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Spinal Outreach Team



PART ONE: Information to guide pressure redistribution mattresses (PRM) selection

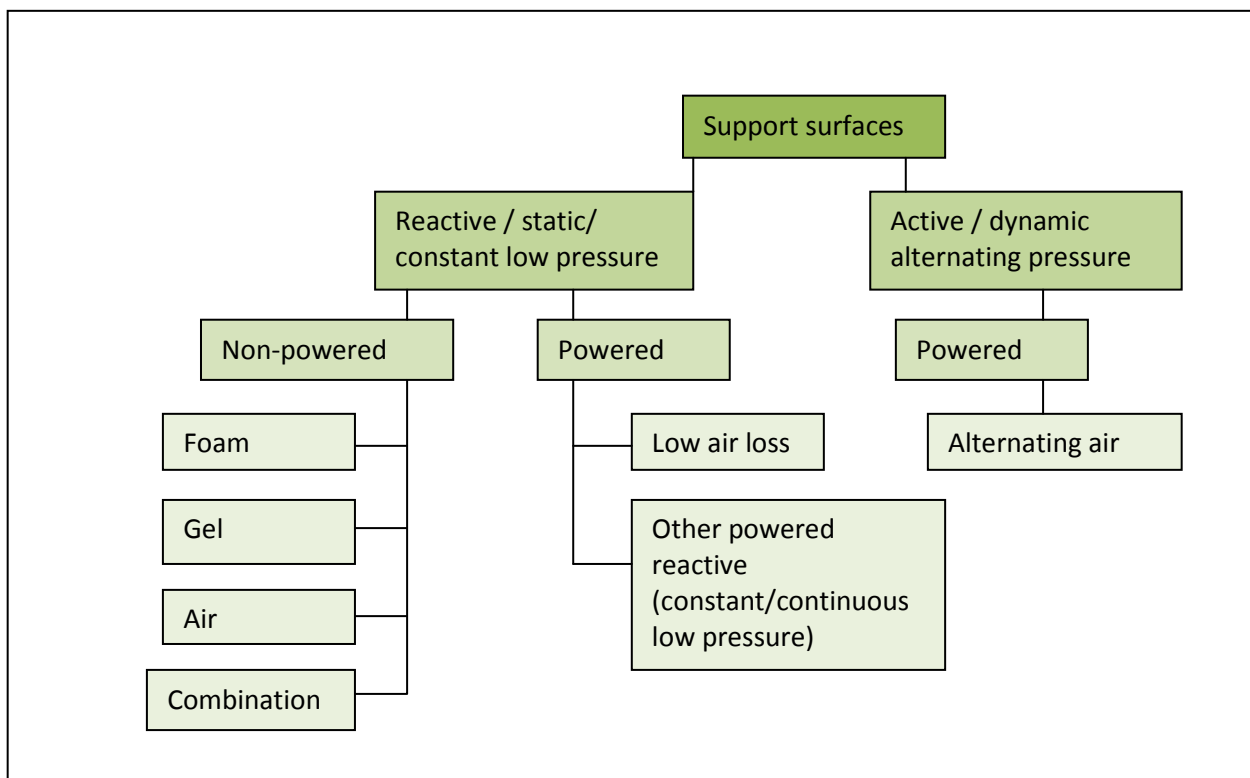
Prescribing a pressure redistribution mattress (PRM) is a complex process. The aim of this information, assessment and post assessment evaluation package is to assist clinicians to collect all the relevant information pertinent to a person with a spinal cord injury (SCI), so as to best match your client's mattress requirements with the final choice of product.

Other information is available to help match your client's needs to an appropriate mattresses. These include:

- The Australian Wound Management Association. Pan Pacific Clinical Practice Guideline for the Prevention and Management of Pressure Injury. Cambridge Media Osborne Park, WA: 2012. ISBN Print: 978-0-9807842-5-1: ISBN Online: 978-0-9807842-3-7 http://www.awma.com.au/publications/2012_AWMA_Pan_Pacific_Guidelines.pdf Chapter 6 pp 39 - 53
- MASS standing offer arrangement (SOA) for mattresses: <https://www.health.qld.gov.au/mass/prescribe/living/products-suppliers.asp>
- MASS application guidelines for mattresses: <https://www.health.qld.gov.au/mass/documents/guidelines-mattress-overlay.pdf>

Further information about SCI can be found at <https://www.health.qld.gov.au/qscis/html/health.asp> in the section titled "information for consumers and health professionals".

