

PRESSURE ULCER/INJURY RECURRENCE

FACT SHEET ON PRESSURE ULCERS IN PATIENTS WITH SPINAL CORD INJURY FOR HEALTHCARE PROVIDERS



Fact sheet on pressure ulcers in patients with spinal cord injury for healthcare providers



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Overview

Individuals with spinal cord injury (SCI) face a heightened risk of developing pressure ulcers due to impaired sensation, reduced mobility, muscle atrophy, and autonomic dysfunction. A clear understanding of the mechanisms, risk factors, and evidence-based management strategies is essential to improve outcomes and quality of life for this population.

Anatomy and physiology of the skin and spinal cord injuries

The skin: structure and function

The skin is the body's largest organ, serving as a protective barrier against external elements, regulating temperature, and preventing infections. It consists of three primary layers:

- **Epidermis:** The outermost layer provides a waterproof barrier and skin tone.
- **Dermis:** Contains connective tissue, blood vessels, nerve endings, and hair follicles, supporting skin integrity and sensory perception.
- **Hypodermis (subcutaneous tissue):** Composed of fat and connective tissue, this layer cushions and insulates the body.

Pressure ulcers occur when prolonged pressure impairs blood flow, leading to tissue ischemia. In SCI patients, this risk is compounded due to impaired autonomic and sensory function.

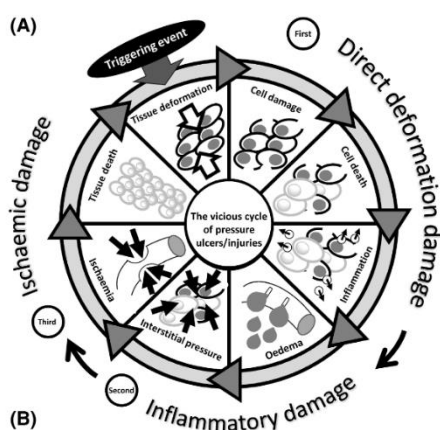


Figure 1. The vicious cycle of pressure ulcer development, illustrating how mechanical

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deformation, ischemia, and inflammation contribute to progressive tissue damage, Gefen et al. (2022)¹. Permission to use granted.

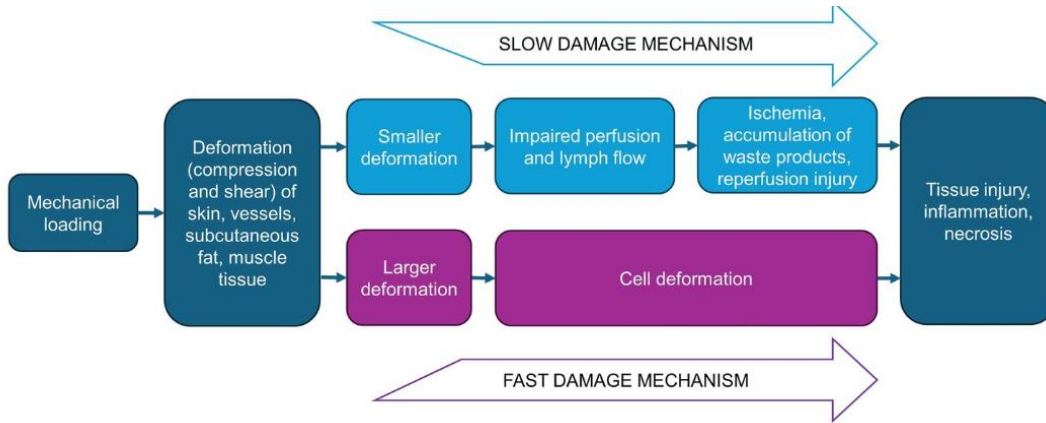


Figure 2. Pathophysiological pathways leading to pressure ulceration, highlighting both slow and fast damage mechanisms caused by mechanical loading and tissue deformation, NPIAP (2025)². Permission to use granted.

Spinal cord injury and skin integrity

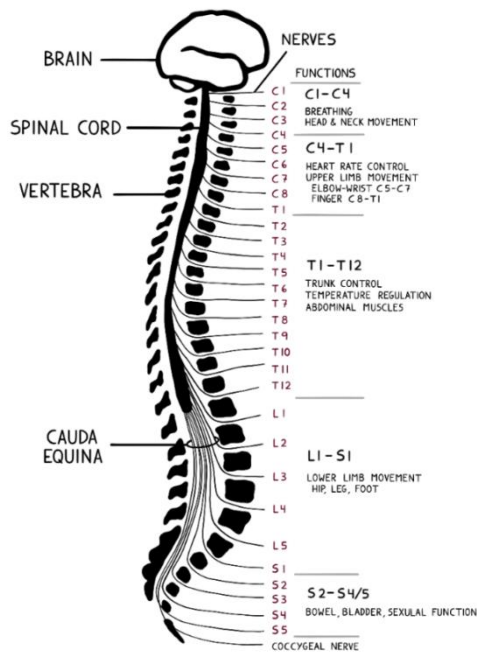


Figure 3. Overview of spinal cord segments and corresponding functional control, highlighting the impact of injury level on motor, sensory, and autonomic function, Halvorsen (2022)³. Permission to use granted.

