AN OVERVIEW OF SKIN AND PRESSURE AREA MANAGEMENT

In Adults with Spinal Cord Injuries

Targeting Health Professionals

© Author: Statewide Spinal Cord Injury Service
Skin Management Taskforce Committee

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People with a spinal cord injury (SCI) are at risk of developing skin complications due to the physiological consequences of the injury. Preventative strategies and ongoing daily skin care are essential to maintain skin integrity and prevent skin breakdown. In the presence of any type/grade of skin breakdown, pressure area or ulcer, immediate actions, treatment and planning will be required.

Clients, patients, carers, health care professionals and literature may describe or refer to changes in skin integrity as any of the following:

<table>
<thead>
<tr>
<th>Pressure area</th>
<th>Pressure Sore</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bed sore</td>
<td>Decubitus Ulcer</td>
</tr>
<tr>
<td>Red area</td>
<td>Red Mark</td>
</tr>
<tr>
<td>Bruise</td>
<td>Scratch</td>
</tr>
<tr>
<td>Skin Breakdown</td>
<td>Tear</td>
</tr>
<tr>
<td>Split</td>
<td>Excoriated Skin</td>
</tr>
<tr>
<td>Macerated Skin</td>
<td>Abscess</td>
</tr>
<tr>
<td>Graze</td>
<td>Burns</td>
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**Essential Strategies for Skin maintenance**
- Maintaining clean and dry skin
- Visual skin inspection morning and evening
- Safe and efficient transfers
- Regular pressure relief (tilt-in-space wheelchair, lifting, rolling, leaning etc)
- Adequate pressure care equipment for all weight bearing surfaces

**Risk Factors for Skin Breakdown**

<table>
<thead>
<tr>
<th>Motor and sensory deficits</th>
<th>Immobility</th>
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<tbody>
<tr>
<td>Degree of functional independence</td>
<td>Incontinence</td>
</tr>
<tr>
<td>Level of injury</td>
<td>Moisture</td>
</tr>
<tr>
<td>Alteration to vascular supply</td>
<td>Trauma</td>
</tr>
<tr>
<td>Alteration to temperature control</td>
<td>Infection</td>
</tr>
<tr>
<td>Alteration to autonomic response (eg vascular and temperature control)</td>
<td>History of skin breakdown</td>
</tr>
<tr>
<td>Lack of carers/care services</td>
<td>Spasm</td>
</tr>
<tr>
<td>Nutritional status</td>
<td>Hydration Status</td>
</tr>
<tr>
<td>Incorrect posture</td>
<td>Lack of knowledge</td>
</tr>
<tr>
<td>Psychological disorders</td>
<td>Inability to apply knowledge</td>
</tr>
<tr>
<td>Cognitive impairment</td>
<td>Substance use</td>
</tr>
<tr>
<td>Smoking</td>
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</tbody>
</table>
Risk Factors for Skin Breakdown (cont.)

- Transfer technique
- Falls
- Ageing
- Weight gain or loss
- Co-morbidities
- Postural deformities
- Equipment type, use and maintenance
- Spasticity
- Scar tissue
- Friction/shearing during physical activity
- Inadequate hygiene
- Musculoskeletal deterioration
- Lack of specific education
- Clothing
- Pregnancy
- Musculoskeletal deterioration
- Unrelieved pressure
- Change in neurological status
- Any surgical procedure

People with SCI and their carers must be meticulous in all aspects of skin care. This may involve additional education programmes/information so that they are competent to observe and assess skin condition, initiate appropriate interventions and seek advice early in the event of a skin problem.

Any activity of daily living has the potential to cause skin damage for example:

**Thermal Injury:** Care must be taken with the following as both extremes of hot and cold can be destructive to skin integrity. Cigarettes, hot liquids, cold surfaces, hot surfaces (including wheelchair footplates), car surfaces, water temperature, cooking and sunburn.

**Infection:** Increased susceptibility to a variety of skin infections/lesions exists in all people with SCI. These include, but are not limited to, fungal infection, excoriation and cellulitis.

**Foot Care:** Damage to the skin integrity of feet is not uncommon. Cracks, callouses, toe nail hypertrophy, cuts, burns and incorrect toe nail care can lead to breakdown. It is essential that the feet are protected when mobilising or transferring to prevent damage from both equipment and the environment. Appropriate footwear will assist in the prevention of problems and should be large enough to accommodate post injury oedema.