For the purpose of this document, the term 'mattress' is used to describe both mattresses AND overlays. However, in reality, a PRM is a mattress replacement, whereas an overlay is designed to be used on top of another mattress. A thin foam pad (60 – 100mm thick) such as those provided with some hi-lo electric beds should not be regarded as a mattress, unless no bottoming out occurs when the client lies on this pad alone.



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When selecting a **foam mattress**, consider the need for the following features.

Feature	Explanation
Castellated foam	Partial thickness cuts made in a regular block pattern on the top section of the foam increases surface contact area, comfort, and may also reduce friction and shear
Side walls	A border or stiffener along the edge increases firmness to assist mobility and transfers
Safety sides (concave shape)	May reduce risk of falls but may also reduce bed mobility. Could perhaps be regarded as a restraint
Hinging system	Wedges are removed so the mattress can conform to profiling beds

When selecting an **air mattress**, consider the need for the following features.

Feature and Description	Purpose and benefit	Needed?
Sensors for automatic body weight distribution adjustment - equalisation of cell pressure automatically takes place at each stage of the cycle	Automatically adjusts pressure within each of the cells throughout the cycle so that support, posture and therapy are constantly maintained at optimum levels in response to patient weight, movement and position.	
Fowler boost automatically increases air pressure in sacral area when in inclined or seated positions. The Fowler position is "the posture assumed by the patient when the head of the bed is raised 45 to 60 degrees and the knees are elevated slightly".	This feature increases the inflation under the pelvis so bottoming out cannot occur in the Fowler position See also "sensors for automatic body weight"	
Quick release CPR valve - rapid mattress deflation in the thoracic region for performing CPR.	Consider ease of access, whether CPR valve can be accidentally operated when changing bed linen, adjusting bed rails etc., resulting in unwanted deflation.	
Stretch foam coverlet - stretches along with the top cover	Lowers the pressure peaks under inflated cells, as the stretch cover reduces hammocking Provides thermal insulation, by preventing excessive loss of body heat through air cells. This in turn prevents vaso-constriction associated with cell chill, so may prevent the development of pressure injuries (PI) in some patients.	
Alternating air mattress - air pressure changes between cells	Number of cells in cycle and length of cycle varies between brands and models, e.g. 1:2; 1:4. For example, a 1:2 system offloads the tissue for 50% of the time; a 1:3 offloads for 33% of the time, and a 1:4 for 25%. So a 1:2 system will have body weight supported by 50% of the contact area, a 1:3 has 66% contact area and a 1:4 has 75% contact area at any one time, resulting in reduced overall peak pressure compared to a 1:2.	
Static air mattress (SAM) - the air within the mattress is at a constant level and is distributed evenly across the mattress surface, compared to an alternating air mattress where the pressures change between cells May also be referred to as "continuous low pressure"	Provides pressure relief, and pain reduction. Alternating air may create discomfort and pain when the air repositions to an affected area, or existing PI. When the air alternates to the area of the PI, it may increase pressure on that area.	

