

**TRAUMA SERVICE GUIDELINES**

**Title:** Management of the Immobilised Patient with Spinal Precautions  
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**Created:** Version 1.0 October 2005  
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**Revised:** Version 6.0 December 2019, V5.1 February 2015

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**Overview**

Spine injury (cord and/or column) must be considered a possibility in any patient with multiple injuries. The most common causes of spinal injury at RMH are due to high force mechanism such as motor vehicle crashes (MVC) 33%, falls 31% and motor cycles crashes (MBC) 13%. <sup>1</sup>

Patients with potential spinal column injuries are at a higher risk of spinal cord injury or worsening of outcomes due to excessive manipulation, if adequate spinal immobilisation (spinal precautions) is not applied. <sup>2</sup> Therefore to “protect” the spine adequate immobilisation must be implemented. <sup>3-5</sup>

**Definition**

Spinal precautions or spinal immobilisation include head holding (manual inline stabilisation), application of a cervical collar, care provided maintaining neutral alignment on an approved mattress and log rolled for all turns. <sup>4, 6, 7</sup>

These precautions should be in place until clinical and/or radiological examination has been performed to establish that the spine has been ‘cleared’ of injury or a ‘management plan’ has been established. <sup>4, 7-10</sup>

In the context of spinal management 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 RMH guidelines [TRM03.01 Cervical Spine Guideline](#) <sup>8</sup> and/or the [TRM04.03 Thoracolumbar Spine Guidelines](#).<sup>9</sup>

All patients with potential or actual spinal cord and/or column injury to any part of their spine require documentation of the management of that injury i.e. the spine has been deemed free of injury, movement restrictions or specific management required. This should be documented in EPIC; the spinal management chart and /or the patients’ medical record.

This guideline outlines the care required for a patient with spinal immobilisation “precautions” in place.

**Aims of Care**

The main aims of care for trauma patients with potential or actual spinal injuries are: <sup>4, 7-9, 11</sup>

1. Implementation of the spinal precautions as per the cervical and thoracolumbar spine guidelines
2. Prevention of possible further spinal injury by immobilising the spine
3. Early spinal clearance clinically and/or radiologically
4. Prevention of immobilisation related complications

Prolonged immobilisation can contribute to complications which may include pressure injuries, dysphagia, aspiration, airway and or respiratory compromise, raised intracranial pressure, pain and discomfort from lying flat in bed for a long period of time. This prolonged

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immobilisation can cause patients to move more to decrease symptoms, negating the effects of immobilisation. <sup>2, 12, 13</sup> Spinal clearance or a management plan for an injury must be ascertained promptly to assist with the prevention of complications. <sup>2, 3, 6, 7, 14, 15</sup>

## Complications

### Pressure Injury Prevention

Patients with spinal precautions are at high risk of pressure injury and all patients should be screened for pressure injury per [MH02.11.09 Pressure Injury Prediction, Prevention and Management Procedure](#) on admission. <sup>16</sup>

For patients with spinal precautions particular attention should be paid to pressure injury high risk areas such as the occiput, chin and clavicles, as well as the elbows, sacrum and heels. An air mattress does not maintain neutral alignment therefore a patient with spinal precautions requires a firm foam mattress. Other pressure offloading devices can be used to reduce risk of pressure related injuries, such as elevating the heels and side lying. Prophylactic dressings should be applied to sacrum and heels and skin should be inspected daily under these dressings and replaced every 3 days. <sup>17</sup>

Prolonged use of a cervical collar (Philadelphia, Miami or Aspen) has been associated with a high risk of pressure injury. <sup>18, 19</sup> Pressure, friction, changes in skin temperature, excessive moisture, knotted hair and foreign objects can all contribute to the development of pressure injuries.<sup>11</sup> The most severe pressure related injuries are located in the occipital area, however, other areas of concern for skin integrity are; chin, mandible, ears, clavicles/ shoulders, laryngeal prominence and sternum. Pressure injuries can occur as quickly as the first 48 hours of placement, with a 55% increase in the risk of a pressure injury after 5 days of collar use. <sup>18, 19</sup>

