Queen Elizabeth National Spinal Injuries Unit

Skin Tolerance Protocol

Pressure Ulcer Prevention (PUP)

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Contents

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Immediate Management and Transfer following Spinal Cord Injury

Following Spinal Cord Injury (SCI) and upon transfer to a Major Trauma Unit, a Vacuum Immobilisation Mattress (VACU) should be used to allow full in-line immobilisation and skin protection. An appropriately sized semi-ridged 2-piece neck collar is used (unless contraindicated as advised by medical staff) to protect the cervical spine.

This same method of transfer will be employed to transfer patients to the Queen Elizabeth National Spinal Injuries Unit (QENSIU) High Dependency (HDU) Edenhall Ward.

On arrival at Edenhall Ward, patients will be transferred safely onto a spinal turning bed by 7 members of staff:

1 to support the neck, who is responsible for co-ordinating the transfer onto the bed.

3 staff at each side of the bed:

- 3 to roll the patient.
- 3 to put the sliding board and sliding sheet in place from the opposite side.

Management on a Spinal Bed

Following SCI, the priority is to protect the spinal cord. The best way to do this is to maintain spinal alignment. This is achieved by nursing the patient on an electric lateral turning bed, we currently use NEXUS turning beds. A ROHO overlay mattress, which is a non-powered, adjustable, zoned, advanced pressure-relieving mattress overlay, can be used when deemed safe to do so by medical staff. This allows for positional changes to be carried out while maintaining spinal alignment/immobilisation.

Once transferred, and safe to do so, a log roll will be carried out, and a full assessment of the patient's skin will be completed. Any skin damage will be recorded on the My Admission Record (MAR) within digital clinical notes, and all NHSGGC documentation completed, including Pressure Ulcer Daily Risk Assessment (PUDRA) and care rounding. If pressure damage is noted, a red flag is completed. If the pressure damage is grade 2 or above, a referral to Tissue Viability Nurse (TVN) for red day review is made via TrakCare. If the heels or ankles have grade 1 damage, unresolved after 2 hours, pressure ulcer prevention boots e.g. Prolevo boots should be considered as per NHSGGC policy. Pressure ulcer prevention boots should be the correct size as there are varying sizes and incorrect fitting can lead to pressure damage.

If the decision is made not to use pressure ulcer prevention boots, or if boots are unavailable, pillows can be used to relieve pressure to the heels and ankles. Pillows must be placed under the legs with the feet suspended off the mattress. Pillows should not be placed directly under the heels or ankles as this will increase pressure. Two hourly care rounding is prescribed to confirm the pillows have not moved position and to ensure heels and ankles

remain pressure free. The clinical rational for not using pressure ulcer prevention boots must be documented using the care rounding variance chart.

If there is deterioration despite the use of pillows and 2 hourly care rounding, a referral should be made to the Orthotics Department for an alternative pressure relieving orthosis.

Any pressure damage identified should be assessed using a measurement scale and documented in the wound assessment chart.

Pressure Ulcer Prevention while being nursed on a Spinal Turning Bed

A log roll is carried out once every 24 hours.

Whilst log rolling, a full assessment of the patient's skin and personal care is carried out, any change or damage to the patient's skin should be highlighted to the medical team and an MDT decision made regarding skin management, whilst maintaining spinal immobilisation preventing neurological damage.

Moisture can contribute to skin damage. The sacral cleft can be particularly susceptible, with the risk of a sacral split developing. Care should be taken to reduce risk of skin damage from moisture. If incontinence is an issue, NHSGGC recommend the use of a thin layer of barrier cream.

PUDRA, Care Rounding, Care plan and if necessary, a wound assessment chart should be updated as per NHSGGC policy.

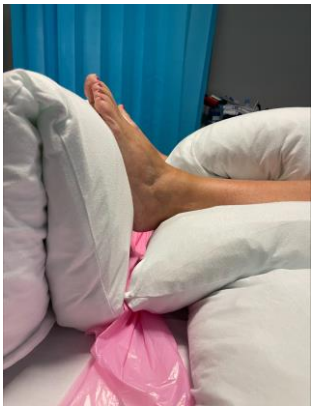
Turning on a spinal bed

Spinal Turning beds tilt side to side to provide pressure relief. Turning on a lateral turning bed will allow skin tolerance in bed to be built up to a maximum of 4 hours, 2 hourly left side/back/right side on two occasions for each then:

- 3 hourly left side/back/right side on two occasions for each then
- 4 hourly left side/back/right side is reached

All accessible/visible areas of skin will be observed at regular intervals during routine turns and when staff are in attendance with the patients.

