Advancement of Wound Care (AAWC), (2012)]

**Undermining:** Tissue destruction under the periwound intact skin involving a wider range from the wound edges of open space (Lewis, 2010)
Clock Positions

Undermining: ex. 11-1 ‘o’ clock = 3cm

Tunneling: ex. 8 ‘o’ clock = 5cm

Used with permission of the National Pressure Ulcer Advisory Panel & 12/11/15.
Clinical Manifestations of Inflammation

- Local reactions
  - Redness
  - Heat
  - Pain
  - Swelling
  - Loss of function
- Systemic manifestations
  - Leukocytosis
  - Fever

Lewis, 2010
Diagnostic Lab Work

- Diagnostic tests
  - CBC
    - leukocytosis
    - hemoglobin
  - Sedimentation rate
  - C reactive protein
  - Albumin
  - Total lymphocyte count

Lewis, 2010
Stages of Pressure Injuries

• Stage 1
• Stage 2
• Stage 3
• Stage 4
• Unstageable
• Deep Tissue Pressure Injury (DTPI) (NPUAP, 2016)
Pressure Injuries

- **Pressure Injury:**
  “A pressure injury is localized damage to the skin and/or underlying soft tissue usually over a bony prominence or related to a medical or other device. The injury can present as intact skin or an open ulcer and may be painful. The injury occurs as a result of intense and/or prolonged pressure or pressure in combination with shear. The tolerance of soft tissue for pressure and shear may also be affected by microclimate, nutrition, perfusion, co-morbidities and condition of the soft tissue (NPUAP, 2016).”

  - Sacrum is the most common site then the heels

- **What factors influence the development of pressure injuries?**
  - Intensity
  - Length of time
  - Patient’s tolerance
  - Shearing force, friction, and excessive moisture (Lewis, 2010)
Layers of the Skin

- Epidermis
- Dermis
- Adipose Tissue
- Muscle
- Bone

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STAGE 1 Pressure Injury

• Non-blanchable erythema/redness
• Intact skin
• May appear different in darkly pigmented skin
• Sensation, temperature, or firmness

(NPUAP, 2016)
STAGE 2 Pressure Injury

- Partial thickness skin loss

- Red/pink wound bed

- Exposure of dermis

- Serous blister or ruptured serum-filled blister

- Adipose (fat), slough, eschar, granulation tissue not present

(NPUAP, 2016)
STAGE 3 Pressure Injury

• Full thickness skin loss

• Adipose (fat), but bone, tendon, fascia, ligament, and muscle not exposed

• Granulation & epibole

• Slough/eschar may be present

• Undermining and tunneling (NPUAP, 2016)

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(NPUAP, 2016)

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STAGE 4 Pressure Injury

• Full thickness skin and tissue loss

• Bone, tendon, muscle, fascia, ligament, or cartilage exposure

• Slough or eschar present

• Epibole

• Undermining and tunneling

(NPUAP, 2016)

(NPUAP, 2016)
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STAGE 3 & 4 Pressure Injuries

Epibole

Area of Focus
UNSTAGEABLE Pressure Injury

• Obscured full-thickness skin and tissue loss

• Depth unknown obscured by slough or eschar

• Stage 3 or 4 pressure injury

• Stable eschar should not be removed

(NPUAP, 2016)
Deep Tissue Pressure Injury (DTPI)

Deep Tissue Pressure Injury is “intact or non-intact skin with localized area of persistent non-blanchable deep red, maroon, purple discoloration or epidermal separation revealing a dark wound bed or blood filled blister...This injury results from intense and/or prolonged pressure and shear forces at the bone-muscle interface” (NPUAP, 2016).

• Pain and temperature may precede color changes

• Can rapidly expose additional layers or resolve without tissue loss

• Unstageable, Stage 3 or Stage 4 (NPUAP, 2016)
Pressure Point Assessment

- Perform head to toe skin assessment daily
- Pressure Points:
  - Sacrum
  - Ischium
  - Trochanters
  - Heels
  - Elbows
  - Occiput
  - Medical Devices

Stage 1 Pressure Injury

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Stage 2 Pressure Injury

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Stage 3 Pressure Injury

Used with permission of the National Pressure Ulcer Advisory Panel & 12/11/15.
Stage 4 Pressure Injury

Used with permission of the National Pressure Ulcer Advisory Panel & 12/11/15.
Unstageable Pressure Injuries

(Unstageable Pressure Ulcer; Wound, Ostomy and Continence Nurses Society, n.d.)

