

Under Pressure: Hospital Acquired Pressure Injury, Situation, Science, and Solutions

Susan M. Scott, RN, MSN, WOC Nurse

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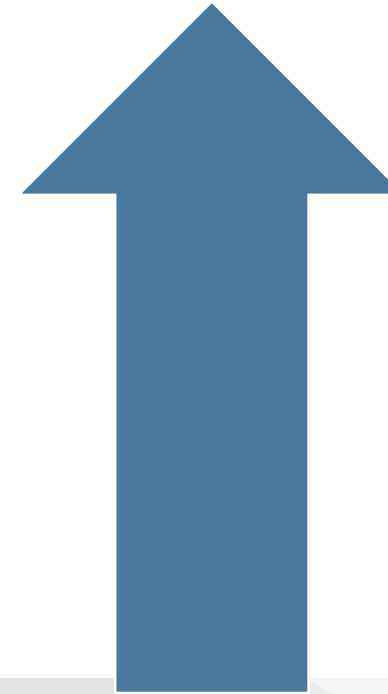
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Objectives

- Identify current trends in incidence, cost, litigation, risk assessment and prevention of hospital acquired pressure injury (HAPI).
- Explore the science of biomechanics, risk factors and the impact on tissue deformation in pressure injury etiology.
- Illustrate evidence-based strategies to reduce risk from pressure injuries.

Situation – Epidemiology - Hospital Acquired Pressure Injury (HAPI)

- 2.5 million patients a year¹
- Excess length of stay
- Higher 30-day re-admission rates
- 60,000 deaths
- Hospital acquired conditions²
 - PSI-90



HAPIs
exclusively
increasing
since 2015²

1. European Pressure Ulcer Advisory Panel, National Pressure Injury Advisory Panel, and Pan Pacific Pressure Injury Alliance. Prevention and Treatment of Pressure Ulcers/Injuries: Clinical Practice. The International Guideline 2019. EPUAP/NPIAP/PPPIA; 2019.

2. Padula WV, Black JM, Davidson PM, Kang SY, Pronovost PJ. Adverse Effects of the Medicare PSI-90 Hospital Penalty System on Revenue-Neutral Hospital-Acquired Conditions. *J Patient Saf.* 2020 Jun;16(2):e97-e102. doi: 10.1097/PTS.0000000000000517. PMID: 30110019.

Situation – Epidemiology cont.

- Cost^{2,3}
 - 26.8 billion
- 59% non-reimbursed by CMS
- Nursing Quality Indicator
- Joint Commission
- Litigation^{4,5}
 - 17,000 lawsuits a year
 - Average settlement \$250,000
 - Top Award \$312 M
 - Plaintiffs are favored 87%

2. .Padula WV, Black JM, Davidson PM, Kang SY, Pronovost PJ. Adverse Effects of the Medicare PSI-90 Hospital Penalty System on Revenue-Neutral Hospital-Acquired Conditions. *J Patient Saf.* 2020 Jun;16(2):e97-e102. doi: 10.1097/PTS.0000000000000517. PMID: 30110019.

3. .Padula WV, Delarmente BA. The national cost of hospital-acquired pressure injuries in the United States. *Int Wound J.* 2019;1–7.

4. Bennett R, O'Sullivan J, DeVito E, Remsburg R. The increasing medical malpractice risk related to pressure ulcers in the United States. *J Am Geriatr Soc.* 2000;48(1):73-81.

5. Petrone, K and Mathis, L. Pressure Ulcer Litigation: What is the wound centers liability? *Today's Wound Care.* Volume 11 Issue 9 - September 2017. Accessed online <http://www.todayswoundclinic.com/articles/pressure-ulcer-litigation-what-wound-centers-liability>

The Science

Definition

Pathogenesis

Location

Classification

Risk

Pressure injury Definition

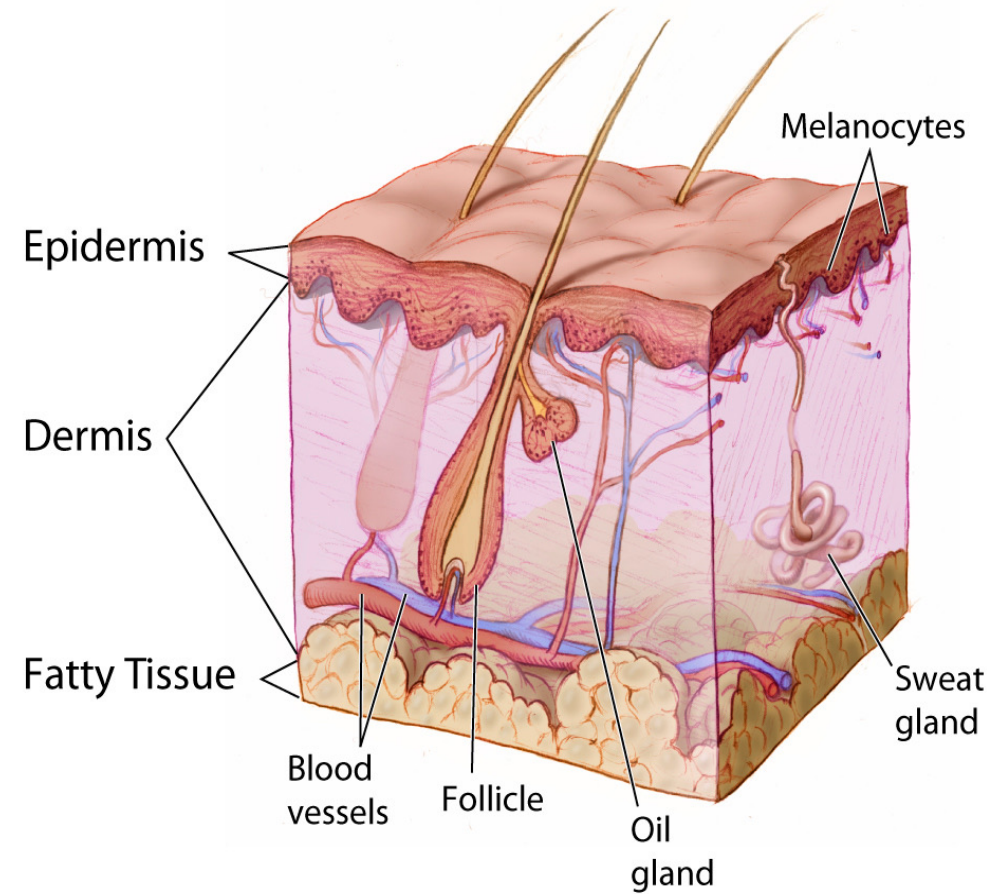
A pressure injury is localized damage to the skin and underlying soft tissue usually over a bony prominence or related to a medical or other device.

The injury can present as intact skin or an open ulcer and may be painful.