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Feature and Description	Purpose and benefit	Needed?
Cell alignment - The air cells can be transverse (across the bed) or longitudinal (head to foot)	Transverse cells can be static or alternating Longitudinal cells can only be static. May be useful if independent transfers are undertaken	
Low air loss (LAL) - immersion and envelopment combined with high air flow. Small holes in the air cells allow air to circulate around the body. Usually this type of mattress has a waterproof, bacteria impermeable, air and moisture permeable coverlet that reduces shear and friction.	Helps to evaporate skin moisture and maintain a drying environment with reduced temperatures and pressures. Creates a microclimate conducive to tissue healing. May be beneficial for those requiring an air mattress who are intolerant of alternating mattresses, palliative clients, those with burns, and low weight clients Increased surface area contact may reduce the skin/mattress interface pressure.	
Constant low pressure mode - the ability to switch from alternating to non-alternating mode,	May assist with bed mobility and performing nursing procedures on bed	
Maximum inflation mode - rapidly inflates the mattress to maximum static pressure for a finite time period	For transfers and/or nursing and personal care purposes.	
Cell-in-cell design – internal static cell remains fully inflated at all times	Reduces the risk of bottoming out, even in the event of a power interruption	
Comfort pressure settings – ability to adjust cell pressure for individual comfort	Ability to accommodate client's pressure redistribution requirements while adjusting firmness of cells for optimal comfort	
Multi zoned mattress - various sections of the mattress have different profiles and/or programming	Generally 3 static cells at head end Some have a separate zone for lower legs & feet	
Cable management - cables are secured in guides along the length of the mattress, inside the cover	Overcomes accidental disconnection of tubing and power supply, tripping on and entanglement in cords, tubing and bed rails, and power cord damage	
Deep cell therapy – extremely low interface pressure of less than 30mm Hg in supporting cells, throughout full cycle	Very low pressure. Manufacturer claims additional benefits in relation to comfort and sleep disturbance.	
Transport facility - maintains air pressure in mattress when unplugged from power, by joining inlet and outlet tubes together	Maintains constant air pressure for a few hours if removed from power source Cannot alternate in this state May benefit from foam underlay if power is unreliable.	

Additional factors to consider

Factor	Examples of things to consider	Comments
Zipper	Does the zipper need to be customised (e.g. for ease of cover removal, checking mattress function etc.)?	
Risk factors	Does the cover have fire retardant properties? Any other risk factors?	
Size required	Are foam bolsters to be placed inside the mattress cover for customised bed size? These may be needed to increase mattress dimensions to match bed size.	

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Factor	Examples of things to consider	Comments
Durability	Is the mattress suitable in the client's home environment? Are there any factors that are likely to affect durability (e.g. sand/grit on clothing if undressing on mattress, pets sleeping on the mattress etc.)?	
Cleaning and maintenance	Is the cover impermeable to fluid and bacteria? How often should the mattress be wiped over, and with what? Can cover be machine washed? Does the mattress require rotating or turning? Is there someone who can do this? Who will instruct client/carer re cleaning and maintenance?	
Cost	Is this the most cost effective mattress that suits the client's needs? Consider eligibility for funding. Consider MASS basic and non-basic funding criteria. Is client aware co-payment may be required?	
Ease of transferring	Is this mattress intended to enable independent transfers and bed mobility? If this hasn't been achieved do you now need to consider other means of transfers and bed mobility?	
Availability and ease of access to timely repairs	Is there a local, qualified supplier/repairer who can undertake timely repairs and maintenance? Does this affect your decision making?	
Independent access to motor unit	Does the client need to reach the motor unit independently to adjust settings for bed mobility, transfers, comfort etc.? If so, do you need to script longer tubing (and power cord) so motor can be positioned at head end of bed?	
Ease of use	Can client/carer/family ensure the correct set up of the mattress? Are they likely to recognise if something goes wrong, and do they know who to contact in this event?	
Ease of transport	Does client go away for holidays? Does the mattress need to fit a small space in a vehicle for this, or would the client hire a mattress instead?	

Abbreviations used in this document

IT	Ischial tuberosity	PWC	Powerdrive wheelchair	MSC	Mobile shower commode	MWC	Manual wheelchair
SCI	Spinal Cord Injury	SOA	Standing Offer Arrangement	PI	Pressure injury/injuries	SPOT	Spinal Outreach Team

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PART TWO: Pressure Redistribution Mattress (PRM) assessment tool

Client Name _____

Address _____

Date of assessment _____ Phone/email _____

Level of Injury _____ Living situation (alone, in/formal support/carer) _____

Details of other health professionals involved with skincare & equipment: _____

Clinical condition: Include recent illness, surgeries, other medical conditions that may impact on skin health and tissue viability (e.g. diabetes, cardiovascular conditions), general health and nutrition, if a smoker etc. _____

Eligibility for funding: (MASS, DVA, Insurance, Work Cover etc.) _____

Body shape, spasm, muscle tone and contractures

Weight _____ kg Height _____ cm Body shape (e.g. thin, obese, bony) _____

Is there any muscle wasting below level of injury? **Y / N** Does client experience spasms in bed? **Y / N**

If so, which part of the body? _____ What triggers the spasms? _____

What position is client in at the time? _____

Does the limb return to the resting position or remain in post-spasm position? **Y / N** _____

