

**TRAUMA SERVICE GUIDELINES**

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**Overview**

Spine injury (cord and/or column) must be considered a possibility in any patient with significant trauma to the head or torso with the most common mechanism of injuries at RMH in the last 10 years being motor vehicle accidents (MVA), falls and pedestrians. [1] To protect the spinal cord from worsening injury, 'spinal precautions' should be maintained as evidence suggests that over 5% of patients experience the onset or worsening of neurological symptoms once they reach hospital and this is not only attributed to worsening ischaemic and spinal cord oedema but also inadequate immobilisation of the spine. [2] Immobilisation also plays a role in controlling pain associated with column fractures and soft tissue injuries. [3]

Spinal precautions include head holding, application of a cervical collar, patients nursed in neutral alignment on an approved mattress and log rolling for all care. These precautions should be in place until clinical and or radiological examination has been performed to establish that the spine has been 'cleared' or a management plan has been made.

In the context of 'spinal clearance' the term 'cleared' in this document and in the management of the trauma patient with potential or actual spinal injuries means that the spine has been 'deemed free of injury' after a clinical and or radiological examination in accordance with the appropriate guidelines.

To determine the assessment and clearance of the spine refer to The Royal Melbourne Hospital [TRM03.01 Cervical Spine Guideline](#) and/or the [TRM04.03 Thoracolumbar Spine Guidelines](#).

All patients with potential or actual spinal cord or column injury to any part of their spine require documentation of the spinal management, i.e. the spine has been deemed free of injury, any movement restrictions or the management plan for the injury. This should be documented on the Spinal Management Chart IP9C and /or symphony and/or the patients' medical record.

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This guideline outlines the care required for a patient being nursed with spinal precautions in place (with known or unknown injuries to the cervical and or thoracolumbar spine).

### Aims of Care <sup>[4-8]</sup>

The main aims of care for trauma patients with potential spinal injuries are:

1. Prevention of possible further spinal injury by immobilising the spine
  - a. Application of stiff neck collar
  - b. Philadelphia collar within 5 hours of admission to the hospital
  - c. Maintaining full (cervical and Thoracolumbar) spine immobilisation
2. Implementation of the spinal precautions as per the cervical and thoracolumbar spine guidelines
  - a. Strict collar care
    - i. Inspection of the neck and occiput at each turn
  - b. Log rolled every 4 hours
  - c. Stable lateral positioning (side lying) or bed tilting
3. Early Spinal Clearance clinically and/ or radiologically
  - a. Timely completion of radiology
  - b. Adequate communication at the bedside
4. Appropriate documentation

### Immobilisation: Spinal Precautions

Patients with unknown or suspected spinal injuries require full spinal immobilisation/ precautions; this includes initially immobilisation of the entire spine, cervical, thoracic and lumbar. This management is to continue until each section of the spine has been "cleared" (deemed free of injury) or a management plan has been prescribed for any diagnosed injuries.

Injury or suspected injury to individual components of the spine will require specific management.

1. Cervical spine & Thoracolumbar spine **not clear** of injury

Patient is to remain on full spinal precautions until a management plan has been decided and further diagnostics performed and or reviewed.
2. Cervical spine **not clear** of injury, thoracolumbar spine **cleared**

In the early phase of management, the patient will require full spinal precautions unless otherwise documented. This is to ensure the potentially unstable cervical spine does not acquire further injury even though the TL spine has been cleared.
3. Cervical spine **cleared**, Thoracolumbar spine **not cleared**

Remove cervical collar, patient no longer needs head holding and can have a pillow, however, they still require being nursed in a neutral position to ensure the alignment of the TL spine. If they need to be nursed in a head up position the bed should be tilted unless otherwise documented. They will require a log roll without head holding for any movements. They can be nursed in the stable side lying position.
4. Cervical spine diagnosed with an injury to be treated in a collar, TL spine **cleared**

The cervical collar should be left insitu. Nursing assessment should be conducted regularly as to the fit and the comfort of the collar. The patient has no restrictions to their position with the collar on, can shower, walk and attend to care as able (taking all other injuries into consideration). This patient can also have a pillow as long as it doesn't cause excessive flexion on the cervical spine. They only require a log roll and head holding for collar care if ongoing immobilisation for other injuries is required. The patient may be taught prior to discharge how to change the collar in the sitting up position see [Philadelphia Collar Discharge Brochure](#).

