

WELCOME

Skin damage associated with moisture and pressure

*Tips for how to
differentiate and goals
for protection and
management*

Brought to you by

American Nurse
today MEMBER OF PANANA

Wound Care
ADVISOR

AP – 017472 -US

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MODERATOR

Cynthia Saver, MS, RN



FEATURED SPEAKER

Linda Moore, BSN, RN, CWON



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Program Objectives

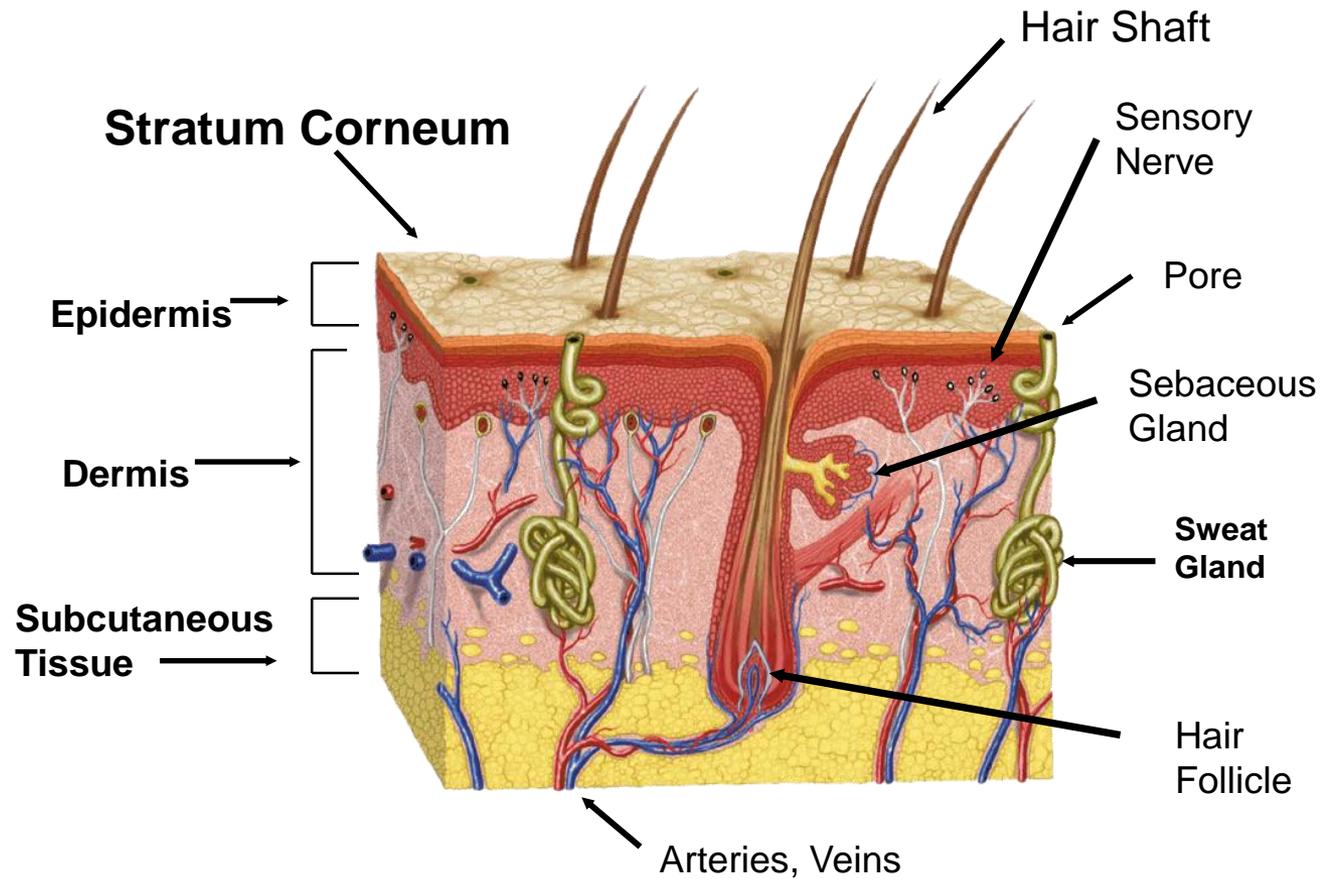


- Identify how wounds are classified according to wound depth and etiology.
- Describe the etiology of a pressure injury (PI) and incontinence-associated skin damage (IAD).
- Discuss evidenced-based protocols of care for prevention and management of IAD and PIs.
- Describe the NPUAP-EPUAP Pressure Injury Classification System.
- Identify appropriate products that can be used for prevention and treatment of IAD and PIs.

Pressure Injury

What are pressure injuries and their contributing factors?