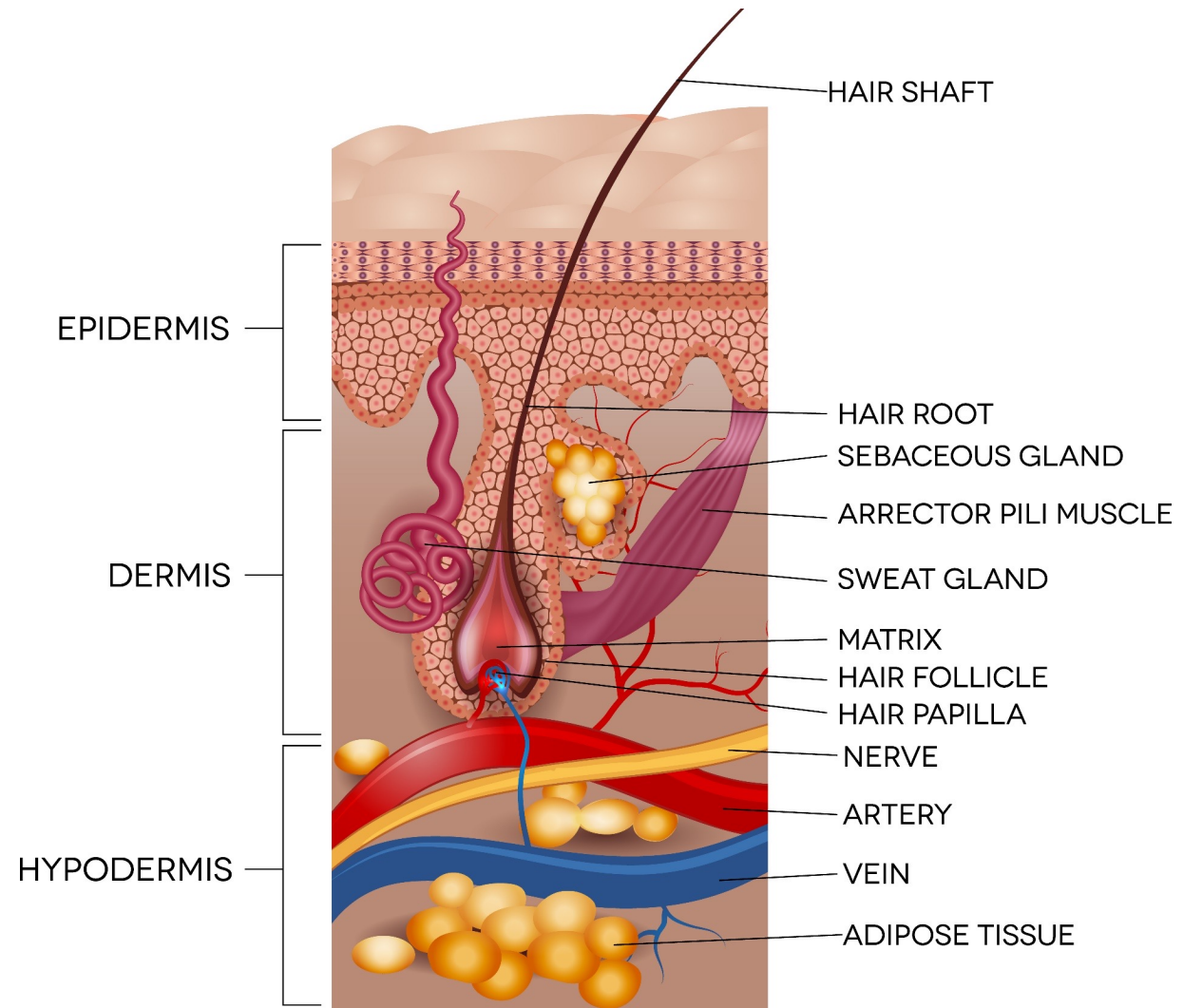
The injury occurs as a result of intense and/or prolonged pressure or pressure in combination with shear. The tolerance of soft tissue for pressure and shear may also be affected by microclimate, nutrition, perfusion, co-morbidities and condition of the soft tissue.

The skin

- Normal Skin
- Purpose:
 - Largest organ
 - Protection
 - Respiration/gas exchange
 - Thermoregulation



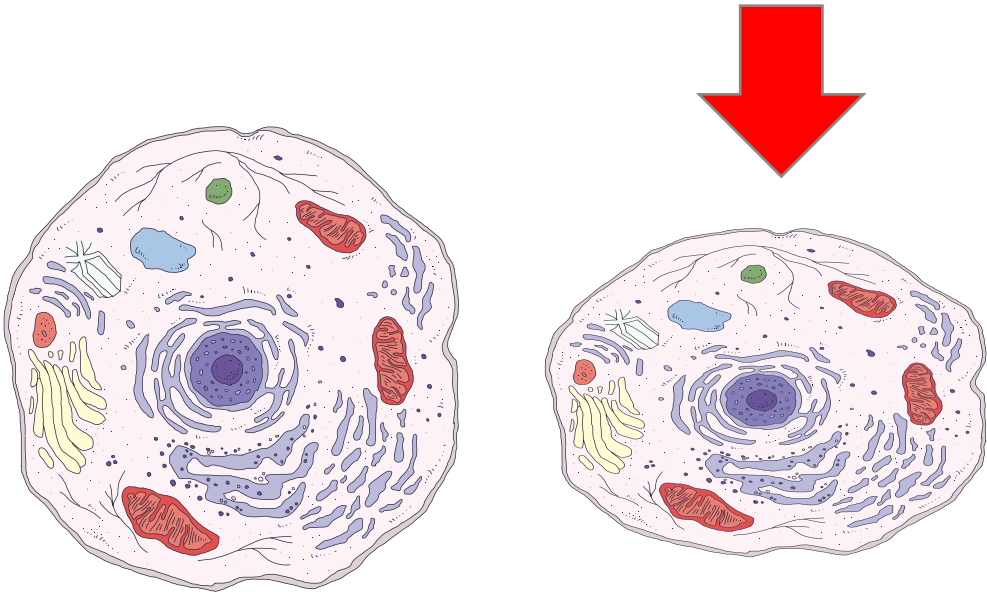
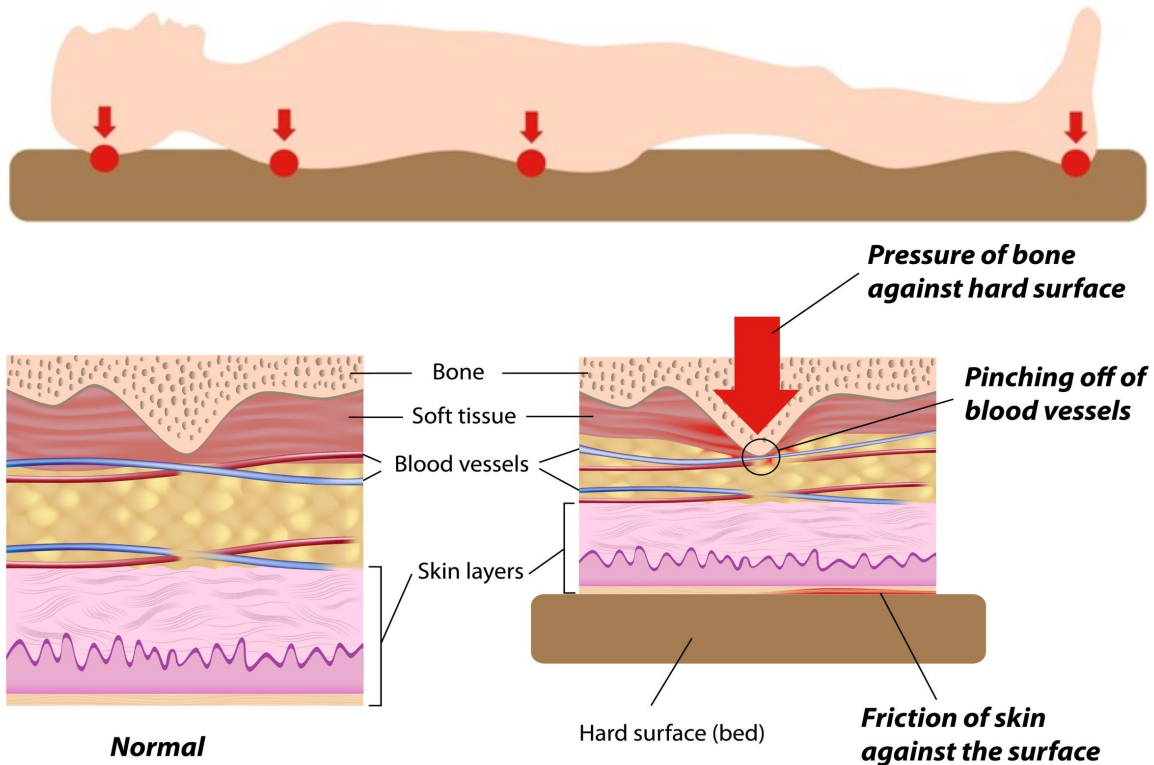
Structure of the epidermis



Shutterstock Image 250127590

6. Lopez-Ojeda W, Pandey A, Alhaji M, et al. Anatomy, Skin (Integument) [Updated 2022 Oct 17]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK441980/>