High Risk Areas

Pressure over a bony prominence is often the cause of skin breakdown. Careful attention must be given to these areas (see page 3) and they will require monitoring and appropriate pressure relief.
Preventative Strategies

Equipment Issues
Pressure care is an essential consideration in all equipment prescription (eg wheelchair, cushion, mattress, commode, shower chair, toilet seat, sling, slide board, car seat and lounge chairs).

Equipment review and maintenance at regular intervals is required or with any change in health or functional status.

Check all equipment prior to use (eg mattresses, commodes, slings, cushions etc).

Seating Checklist
Cushion is properly placed on the wheelchair as per instructions for use.
Air cushions must be correctly inflated as per instructions for use.
Use only the correct cushion cover (no sheepskins, sheets, pillowcases, incontinence sheets etc).
Correct footplate placement (raising the feet increases pressure on the Ischial Tuberosity).
Review foam cushions twelve monthly and replace as required. Some foam cushions require replacement annually.

Visual skin inspection
All skin must be thoroughly inspected a minimum of twice daily for any changes in colour or texture. In order to check skin thoroughly adaptive devices, techniques or carer’s assistance may be required.

In the event of an alteration to skin integrity the affected area requires immediate pressure relief and increased monitoring and an urgent telephone consultation with Spinal Cord Injury expert clinician for advice regarding ongoing skin management.

Other areas that may now be subjected to additional pressure require monitoring every three hours.

Hygiene
Maintain clean and dry skin. Particular attention to groins and skin folds.

In the presence of multiple risk factors, (see page 1 and 2) for skin breakdown, extra vigilance is required with all of the above strategies.
Pressure Area Recognition

Not all wounds are pressure areas, however, any change in skin integrity or colour will deteriorate in the presence of pressure.

Grading of Pressure Areas

Grade One
Nonblanchable erythema of intact skin
A Grade I pressure ulcer is an observable pressure related alteration of intact skin whose indicators as compared to the adjacent or opposite area on the body may include changes in one or more of the following: Skin temperature (warmth or coolness), tissue consistency (firm or boggy feel) and/or sensation (pain, itching).
The ulcer appears as a defined area of persistent redness in lightly pigmented skin, whereas in darker skin tones, the ulcer may appear with persistent red, blue, or purple hues.

Grade Two
Partial thickness skin loss involving epidermis, dermis, or both. The ulcer is superficial and presents clinically as an abrasion, blister, or shallow crater.

Grade Three
Full thickness skin loss involving damage to, or necrosis of subcutaneous tissue that may extend down to, but not through, underlying fascia. The ulcer presents clinically as a deep crater with or without undermining of adjacent tissue.

Grade Four
Full thickness skin loss with extensive destruction, tissue necrosis, or damage to muscle, bone, or supporting structures (e.g., tendon, joint capsule). Undermining and sinus tracts also may be present.
Immediate Actions for Treatment of a Pressure Area

All pressure must be completely removed, from any pressure area, of any grade 24 hours per day.

Complete removal of pressure may be achieved without total bed rest depending on the site of the area (e.g., tray attached to wheelchair causing pressure to ribs – removal of tray will totally relieve pressure).

If pressure cannot be completely removed then bed rest, off the affected area, 24/7 is the ONLY option until the area is healed.

Avoid elevating the head of the bed. If this is not possible limit elevation to <30 and use knee break where fitted to prevent sliding down the bed.

- Contact community nursing (if not already involved)
- Assess wound
- Commence appropriate wound management
- Liaise with Local Medical Officer/Nurse Practitioner
- Determine cause of wound
- Equipment review of all weight bearing surfaces
- Contact spinal plastics outpatient services in your catchment area for support to your clinical decisions as required.
- Using clinical skills and information contained in this document, develop an holistic management plan.
ALERT

If 24 hour per day bed rest is indicated the person with SCI will be at a significantly increased risk for further skin breakdown on other areas unless the mattress is suitable for 24/7 bed rest. It is recommended that expert opinion be sought (see resource contacts list) to support your clinical decisions.

### Essential Considerations for Patients Requiring Bed Rest (longer than 3 days)

<table>
<thead>
<tr>
<th>Bowel Management</th>
<th>Bladder Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional Care requirements</td>
<td>Equipment (particularly mattress)</td>
</tr>
<tr>
<td>DVT prevention</td>
<td>Psychological impact</td>
</tr>
<tr>
<td>Protection of intact skin</td>
<td>Nutritional requirements</td>
</tr>
<tr>
<td>Dressings</td>
<td>Additional medications</td>
</tr>
<tr>
<td>Respiratory function</td>
<td>Positioning in bed</td>
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Additional information on how to manage these specific problems can be obtained from one of the resources listed at the end of this document.

