

Rural Spinal Cord Injury Project

A collaborative project between:

Prince Henry & Prince of Wales Hospital

Royal North Shore Hospital

Royal Rehabilitation Centre Sydney

Spinal Cord Injuries Australia

Paraplegic & Quadriplegic Association of NSW

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AN OVERVIEW OF SKIN AND PRESSURE AREA MANAGEMENT

In Adults with Spinal Cord Injuries



Targeting Health Professionals

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Skin Management Taskforce Committee



Project funded by the Motor Accidents Authority of NSW

**MOTOR ACCIDENTS
AUTHORITY**

SKIN MANAGEMENT AND PRESSURE AREA PREVENTION

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:

Pressure area	Pressure Sore
Bed sore	Decubitus Ulcer
Red area	Red Mark
Bruise	Scratch
Skin Breakdown	Tear
Split	Excoriated Skin
Macerated Skin	Abscess
Graze	Burns

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

Motor and sensory deficits	Immobility
Degree of functional independence	Incontinence
Level of injury	Moisture
Alteration to vascular supply	Trauma
Alteration to temperature control	Infection
Alteration to autonomic response (eg vascular and temperature control)	History of skin breakdown
Lack of carers/care services	Spasm
Nutritional status	Hydration Status
Incorrect posture	Lack of knowledge
Psychological disorders	Inability to apply knowledge
Cognitive impairment	Substance use
	Smoking

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	Change in neurological status
Unrelieved pressure	
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.

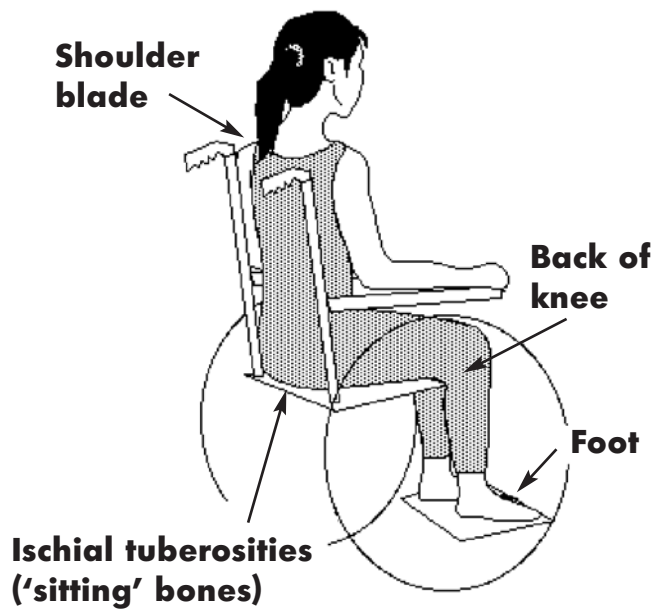
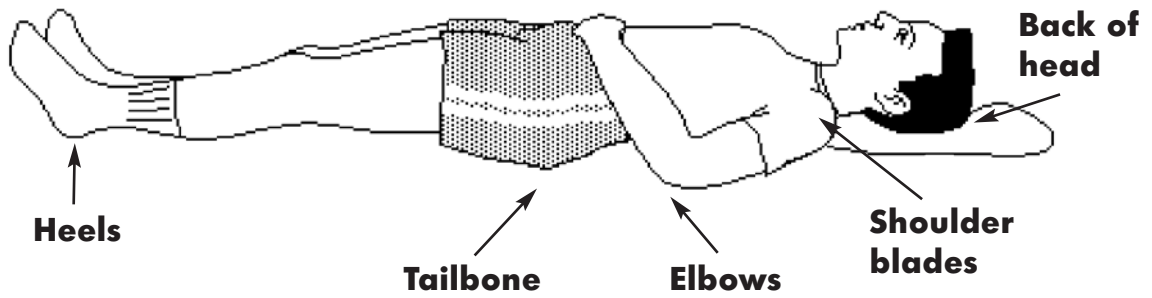
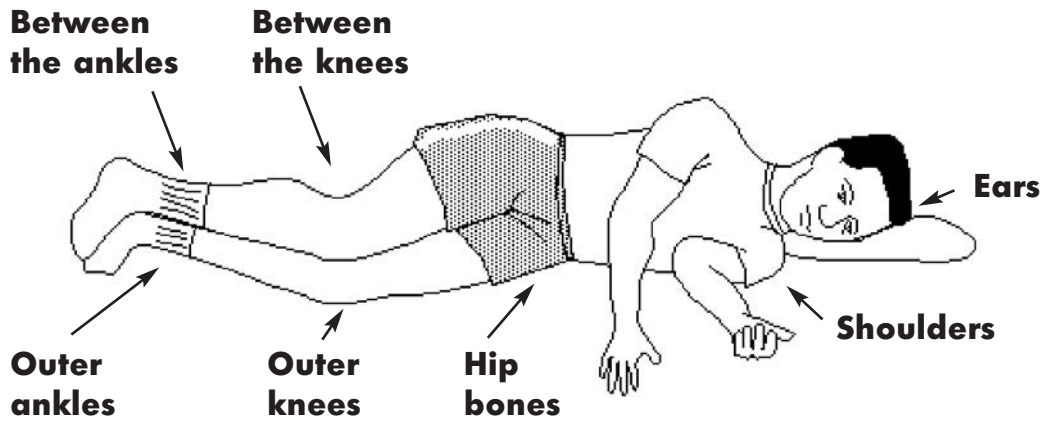
Infection: Increased susceptibility to a variety of skin infections/lesions exists in all people with SCI. These include, but are not limited to, fungal infection, excoriation and cellulitis.