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Deep Tissue Pressure Injury (DTPI)
Medical Device Skin Assessments

• Inspect under and around medical device
  • At least twice a day
• Localized or generalized edema: Assess greater than twice a day
  • Manufacturer guidelines

(NPUAP, 2014)
Mucosal Membrane Pressure Injuries

- Mucous Membrane (tongue, GI tract, nasal passages, urinary tract, & vaginal canal)

- Vulnerable medical devices creating pressure (oxygen tubing, endotracheal tubes, bite blocks, orogastric and nasogastric tubes, urinary catheters, fecal management systems)

- Staging system not used

- Labeled as Mucosal Membrane Pressure Injury

NPUAP, 2012
Friction/Shear

**Friction:**
- Two forces rubbing
- Not pressure ulcers
- Moisture
- Ex. Serous blisters
- Dressings to prevent friction

**Shear:**
- Causative factor of a pressure injury

DTPI vs. Bruise

Deep Tissue Pressure Injury: purple skin is presented around 48 hours following pressure injury (Wounds International Enterprise House, 2010).

• No known depth
• Develop into a Stage III or Stage IV pressure injury
• Potential for rapid deterioration

Bruise: extravasation of blood into the surrounding tissues

• Results from blunt force to the body (trauma)
• Approx 2 weeks for healing

Why is it imperative to learn how to stage and measure pressure injuries?

• Identify pressure injuries on admission equals correct reimbursement

• Documentation to identify pressure injuries on admission is crucial for payment

• CMS evaluates the staging of pressure injuries on admission, discharge, and acquired pressure injuries of the facility (Cafardi, 2012).
Incontinence Associated Dermatitis (IAD)

• AKA perineal dermatitis
  • Inflammation
  • Erosion
• Exposure from urine or stool
  
(Gray, 2014)
Incontinence Associated Dermatitis (IAD)

- Proper skin care for IAD:
  - Perineal cleansing
  - Moisturization
  - Skin protectant
  - Antifungal
  - Aggressive containment

Arterial Ulcers

(Eschar on the Distal Tip of a great toe; Wound, Ostomy and Continence Nurses Society, n.d.)
Arterial Ulcers

**Management:**
Surgical procedures maybe necessary to increase perfusion

- **Bypass grafts** most common
- **Angioplasty**
- **Amputation**

**Medication:** anticoagulants & antiplatelet agents

**Risk Factors:**
- Cardiovascular disease
- Hyperlipidemia
- Tobacco use
- Diabetes Mellitus
- Hypertension

(Bryant & Nix, 2007)
Venous Ulcers

(Lecture Information from: Bryant & Nix, 2007)

¬ (Venous Stasis Ulcer with Drainage; Wound, Ostomy and Continence Nurses Society, n.d.)

¬ Hemosiderin Staining/ Venous Insufficiency

(Lower Extremity Venous Disease (LEVD); Wound, Ostomy and Continence Nurses Society, n.d.)
Venous Ulcers

**Treatment:**
- **Compression therapy:** elastic wraps, compression stockings, UNNA boots
- **Limb Elevation**
- **Surgical procedures**
- **Physical therapy and exercise**

**Risk Factors:**
- Deep vein thrombosis
- Leg trauma
- Venous disease (family history)
- Thrombophilia
- Pregnancies
- Obesity (Varicose veins)
- IV drug use of affected extremity
- Arthritis affecting calf muscle function
- Sedentary lifestyle
- Prolonged standing

(Bryant & Nix, 2007)
Diabetic/Neuropathic Ulcers

(Lecture Information from: Bryant & Nix, 2007)

(Foot Ulcer; Wound, Ostomy and Continence Nurses Society, n.d.)
Diabetic/Neuropathic Ulcers

Management:
• Daily foot exams
• Inspection of feet
• Cracks: use moisturizer, not between toes
• Do not soak feet
• Proper nail care
• Properly fitted shoes
• Inspect shoes
• Do not use a heating pad or hot water bottles to warm feet.
• Do not walk barefoot

Risk Factors:
Diabetes Mellitus
Spinal Cord Injury  
(Bryant & Nix, 2007)
Nursing diagnoses

- Impaired skin integrity
- Risk for infection
- Impaired tissue integrity
- Altered nutrition: less than body requirements
Structured Risk Assessment