5. Thoracolumbar spine injury treated with a brace and /or surgery, cervical spine **cleared**

Cervical collar can be removed; there are no restrictions to the cervical spine. The patient can be nursed in an upright position (bent at the hips) with a pillow. The brace for the TL spine will need to be applied for sitting out of bed, showering and mobilising. Unless otherwise documented

### Manual Handling patient with spinal precautions

#### Head Holding

All patients require spinal precautions until a spinal management plan has been ascertained, this includes head holding. Head holding means the patient's head must be supported during position changes, collar care and in any circumstance in which the collar is removed e.g. procedures such as central venous catheterisation.

The aim of head holding is to ensure that the patient's head is maintained in the correct anatomical position throughout a movement such as trolley transfer or log roll (no flexion, extension, rotation or lateral bending of cervical spine). The patient's head can be held from the top of the bed or from the side depending on the location of the patient and equipment surrounding the bed. [9-14]

For both methods:

1. Explain the procedure to the patient regardless of conscious state.
2. Ensure that the patient is lying in a supine position, arms are by his/her side and head in neutral position, and neck extended 10-15 degrees. If conscious ask the patient to look vertical upwards to back of the room.
3. Ensure that the bed is at the correct height for the designated head holder.

Head holding is no longer required when;

- the cervical spine has been cleared of injury
- a stable fracture or ligamentous injury has been diagnosed in which care must be taken to ensure that the patient's head remains in anatomical alignment on turning or lateral positioning.

#### For the head holding from the top of the bed

Hands are placed on lateral portions of the patient's head, fingers spread, around the mandible and back of neck and thumbs on patient's cheeks. The forearm is used to stabilise the lateral aspect of the head. Firm pressure must be applied to restrict possible neck movement.

#### For the head holding from the side of the bed [2, 9, 13-15]

Head holder stands on the side of the bed that the patient is to be rolled to. One hand is placed under patient's neck. The second hand is places over the jaw. Firm pressure must be applied to restrict possible neck movement.



#### Log rolling

Log rolling technique is utilised until the patient no longer requires "spinal precautions" for the thoracolumbar spine. This technique is used to relieve pressure, examine the patient's back, neck and occiput, collar care, physiotherapy and hygiene care.

This is a 4 (minimum) or 5 person techniques depending on the needs of the patient (i.e. size, other injuries). [16, 17]



To perform a log roll:

- Assess the need for pain relief
- Ensure that the current collar (if insitu) is well fitting prior to the log roll
- Assemble all necessary equipment i.e. hygiene equipment wedge for side lying etc.
- Explain the procedure to the patient regardless of conscious state
- Request that they lay still and resist assisting
- Secure all lines, drains and tubes
- Assess the need for a pillow in between lower limbs for support
- Ensure that the log rolling team is correctly positioned:
  1. Person 1 supports upper body hands on shoulder and hip
  2. Person 2 supporting abdomen and lower legs hands on hip and lower legs
  3. Person 3 may be required to provide more support to lower body
- The head holder ensures the team is ready and the roll is coordinated
- Ensure that the patient is in neutral alignment (straight) and avoid any rotational movements of the individual spinal segments
- On completion of the roll, position the patient in alignment



The turn must occur in one smooth action with the patient's head and body remaining in anatomical alignment at all times. [15-20] The log roll should also be done in accordance with MH policy for Manual Handling MH 15.11.

If the patient requires cervical spine precautions, the head holder is in charge of the procedure ensuring that all of the team members are ready to turn in a coordinated manner. If cervical spine has been cleared and the TL requires immobilisation, a nominated person should control the roll to ensure it is coordinated and the patient maintains neutral alignment.