Layers of the Skin



Wound Classification by Depth

Partial Thickness

Friction
Injury



Skin Tear



Stage 2
Pressure Injury



Partial-
Thickness
Burn



Wound Classification by Depth

Full Thickness

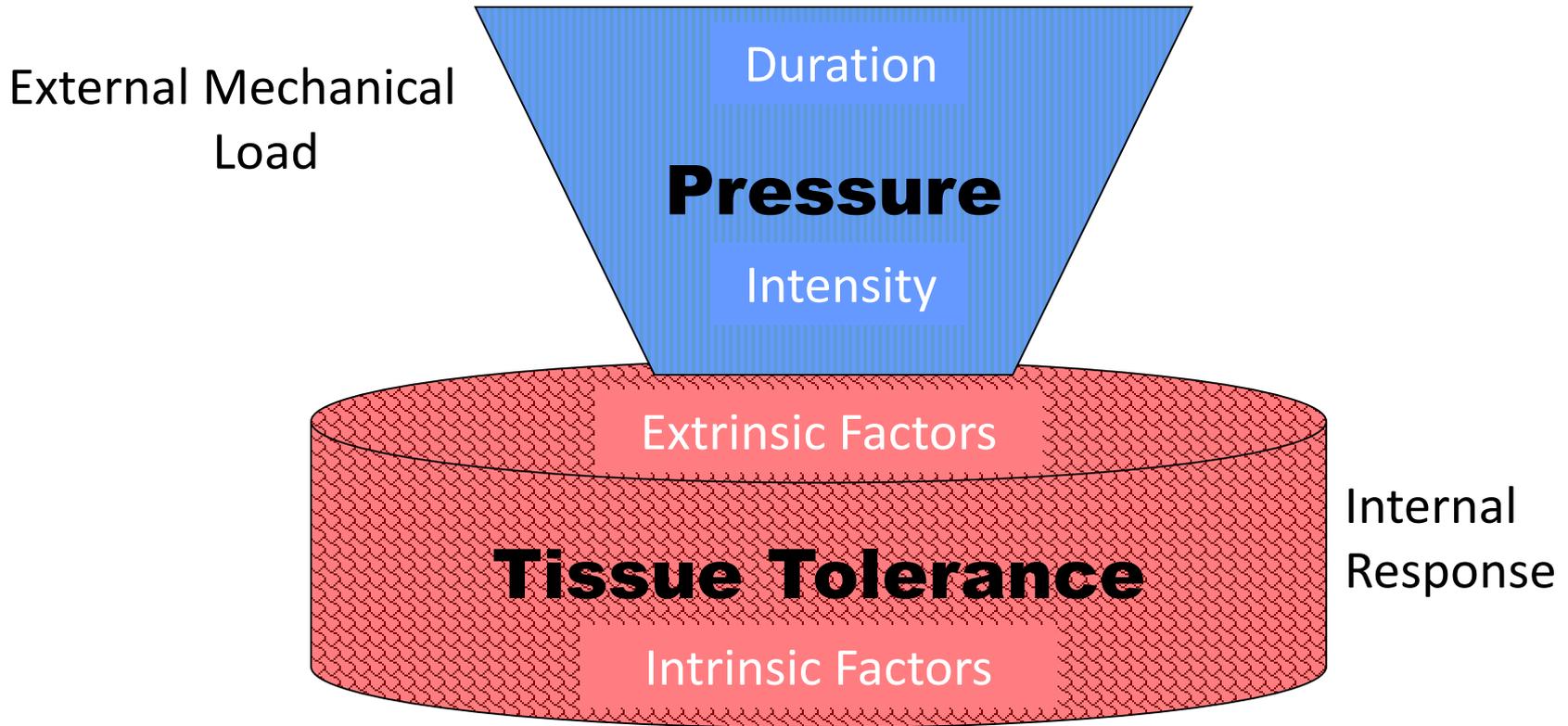


Pressure Injury Definition



- A pressure injury (PI) is localized damage to the skin and/or underlying soft tissue usually over a bony prominence or related to a medical or other device.
- A PI 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, comorbidities and condition of the soft tissue.

Etiology of PIs



Prolonged duration and intensity of pressure can cause tissue intolerance due to extrinsic and intrinsic factors. Pressure compresses tissue and blood vessels, hindering oxygen and nutrient delivery, leading to tissue death.

Shear Forces

Shear: Force per unit magnitude of the area acting parallel (**tangential**) to the surface of the body. This parameter is affected by pressure, the coefficient of friction between the materials contacting each other, and how much the body adheres to the support surface.

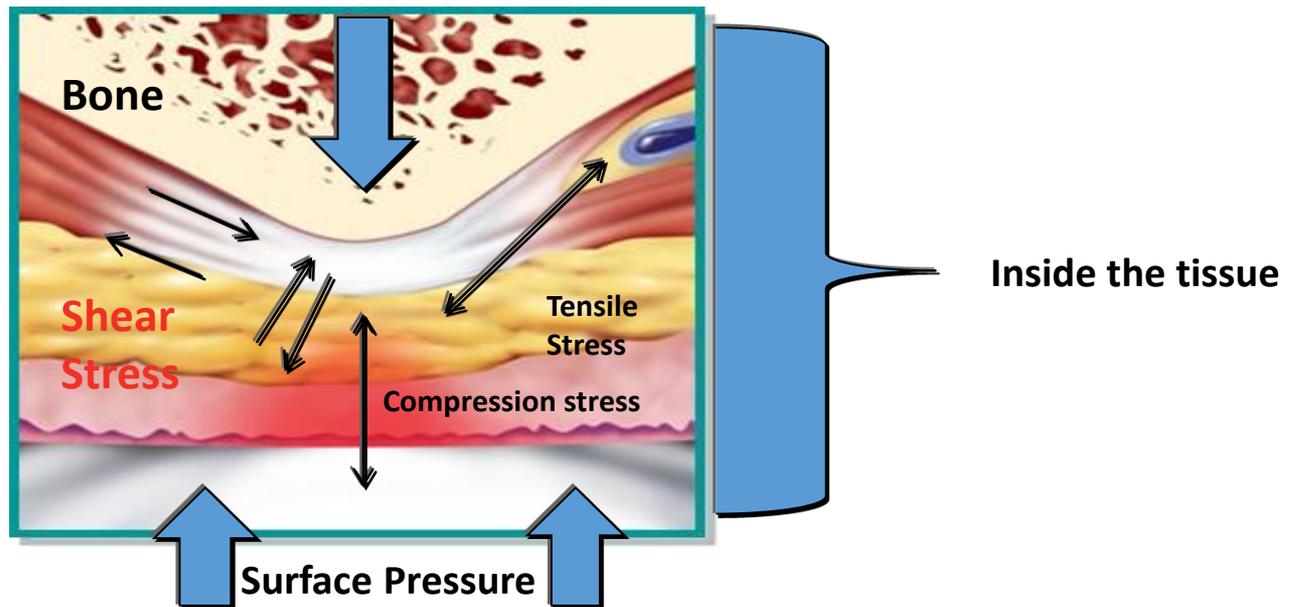


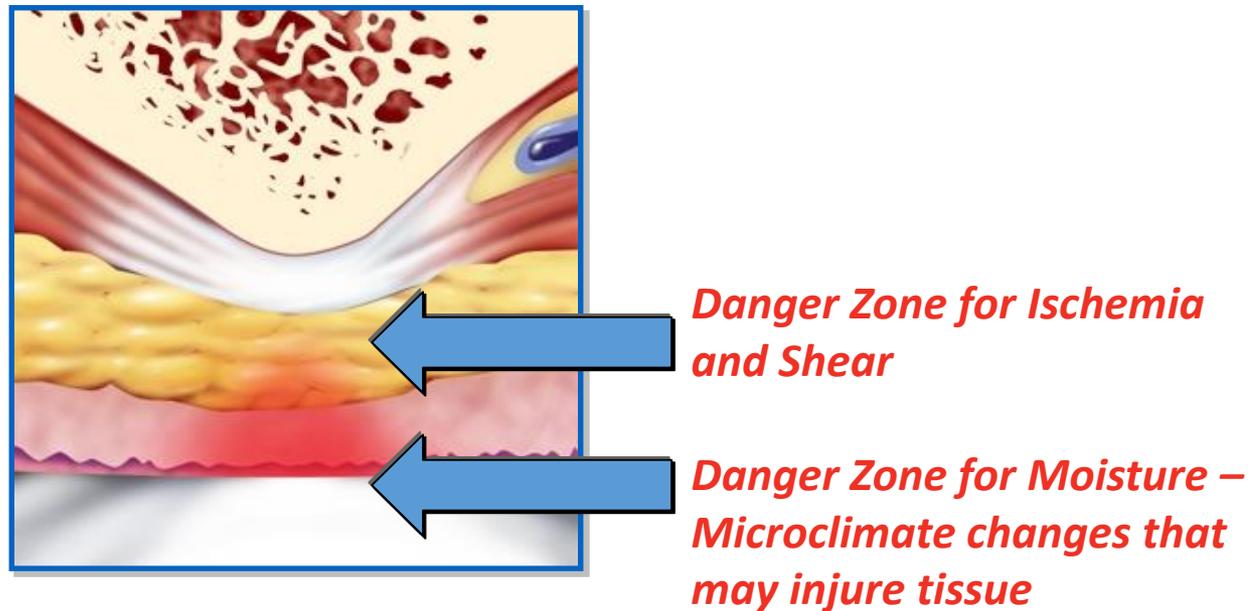
Illustration from Ohura, Sapporo, Japan, 2007 – Shear Force Initiative

