

Integumentary Changes and Considerations Impacting People with Spinal Cord Injury

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Fact Sheet

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Why should PTs be concerned about skin for patients with spinal cord injury?

Changes to the skin in patients with SCI (listed below), combined with skin changes common due to aging and other co-morbidities, can make the SCI population at a very high risk for skin breakdown and pressure injury. Patients with sensory and motor complete injuries are more susceptible to breakdown; however people with incomplete injuries can still be at high risk, especially when medically unstable.⁴

- Decreased blood flow, supply, pressure
- Decreased amino acid concentration
- Decreased enzymes for biosynthesis
- Potential change in gene expression
- Decreased Adrenergic receptors (norepinephrine, epinephrine)
- Decreased proportion of Type I to Type III collagen fibers
- Increased collagen catabolism (dermis)
- Decreased Partial Pressure of Oxygen (PO₂)

What types of skin injuries are most common in SCI?

Pressure ulcers/injuries are the most common types of wounds for patients with SCI. They form over bony prominences such the sacrum, ischial tuberosities, greater trochanters, and heels secondary to lack of mobility and blood flow to the areas. It's important to perform manual skin checks (palpation) in addition to visual skin checks, to note a change in tissue quality (induration / boggy); as signs of potential breakdown may show up before visual signs are noted. Teaching staff and caregivers how to perform these manual and visual checks daily is an integral part of the patient's overall SCI education and future health. While pressure ulcers tend to be the main focus for clinicians, venous, arterial, neuropathic and surgical wounds are other common wound etiologies that PTs may encounter as well.

Ways to prevent and treat skin breakdown in patients with SCI

An ounce of prevention is worth a pound of cure! Strategies to prevent skin breakdown from occurring, including frequent and adequate pressure relief maneuvers, proper seating and positioning, daily visual and manual skin checks, and education are the best forms of prevention. When a pressure ulcer is identified, it's important to understand the source of the ulcer, and develop a comprehensive treatment plan to heal the skin and eliminate risk of reoccurrence breakdown.

Prevention and treatment strategies include:

- Ensure proper Wheelchair fitting: Be sure the wheelchair is fit by a provider
- Pressure map all sitting surfaces: Pressure mapping is a tool can identify areas of high pressure from bony prominences. This can aide in the treatment plan or help when selecting a proper support surface.
- Perform frequent and adequate pressure reliefs:
 - Weight shifts should occur every 15-30 minutes and should last at least a full 60 seconds to relieve the pressure properly. If you have a skin sore, weight shifts will need to be done more often. It is important to perform weight shifts as instructed by your healthcare provider.
- Education: Understanding the cause, prevention, and treatment of skin breakdown is imperative.

Updated Stages of Pressure Injury
 Provided by: National Pressure Ulcer Advisory Panel {NPUAP}

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Stages of Pressure Injury (NPUAP, 2016)		
Stage	Description	Picture
1	<p style="text-align: center;">Non-blanchable erythema of intact skin.</p> <p>Intact skin with localized area of redness, which may appear differently in darkly pigmented skin. Blanchable erythema, changes in sensation, temperature, or firmness may precede visual changes.</p>	
2	<p style="text-align: center;">Partial-thickness skin loss with exposed dermis.</p> <p>Wound bed is viable, pink or red, moist. May also present as an intact or serum-filled blister. Adipose and deeper tissues are not visible. Granulation tissue, slough, and eschar are not present. <i>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 (MARS), or traumatic wounds (skin tears, burns, abrasions).</i></p>	
3	<p style="text-align: center;">Full-thickness skin loss.</p> <p>Full-thickness loss of skin. Adipose is visible and granulation tissue and epibole (rolled wound edges) are often present. Slough and/or eschar may be visible. Depth varies by anatomical location. Undermining and tunneling may occur. Fascia, muscle, tendon, ligament, cartilage and/or bone are not exposed. <i>If slough or eschar obscures the extent of tissue loss this is an Unstageable Pressure Injury.</i></p>	
4	<p style="text-align: center;">Full-thickness skin and tissue loss.</p> <p>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. <i>If slough or eschar obscures the extent of tissue loss this is Unstageable.</i></p>	
Unstageable	<p style="text-align: center;">Obscured full-thickness skin and tissue loss.</p> <p>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. <i>If slough or eschar is removed, a Stage 3 or Stage 4 pressure injury will be revealed. Stable eschar (on the heel or ischemic limb should not be softened or removed).</i></p>	
Deep Tissue Pressure Injury	<p style="text-align: center;">Persistent non-blanchable deep red, maroon or purple discoloration.</p> <p>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. Results from intense and/or prolonged pressure and shear forces at the bone-muscle interface. May rapidly evolve 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, Stage 4). <i>Do not use DTPI to describe vascular, traumatic, neuropathic, or dermatologic conditions.</i></p>	

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