Etiology of pressure injuries

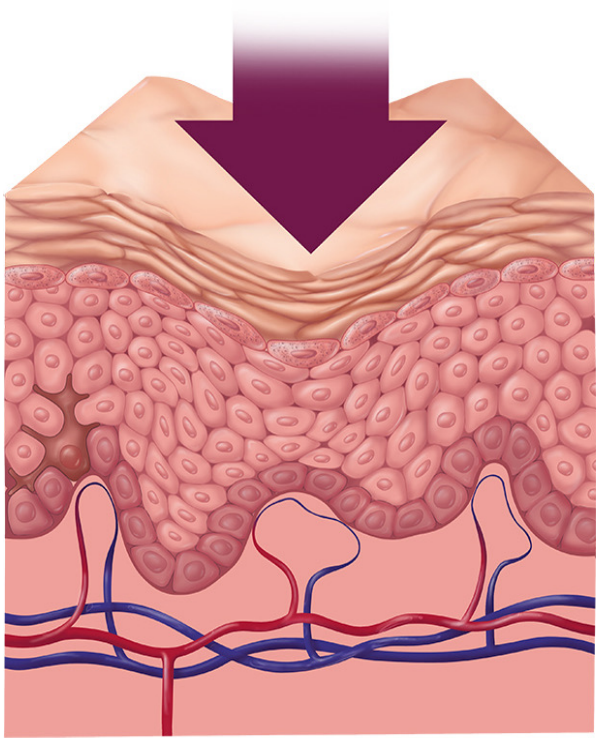


Primary cause is sustained exposure to cell and tissue deformation - Gefen

Image Credit: <https://www.shutterstock.com/image-illustration/etiology-pressure-sores-89421034> and <https://www.shutterstock.com/image-vector/animal-cell-544911853>

7. Gefen A, Brienza D, Edsberg L, et al. The etiology of pressure injuries. In: Prevention and Treatment of Pressure Ulcers/Injuries: Clinical Practice Guideline European Pressure Ulcer Advisory Panel (EPUAP), National Pressure Injury Advisory Panel (NPIAP) and the Pan Pacific Pressure Injury Alliance (PPPIA). 3rd ed. Westford, MA, USA: EPUAP-NPIAP-PPPIA; 2019a.

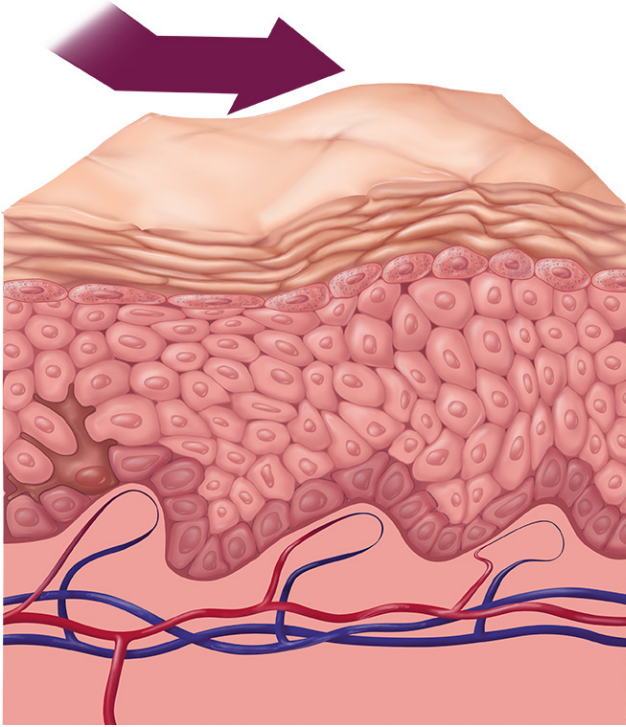
Pressure



The force per unit area exerted perpendicular to the plane of interest.¹

In laymen's terms, pressure is the amount of the patient's body weight that is being exerted upon a given body surface area. When a patient is laying on a hard surface that does not conform (envelop) the bony prominences of the body, then a larger proportion of the patient's weight is supported on that one area. The result of pressure is the compromise of blood flow to the skin. In a compromised patient, this can cause ischemia, which deprives the tissue of oxygen and nutrients, thus resulting in skin injury.

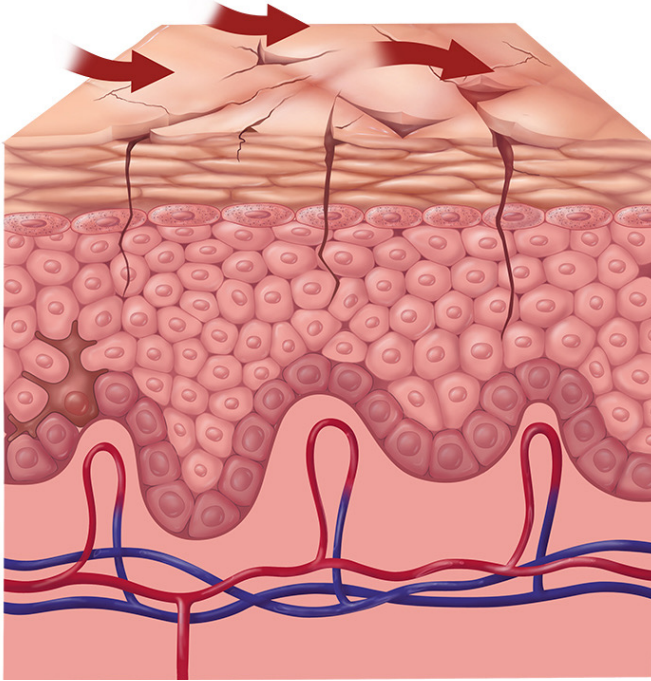
Shear



The force per unit area exerted parallel to the plane of interest.¹

The underlying problem with shear stress is that the capillary loops feeding the skin become kinked and distortion of the tissues occurs. The end result is ischemia and damage to the tissue due to lack of blood flow. Shear stress can occur due to normal gravitational forces, such as sliding down in the bed or chair.

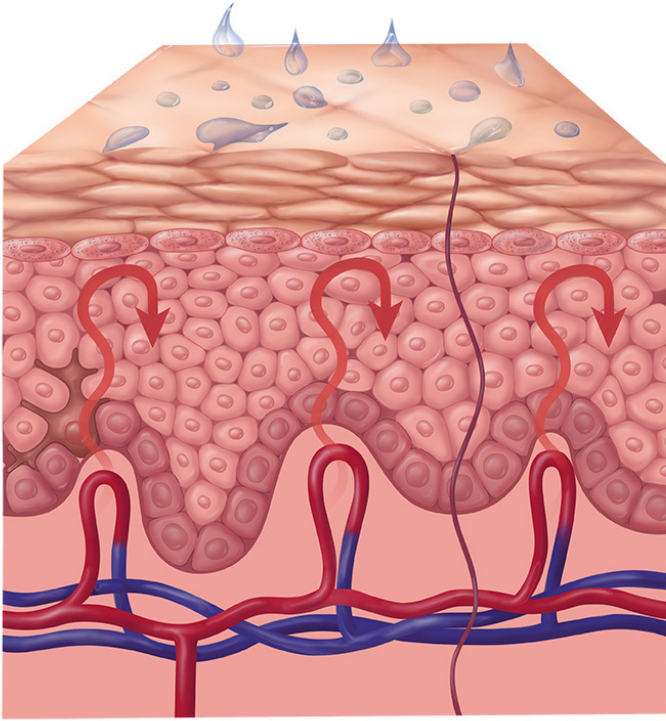
Friction



The resistance to motion in a parallel direction relative to the common boundary of two surfaces.¹

Friction can occur from abrasive linens, pads, or mattress coverings. The continual rubbing from the abrasive fabric can create a mechanical injury to the skin.