Paraplegic patient nursed on a turning bed


Tetraplegic patient nursed on a turning bed (arm boards are optional)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Pillow positioning whilst being nursed on a turning bed

While nursed on a spinal turning bed, one pillow is placed lengthways under each leg ensuring the knees are supported and heels are suspended off the mattress. This will prevent hyperextension of the knees and avoid pressure to the heels and ankles.

One pillow is placed at each foot, maintaining the anatomical neutral position and preventing contracture of the plantar flexors.

Patients with cervical and higher thoracic injuries should not have a pillow behind their head unless stated by the medical team.

Arm Boards should be used on alternate arms to relieve pressure to vulnerable areas of the upper limbs and prevent contractures but are rotated every 1-2hrs and skin inspection carried out.

If the patient has pressure damage and the spine is unstable, the use of ROHO sections may be used on advice of medical staff.

Best practise is to use a lateral turning bed, which allows for safe turning and prevents neurological deterioration.

Orthosis/Medical Devices Used in Unstable Spinal Cord Injury

Cervical collars are completely removed once per day with occipital, neck and chin areas inspected. If there are concerns regarding skin integrity under collars/orthosis or any medical devices, tissue viability recommend the use of a silicone contact layer, e.g. Kliniderm, when there is an early warning sign (EWS). This product can be used, removed, washed, and reapplied when the skin is intact, it should not be used on broken skin.

Anti-Embolism stockings are removed once per day to carry out a full skin inspection of the feet and legs. If the skin is marked due to anti-embolism stockings, these should not be reapplied, sequential stockings should be used as an alternative.

Prevention of Pressure Ulcers Following Spinal Cord Injury

SCI results in reduced or absent movement and sensation below the level of injury, patients are unable to change position in response to discomfort. Patients are therefore at risk of pressure damage because they cannot pressure relieve naturally.

The aim of pressure ulcer prevention is to build skin tolerance up slowly over an agreed period. To achieve increased pressure tolerance, the skin is carefully exposed to increasing pressure of an appropriate surface over time without skin breakdown. Patients are taught how to recognise early signs of pressure damage and take appropriate action to prevent further deterioration and resolve any damage.

The spinal skin tolerance protocol aims to safely increase time spent in a wheelchair without having to return to bed to pressure relieve, thus enabling those living with a SCI who are wheelchair users to sit all day in their chairs and return to work, study, recreational activities etc.
Skin tolerance is defined as the amount of time a patient can lie or sit on the same skin surface without the skin becoming damaged.
Skin damage is a non-blanching mark that does not fade within 15 minutes.

Building Skin Tolerance Up Whilst In Bed

1. All patients commence turning at 2 hourly intervals – side/side turns should be encouraged to ensure the sacral and buttock areas are kept free from pressure and allow reperfusion whilst in bed. These areas are more prone to pressure damage in a wheelchair.

2. If each hip/side remains free from pressure damage after 2 hourly turns, turns can be increased to 3 hourly side/side. This is a turn onto the patient's side and not a 30-degree tilt.

3. If each hip remains free from pressure damage after 3 hourly turns, turns can be increased to 4 hourly side/side.

4. Once turning 4 hourly side/ side is achieved the following steps are taken:

    - 4 hourly side/side turns – repeat this twice, and if the skin remains free of pressure damage progress to 5 hourly side / side turns - repeat this twice, and if the skin remains free of pressure damage progress to 6 hourly side / side turns - repeat this twice, and if the skin remains free of pressure damage progress to 7 hourly side / side turns - repeat this twice and if the skin remains free of pressure damage progress to 8 hourly side / side turns - repeat this twice and if the skin remains free of pressure damage increase until 10 hourly side / side turns are achieved.

The aim is to achieve turn times twice, on each side, with no pressure damage occurring. Turn times will only be increased as above when the skin remains intact, showing no signs of pressure damage at all.

For example, if a patient is in their wheelchair during the day it will take 4 nights to achieve 8 hourly turns safely. If positioned on the right side on night 1 for 8 hours, then on night 2 they will be positioned on the left side, and this would be repeated for night 3 and 4. This approach allows for skin tolerance to be built up safely. If any damage is noted at all then the patient should not be positioned on the side with damage until the damage has resolved.

Patients to have the confidence to sleep in the same position without the need to be turned overnight, eliminating the need for an overnight care visit.