Any contractures impacting on position in bed? **Y / N** _____

Sensation

Describe sensation below level of injury (e.g. none, patchy, normal, distorted) _____

Bed Mobility

What position does the client lie in at night? _____

How long is spent in this/these positions? _____ Can client roll independently? **Y / N**

Does client set an alarm to wake for turns during night? **Y / N** How often? _____

Does client get turned by another during the night? **Y / N** How often? _____

What assistance is required for bed mobility? _____

Do any non-adjustable postural issues or bony prominences impact on positioning in bed? **Y / N** _____

Transfers

List equipment used in transfers (e.g. MWC, PWC, MSC, type of pressure cushion, slide board, hoist) _____

Describe how client transfers to & from bed? _____

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Is height of mattress critical? **Y / N** Why? _____

What assistance is required for transfers to and from bed? _____

Continence management in bed

Will client need to self-catheterise in bed? **Y / N** If so, what position is used? _____

Will head of bed need to be raise to help achieve this position? **Y / N**

Will client undertake bowel management while in bed? **Y / N** If so, what positions are used for which activities (e.g. enema insertion, digital stimulation, manual evacuation)? _____

Dressing

Does client dress in bed? **Y / N** If Yes, what does this involve (e.g. rolling, sitting, propping etc. _____

Issues that may impact on ability to monitor mattress

Does client have any of the following? Mental health issues **Y / N** Cognitive issues **Y / N** Drug or alcohol issues **Y / N**
(If the answer is 'Yes' to one or more of these questions, the client may be better with a 'set and forget' type mattress)

Information about current bed and mattress

What bed and mattress is client currently using? _____

Why does current mattress need replacing? _____

Does client get red skin areas that don't disappear after 30 minutes caused by the current mattress? **Y / N**

Does client intend to keep current bed and use it with the new prescribed mattress? **Y / N** If no, what type of bed will be used? _____

Does/will bed have: Hip break **Y / N** Knee break **Y / N** Hi/lo facility **Y / N** Bed rails **Y / N**

Dimensions of desired mattress: Length _____mm Width _____mm Thickness(if height is critical) _____mm

Bed Use

How long is spent in bed per 24 hour period on average? _____ Is this consecutive hours, or broken up? _____

What is the longest time period spent in bed, on average? _____

Is bed shared with another person? **Y / N**

Which side of the bed does the client use? Left _____ Right _____ Middle _____

Does the head end of the bed need to be raised for:

Eating meals **Y / N** Watching TV **Y / N** Respiratory function? **Y / N** Other activities **Y / N** _____

Comments (e.g. what angle of incline, what period of overall time in bed etc.) _____

Does client intend to smoke in bed? **Y / N** _____

Does client live in area where the electricity supply is often unreliable? **Y / N** _____

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Personal preference

Does client prefer a firm, soft or other type of mattress? _____

What types of PRMs have been trialled in the past? _____

Which was liked and why? _____

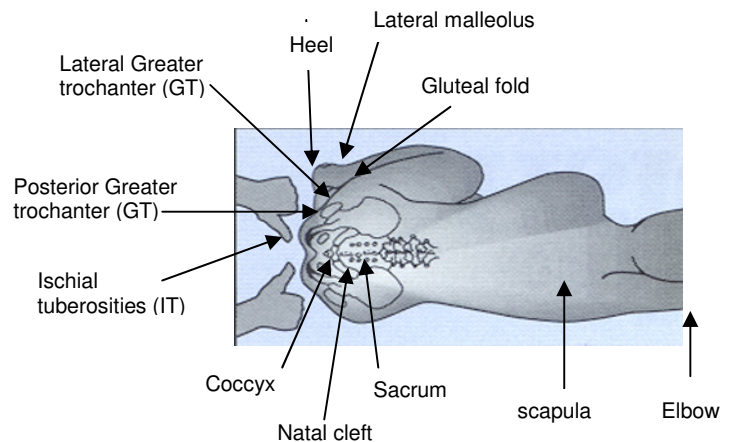
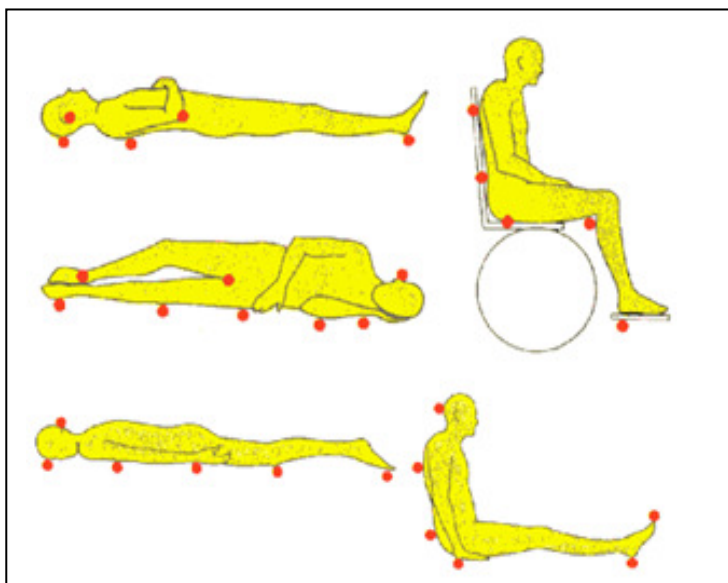
Which wasn't liked and why? _____