National Pressure Ulcer Advisory Panel, European Pressure Ulcer Advisory Panel and Pan Pacific Pressure Injury Alliance. Prevention and Treatment of Pressure Ulcers: Clinical Practice Guideline. Emily Haesler (Ed.). Cambridge Media: Osborne Park, Western Australia; 2014, pgs 18 – 19.

International review, Pressure ulcer prevention: pressure, shear, friction and microclimate in context. A consensus document. London: Wounds International. 2010, 13-14.

Shear Forces

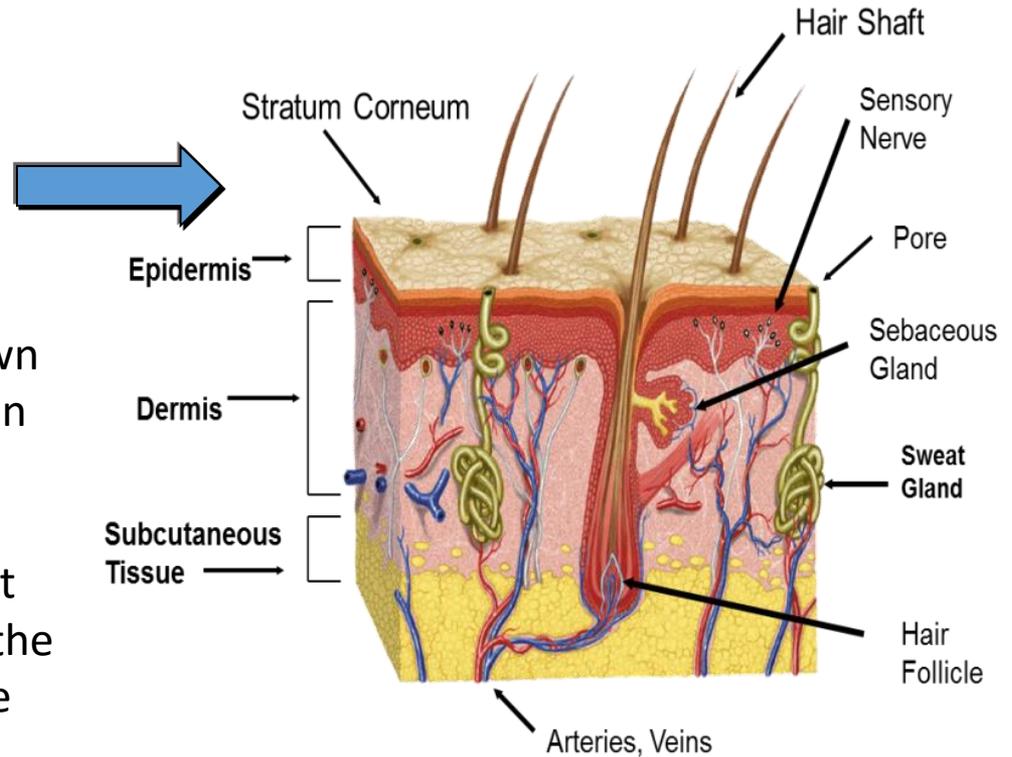
- Shear forces affect the deep blood vessels and deeper tissue, which may result in ulcers with large areas of internal tissue damage and less damage at the skin surface.
- Moisture damage occurs from the outside; the term microclimate describes moisture in contact with the skin.



Effects of Moisture on the Skin

Moisture and temperature changes the stratum corneum (SC)

- Strain at which the SC breaks down at 100% humidity is 4 times > than dry skin.
- Moisture increases the coefficient of friction between the skin and the underlying surface, increasing the risk of shear damage.



PI Staging

Stage 1



Stage 2



Stage 3



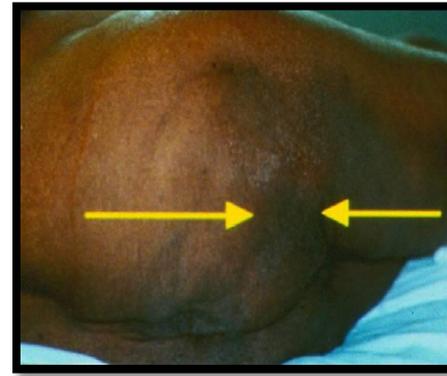
Stage 4



Unstageable



Deep Tissue Injury



Unstageable Pressure Injury (UPI): Obscured full-thickness skin and tissue loss



- 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.

UPI: Further definition

Stable eschar (i.e., dry, adherent, intact without erythema or fluctuance) on an ischemic limb or the heel(s) should not be removed.

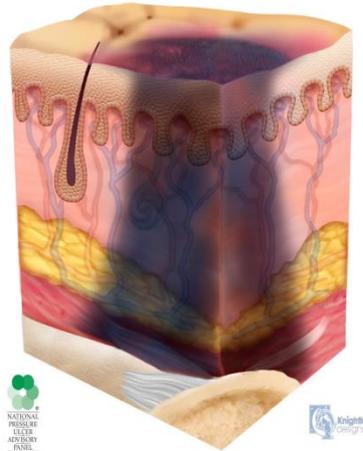


Loose, soft or spongy
– Should be removed



**Stable (dry, adherent) — Do not
remove**

Deep Tissue Pressure Injury(DTPI): Persistent non-blanchable deep red, maroon, or purple discoloration



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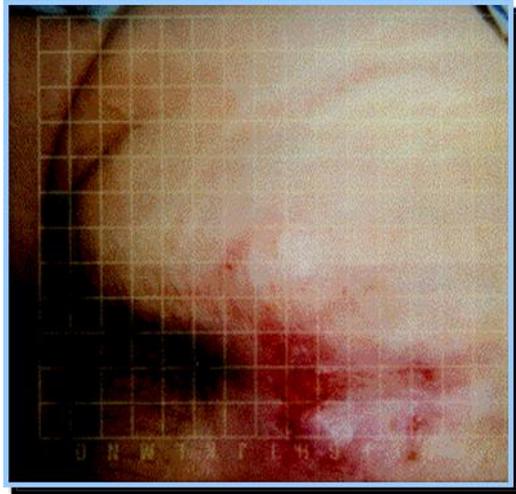


Blood-filled Blister

- 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 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.