- Complete within 8 hours after admission
- Head to toe skin assessment (pressure points)
- Risk Assessment Tool (ex. Braden Scale)
- Reassess with any significant change in condition
- Repeat assessment as often as required dependent on the individual’s acuity
- Identify those at risk and initiate preventative strategies and a prevention plan
- Assess activity/mobility limitations and skin status
- Existing pressure injuries
- Assess skin prior to discharge

(NPUAP, 2014)
Predisposing Skin Risk Factors

- Perfusion and oxygenation
- Poor nutritional status
- Increased skin moisture
- Increased body temperature
- Advanced age
- Sensory perception
- Hematological measures
- General health status (NPUAP, 2014)
- Decreased mental status
- Incontinence
- Medical Devices
- Friction/Shear
- Immobility
- Inactivity

Explanations from Lewis, 2010
Additional Predisposing Skin Risk Factors

- **Drugs** (corticosteriods, chemotherapy, vasopressors)
- **Obesity**:
- **Diabetes**
- **Anemia**
- **Decreased blood supply**
- **Smoking**
- **Wound debris or necrotic tissue**

Lewis, 2010
Dressings

- Gauze
- Nonadherent
- Transparent films
- Hydrocolloids
- Hydrogels
- Calcium alginate
- Foam
- Antimicrobials

Lewis, 2010
Wound Care: Debridement

- **Surgical/Sharp debridement**
  - ex. Scalpel, iris scissors used
    - (NPUAP, 2014)

- **Conservative Sharp Debridement**
  - (NPUAP, 2014)

- **Mechanical debridement**
  - Ex. irrigation, whirlpool, ultrasound
    - Lewis, 2010

- **Enzymatic debridement:**
  - ex. Santyl
    - (NPUAP, 2014)

- **Autolytic debridement:**
  - ex. hydrocolloid/Duoderm
    - Lewis, 2010

- **Larval debridement:**
  - ex. Maggot therapy
    - (NPUAP, 2014)
Wound Care: Cleansing

- Cleanse at each dressing change
- Cleanse with potable water (suitable for drinking) or normal saline
- Aseptic technique
- Utilize antimicrobial solutions
- Cleanse tunnels and undermining with caution
- Irrigation solutions that apply sufficient pressure to remove debris and bacteria
- Cleanse surrounding skin

(NPUAP, 2014)
Surgical Flaps for Pressure Injuries

- Transfer to avoid disruption of the flap
  - Lift the patient rather than sliding or pulling
- Avoid manual handling
- Support surface (ex. air fluidization)
- Avoid shear and friction
- NPUAP states to wear appropriate clothing when using slide boards to prevent damage to flap
- Monitor drains
- Report signs of flap failure to surgeon
  - Pallor, mottling, incisional dehiscence, increased drainage from incision, edema, bluish-purple tissue
- Sitting Protocol per surgeon orders
- Educate pressure injury prevention after discharge (NPUAP, 2014)
Preventive Skin Care

- Avoid positioning on area of erythema
- Keep skin clean and dry
- Do not massage or rub area at risk
- Utilize a barrier product
- Utilize skin moisturizer

(NPUAP, 2014)
Therapies for Pressure Injury Prevention

- Microclimate Control
  - support surfaces: helps control moisture and heat
  - Do not apply heating devices

- Prophylactic dressings
  - Polyurethane foam dressing
  - Assess the skin each dressing change or at least daily

- Fabrics and Textiles

- Electrical Stimulation (NPUAP, 2014)
Nutrition

• Nutrition Screening for patients at risk
  • On admission
  • Change in clinical condition
  • Delayed wound healing
  • Use a nutrition screening tool
  • Consult dietician

• Nutrition Assessment
  • Weight status
  • Assess ability of individual can eat independently
  • Assess total nutrient intake
  • Adequate protein intake
  • Adequate vitamins and minerals (NPUAP, 2014)
Repositioning and Early Mobilization

- Relieve or redistribute pressure
- Avoid repositioning over areas of erythema
- Use manual handling devices: lift don’t drag
- Use a sling mechanical lift
- Ensure patient not laying on devices
- Do not leave a patient on a bedpan for an extended period of time

(NPUAP, 2014)
Mechanical Loading and Support Surfaces

- Reposition bed-bound individuals at least every 2 hours (NPUAP, 2012)
- Reposition chair-bound individuals every hour (NPUAP, 2012)
- Postural alignment when up in chair or wheel chair (NPUAP, 2014)
- Teach chair-bound individuals to shift weight every 15 minutes (NPUAP, 2012)
- Utilize pressure redistributing mattresses and chair cushion surfaces
- Use pressure redistributing devices in the operating room (NPUAP, 2012)
Mechanical Loading and Support Surfaces