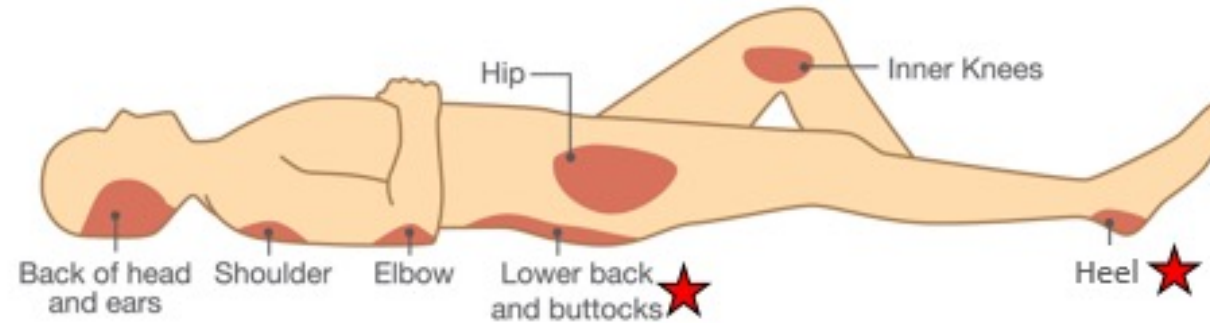
Moisture



A small amount of a liquid (such as water) that makes something wet or moist; liquid diffused or condensed in relatively small quantity.¹

Moisture can occur from incontinence, perspiration, or fluids used for patient care. Sustained exposure to urine or feces can cause chemical injury to the skin and further weakens the skin, making it more vulnerable to the forces of pressure, shear, and friction. The gas exchange that normally takes place at the dermis cannot occur due to the saturation of skin cells.

Location



	Location	Percentage
★	Sacrum	34.2%
★	Heel	16.5%
	Buttocks	16.7%

HEEL PRESSURE INJURIES ACCOUNT FOR 30% OF DTI
(*DEEP TISSUE INJURY*)

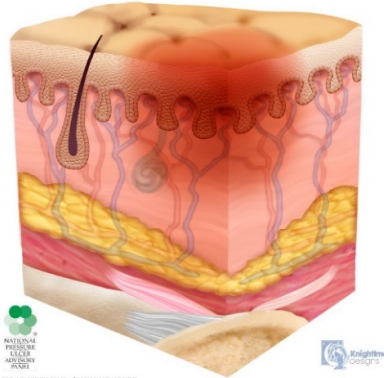
Image Credit: Copyright: alila / 123RF Stock Photo

8. VanGilder CA, Cox J, Edsberg LE, Koloms K. Pressure Injury Prevalence in Acute Care Hospitals With Unit-Specific Analysis: Results From the International Pressure Ulcer Prevalence (IPUP) Survey Database. *J Wound Ostomy Continence Nurs.* 2021;48(6):492-503. doi:10.1097/WON.0000000000000817

Classification

Changes to staging

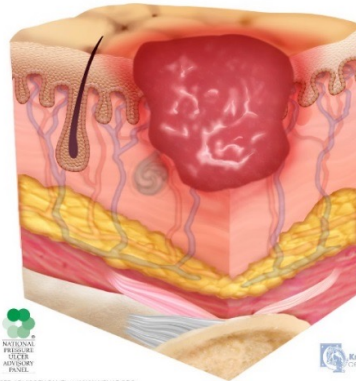
Stage 1 Pressure Injury - Caucasian




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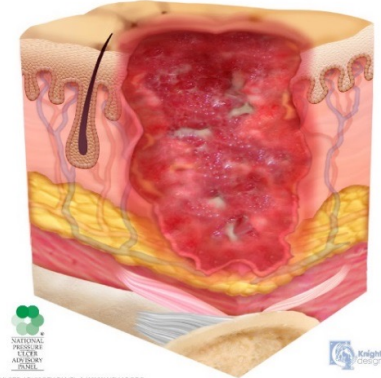
Stage 2 Pressure Injury




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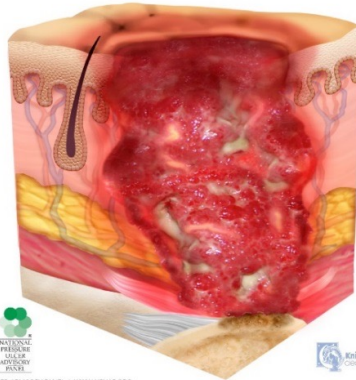
Stage 3 Pressure Injury




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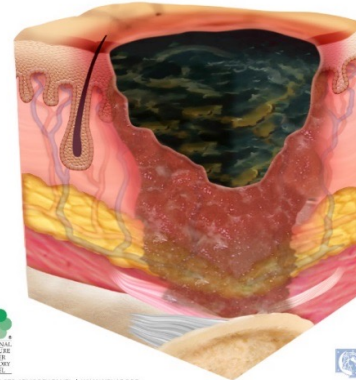
Stage 4 Pressure Injury




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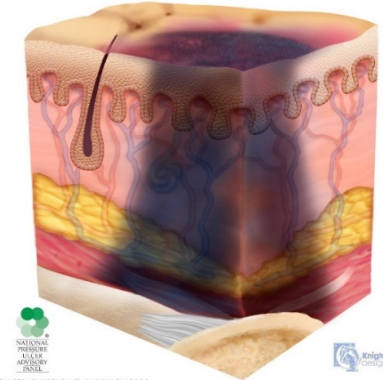
Unstageable Pressure Injury - Dark Eschar




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Deep Tissue Pressure Injury




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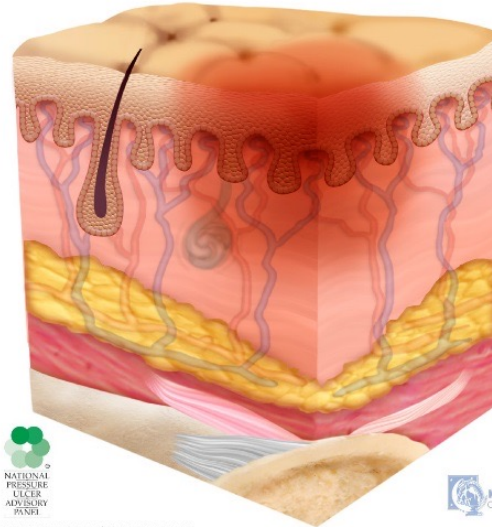


Stage 1

Stage 1 Pressure Injury:

Intact skin with a localized area of non-blanchable erythema, which may appear differently in darkly pigmented skin. Presence of blanchable erythema or changes in sensation, temperature, or firmness may precede visual changes. Color changes do not include purple or maroon discoloration; these may indicate deep tissue pressure injury.

Stage 1 Pressure Injury - Caucasian



Stage 2

Stage 2 Pressure Injury:

The wound bed is viable, pink or red, moist, and may also present as an intact or ruptured serum-filled blister. Adipose (fat) is not visible and deeper tissues are not visible. Granulation tissue, slough, and eschar are not present. These injuries commonly result from adverse microclimate and shear in the skin over the pelvis and shear in the heel. This stage should not be used to describe moisture-associated skin damage (MASD) including incontinence-associated dermatitis (IAD), intertriginous dermatitis (ITD), medical adhesive related skin injury (MARSI), or traumatic wounds (skin tears, burns, abrasions).

Stage 2 Pressure Injury

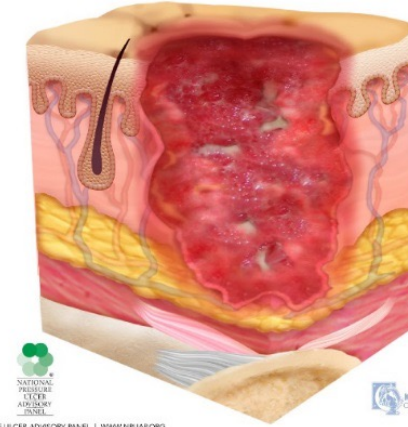


Stage 3

Stage 3 Pressure Injury:

Full-thickness loss of skin, in which adipose (fat) is visible in the ulcer and granulation tissue and epibole (rolled wound edges) are often present. Slough and/or eschar may be visible. The depth of tissue damage varies by anatomical location; areas of significant adiposity can develop deep wounds. Undermining and tunneling may occur. Fascia, muscle, tendon, ligament, cartilage, and/or bone are not exposed. If slough or eschar obscures the extent of tissue loss this is an Unstageable Pressure Injury.