DTPI: Further definition

- 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.



On Admission



Day 7

Example of the progression of a DTPI from an area of maroon discoloration to an eschar covered full-thickness pressure injury.

Location of Deep Tissue Injuries

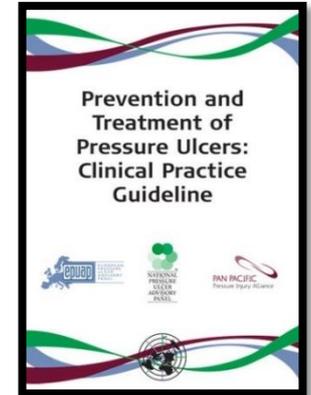
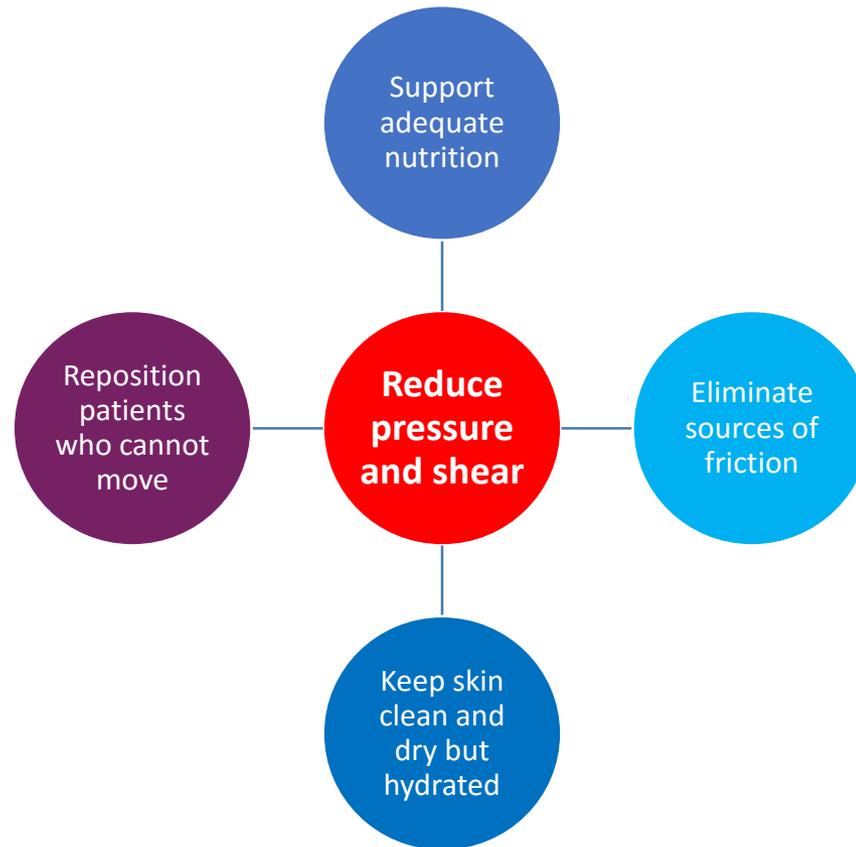
Heels	41.4%
Sacrum	19.1%
Buttocks	12.9%
Ankles and Foot	9.9%
Elbow	2.5%



VanGilder C, MacFarlane GD, Harrison P et al. The demographics of suspected deep tissue injury in the United States: An analysis of the International Pressure Ulcer Prevalence Survey 2006-2009. *Advances In Skin and Wound Care*. 2010, 23(6):254-61.

Photos courtesy of Ann Durnal RN, BSN, NP

Keys to Maintaining Healthy Skin and Preventing PI



Pressure ulcer prevention: pressure, shear, friction and microclimate in context. A consensus document. London: Wounds International 2010.

National Pressure Ulcer Advisory Panel, European Pressure Ulcer Advisory Panel and Pan Pacific Pressure Injury Alliance. Prevention and Treatment of Pressure Ulcers: Clinical Practice Guideline. Emily Haesler (Ed.) Cambridge Media: Perth, Australia; 2014, pgs 42 – 117 – Prevention.

Moisture-Related Damage Terms

Term	Definition
Diaper dermatitis/Rash	Dermatitis of thighs and buttocks resulting from exposure to urine and feces in diapers
Perineal dermatitis	Skin inflammation limited to the perineum
Moisture-associated skin damage (MASD)	Injury to the skin caused by repeated or sustained exposure to moisture (e.g., perspiration, urine, stool, wound exudate)
Maceration	Skin damage caused by super-saturation of the skin that is associated with pigmentation changes, even in people of color, but no erosion of the epidermis
Erosion	Denudation; epidermal and dermal loss resulting in a partial-thickness wound
Intertrigo <i>Intertriginous dermatitis</i>	Dermatitis associated with perspiration in skin folds/creases accompanied by friction

Lekan-Rutledge D. Management of Urinary Incontinence: Skin Care, Containment Devices, Catheters, Absorbent Products. In: Doughty DB, ed. *Urinary & Fecal Incontinence Current Management Concepts*, 3rd ed. St. Louis, Mo: Mosby, Inc, an affiliate of Elsevier Inc; 2006:309-340.

Beeckman D et al. Proceedings of the Wounds International 2015 Global IAD Expert Panel. Incontinence associated dermatitis: prevention forward. Available for download at www.woundsinternational.com.