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SCI impacts skin health in several ways

- **Loss of sensation:** Patients may not feel pain or pressure, delaying pressure relief.
- **Reduced circulation:** Compromised blood flow hinders healing and increases tissue fragility.
- **Autonomic dysfunction:** Alters thermoregulation and sweat response, affecting skin moisture.
- **Muscle atrophy:** Decreases soft tissue padding over bony prominences, increasing risk.

Understanding the interplay between impaired neurological function and skin health is critical for early intervention and pressure ulcer prevention in SCI.

What is a pressure ulcer?

Pressure injuries/ulcers are localised damage to the skin and/or underlying tissue, usually over a bony prominence or related to a medical or other devices, resulting from prolonged pressure or pressure in combination with shear².

Key risk factors in SCI

- **Impaired sensation** – Delays recognition of discomfort
- **Limited mobility** – Prolonged pressure exposure
- **Moisture exposure** – Incontinence-related skin breakdown
- **Malnutrition** – Poor wound healing capacity
- **Spasticity/muscle atrophy** – Increased pressure over bony areas
- **Circulatory impairments** – Reduced skin oxygenation and healing.

Stage	Description
Stage 1	Non-blanchable erythema of intact skin
Stage 2	Partial-thickness skin loss with exposed dermis
Stage 3	Full-thickness skin loss; visible adipose tissue
Stage 4	Full-thickness tissue loss with exposed bone, muscle, or tendon

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Unstageable	Obscured full-thickness ulcer
SDTI	Suspected deep tissue injury: discoloured, intact skin or blood-filled blister

Prevention strategies for healthcare providers

- **Repositioning:** Every two hourly or three hourly intervals should be implemented for most individuals at risk of pressure ulcers, if they are also on an appropriate pressure redistribution full body support surface.
- **Pressure redistribution:** Use of specialised cushions/mattresses
- **Daily skin checks:** Document and act on early signs
- **Moisture management:** Incontinence care and barrier creams
- **Nutritional support:** Collaborate with dietitians on hydration/protein intake
- **Patient & carer education:** Promote awareness and active prevention.

Treatment approaches

- **Wound management:** Implement evidence-based debridement, dressing selection, and infection control.
- **Pressure relief:** Use of tilt-in-space wheelchairs, pressure-relieving surfaces, and frequent repositioning to reduce sustained load.
- **Manual handling and transfers:** Employ safe manual handling techniques and transfer aids to minimise shear and friction trauma to vulnerable skin.
- **Identify and address underlying causes:** Investigate and resolve contributing factors such as ill-fitting equipment, unmanaged spasticity, poor nutrition, or moisture-associated skin damage.
- **Individualised protocols:** Develop a personalised pressure relief plan in collaboration with the patient, tailored to their mobility, lifestyle, and risk factors.
- **Medical interventions:** Manage infected ulcers in line with antimicrobial stewardship and consider surgical intervention for non-healing or complex wounds.
- **Interdisciplinary approach:** Coordinate with nurses, physicians, physiotherapists, occupational therapists, and dietitians to deliver holistic care.

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- **Patient collaboration:** Actively involve the patient in decision-making and self-care strategies; this partnership is essential to both the prevention and management of pressure ulcers.

Collaboration with the patient is not optional, it is fundamental to achieving optimal outcomes in both prevention and healing.

Impact on quality of life and clinical outcomes

Pressure ulcers can lead to significant morbidity including pain, infection, hospitalisation, and decreased independence. Effective prevention and early management can enhance functional outcomes and reduce healthcare burdens.

Environmental and self-care considerations

To support skin health in SCI individuals, consider:

- Adaptive equipment: Pressure-relieving cushions, heel offloading devices, alternating pressure mattresses
- Home modifications: Adjustable beds, lifts, automated turning devices, and ergonomic supports
- Daily skin surveillance: Empower patients/carers to detect early signs
- Hygiene and moisture control: Consistent skin cleansing, drying, and protection (moisturisers/barrier applications)
- Nutrition and hydration: Support for healing and overall health
- Therapy and positioning: Tailored exercise programs to reduce prolonged pressure
- Mental health and support services: Address psychosocial needs and access support groups.

Creating an individualised care plan and safe environment is vital to long-term prevention.

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