### Secondary Actions for Treatment of a Pressure Area

**Conservative/Non-surgical Treatment**

- Complete removal of pressure
- Complete bed rest as necessary (see specific information on following page)
- Appropriate dressings
- Antibiotic therapy if indicated
- Gradual return to weight bearing/pressure/sitting
- Referral to Spinal Plastics Service (SPS – RNSH) or Spinal Pressure Care Clinic (SPCC – POWH)

**SPS and SPCC**

SPS and SPCC are specialised services providing multidisciplinary management of skin and/or pressure problems.
Investigations Required
Some or all of the following investigations may be required. This is dependent on general health, extent of wound and plan of management:

<table>
<thead>
<tr>
<th>Investigation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wound Swab</td>
<td>Digital photos (with indicator of scale)</td>
</tr>
<tr>
<td>Sinogram</td>
<td>Height/Weight (for BMI)</td>
</tr>
<tr>
<td>X-ray</td>
<td>CT Scan (soft tissue and bony windows)</td>
</tr>
<tr>
<td>Full blood count</td>
<td>BSL/LFT/EUC</td>
</tr>
<tr>
<td>Albumin Levels</td>
<td>Pre Albumin level if available</td>
</tr>
<tr>
<td>Inflammatory Markers (CRP &amp; ESR)</td>
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</tbody>
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Surgical Treatment
- Referral to spinal plastics service (SPS – RNSH and SPCC – POWH)
- Comprehensive multidisciplinary assessment
- Baseline pathology and radiology
- Debridement and dressings
- Planned admission
- Definitive plastic surgery and orthopaedic procedures
- Review of all weight bearing equipment (wheelchairs, cushions, commodes, slings)
- Gradual return to weight bearing as per protocol
- Education re prevention of further problems

Essential Follow up post surgery
- Re assessment of seating requirements
- Pressure measurement and clinical assessment of findings
- Surgical review 6/52
Management and Planning Tools

Any or all of the following tools may be used in the management of people with skin problems related to spinal cord injury:

- Shared Care Arrangements
- Teleconferencing
- Outpatient Clinic Review
- Video Conferencing
- Seating protocol
- Case Conference
- Multidisciplinary team review
- Digital photos
- Assessment questionnaire

In home assessment by Clinical Nurse Consultant (if available)

Resources / Contacts

Spinal Cord Injury Unit, Royal North Shore Hospital 9926 7111
(Northern New South Wales Catchment Area)

Spinal Injury Rehabilitation Unit, Moorong 9808 9269
(Comprehensive multidisciplinary rehabilitation of SCI)

Spinal Injuries Unit, Prince of Wales Hospital 9382 2222
(Southern New South Wales catchment area)

Spinal Plastics Service (SPS) 9926 7973
(Multidisciplinary Management of Pressure Areas)
Royal North Shore Hospital

Spinal Pressure Care Clinic (SPCC) 9382 8338
(Multidisciplinary Management of Pressure Areas)
Prince of Wales Hospital

Spinal Outreach Service 9808 9666

Northern Sydney Home Nursing Service 9926 5599

ParaQuad Association - Clinical Services 8741 5674
Occupational Therapy & Nursing Services
Information and Intake Officer

Northcott Society 9630 2246
(Paediatric Outreach Services)
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Authors may be contacted via the Rural Spinal Cord Injury Project and welcome your comments and feedback regarding the content of this document.
This document was published as a fact sheet for the Rural Spinal Cord Injury Project (RSCIP), a pilot healthcare program for people with spinal cord injuries (SCI) conducted within New South Wales. It is not a stand alone resource but part of a series of eight fact sheets produced by specialists to fulfil the educational components of the project.

All recommendations are for spinal patients as a group. Individual therapeutic decisions must be made by combining the recommendations with clinical judgement, including a detailed knowledge of the individual patient’s unique risks and medical history, as well as the resources available. This document is published as a guide only and does not take the place of advice from your regular health professional and /or medical practitioner.

Suggested Readings


Royal North Shore Hospital (2003) Guidelines for the Prevention of Pressure Areas