Intertriginous Dermatitis

- Can occur anywhere on the body where there are folds of skin against skin and moisture is present
- May appear as a linear break in the skin
- Occurs in creases such as the intergluteal cleft or groin creases when associated with IAD
- Bacteria or fungal overgrowth is a risk in these areas
- Patients may complain of Itching which can lead to scratching and excoriation of the area

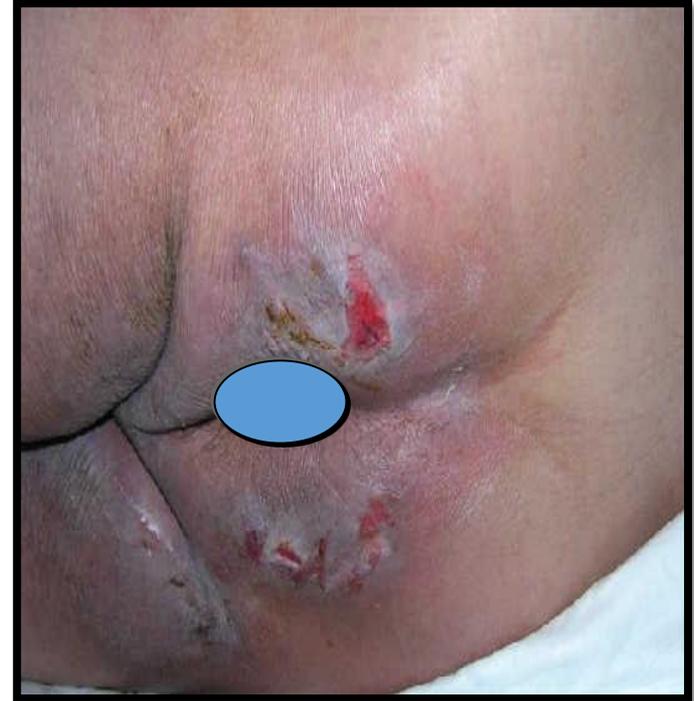
With incontinent patients, timely skin checks to maintain dry skin is a key goal to prevent this condition – keep the area dry and protected.



Photo courtesy of
Dot Weir RN, CWS, CWON

Incontinence: Scope of the Problem

- Study of 152 acute and critical care patients—33% of patients had fecal incontinence¹
- Study of 608 patients in acute and critical care areas:²
 - 19.75% prevalence of incontinence
 - 107 (17.6%) had fecal incontinence
 - 120 (42.5%) of the incontinent patients demonstrated some type of skin injury



1. Bliss DZ, Johnson S, Savik K, Clabots CR, Gerding DN. Fecal incontinence in hospitalized patients who are acutely ill. *Nurs Res* 2000;49(2):101-108.
2. Junkin, J, Selekof, J. Prevalence of Incontinence and associated skin Injury in the acute care patient. *Journal of WOCN*. 2007;34(3);260-269.

Risk Assessment – Braden Scale

Moisture Subscale

1

CONSTANTLY MOIST

Skin is kept moist almost constantly by perspiration, urine, etc.

Dampness is detected every time patient is moved or turned

2

VERY MOIST

Skin is often, but not always moist

Linen must be changed at least once a shift

3

OCCASIONALLY MOIST

Skin is occasionally moist

Requires an extra linen change approximately once a day

4

RARELY MOIST

Skin is usually dry

Linen only requires changing at routine intervals

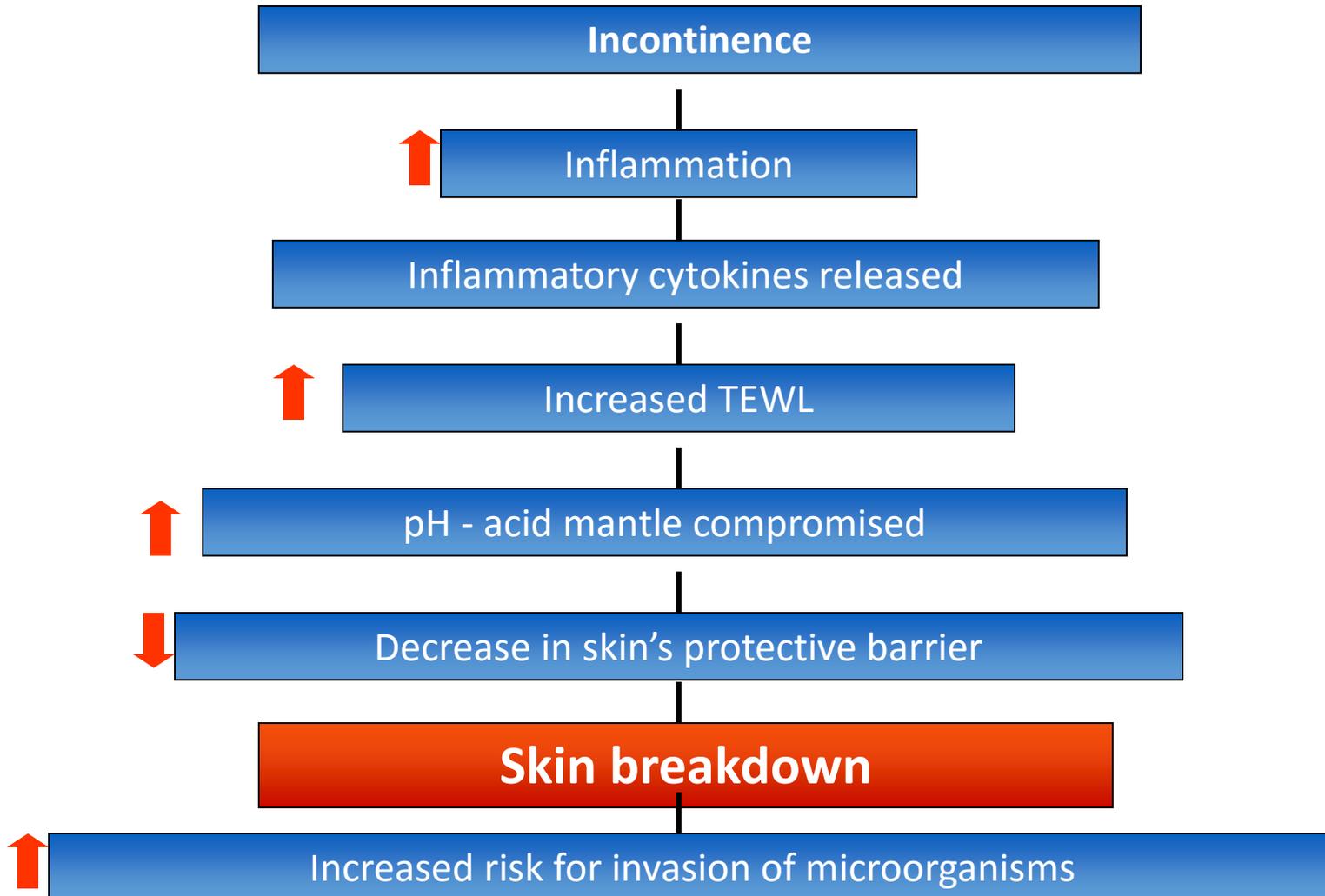
Incontinence-Associated Skin Damage (IAD)

Characterized by:

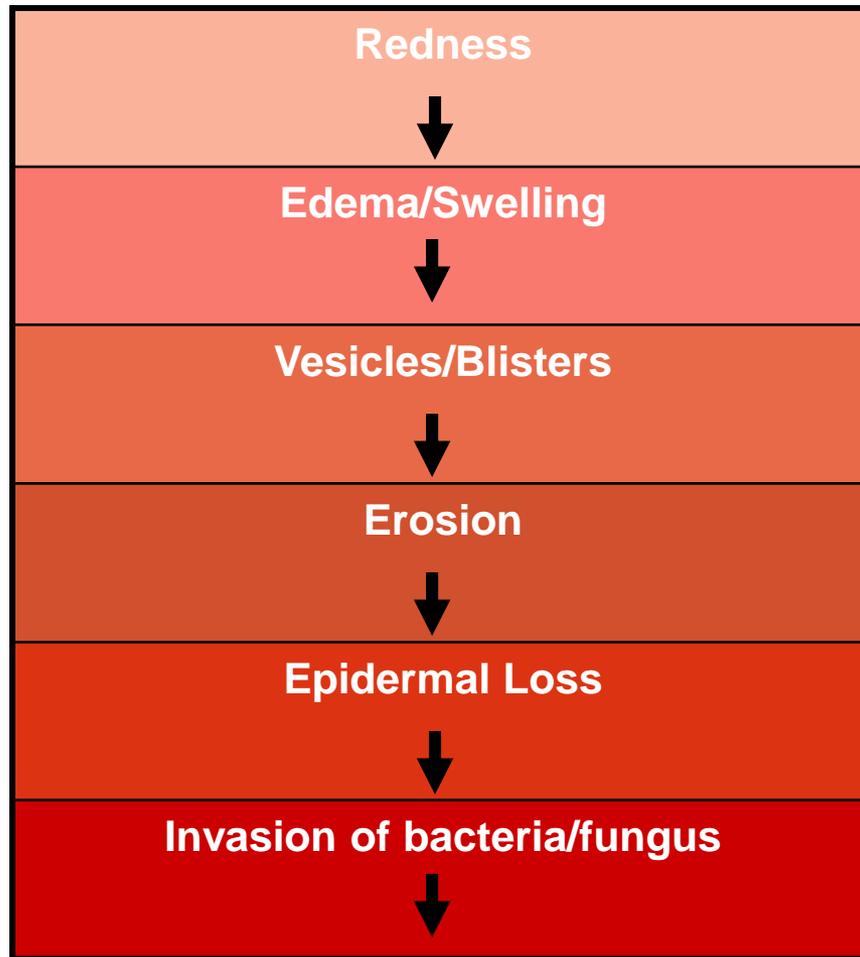
- Inflammation of the skin that occurs when urine or stool comes into contact with perineal or peri-genital skin
- Irritation and inflammation of the skin from prolonged exposure to urine or stool



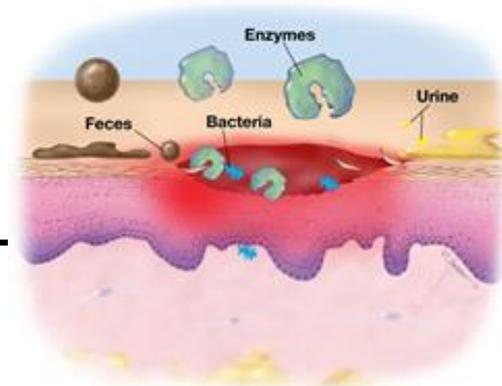
IAD Pathophysiology



IAD: Skin Damage Progression



IAD Pathophysiology



Urine

- Over-hydrated skin
- Maceration
 - ↑ pH (alkaline pH)
 - ↓ Protective barrier
- **Urine interacts with feces to activate fecal enzymes**
- Urine incontinence alone – not as significant a factor in developing IAD

Feces

Fecal Enzymes

- ↑ microbes/bacteria
- ↑ protease activity
- ↑ pH (alkaline pH)
- Feces interacts with urine to activate fecal enzymes

Double incontinence – significant factor developing IAD

IAD Intervention Tool

Moderate IAD — “Affected skin is bright or angry red - in darker skin tones, it may appear white, yellow, or very dark red/purple. Skin usually appears shiny and moist with weeping or pinpoint areas of bleeding. Raised areas or small blisters may be noted. Small areas of skin loss (dime size) if any. This is painful whether or not the person can communicate the pain.”



IAD Intervention Tool

- **Severe IAD** — “Affected skin is red with areas of denudement (partial-thickness skin loss) and oozing/bleeding. In dark-skinned persons, the skin tones may be white, yellow, or very dark red/purple. Skin layers may be stripped off as the oozing protein is sticky and adheres to any dry surface.”



Examples of IAD

Moderate



Severe



What IAD Looks Like



Note scaling of the skin, papule, vesicle formation, and tissue weeping

IAD vs. Stage 1 and 2 PIs



IAD



Stage I Pressure Ulcer
Stage 1 and Stage 2 PIs

IAD or PI?

IAD

- **Etiology**: continued skin exposure of urine, feces or both
- **Location**: buttocks, perineum upper thighs, skin folds – diffuse area
- **Color**: red or bright red
- **Depth**: partial-thickness (limited to epidermis and/or dermis)
- **Necrosis**: none
- **Symptoms**: may be painful and cause itching

PI

- **Etiology**: ischemia from pressure - shear
- **Location**: circumscribed and usually over bony prominences or device related
- **Color**: red to bluish/purple
- **Depth**: partial or full-thickness deep tissue injury
- **Necrosis**: slough or eschar
- **Symptoms**: may be painful

What Is Your Assessment?



What Is Your Assessment?

Diffuse erythema and bluish discoloration of the skin over a large area superior to the rectal area – sacral/coccyx area

No erythema or skin changes close to the rectal area



Shallow wound covered with yellow debris-slough

Note: Brighter red area of inflamed skin around the area containing slough

Assessment: Tissue injury changes associated with pressure/shear

Use of Underpads or Diapers

- Avoid occlusive products that may cause chafing of compromised skin (e.g., diapers, briefs, pads).
- Use absorptive products that wick moisture away from skin.
- Consider scheduled toileting when appropriate.



Containment of Fecal Incontinence

- Document skin condition per facility policy/protocol.
- Follow manufacturer's instructions for application and management of containment devices used.