### Collar Care

Collar care is essential in the nursing management of the trauma patient with a cervical collar (stiff neck, Miami j, aspen or Philadelphia) insitu. Breakdown of skin integrity can occur within the first 48hrs of cervical collar placement [21] and the use of a cervical collar for more than 5 days is associated with a 38 to 55% risk of pressure ulcer development. The ultimate aim is to clear the spine and remove the collar if there are no identified injuries. However, if a collar remains insitu, collar care should be conducted every **4 hours** to relieve pressure and to inspect for early signs of skin break down. The areas of concerns for skin integrity are; chin, mandible, ears, occiput, shoulders, laryngeal prominence and sternum. [22]

Collar care consists of:

- Skin washed / dried and pressure points examined especially the back of neck and occiput (this can be assessed whilst logrolling the patient), need to visualise skin through hair
- Male patients will need daily shave and beards trimmed to prevent irritation and pressure areas to the chin
- Hair must be washed with the head held in neutral to slight extension. Combed and checked for knots or matting. Hair can be clipped short under the collar to prevent pressure areas.



To ensure the cervical collar is correctly fitted. Assess if the;

- Chin is cupped
- Ears are clear

- Adam's apple is clear
- Front piece is resting on sternum
- Front piece is placed over back piece
- No step down
- Velcro straps are evenly placed
- Collar is centred and neck in neutral alignment

If the collar does not fit after assessing against the above criteria, take the collar off whilst another head holding and reapply. If the collar still does not fit as per the above, ask a qualified cervical collar fitter (ANUM, CNS, CNE- who have completed the cervical collar fitting competency, Trauma coordinator, Trauma Program Manager, Orthotist) to remeasure and refit a correct sized collar.

## Positioning

### Side Lying

Patients who have spinal precautions in place benefit from side lying to assist with chest physio, comfort and decrease in pressure related complications such as occipital pressure sores. All patients unless otherwise stated (i.e. unstable thoracolumbar fracture, cervical fracture or pelvic fracture) should intermittently be positioned on their sides using a wedge to ensure that anatomical alignment is maintained.

Log Roll as per protocol

- Insert a long wedge to support the length of the lumbar, thoracic and cervical spine
- Sheet is used to keep wedge in place
- On the head holders count, roll the patient back to rest against the wedge
- The head holder should continue to hold the head until support for the head is put in place.



A second person places support such as folded towels under the head to maintain neutral alignment

*Restrictions on side lying should be documented on the spinal management chart and/or in the patient's medical record.*

### Bed tilting

Patients that remain on 'spinal precautions' have an increased risk of aspiration and restrictions in respiratory function. [21] Patients in this position can have the whole bed tilted head up especially whilst eating and drinking to prevent these complications until their spine has been cleared and spinal precautions have been lifted and documented.

### Pillow use

Patients can have a small, flat pillow when;

- Cervical spine has been formally cleared and documented
- If a cervical spine injury (fracture or ligamentous) has been identified and the management is with a cervical collar
- This should be documented in the patient medical record and or on the spinal management chart that the patient can have a pillow in place

### Other care

If a patient has had a suspected spine injury, neurovascular observations to the upper limbs and lower limbs should be conducted to establish the presence or absence of spinal cord injury. Neurological assessment is required to establish the presence or absence of spinal cord injury and to classify the extent of the damage.

In cervical spinal cord injury, motor weakness is greater in the upper extremities than the lower. Sensory loss is variable, with the patient more likely to lose pain and or temperature sensation than proprioception

and or vibration. Dysesthesias (burning sensation in the hands or arms) is common. <sup>[23, 24]</sup> Any of these signs should be reported immediately to medical staff.

If a patient is to be discharged home with a Philadelphia collar instiu, provide the patient with the 'Philadelphia collar discharge brochure' which can be obtained from ipolicy and ensure the patient and or a family member has been educated regarding the ongoing care for the collar.

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