- Pad bony prominences
- Offload heels with pillows under the calf (Stage I or II pressure injuries)
- Offload heels with offloading boots (Stage I, II, III, IV, unstageable pressure injuries)
- Avoid repositioning patient directly on trochanters
- Head of bed: at or below 30° or at the lowest degree of elevation based on the individual’s medical condition
- Document Repositioning
- Limit amount of linen and incontinence pads on bed (NPUAP, 2014)
Prevention of Medical Device Related Pressure Injuries

Best Practices for Prevention of Medical Device-Related Pressure Ulcers

- **Choose** the correct size of medical device(s) to fit the individual
- **Cushion** and protect the skin with dressings in high risk areas (e.g., nasal bridge)
- **Remove** or move the device daily to assess skin
- **Avoid** placement of device(s) over sites of prior, or existing pressure ulceration
- **Educate** staff on correct use of devices and prevention of skin breakdown
- **Be aware** of edema under device(s) and potential for skin breakdown
- **Confirm** that devices are not placed directly under an individual who is bedridden or immobile

http://www.npupap.org/wp-content/uploads/2013/04/Medical-Device-Poster.pdf (NPUAP, 2013) NPUAP copyright & used with permission
# Pressure risk assessment scales

**Braden scale**
- Sensory perception
- Moisture
- Activity
- Mobility
- Nutrition status
- Friction/shear

**Norton scale**
- Physical condition
- Mental status
- Activity
- Mobility
- Continence

**Waterlow scale**
- Sex
- Age
- Build
- Appetite
- Nurses’ visual assessment of skin condition
- Mobility
- Continence
- Factors contributing to tissue malnutrition
- Neurologic deficits
- Major surgery or trauma
- Medication

**Jackson Cubbin scale**
- Age
- Weight
- Skin condition
- Mental status
- Mobility
- Nutrition
- Respiration
- Continence
- Hygiene
- Hemodynamic status

(Cooper, 2013)
Braden Scale

6 Subscales are assessed within the Braden Scale:

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

(Cooper, 2013)
Initiate Braden Subscale interventions based on assessment ratings

- Activity/mobility/sensory perception
  - Float heels off pillows or offloading boots
  - Reposition every 2 hours
  - Shift weight in chair Q 15 min
  - Pressure redistribution mattress

- Nutrition
  - Dietary consult
  - Encourage supplements

- Moisture
  - Barrier cream
  - Perineal cleansing
  - Incontinence Pads
  - Keep clean and dry

- Friction/Shear
  - Elevate HOB less than 30 degrees
  - Protect areas exposed to friction/shear: polyurethane foam dressing
Pressure Injury Prevention: Bariatric (Obese)

- Assess under skin folds
- Intertriginous Dermatitis vs. stage I or II Pressure injuries
- Ensure appropriate size of support surface
- Chair Cushion
- Use pillow or other or other positioning devices to assist with offloading the pannus or other skin folds to avoid skin-on-skin pressure (NPUAP, 2014)
Pressure Injury Prevention: Critically ILL

- Frequent small turns to allow sufficient time to stabilize vital signs
  - few patients are truly unstable to reposition
- Trial repositioning every 8 hours
- Ensure appropriate support surface
- Consider lateral repositioning: must still reposition!

(NPUAP, 2014)
Pressure Injury Prevention: Operating Room

- Risk factors during surgery
  - Duration of time immobile prior to surgery
  - Time length
  - Hypotensive episodes
  - Low core temperature
  - Decreased mobility on POD #1
- Ensure heels are offloaded
- Utilize appropriate support surfaces
  - Facial pads when in prone position
- Document the patient’s position
- Document anatomical areas  

(NPUAP, 2014)
Patient/Caregiver Education

- Educate the normal healing process
  - The care plan should be reassessed if no progress
- Teach signs/symptoms of infection
- Provide pressure injury prevention education prior to discharge
- Document

(NPUAP, 2014)
Closure

- Knowledgeable of various types of wounds
- Accurately assess and stage pressure injuries
- Identify and initiate pressure injury prevention strategies
- Identify individuals at risk for pressure injury development
- Decrease Hospital Acquired Pressure Injuries
- Educate coworkers and patients
?????QUESTIONS????
References


References (Continued)


References (Continued)


References (Continued)


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