Flexi-Seal® fecal collector



Flexi-Seal® Signal FMS

Skin and Wound Care Products for Protection and Management of Open Skin Areas

Skin Care



Skin Injury – Examples of dressings for Skin Protection and wound management



DuoDERM® Extra –Thin dressings



DuoDERM® Signal Dressings



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Refer to product label for complete information on indications and use of each product

Sensi-Care[®] Skin Protectant Incontinence Wipes

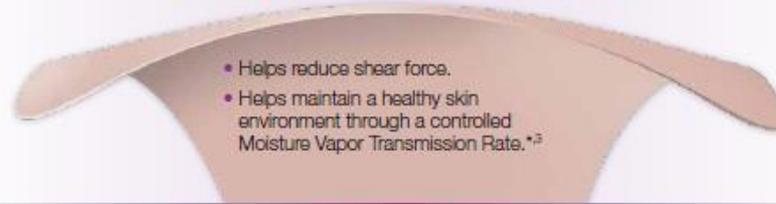


- 3-in-1 Wipe: Cleans, Moisturizes, Protects
- Large 8"x10", dual texture cloth design makes cleansing efficient
- Skin-friendly pH
- Fragrance-free
- Protects fragile skin with 3% dimethicone¹
- Helps treat and prevent incontinence-associated dermatitis¹

AQUACEL[®] for Skin Protection and Wound Care

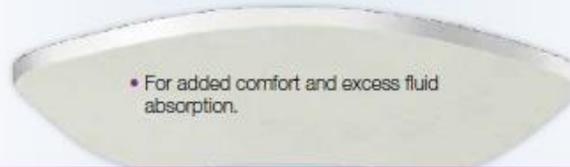
Foam

Smooth Water Proof/Bacteria Barrier



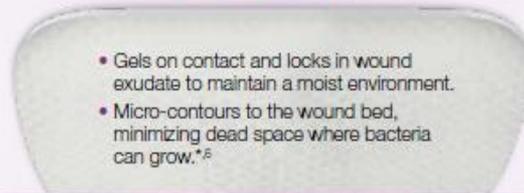
- Helps reduce shear force.
- Helps maintain a healthy skin environment through a controlled Moisture Vapor Transmission Rate.*³

Soft Absorbent Foam Pad



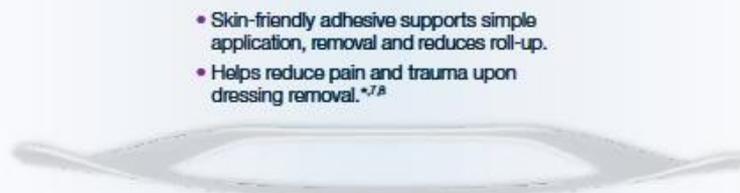
- For added comfort and excess fluid absorption.

AQUACEL[®] Layer



- Gels on contact and locks in wound exudate to maintain a moist environment.
- Micro-contours to the wound bed, minimizing dead space where bacteria can grow.*⁶

Gentle Silicone Adhesive



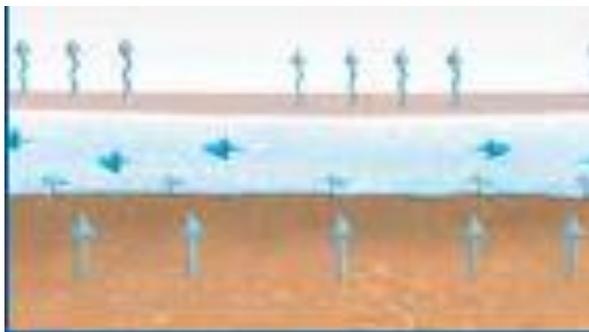
- Skin-friendly adhesive supports simple application, removal and reduces roll-up.
- Helps reduce pain and trauma upon dressing removal.*^{7,8}

* As demonstrated in vitro

³In vitro testing of AQUACEL[®] foam and Competitor Dressings Fluid Handling Capacity Testing, WHRI3533 MS067. Data on file, ConvaTec Inc.⁶Jones S, Bowler PG, Walker M. Antimicrobial activity of silver-containing dressings is influenced by dressing conformability with a wound surface. *WOUNDS*. 2005;17(9):263-270. ⁷Evaluation of Keratinocyte adhesion to Wound Dressings. CCA085. Data on File. ConvaTec Inc. ⁸Global Clinical Case Study Compendium. A Next Generation Foam: AQUACEL[®] Foam Dressing. AP-013181-MM. February, 2013.

AQUACEL[®] Foam Dressing

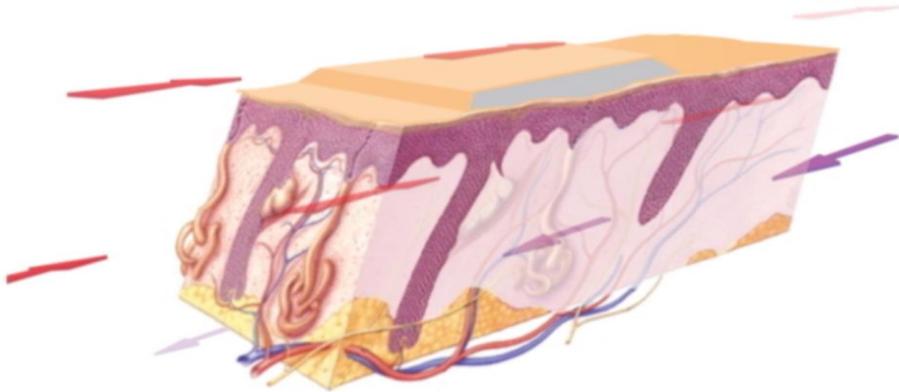
- **Helps Promote a Healthy Skin Environment**
- Multi-layer dressing design helps keep moisture, such as perspiration or incontinence episodes from breaking down skin and provides a controlled Moisture Vapor Transmission Rate (MVTR)*
- **Lets You Take a Peek at Intact Skin**
- Skin-friendly silicone adhesive allows you to lift the border to inspect skin and reapply**
- Smooth outer surface allows for easy cleaning, which may help reduce dressing changes



*. *In vitro* testing of AQUACEL[®] foam and Competitor Dressings Fluid Handling Capacity Testing, WHRI3533 MS067. Data on file, ConvaTec Inc.

** *In vitro* testing of AQUACEL[®] foam Adhesion Characteristics. WHRI 3539 MS070. Data on File. ConvaTec Inc.

Lower Shear Force with AQUACEL® Foam *



Shear injury is predominantly localized at the sacrum or coccyx**



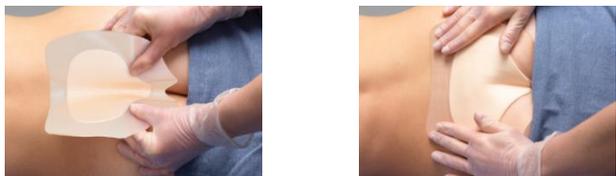
Waterproof smooth surface slides easily and helps to reduce friction and shear force*

* Comparative Assessment of *in vitro* Shear Force Reduction through AQUACEL® Foam and Mepilex® Border Dressings. WHRI3783 TA290. Data on File ConvaTec Inc.