Stage 3 Pressure Injury

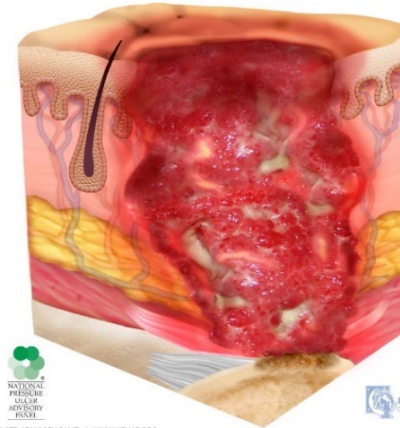


Stage 4

Stage 4 Pressure Injury:

Full-thickness skin and tissue loss with exposed or directly palpable fascia, muscle, tendon, ligament, cartilage, or bone in the ulcer. Slough and/or eschar may be visible. Epibole (rolled edges), undermining, and/or tunneling often occur. Depth varies by anatomical location. If slough or eschar obscures the extent of tissue loss this is an Unstageable Pressure Injury.

Stage 4 Pressure Injury

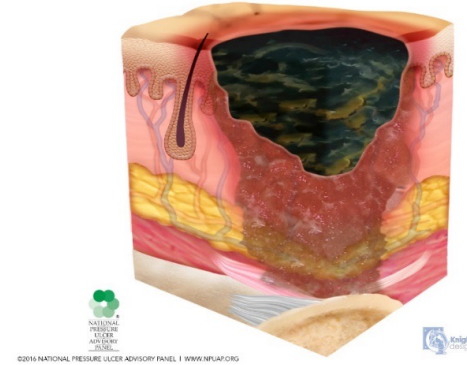


Unstageable

Unstageable Pressure Injury:

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 is removed, a Stage 3 or Stage 4 pressure injury will be revealed. Stable eschar (i.e. dry, adherent, intact without erythema or fluctuance) on the heel or ischemic limb should not be softened or removed.

Unstageable Pressure Injury - Dark Eschar

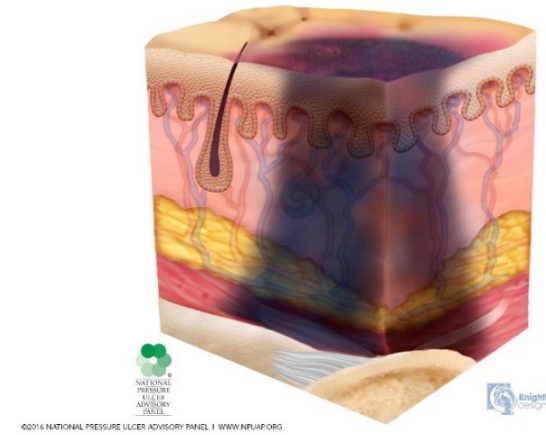


Deep tissue pressure injury

Deep Tissue Pressure Injury:

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. Pain and temperature change often precede skin color changes. Discoloration may appear differently in darkly pigmented skin. This injury results from intense and/or prolonged pressure and shear forces at the bone-muscle interface. The wound may evolve rapidly to reveal the actual extent of tissue injury, or may resolve without tissue loss. If necrotic tissue, subcutaneous tissue, granulation tissue, fascia, muscle, or other underlying structures are visible, this indicates a full thickness pressure injury (Unstageable, Stage 3, or Stage 4). Do not use DTPI to describe vascular, traumatic, neuropathic, or dermatologic conditions.

Deep Tissue Pressure Injury



Risk Assessment

Who is at risk

- Impaired mobility
- Impaired activity
- Nutritional indicators
 - Malnourished
 - Obese
 - Dehydrated
- Factors affecting perfusion and oxygenation
 - Circulatory disorders
 - Lung/pulmonary issues
 - Anemia
 - Chronic disease (e.g., diabetes)
- Advanced age
- Sensory perception
- Skin moisture
- Incontinence
- Shear potential
- General health status
- History of pressure ulcers

Determining risk

- Assess patient for previous or existing pressure injuries ¹
- Utilize a validated risk-assessment tool (Braden) upon admission and daily¹
 - Target interventions toward subcategories in which the patient scores low
- Utilize a risk-assessment tool specific to special populations eg. Surgery and Pediatrics ¹⁰



1. European Pressure Ulcer Advisory Panel, National Pressure Injury Advisory Panel, and Pan Pacific Pressure Injury Alliance. Prevention and Treatment of Pressure Ulcers/Injuries: Clinical Practice. The International Guideline 2019. EPUAP/NPIAP/PPPIA; 2019.

10. Guideline for prevention of perioperative pressure injury. In: *Guidelines for Perioperative Practice*. Denver, CO: AORN, Inc; 2023:751-776.

Braden risk assessment scale

Abridged version

	1	2	3	4
Sensory Perception	Completely limited	Very limited	Slightly limited	No impairment
Moisture	1 Constantly moist	2 Very moist	3 Occasionally moist	4 No impairment
Activity	1 Bedfast	2 Chairfast	3 Walks Occasionally	4 Walks frequently
Mobility	1 Completely immobile	2 Very limited	3 Slightly limited	4 No limitation
Nutrition	1 Very poor	2 Probably inadequate	3 Adequate	4 Excellent
Friction & Shear	1 Problem	2 Potential problem	3 No apparent problem	-

Barbara Braden and Nancy Bergstrom. Used with Permission

11. Bergstrom N, Braden BJ, Laguzza A, & Holman V. The Braden Scale for Predicting Pressure Sore Risk. *Nursing Research*, 1987;36:205-210.

Special patient populations

Critical Care

Surgery

Pediatrics

Bariatric Patients

Dark Skin Patients

Critical care

- Prevalence ranges from 10-51% for ICU patients^{12,13}
- Increased risk due to multiple factors, aside from normal risk factors
 - Equipment/devices
 - Medications/infusions
 - Immobility
- Risk assessment tools do not adequately capture additional risk factors for ICU patients

12. Cox J, Schallom M. Pressure Injuries in Critical Care: A Survey of Critical Care Nurses. *Crit Care Nurse*. 2017;37(5):46-55. doi:10.4037/ccn2017928

13. Cooper KL. Evidence-based prevention of pressure ulcers in the intensive care unit. *Crit Care Nurse*. 2013;33(6):57-66. doi:10.4037/ccn2013985

Critical care considerations

- Competing priorities
 - Many care practices to prevent other complications may “increase risk of pressure ulcer development”
 - Elevated HOB, lateral positioning
- Increased need for nutritional support
- “Device-related pressure ulcers”
 - Endotracheal tubes, access devices, life support equipment
- Increased risk for incontinence
- At a minimum, skin assessments should occur every shift, if not more frequently as patient condition changes

Increased risk and immobility in critical care

- Cox and Shallom found that critical care nurses considered immobility a risk factor for unavoidable pressure injury
- Immobility should be assessed separately from the basic Braden in the context of the patient's individual condition based on the tissue tolerance and the duration and magnitude of the pressure exerted on the tissue
- In critical care, immobility may be a necessary component of care

Medical-device related PI

- Patients with medical devices are 2-4 times more likely to develop PI. ¹⁴
- Definition ¹⁵
- Risk factors ^{14,15}
 - Pressure
 - Heat and humidity
 - Tight securement
 - Difficult to assess under device
 - Presence of edema.
- Respiratory devices, tubes/drains, and compression warps/splints/braces. ¹⁵