If a non-blanching red mark (grade 1) appears on any skin surface and fades within 30 minutes, turns should remain static until tolerance is achieved. If the red mark (grade 1) takes more than 30 minutes to fade, turns should be decreased accordingly. If tissue damage does not fade it is not appropriate to lie on the affected area. For example, if there is a red area on the left hip then the patient should only be positioned on the right side and the back.

Positional change timing will only be increased as above for intact skin surfaces. Damaged skin will be left pressure free until completely healed.
Once tissue damage is completely healed for 48 hours the mobilisation protocol is recommenced as per steps 1-4 above.
If pressure damage is unresolved then a therapy mattress should be requested. Turns onto the unaffected pressure areas do not need to be reduced to 2 hourly because a therapy mattress has higher pressure relieving properties.
Turn times on the therapy mattress should be reduced by half what they were, for example a patient has pressure damage on the left side and was turning 8 hourly, turns would be changed to 4 hourly right side and back with the left side remaining pressure free.
When the pressure damage has healed and 8 hourly skin tolerance has been achieved on a therapy mattress, the patient should be transferred onto a foam mattress. Turns will be reduced to 2 hourly and built up as before in steps 1-4. Intervals between turns should always be reduced to 2 hourly when changing from a mattress with greater pressure relieving properties to one with lesser pressure relieving properties.

Accessible/ visible areas of skin should be inspected regularly between turn times whilst staff are in attendance with patients. If pressure damage is present, this is recorded on PUDRA and care rounding increased to 2 hourly. The back of the care rounding document is completed to record pressure area care has been carried out. It should be documented in PUDRA in the comments box that the skin protocol is being followed.

<u>Air Fluidised Care System (Pearl beds from Hillrom)</u>

In exceptional circumstances, for the management of severe or extensive pressure ulcers, air fluidised beds will be prescribed.
When nursed on these beds patients will remain on bedrest. Patients should still be repositioned 6 hourly side to side, promoting lung expansion and helping prevent contractures.

The sheet creases are straightened when the patient is being turned, the sheet attached to the bed is also straightening, it is confirmed that the patient is not bottoming out on the bed. Accessible and visible areas of skin are checked 2 hourly as per PUDRA and care rounding.

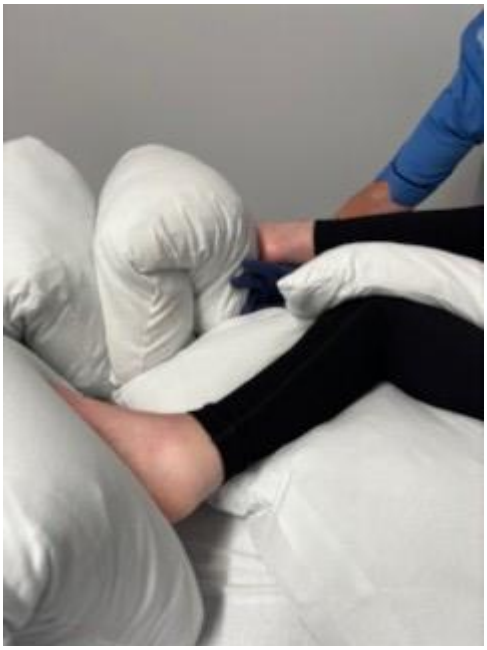
Pillow Positioning for All Patients in Bed

Once the spine is stable, great care should be taken when placing pillows for pressure relieving purposes – pillows should be placed to relieve pressure from bony prominences, care should be taken when positioning the legs to ensure no increase in pressure is caused by pillows. To ensure bony prominences (ankles/ heels/ knees) remain pressure free, a pillow is placed between the thighs, a pillow is placed below the knees but above the ankle, and a pillow is placed at the sole of the feet to maintain neutral ankle position.

When patients are nursed on a foam mattress, it is essential to ensure the heel and ankle are completely pressure free i.e. not in contact with the mattress.

Pillows are not recommended under the legs when the patient is nursed on a pressure relieving mattress as the pressure of the pillows will be greater than that of the therapy mattress. Only pillows between the legs will be needed.

For patients with a thoracolumbar injury, when lying on the side a pillow is placed at the patients back from the cervical to lumbar region to support the patient and prevent them from rolling backwards.



For patients with a cervical Injury, when lying on their side, their shoulders can remain on the bed with the pelvis tilted to either side with a pillow at the lumber region.

Nurses experienced in the care and management of spinal cord injury will demonstrate all of these positioning techniques.