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

High Risk Areas



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.

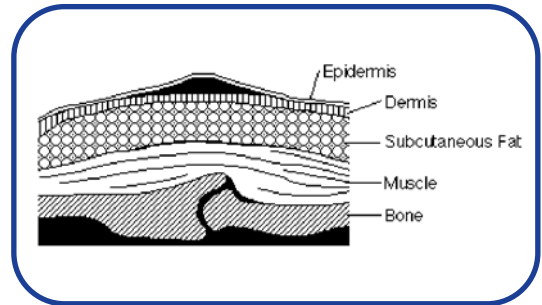
Grading of Pressure Areas

Grade One

Nonblanchable erythema of intact skin

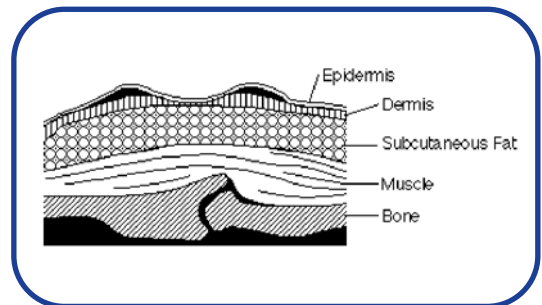
A Grade I pressure ulcer is an observable pressure related alteration of intact skin whose indicators as compared to the adjacent or opposite area on the body may include changes in one or more of the following: Skin temperature (warmth or coolness), tissue consistency (firm or boggy feel) and/or sensation (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



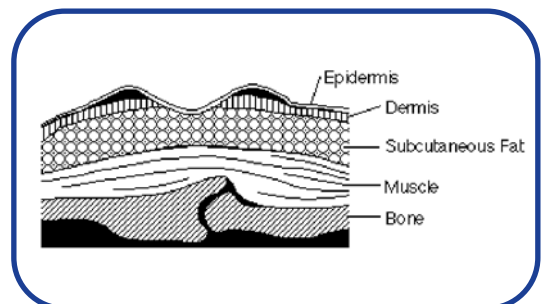
Grade Two

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



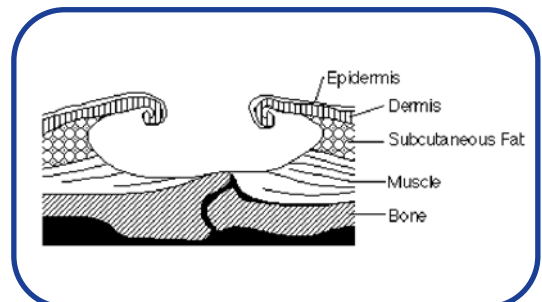
Grade Three

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 (eg 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)

Bowel Management	Bladder Management
Additional Care requirements	Equipment (particularly mattress)
DVT prevention	Psychological impact
Protection of intact skin	Nutritional requirements
Dressings	Additional medications
Respiratory function	Positioning in bed

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:

Wound Swab	Digital photos (with indicator of scale)
Sinogram	Height/Weight (for BMI)
X-ray	CT Scan (soft tissue and bony windows)
Full blood count	BSL/LFT/EUC
Albumin Levels	Pre Albumin level if available
Inflammatory Markers (CRP & ESR)	

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 (Northern New South Wales Catchment Area)	9926 7111
Spinal Injury Rehabilitation Unit, Moorong (Comprehensive multidisciplinary rehabilitation of SCI)	9808 9269
Spinal Injuries Unit, Prince of Wales Hospital (Southern New South Wales catchment area)	9382 2222
Spinal Plastics Service (SPS) (Multidisciplinary Management of Pressure Areas) Royal North Shore Hospital	9926 7973
Spinal Pressure Care Clinic (SPCC) (Multidisciplinary Management of Pressure Areas) Prince of Wales Hospital	9382 8338
Spinal Outreach Service	9808 9666
Northern Sydney Home Nursing Service	9926 5599
ParaQuad Association – Clinical Services Occupational Therapy & Nursing Services Information and Intake Officer	8741 5674
Northcott Society (Paediatric Outreach Services)	9630 2246

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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.

SUGGESTED READINGS

Consortium for Spinal Cord Medicine (2001) Clinical Practice Guidelines
Pressure ulcer prevention and treatment following spinal cord injury:
a clinical practice guideline for health-care professionals.

Wound Care Association of NSW Inc (2000)
Pressure Ulcer Prevention Guidelines an Expert Consensus Statement
(available at www.clininfo.health.nsw.gov.au/wcansw/)

Registered Nurses Association of Ontario (2002)
Risk Assessment and Prevention of Pressure Ulcers
Nursing Best Practice Guidelines Project

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

C A Salzberg et al, Predicting pressure ulcers during initial hospitalization
for acute spinal cord injury Wounds: A Compendium of Clinical Research
and Practice 11 no 2 (1999) 45-47.

RURAL SPINAL CORD INJURY PROJECT

Should you require any further copies of this document go to www.paraquad.nsw.asn.au
and follow the links from information to publications or go to:

www.ciap.health.nsw.gov.au and follow the specialties link or contact,

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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