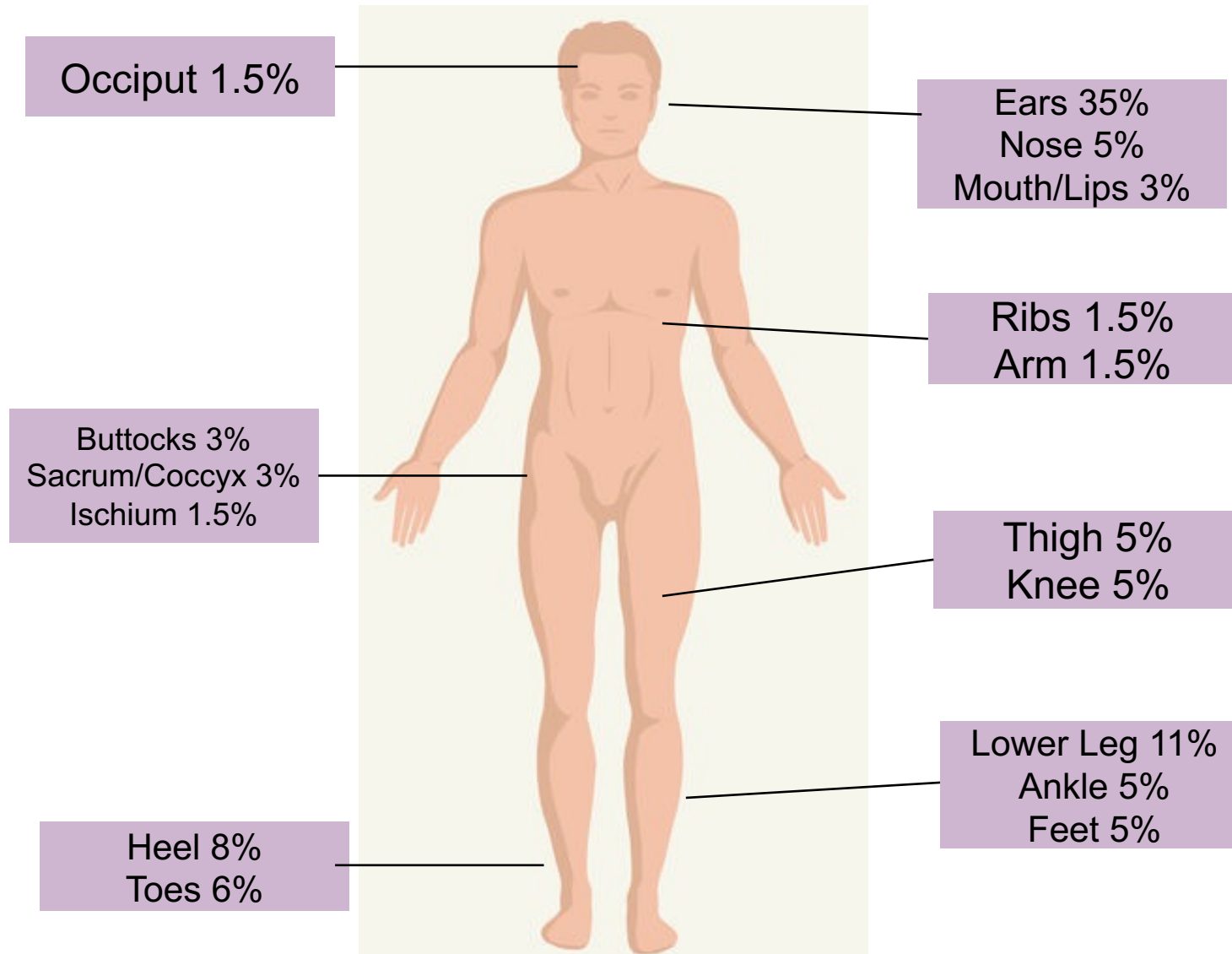


Image credit: https://www.shutterstock.com/search/icu-patient?image_type=vector

14.Black JM, Cuddigan JE, Walko MA, Didier LA, Lander MJ, Kelpke MR. Medical device related pressure ulcers in hospitalized patients. *Int Wound J*. 2010;7(5):358-365. doi:10.1111/j.1742-481X.2010.00699.

15.Pittman J, Gillespie C. Medical Device-Related Pressure Injuries. *Crit Care Nurs Clin North Am*. 2020;32(4):533-542. doi:10.1016/j.cnc.2020.08.004

Location of MDRPI



14. Black JM, Cuddigan JE, Walko MA, Didier LA, Lander MJ, Kelpel MR. Medical device related pressure ulcers in hospitalized patients. *Int Wound J.* 2010;7(5):358-365. doi:10.1111/j.1742-481X.2010.00699.

Image credit: Copyright: eveleen / 123RF Stock Photo

Medical-device related PI Prevention Bundles^{15,16}

Assessment

Anchoring and Securement

Pressure Redistribution

Partnering with Team

Skin Protection

15. Pittman J, Gillespie C. Medical Device-Related Pressure Injuries. *Crit Care Nurs Clin North Am.* 2020;32(4):533-542. doi:10.1016/j.cnc.2020.08.004

16. Stellar JJ, Hasbani NR, Kulik LA, et al. Medical Device-Related Pressure Injuries in Infants and Children. *J Wound Ostomy Continence Nurs.* 2020;47(5):459-469. doi:10.1097/WON.0000000000000683

Surgery: Perioperative Pressure Injury

- Incidence & Prevalence

- Chen - Range 0.3%-57% mean 15%¹⁷
- Surgery >3 hrs 8.5%¹⁸

- Multiple risk factors^{10,19}

- Prolonged unrelieved pressure
- Perioperative immobility
- Surgical position & devices

- Use surgery specific risk assessment tools¹⁹

- Scott Triggers
- Munro Scale



17. Chen H, Chen X, Wu J. The incidence of pressure ulcers in surgical patients of the last 5 years: a systematic review. *Wounds*. 2012;24(9):234–241.

18. Gefen A, Creehan S, Black J. Critical biomechanical and clinical insights concerning tissue protection when positioning patients in the operating room: A scoping review. *Int Wound J*. 2020;1-19.

10. Guideline for prevention of perioperative pressure injury. In: *Guidelines for Perioperative Practice*. Denver, CO: AORN, Inc; 2023:751-776.

19. Spruce L. Strategies to Help Prevent Hospital-Acquired Pressure Injuries *AORN J*, 2020;111(2):241-242.

Surgical Positions & Skin Bundles 10,19-20

SURGICAL POSITIONS



Supine Position



Trendelenburg Position



Reverse Trendelenburg Position



Fracture Table Position



Lithotomy Position



Prone Position



Jackknife Position



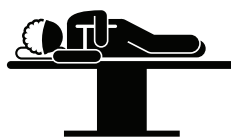
Fowler's Position



Knee-Chest Position



Kidney Position



Lateral Position



Wilson Frame Position



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10. Guideline for prevention of perioperative pressure injury. In: *Guidelines for Perioperative Practice*. Denver, CO: AORN, Inc; 2023:751-776.

19. Spruce L. Strategies to Help Prevent Hospital-Acquired Pressure Injuries *AORN J*, 2020;111(2):241-242.

20. Scott S. Use of an OR skin bundle to prevent pressure injury. *AORN J*. 2017;106(4):18-19.

Bariatric

- Pennsylvania Patient Safety Authority report
 - 33.1% of reports of patient harm for obese patients were related to skin integrity issues
 - 82.8% of these listed immobility as the main factor
 - 85% pressure-related
 - 20.7% were serious events resulting in patient harm