The following collar care guidelines assist in prevention of pressure injury. <sup>15, 19 20</sup>

### Head Holding

Head holding or manual inline stabilisation is a key part of spinal immobilisation. The patient's head and cervical spine must be supported during position changes, collar care and in any circumstance in which the collar is removed e.g. procedures such as intubation and or central venous catheterisation. <sup>12</sup>

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 is held from the top of the bed, the procedure is outlined below. <sup>6, 7, 21, 22</sup>

- Ensure the patient has been given adequate analgesia
- Explain the procedure to the patient regardless of conscious state
- Ensure that the bed is at the correct height for the designated head holder and all the necessary equipment is assembled
- Ensure that the patient is lying in a supine position; arms are by his/her side and head in neutral position. If conscious ask the patient to gaze vertically upwards towards the head holder (this may assist in preventing them from dropping their chin when the collar is removed)
- 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



Head holding is no longer required when the cervical spine has been cleared of injury and/or a stable fracture or ligamentous injury has been diagnosed, it would still be required however when removing the collar for collar care in all patients.

### Log rolling

Log rolling 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, and perform collar care, physiotherapy and hygiene care. <sup>4, 7</sup>

This is a 4 (minimum) or 5 person techniques depending on the needs of the patient (i.e. size, other injuries). <sup>7, 23</sup>

To perform a log roll:

- Assess the need for pain relief and discuss the procedure with the patient regardless of conscious state
- Assemble all necessary equipment i.e. hygiene equipment wedge for side lying, pillow for between the legs etc.
- Assemble a team of 4-5 depending in patient needs



- Ensure that the current collar (if insitu) is well fitting prior to the log roll
- Prepare the patient and request that they lay still and resist assisting
- Secure all lines, drains and tubes
- Ensure that the log rolling team is correctly positioned
  1. Person 1. Hold the head from top or side; they coordinate the roll and ensure that the patient is in neutral alignment (straight) and avoid any rotational movements of the individual spinal segments and on completion of the roll, position the patient in alignment
  2. Person 2. Supports upper body with hands positioned on shoulder and hip
  3. Person 3. Supporting abdomen and lower legs with hands supporting hip and lower legs
  4. Person 4. May be required to provide more support to lower body
  5. Person 5. Conducts the hygiene, pressure care (not pictured)

The turn must occur in one smooth action with the patient's head and body remaining in anatomical alignment at all times, <sup>3, 4, 7</sup> in accordance with [MH policy 15.11 Patient Manual Handling](#). <sup>24</sup> 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.

### 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 and sacral pressure injuries. 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

- 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
- Insert a long wedge to support the length of the lumbar, thoracic and cervical spine
- A sheet is used to keep wedge in place



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

#### Bed tilting

Patients who are nursed supine are at higher risk of complications. Tilting the whole bed whilst the patient is lying flat can assist with eating and drinking <sup>13</sup> and impact their mental health and wellbeing.

#### Pillow use

Patients can have a small, flat pillow when

- Cervical spine has been cleared and documented in the patient medical record and or on the spinal management chart
- If a cervical spine injury (fracture or ligamentous) has been identified and the management of a stable injury is with a cervical collar

### Collar Care

Collar care is essential in the management of the trauma patient with a cervical collar (stiff neck, Miami, Aspen or Philadelphia). <sup>25</sup> The ultimate aim is to clear the spine and remove the collar as soon as possible. <sup>4, 25</sup>

Collar care should be performed **4 hourly**, this consists of maintaining manual inline stabilisation of the neck, and neutral alignment of the spine, log rolling the patient, releasing the collar straps and washing and drying the skin, shaving face/neck, and assess for pressure related injuries. <sup>19</sup>

Collar care is conducted in a two-step process to include the front and the back of the neck.

Step 1. Collar care and inspection for the posterior neck and head.

