

**Spinal Seating Professional Development Program
RD14.1: Likely Causes of Pressure Injuries**

Identifying the likely cause of pressure injury in relation to bony prominences against contact surfaces

When a pressure injury is discovered it is important to identify and document the likely cause. This information is valuable as a guide to what must be done to aid healing, prevent recurrence and eliminate the cause.

Sometimes an apparent pressure injury is actually the result of a burn, graze or other cause, and this needs to be kept in mind when seeking the cause of injury.

The location of the pressure injury is the most obvious clue as to the cause, and the Table below shows likely cases in relation to the position of the pressure injury and the bony prominence involved.

Tissue which has been recently damaged by a bruise, graze or burn is much more vulnerable to applied pressure than would normally be the case. For example, a patient with a bruise is (until the bruising heals) very vulnerable to pressure injuries when sitting on the bruised tissue. In this case causative factor was not a problem with the patient's pressure cushion, but the failure to recognise the bruise and stay off it until healed. In such a case the sudden onset of the pressure injury (no recent history of red marks or skin problems) gives a clue that there may have been a specific incident that was the underlying cause. While the pressure cushion should be reviewed, there is also a need for patient education and review of factors that may have contributed to the initial bruise (E.g. transfer techniques).

The occurrence of a pressure injury following a series of lesser indications (red marks, or discoloured, scaly skin etc.) over time suggests a consistent problem with equipment, clothing or care practice that needs to be addressed.

Bony prominence	Support Surfaces to be investigated:	Additional factors to be considered:
Ischial Tuberosity	<ul style="list-style-type: none"> • Seat (or cushion) in wheelchair, commode, car etc. • Mattress or clinical table, when backrest is partly raised. • Thick or harsh trouser material, clothing seams or creases. • Non-stretch cover over pressure cushion. • Hard object (keys, coin etc) left on pressure care cushion 	<p>Tuberosity is likely cause of pressure injuries in the gluteal fold (crease between top of thigh and buttock), particularly when the body tends to slide forwards in chair, or slide down the bed due to raised backrest</p> <p>Height of foot supports is related to loading of pelvis on cushion – raising foot supports increases pressure under pelvis</p> <p>Duration of unrelieved sitting needs to be considered, particularly for “high pressure” seating such as commodes</p> <p>Beds with backrest raise should also have knee break to minimise shear under pelvis</p>
Greater Trochanter	<ul style="list-style-type: none"> • Mattress or clinical table (side lying -when area is on lateral aspect of trochanter) • Seat (cushion) in wheelchair, commode, car etc. • Commode seat 	<p>Poor sitting posture.</p> <p>See also factors listed under Ischial Tuberosity</p>
Sacrum/ Natal cleft	<ul style="list-style-type: none"> • Mattress or clinical table (supine, or with backrest partly raised) • Seat or backrest in wheelchair, commode, car etc. • Commode seat 	<p>Poor sitting posture</p> <p>Natal cleft is susceptible to tearing of skin during hoisting with sling - hoisting technique is important</p> <p>Beds with backrest raise should also have knee break to minimise shear under pelvis</p>



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Coccyx	<ul style="list-style-type: none"> • Seat (cushion) in wheelchair, commode, car etc. • Mattress (supine lying, prominent coccyx) • Thick or harsh trouser material, clothing seams or creases, or non-stretch cushion cover over pressure care cushion 	See also factors listed under Ischial Tuberosity
Legs, Heels, Ankles & Feet	<ul style="list-style-type: none"> • Foot supports in wheelchair, commode etc. • Foot board in bed (plantar surface of foot) • Mattress or clinical table (ankles in side lying, heels when supine) • Footwear 	<p>Absence of footwear leaves the feet vulnerable to injury</p> <p>Injury may be a burn from contact with metal parts of chair frame, or household plumbing, under bench contact with stovetop, or floor of car above exhaust etc., particularly when patient prefers bare feet</p>
Head	<ul style="list-style-type: none"> • Mattress or clinical table (supine lying) or pillow • Orthoses or cervical collar • Headrest of wheelchair etc. 	
Scapula	<ul style="list-style-type: none"> • Mattress or clinical table (supine lying) • Backrest of wheelchair, commode, car seat etc. 	Protruding scapulae are at increased risk
Elbows	<ul style="list-style-type: none"> • Mattress or clinical table (supine lying) • Armrest of wheelchair, commode, car etc 	
Hips (Iliac spines)	<ul style="list-style-type: none"> • Clinical table or Mattress (supine lying) • Orthotic jacket • Ribcage (severe scoliosis) 	
Ribcage	<ul style="list-style-type: none"> • Backrest tubing of wheelchair, commode etc • Lateral trunk support of wheelchair, commode etc. 	Scoliosis increases risk
Spinous processes	<ul style="list-style-type: none"> • Backrest of wheelchair, commode, car etc. • Mattress or clinical table (supine lying) 	Kyphosis increases risk

Equipment factors relating to pressure injuries

Wheelchairs, commodes and others seating

- Sharp edges, protruding screws etc. can damage cushions, or create risk of injury.
- Commode seat may have torn vinyl or sealed plastic seams that are sharp or rough.
- Commode seats aperture may be wrong size or badly placed to accept ischial tuberosities.
- Protruding brake handles, clothing guards etc. can could cause bruising or injuries during transfers.
- Self-repositioning may be impeded by equipment problems E.g. tilt in space, leg rest and/ or backrest actuators not usable, or lack of suitable grip points for self-lifting.
- New or changed equipment is a risk unless carefully trialled before final selection.

Seating in vehicle / air travel

- Consider pressure care cushion for the seat
- Distance from seat to floor height influence effectiveness of pressure distribution on the seat / cushion
- Position of lower limbs when in a car/ quad bike can lead to injury through contact with unpadded or hot surfaces.
- Be aware of positioning of the feet so that the shoe will not rub against the back of the heel.