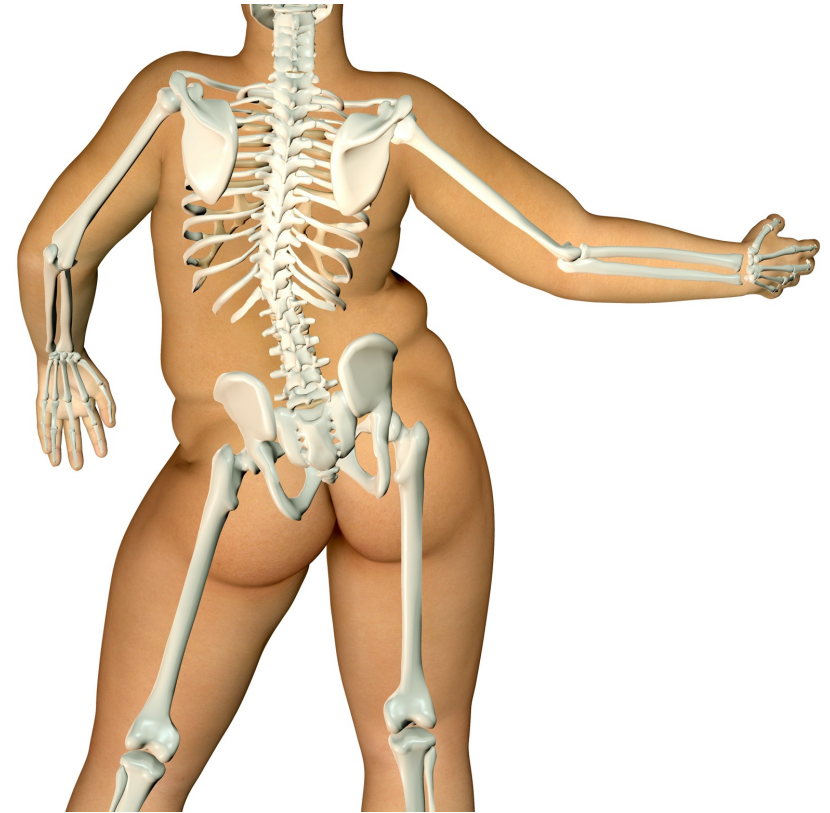


Image Credit: <https://www.shutterstock.com/catalog/collections/2773448902110611311>

21. Skin Integrity, Immobility, and Pressure Ulcers in Class III Obese Patients. Pa Patient Saf Advisory 2013 Jun;10(2):50-4.

http://patientsafety.pa.gov/ADVISORIES/Pages/201306_50.aspx#

Bariatric considerations

- Skin on skin environment
 - Lack of airflow to tissue
 - Increased effect of moisture
 - Poor tissue perfusion
 - Weight of pannus
- PI may not be over bony prominence
- Special care considerations
 - Assessment
 - Hygiene
 - Mobility/equipment
 - Sensitivity

Pediatrics

- Prevalence varies ²²
 - 0.47% to 13% in noncritical areas
 - Up to 27% in PICU
 - Up to 23% in NICU
- Risk factors vary
- MDRPI #1 cause of PI in Peds ¹
- “Most PIs occur within 2 days of admission” ²²
- Occiput is the most common site ²²
- Pediatric risk assessment
 - Braden Q tool
 - Glamorgan Scale
 - Neonatal Skin Risk Assessment Scale (NSRAS)
 - Braden QD ¹⁶

22. Baharestani, Mona Mylene, and Catherine R. Ratliff. "Pressure ulcers in neonates and children: an NPUAP white paper." *Advances in skin & wound care*

1. European Pressure Ulcer Advisory Panel, National Pressure Injury Advisory Panel, and Pan Pacific Pressure Injury Alliance. *Prevention and Treatment of Pressure Ulcers/Injuries: Clinical Practice. The International Guideline 2019.* EPUAP/NPIAP/PPPIA; 2019.

16. Stellar JJ, Hasbani NR, Kulik LA, et al. Medical Device-Related Pressure Injuries in Infants and Children. *J Wound Ostomy Continence Nurs.* 2020;47(5):459-469.

doi:10.1097/WON.0000000000000683

Darkly pigmented skin - Challenges

- Using visual cues of potential skin damage may delay identification for patients with dark pigmented skin²³
- Dark skin does not typically blanch ²³
- Assessments are based on race not skin tones²⁴



23. Bennett MA (1995) Report of the task force on the implications for darkly pigmented intact skin in the prediction and prevention of pressure ulcers. *Advances in Wound Care*; 8: 6, 34-35.
24. Oozageer Gunowa N, Hutchinson M, Brooke J, Jackson D. Pressure injuries in people with darker skin tones: A literature review. *Journal of Clinical Nursing* (John Wiley & Sons, Inc). 2018;27(17-18):3266-3275. doi:10.1111/jocn.14062

Darkly pigmented skin - Assessment

- Skin color change at pressure points
 - Compare with normal skin
- Assess for warmth (temperature change), edema (boggy) or induration (firmness) by palpation²⁵
- Area may be grey/purplish/bluish color²⁵
- Assess for pain²³

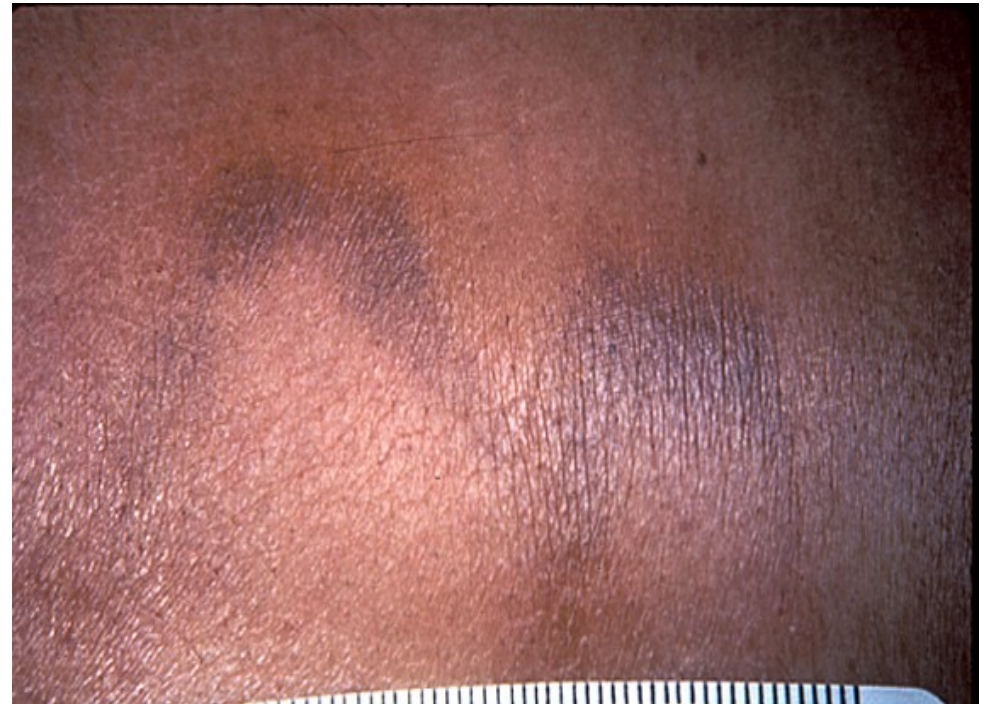


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24. Oozageer Gunowa N, Hutchinson M, Brooke J, Jackson D. Pressure injuries in people with darker skin tones: A literature review. *Journal of Clinical Nursing* (John Wiley & Sons, Inc). 2018;27(17-18):3266-3275. doi:10.1111/jocn.14062

25. Clark M (2010) Skin assessment in dark pigmented skin: a challenge in pressure ulcer prevention. *Nursing Times*; 106: 30, early online publication.

Situation, Science & Solution

Prevention Programs

People

Process

Product

19. Spruce L. Strategies to Help Prevent Hospital-Acquired Pressure Injuries *AORN J*, 2020;111(2):241-242.

26. AORN Position Statement on Prevention of Perioperative Pressure Injury. *AORN J*, 2022;115(5):458-461.

27. Scott, S. Perioperative Pressure Injuries: Protocols and Evidence-Based Programs for Reducing Risk. *PSQH*, 2016;13(4), 20-28.