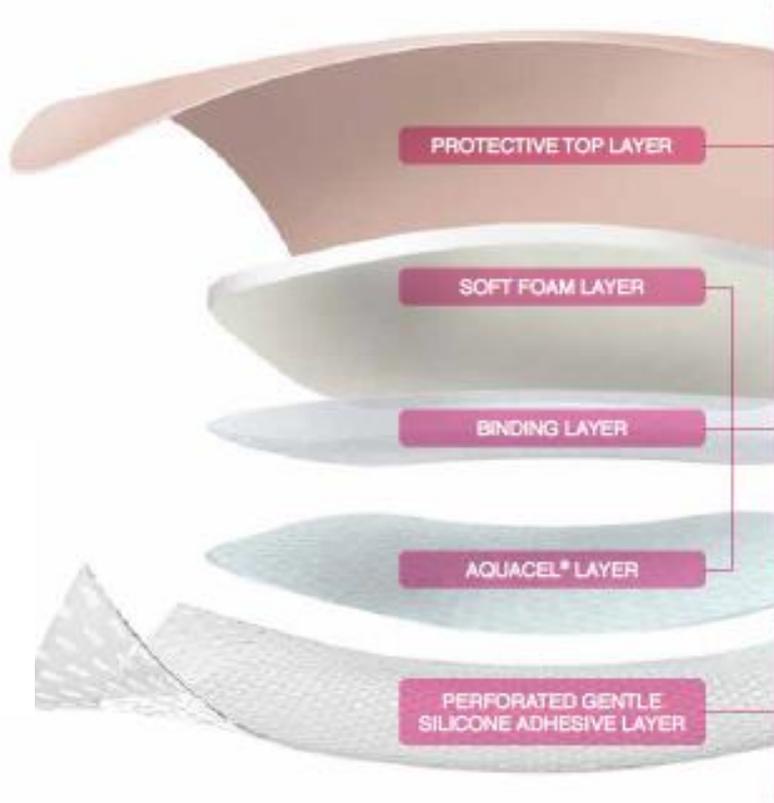
** Bryant RA. Types of Skin Damage and Differential Diagnosis. Bryant RA, Nix DP, eds. Acute and Chronic Wounds. *Current Management Concepts*. 5th ed. St. Louis, MO: Elsevier, Inc.; 2016: 82-108

For Skin Protection in the Sacrum: AQUACEL[®] Foam Pro

AQUACEL[®] Pro
Foam



AQUACEL[®] Foam Pro includes a **perforated silicone adhesive wound contact layer**¹. Designed to protect skin from breaking down in the sacral area.



- Smooth, breathable, waterproof film helps minimize shear and friction, †³ e.g., between bed linens and dressing
- Enables easy cleaning of the dressing
- Multilayered silicone foam powered by Hydrofiber[®] Technology helps provide a healthy skin microclimate by absorbing and locking away excess moisture from the skin †^{2,3}
- Perforated gentle silicone adhesive layer allows easy application and removal^{*3}
- Adhesive does not stick to itself^{*3}

†When used as part of a protocol of care.

*As demonstrated *in-vitro*.

1. AQUACEL[®] Foam Pro package insert

2. Walker M, Hobot JA, Newman GR, Bowler PG. Scanning electron microscopic examination of bacterial immobilisation in a carboxymethylcellulose (AQUACEL[®]) and alginate dressings. *Biomaterials*. 2003;24(5):883-890

3. In-vitro Performance Characteristics of AQUACEL[®] Foam Pro WHRI4536MS129. 2015. Data on File. ConvaTec

IAD or PI?

IAD

- **Etiology**: continued skin exposure of urine, feces or both
- **Location**: buttocks, perineum upper thighs, skin folds – diffuse area
- **Color**: red or bright red
- **Depth**: partial-thickness (limited to epidermis and/or dermis)
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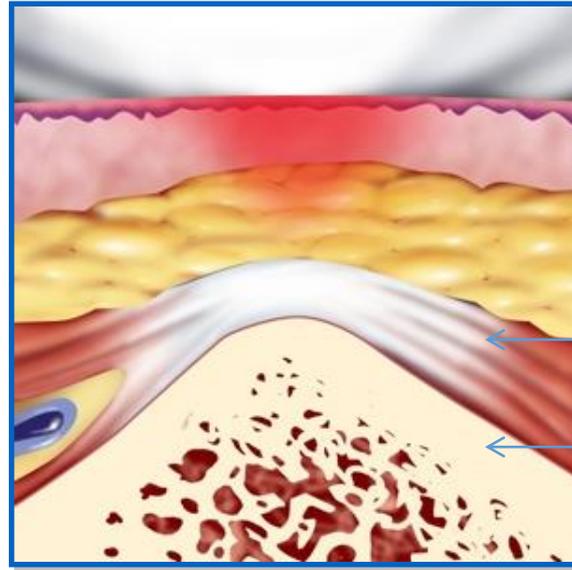
PI

- **Etiology**: ischemia from pressure - shear
- **Location**: circumscribed and usually over bony prominences or device related
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- **Depth**: partial or full-thickness. deep tissue injury
- **Necrosis**: slough or eschar
- **Symptoms**: may be painful

“Outside in” Tissue Damage

- Friction and microclimate changes
- Examples: Skin tears, IAD, intertrigo abrasions, blisters, fungal rashes

Partial
Thickness



← Skin Surface

← Muscle

← Bone

Deep
Damage



“Inside Out” Tissue Damage

- Pressure and Shear Forces causing ischemia and ultimately tissue necrosis – full thickness PI

Mahoney, M., Rozenboom, B., & Doughty, D. Challenges in classification of gluteal cleft and buttocks wounds: consensus session reports. *JWOCN*. 2013;40(3), 239-245, p. 242.

Gefen A, Farid K, Shaywitz I A Review of Deep Tissue Injury Development, Detection, and Prevention: Shear Savvy. *OWM*. 2013;59(2):26-35.

Pressure ulcer prevention: pressure, shear, friction and microclimate in context. A consensus document. London: Wounds International 2010.

QUESTIONS?

Thank you for attending today's webinar

Share the knowledge with your colleagues by accessing the archived edition at www.AmericanNurseToday.com or www.WoundCareAdvisor.com.

This is the first in a series of four wound care webinars in 2017. Our next webinar is scheduled for April 25th with guest speaker Kimberly LeBlanc, MN, RN, CETN(C), nationally recognized expert on the subject of skin tears.

For additional information on ConvaTec, visit convatec.com.

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