Skin Assessment:

Observe for scarring, existing red areas or PIs. Does client check own skin daily/twice daily? How are skin checks done?

	Location e.g. IT, heel (refer to diagrams on this page)	Current/ Previous	Duration e.g. current, previous, how long, how frequently	Probable cause e.g. sitting, shear, spasm, pressure, bad transfer, other equipment, what client thinks caused PI	Description i.e. size, colour, severity (use PI grading 1 – 4)
1					
2					
3					
4					

The following diagrams indicate the common locations of PIs in both sitting and lying, with the second diagram also demonstrating the best position for checking the location of PIs over the ischial tuberosities (ITs). If you suspect the current PI unlikely to have been caused by mattress, check all other equipment being used for possible cause of PI.



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PART THREE: Post trial PRM evaluation

Client Name _____

Address _____

Phone/email _____

Date of trial: / /20 - / /20

Type of mattress trialled: (refer to diagram in part one, page one for explanation)

Reactive (static, constant/continuous low pressure) **Y / N**

Non-Powered: Foam / Gel / Air / Combination _____

Powered: Low air loss / other powered reactive (constant/continuous low pressure) _____

Active (dynamic) alternating pressure **Y / N**

Alternating air: _____

Brand of mattress: _____ **Model:** _____

Trial supplier & contact details: _____

Did mattress provide adequate pressure management? **Y / N** Comment re need for turns, skin integrity, red areas etc.

Was this mattress comfortable? **Y / N** Comment re temperature, pain, noise etc. _____

Were transfers successful? **Y / N / NA** Comment as to whether better or worse than current mattress etc. _____

Was bed mobility possible? **Y / N / NA** Comment whether better/worse/about the same as current mattress etc. and why

Was client able to attend to ADLs such as bladder/bowel management, dressing etc.? **Y / N / NA** Comment re success of this: _____

Was client/carer able to successfully monitor the mattress? **Y / N / NA** _____

Would client be happy to use this mattress in the long term? **Y / N** Why? _____

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Other features:

Feature	Trialled Y/N	Useful Y/N	Feature	Trialled Y/N	Useful Y/N	Feature	Trialled Y/N	Useful Y/N
Auto weight & position sensor			Fowler boost			CPR valve		
Coverlet			Alternating air			Static air		
Cell alignment transverse			Cell alignment longitudinal			Low air loss		
Constant low pressure mode			Maximum inflation mode			Cell in cell		
Comfort pressure settings			Multi zoned			Cable management		
Deep cell therapy			Transport facility					

Other considerations

Feature	Suitable in this mattress Y/N/NA	Feature	Suitable in this mattress Y/N/NA	Feature	Suitable in this mattress Y/N/NA
Zipper		Durability		Size	
Risk factors		Cost		Transfers	
Repairs		Access to controls		Cleaning/maintenance	
Ease of use		Ease of transport			

Summary/notes for further trials, information to add to application, diagrams etc.

Actions:

- 1.
- 2.
- 3.
- 4.
- 5.