People

- Leadership ^{1,10}
- Team Collaboration ^{1,10}
- Certified wound specialist ^{1,10}
- Knowledge, Skills, Attitude (KSA)¹⁰
- Competency
- Education – enduring ¹
 - Classification
 - Assessment
 - Documentation
- Handoff Communication¹⁰

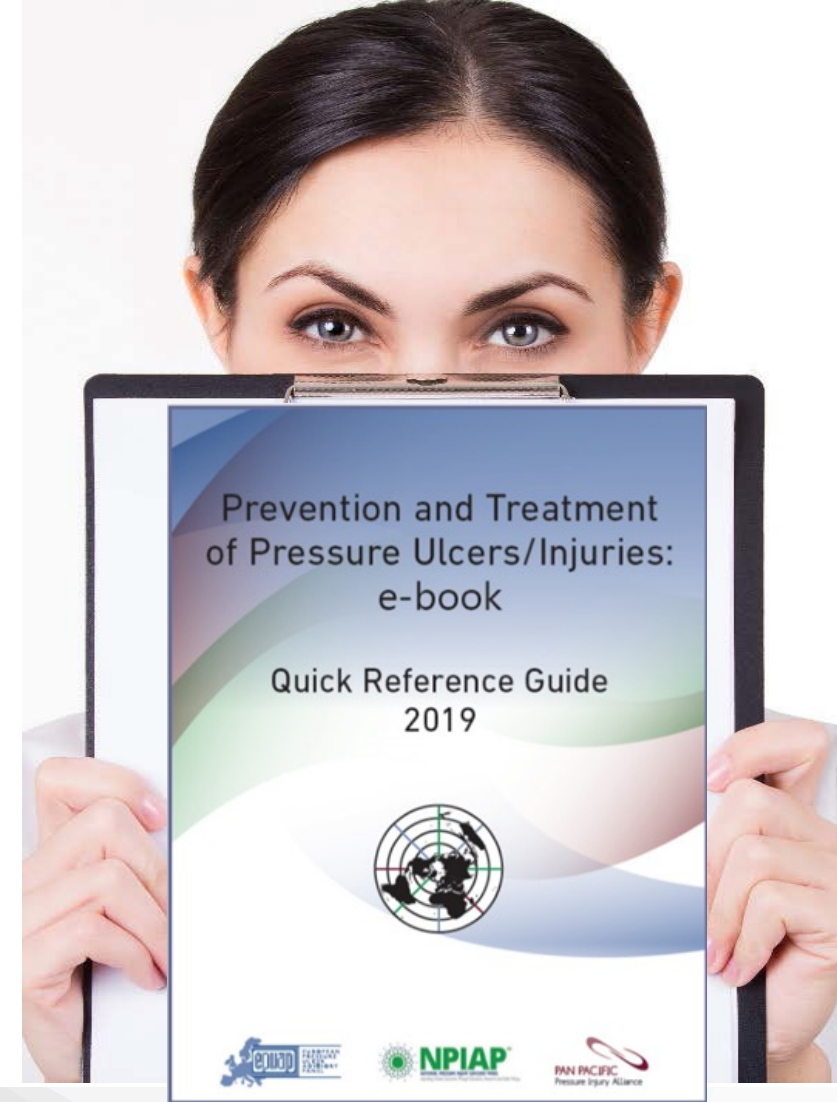


1. European Pressure Ulcer Advisory Panel, National Pressure Injury Advisory Panel, and Pan Pacific Pressure Injury Alliance. Prevention and Treatment of Pressure Ulcers/Injuries: Clinical Practice. The International Guideline 2019. EPUAP/NPIAP/PPPIA; 2019.

10. Guideline for prevention of perioperative pressure injury. In: *Guidelines for Perioperative Practice*. Denver, CO: AORN, Inc; 2023:751-776.

Process: Standards of Care

- Strategic Plan ^{1,28}
- Policy and Procedure ^{1,28}
- Risk Assessment ^{1,27}
- Skin Bundles ^{1,27,20}
- Standardize equipment & devices
- QI work, RCA & Action ^{1,29}
- Data management: Audits
- EHR Documentation¹



1. European Pressure Ulcer Advisory Panel, National Pressure Injury Advisory Panel, and Pan Pacific Pressure Injury Alliance. Prevention and Treatment of Pressure Ulcers/Injuries: Clinical Practice. The International Guideline 2019. EPUAP/NPIAP/PPPIA; 2019.

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29.. Scott SM, Bennett J. Avoiding pressure injuries with root cause analysis and action. *AORN J*. 2018;108(5):15-16.

Veteran's VA Skin Bundle

A

- Assess Skin and Risk Status

S

- Select Surfaces & Devices to Relieve Pressure

K

- Keep Turning and Repositioning

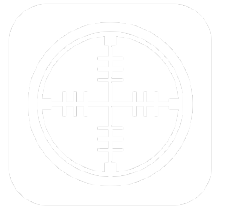
I

- Incontinence Management

N

- Nutrition and Hydration Assessment and Intervention

Skin Assessment



Timing

Skill

Accuracy

Documentation

1. European Pressure Ulcer Advisory Panel, National Pressure Injury Advisory Panel, and Pan Pacific Pressure Injury Alliance. Prevention and Treatment of Pressure Ulcers/Injuries: Clinical Practice. The International Guideline 2019. EPUAP/NPIAP/PPPIA; 2019.

Safe Patient Handling and Movement (SPHM)

- Patient size/condition
 - In a typical 8-hr day, nurses will lift 1.8 tons³¹
 - 51 lb. – maximum recommended load weight to be lifted under ideal conditions³²
- Caregiver time
 - Traditional methods require two caregivers
 - Locating and waiting for help adds to time requirements
- Caregiver injury risk³³
 - 62% of nurses are concerned about back injury
 - 80% have muscle and joint pain
- Apathy

31. Nelson A, Baptiste AS. Evidence-based practices for safe patient handling and movement. *Online J Issues Nurs*. 2004;9(3):4. Published 2004 Sep 30.

32. United States Department of Labor. Occupational Safety & Health Administration. Standard Interpretations: Section 5(a)(1).

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33. American Nurses Association. 2011 ANA Health & Safety Survey: Hazards of the RN Work Environment. <https://www.nursingworld.org/practice-policy/work-environment/health-safety/health-safety-survey/>

Product selection, care, and maintenance

- Support surfaces
- Seating cushions
- Positioning devices
- Safe Patient Handling and Movement (SPHM)
- Prophylactic dressings
- Skin care, cleanser, moisturizer, and barriers.
- Contenance products
- Selected by team ^{1,10}
- Evidence-based ³⁴
- Efficacy evaluations ³⁴
- Equipment standardization ³⁴
- Availability ¹⁰
- Maintenance ¹
- Budget ³⁴

1. European Pressure Ulcer Advisory Panel, National Pressure Injury Advisory Panel, and Pan Pacific Pressure Injury Alliance. Prevention and Treatment of Pressure Ulcers/Injuries: Clinical Practice. The International Guideline 2019. EPUAP/NPIAP/PPPIA; 2019.

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34. Scott S. Progress and Challenges in Perioperative Pressure Ulcer Prevention. *J Wound Ostomy Contenance Nurs*. 2015;42 (5);480-485

Quality Improvement

- Root Cause Analysis and Action (RCA²)^{29,35,}
- Investigation³⁶
 - Incidence & Audits
- System Causes
- Corrective Action
- Monitor Outcomes
- Communicate



29. Scott SM, Bennett J. Avoiding pressure injuries with root cause analysis and action. *AORN J*. 2018;108(5):15-16.

35. National Patient Safety Foundation. *RCA2: Improving Root Cause Analyses and Actions to Prevent Harm*. Boston, MA: National Patient Safety Foundation; 2015.

36. Black J. Root Cause Analysis for Hospital-Acquired Pressure injury. *J Wound Ostomy Continence Nurs*. 2019;46(4):298-304.



Questions?

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3. Padula WV, Delarmente BA. The national cost of hospital-acquired pressure injuries in the United States. *Int Wound J.* 2019:1–7.
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5. Petrone, K and Mathis, L. Pressure Ulcer Litigation: What is the wound centers liability? Today's Wound Care. Volume 11 Issue 9 - September 2017. Accessed online <http://www.todayswoundclinic.com/articles/pressure-ulcer-litigation-what-wound-centers-liability>
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