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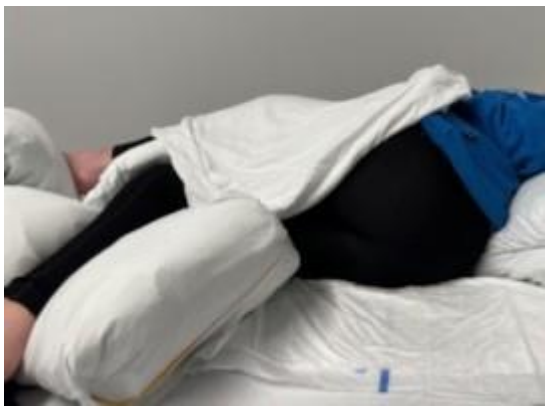

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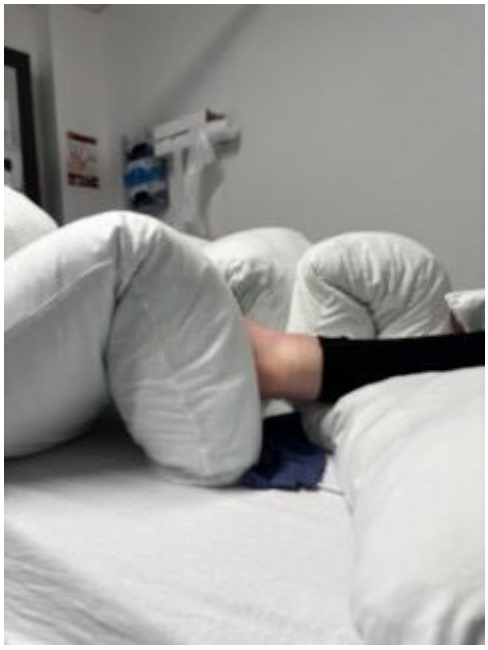

Cervical or thoracolumbar Injuries:

When lying on their back

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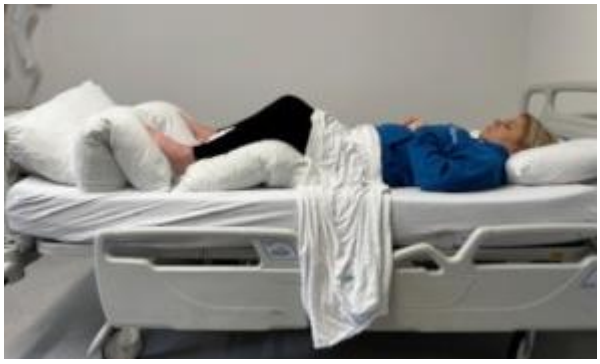

Carefully positioned pillows allow the heels and ankles to remain pressure free.

If the heels or ankles have grade 1 pressure damage, unresolved following 2 episodes of 2 hourly care rounding, NHSGGC policy should be followed, a pressure ulcer prevention boot should be considered. The pressure ulcer prevention boot should be the correct size as there are varying sizes and incorrect fitting can lead to pressure damage.

If the clinical decision made is not to use a pressure ulcer prevention boot, or they are unavailable, pillows can be used to provide pressure relief to the heels and ankles. Pillows must be placed under the legs with the feet suspended off the mattress. Pillows should not be placed directly under the heels or ankles as this will increase pressure. Two hourly care rounding should be prescribed to confirm the pillows have not moved position and to ensure the heels and ankles remain pressure free. The clinical rational for not using pressure ulcer prevention boots must be documented using the care rounding variance chart and recorded in DCN as an additional intervention in the skin/wound care plan.

If there is further deterioration despite the use of pressure ulcer prevention boots or pillows and 2 hourly care rounding, it is appropriate to refer to the Orthotics Department for an alternative pressure relieving orthosis.

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If pressure damage becomes grade 2, the case must be referred to TVN for a red day review.

Mobilising Protocol following Spinal Cord Injury

A patient's time sitting and mobilising in a wheelchair is increased following the below guidelines for all patients whether during primary rehabilitation or sitting following the healing of a pressure damage. All patients should be seated on their individual specialised cushion in their wheelchair for a morning session and an afternoon session with a rest of at least 2 hours between each session. The skin should be checked prior to and after sitting. If the skin is unmarked following the two sessions then sitting time can be increased by 15 minute intervals per day, until 1 hour is achieved, then by 30 minute intervals. The sitting times must be achieved twice before the time is increased.

Any increase in sitting time is subject to there being no pressure damage present. If there is pressure damage to an unrelated area, for example the foot or ankle, then mobilising can still take place. Clinical judgement should be employed to determine seating times for more vulnerable patients' e.g. frail elderly or patients with medical concerns.
The following is a guide to increasing sitting times, individual person-centred care and clinical judgement should guide decision making. Some patients may only increase their time in a wheelchair every 3rd or 4th day.

