

## Trauma Service Guidelines

### Title: Thoracolumbar Spine Guideline

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See Also: [TRM 03.01 Cervical Spine Guideline](#)

[TRM08.04 Management of the Patient with Spinal Precautions](#)

## Overview

The aim of the thoracolumbar (TL) spine guideline is to assist in the decision making, assessment and identification of TL spine injuries and to ensure appropriate and timely referral and care of these patients.

Delayed or missed injuries result in an eight fold increase in neurological deficits and lead to complications related to patient positioning and immobilisation in addition to long term pain and diminished quality of life. <sup>1,2</sup>

The TL spine is the most rigid and strong of all the vertebrae and to disrupt the column at this level requires great force. The incidence of TL injuries in level 1 (major trauma) centres is 4-5%. <sup>2-7</sup> In the severely injured patient (major trauma) at RMH, 28% of patients had TL spine injuries. <sup>7</sup>

Injuries to the TL spine are commonly the result of high velocity deceleration mechanisms such as motor vehicle crashes, high falls, pedestrians struck by motor vehicles and motorcyclists. <sup>4,6</sup> Compression and burst fractures are the most common TL fractures, accounting for 35% of all TL spine injuries. <sup>4</sup> At RMH the most common TL spine fracture is to the transverse processes which accounts for 50% of all TL spine fractures. <sup>7</sup>

The reported incidence of neurological deficit in patients with TL spine fractures is 19-50% <sup>2</sup> ; however, only 2% of RMH patients with a thoracolumbar spine fracture are diagnosed with neurological deficit. <sup>7</sup>

## Clearance of the Thoracolumbar Spine

It is now recognised that CT scanning is the 'gold standard' in imaging with sensitivity of 95 to 100% in identifying bony injuries. <sup>2, 4-6, 8-10</sup> Spinal reformats from abdominal and chest CT's in trauma have been shown to have a better sensitivity, specificity and negative predictive values than plain x-rays of the TL spine. <sup>2, 4-6, 10</sup> Spinal reformats can also result in faster spinal clearance times, equivalent overall costs and improved detection of TL fractures when used as a screening tool compared with plain films. <sup>5, 6, 10</sup>

There are a number of clinical indicators and high risk mechanisms that correlate strongly to the presence of TL spine injuries.

CT scan should be performed to assess the TL spine when a patient has the presence of: <sup>2, 4-6</sup>

- Any clinical indicators identified on clinical examination
- Any suspected or known high risk mechanisms

These clinical indicators include: <sup>2, 4-6</sup>

- Altered mental status (these patients may not be reliable in clinical examination therefore radiological screening is essential) defined as: <sup>10</sup>
  - Intoxicated patients: defined as loss of control of faculties and/ or behaviour
  - Patients intubated: at the scene or in emergency prior to any clinical examination
  - Confused and/ or, repetitive speech
  - Unconscious/ obtunded GCS < 13
  - Seizure activity
- Clinical signs on examination

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- TL pain, tenderness, bruising, palpable step
- Neurological deficits
- Known cervical spine fractures or any other region of the spine
  - There is an increase incidence of 20% in TL fractures when there are concomitant fractures elsewhere in the spine
- Multiple or distracting injuries
  - Severe enough injury/ies potentially impair the patient's ability to appreciate other injuries, such as TL spine fractures.

There are multiple mechanisms of injury that have been identified that strongly correlate with TL spine injuries, the presence of these should be the precursor to radiological investigation.

These are defined as "High Risk" and include: <sup>2, 4-6</sup>

- Fall from greater  $\geq$  to 3 metres
- Ejection from a vehicle
- Motor bike accidents
- Pedestrian hit by car  $\geq$  60 km/hr
- Any high velocity mechanism

If any clinical indicator and/or high risk mechanism have been identified, 'spinal precautions' should be maintained until a diagnosis/ treatment and/or spinal management plan has been confirmed and documented.

### Clinical Examination

Asymptomatic patients who present with a potential TL spine fracture and who meet the following criteria do not require radiological screening: <sup>2, 10</sup>

- Conscious patient GCS 13-15
- Not intoxication or altered mental status
- Neurologically intact
- Normal/ reliable clinical exam, no complains of pain
- No high risk mechanism
- No distracting injuries

If there is no evidence of clinical indicators or high risk mechanism, the TL spine can be cleared clinically with no radiology required <sup>2</sup>. This should be documented on the spinal management chart or in the medical record and or on symphony and spinal precautions can be ceased.

### Who can clinically clear a thoracolumbar spine?

A qualified clinician can deem the TL spine injury free after assessing the patient.

A qualified clinician is anyone of the following:

- Trauma consultant or accredited registrar
- ED consultant or accredited senior registrar
- Neurosurgery consultant or accredited registrar
- Orthopaedic consultant or accredited registrar
- Intensive care consultant or accredited registrar

### Who can radiologically clear the thoracolumbar spine?

A Radiologist or an accredited registrar or a senior credentialed clinician can deem the thoracolumbar spine radiologically injury free.