- Logroll the patient, head holding to maintain inline stabilisation and spinal precautions.
- Confirm the head holder is ready and undo the top Velcro strap of the collar (as pictured)
- Pull the back section back to allow the washing and drying of the back of the neck.
- Assess for pressure related injuries at the occiput, visualising skin through hair.
- The back of the collar can be washed & dried whilst in place at this time.
- On completion reapply the back piece and secure strap ensuring spinal alignment.
- Inspect the posterior surfaces of the back and sacrum and conduct hygiene
- Log roll the patient back supine



*It is recommended that the back section is only removed when replacing a wet collar for a dry one (after showering) or replacing the liners once daily or when soiled. This should be done whilst the patient is supine. Removing the back section can cause excessive motion on the spine.*

Step 2. Collar care for the front of the neck

- Patient is lying in supine position with manual in line stabilisation (head holding), remove the front piece of collar, wash and dry skin and the front of the collar. Assess the anterior and sides of the neck for pressure points such as the chin, under the ears and clavicles.
- Male patients will need daily shave and beards trimmed to prevent irritation and pressure injury to the chin
- Hair must be washed with the collar in place, combed and checked for knots or matting. Hair can be clipped short in high risk cases with prolonged collar use to prevent pressure injury.
- Once hygiene is complete the front section of the collar is replaced
- The conduct the collar fitting checks to ensure its fitted correctly

#### Cervical collar fitting assessment

- Chin is cupped
- Ears are clear
- Adam's apple is clear
- Front piece is resting on sternum (this may not happen in all patients due to different anatomy)
- Front piece is placed over back piece (Philadelphia collar)
- Back piece is placed over the front piece (Aspen collar)
- No step at the side of the collar
- Velcro straps are evenly placed
- Collar is centred and neck in neutral alignment

**If collar is found to be ill fitting**, remove and refit. If the collar still doesn't fit correctly, ask a qualified cervical collar fitter (clinicians who have completed the cervical collar fitting competency) to remeasure the neck and select a correct fitting collar.



## Other

### Neurological observations

If a patient has had a suspected spine injury, neurological observations including Glasgow Coma Scale (GCS) and motor and sensory assessment to all limbs should be conducted to establish a baseline. Regular assessment for the presence or absence of spinal cord injury should be performed. Signs and symptoms of changes in neurology such as decreased limb strength, changes to sensation, incontinence or urinary retention must be report to Nurse in Charge and the Resident/Registrar of the managing team as per [MH02.04.01 Neurological Observations Procedure](#).<sup>26</sup>

VTE Prophylaxis

Patients on spinal precautions are at high risk of developing Venous Thromboembolism (VTE) due to decreased mobility and pooling of blood in the lower limbs, multiple injuries and surgery and individual risk factors. <sup>27</sup> VTE risk screening should be completed as per [MH 02.02.04 Venous Thromboembolism Prevention Procedure](#) <sup>28</sup> and mechanical prophylaxis including , anti-embolic stockings, intermittent pneumatic compression device such as foot pumps or calf compressors as well as pharmacological prophylaxis should be initiated if not contraindicated <sup>28</sup>. Patient education to explain the importance of VTE prevention from the multidisciplinary team should be ongoing to assist with patient compliance. Documentation of mechanical and pharmacological prophylaxis should occur on the Anticoagulant Management section of the Medication Chart IP12 <sup>28</sup>.

Nutrition

Patients who present with traumatic injury may develop altered metabolic state due to the stress response to illness or injury. In addition spinal precautions can often make nutrition maintenance difficult. Malnutrition and starvation can increase electrolyte imbalances, muscle wasting, morbidity and mortality, delay recovery, impede healing of acute and chronic wounds, compromise the immune system and ultimately increase morbidity / mortality and length of stay. <sup>13</sup> Early identification of malnutrition can prevent complications and the Malnutrition risk screening must be completed as per [MH 22.01 Prevention, Identification and Management of Malnutrition Procedure](#) <sup>29</sup> with appropriate referrals to Dietitian if the patient is deemed at risk. <sup>29</sup>

Discharge planning

If a patient is to be discharged home with a Philadelphia and/or Aspen collar, provide the patient with the [Collar Management at Home Discharge Brochure](#) which can be obtained from ipolicy or the intranet and ensure the patient and/or a family member has been educated regarding the ongoing care for the collar.

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