Day 1 – mobilise 15 minutes twice.

Day 2 – mobilise for 30 minutes twice.

Day 3 – mobilise for 45 minutes twice.

Day 4 – mobilise for 1 hour twice.

Day 5 – mobilise for 1 hour 30 minutes twice.

Day 6 – mobilise for 2 hours twice.

Day 7 – mobilise for 2 hours 30 minutes twice.

Day 8 – mobilise for 3 hours twice.

Day 9 – mobilise for 3 hours 30 minutes twice.

Day10 –mobilise for 4 hours twice.

Once patients are sitting up for 4 hours twice a day it can become more difficult to fit in two separate mobilising sessions in a day. It may be easier for the patient to mobilise for one session in the middle of the day.

Each sitting time still needs to be achieved twice before increasing.

Day 11 - mobilise for 4 hours 30 minutes once.

Day 12 - mobilise for 4 hours 30 minutes once.

Day 13 - mobilise for 5 hours once.

Day 14 - mobilise for 5 hours once.

Day 15 - mobilise for 5 hours 30 minutes once.

Day 16 - mobilise for 5 hours 30 minutes once.

Day 17 - mobilise for 6 hours once.

Day 18 - mobilise for 6 hours once.

Day 19 - mobilise for 7 hours once.

Day 20 - mobilise for 7 hours once.

Day 21 - mobilise for 8 hours once.

Day 22 - mobilise for 8 hours once.

Once 8 hours have been achieved the patient is considered to be up as able.

On returning the patient to bed, the sitting times and condition of the skin is documented accurately in the care rounding document. If there are any non-blanching red pressure areas, care rounding is reduced to 2 hourly and PUDRA updated to reflect this. Accessible/ visible areas of skin should be inspected regularly during mobilising whilst staff are in attendance.

Particular care should be taken with cushions prior to seating, for example:

- Cushions should be positioned on the chair the correct way.
- The cushion cover should be fitted correctly.
- If a Jay 2 cushion is used, the gel in the cushion should be redistributed prior to mobilising.
- If a ROHO cushion is used, the ROHO pressures must be checked and be correct prior to mobilising.
- If there are concerns about the cushion provided or its use/set up, occupational therapy colleagues will review.
- The trousers should not be pulled up to position the patient back in their wheelchair.
- It is important that the catheter and bag/straps etc. are correctly positioned and not under the patient.
- With regard to mobilising following a period of bed rest for a non-pressure related problem, if the patient has been on bedrest for 2 days or less, no change is required to their sitting time. If they have been on bed rest for 7 days or less their sitting time is halved and increased by 1 hour per day. If they have been on bedrest for 8 days or more, the sitting time starts at 1 hour and is increased by 30 minutes per day. If they have been on bed rest for 2 weeks or more, they should start sitting up for 30 minutes.
- With regard to mobilising following a period of bed rest for a pressure related problem, if the patient has been on bedrest for 2 days or less, no change is required to their sitting time (if the cause has been alleviated). If they have been on bedrest for 7 days or less, the sitting time is reduced to 1 hour and built up by 30 minutes per day. If they have been on bed rest for 8 days or more, the patient should start mobilising for 15 mins sessions only.

In some instances, patients may be mobilised with a red mark (grade 1) on their hip or high sacral region, this can only be decided by an experienced senior nurse/ medical staff or occupational therapist

Use of Shower Chair

A shower chair is patient specific. Once a patient has successfully managed to achieve mobilising for 4 hours in their wheelchair with no pressure damage, use of a shower chair begins to facilitate bowel management and showering.

If there has been previous pressure damage to the sacral or hip region, it is appropriate to wait until the patient is mobilising in the wheelchair for 6 hours a day with no pressure damage prior to the use of a shower chair.

Appendix

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www.spinalunit.scot.nhs.uk

http://www.staffnet.ggc.scot.nhs.uk/Acute/Division%20Wide%20Services/TissueViabilityServiceAcuteDivision/Pages/TissueViabilityService-AcuteDivisionHomepage.aspx

NHSGG&C Podiatry Service (scot.nhs.uk)

Standard 01 - Pressure Area Care.pdf

CPG_Pressure-Ulcer.pdf (mascip.co.uk)

MASCIP-SIA-Guidelines-for-MH-Trainers.pdf

MASCIP-Management-of-the-older-person-with-a-spinal-cord-injury.pdf

Overview | Spinal injury: assessment and initial management | Guidance | NICE

Recommendations | Rehabilitation after traumatic injury | Guidance | NICE