Documentation of clearance will be by the reporting radiologist/ fellow or accredited registrar completing the report in synapse. Accredited registrars will have a disclaimer in their signature stating their level and ability to clear spines.

### Documentation of Spinal Management/ Clearance

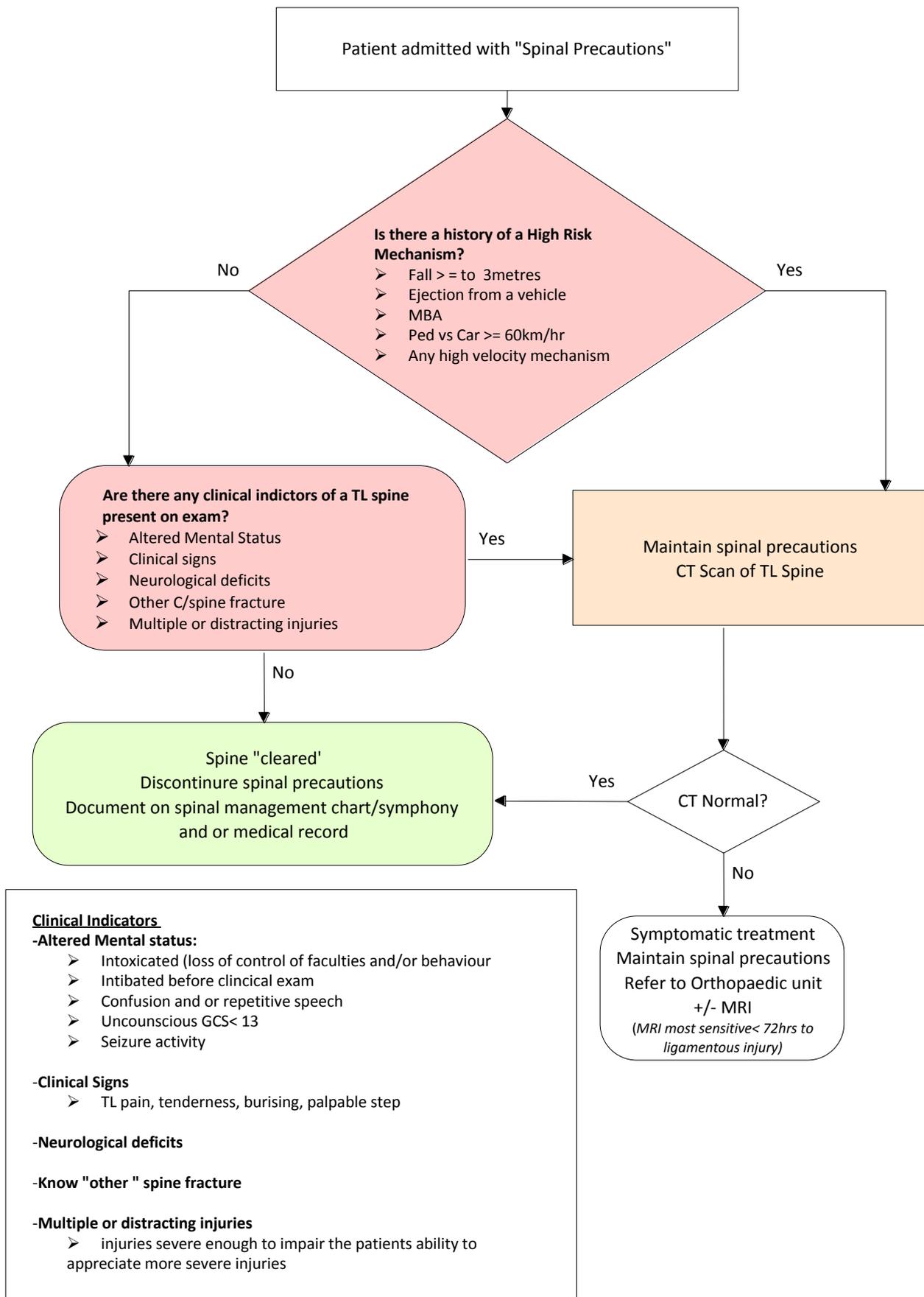
When a spinal management plan or "spinal clearance" is ascertained there should be clear documentation by the treating team on either symphony (in the emergency department), in the patients progress notes, or on the spinal management chart.

### Position restrictions

The consensus opinion of the ACT committee and amongst the orthopaedic spinal surgeons is that trauma patients awaiting a spinal management plan are to be nursed with spinal precautions i.e. immobilised on a flat surface in a neutral position. If they need to have head elevation this should be achieved by tilting the bed. There is to be no hip flexion unless specified by the managing unit and documented on the spinal management chart and/or in the patients' medical record. (Refer to the [Management of the patient with Spinal Precautions](#))



If any doubt exists as to the mechanism or the clinical assessment of the patient leave spinal precautions in situ and refer to the orthopaedic unit for ongoing management



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