



Health
South Western Sydney
Local Health District

Guideline

Guideline Title:	Spinal Clearance Guidelines
Document Number:	LH_GL2017_P01.10
Functional Sub-Group:	Clinical
Approved by:	Director Medical Services General Manager
Publication Date:	January 2017
Next Review Date:	January 2020
Replaces Existing Guideline:	LH_GL2013_P01.10 Spinal Clearance Guidelines
Previous Review Dates:	1/11; 9/12; 7/14; 10/16

The Aims / Expected Outcome of this guideline:

- Facilitate the safe and efficient assessment and management of suspected cervical spine injury.
- Appropriate imaging is conducted and the spinal clearance protocol is documented by senior medical staff.
- Cervical, Thoracic, and Lumbar spine is cleared within 24 hours of admission.
- Provide Clinical Flowchart for Clearance of Suspected Cervical Spine Injury in Trauma Patient

Background

Spinal immobilisation of trauma patients is routinely carried out to minimise the potential for secondary spinal cord injury. Immobilisation involves fitting a cervical hard collar to minimise the risk of additional cervical spinal cord compromise, being nursed in a supine position and log rolled for pressure care to minimise potential risk to the thoracic and lumbar spine. Failure to achieve early spinal clearance predisposes the patient to increased morbidity secondary to prolonged immobilisation. Common adverse effects of immobilisation include discomfort, time delays, tissue ulceration, increased intracranial pressure, impaired respirations and in some cases causing spinal injury.

Spinal Clearance involves the utilisation of an assessment framework for the evaluation of the spinal status for those patients considered to be at risk of spinal trauma. The assessment process concludes with either the validation of the lack of injury via the appropriate history, examination and investigations, or the diagnosis and subsequent management of an injury

Related Liverpool Policies

- P07.32 Motor Sensory Spinal Observations
- P07.01 Spinal Fractures – Clinical Management
- P07.16 Philadelphia collar clinical management

Guideline

1. Patients with a suspected spinal injury must be immobilised with a cervical collar and spinal precautions including: Supine position in anatomical alignment to be

maintained; Log roll for all turns with a minimum of three people (one person controlling the head); No pillow under the patients head

2. Cervical spine clearance must be attended by senior clinical medical staff, after review and reporting of the appropriate cervical spine imaging and must clearly documented in the health care record. Documentation includes: the injury description, level of injury, management plan and spinal mobility and restrictions. In situations where responsibility is delegated the consultant must clearly state this in the clinical notes.

Senior clinical medical staff includes:

- Emergency consultant or Emergency Senior / Advance Registrar
- Trauma Surgeon or Fellow
- Orthopaedic Consultant
- Consultant Neurosurgeon or Senior Neurosurgical Registrar / Fellow
- Intensive Care Consultant or Senior Registrar
- Consultant Radiologist or Senior Radiologist

3. Examine the patient clinically using the C Spine Clearance algorithm for conscious trauma patients which utilises the *NEXUS (Appendix 1) / *Canadian rules (Appendix 2) to determine the need for imaging.
4. For the unconscious patient a CT scan of cervical, thoracic and lumbar spine is required (**Consultant Supported Decision supports the decision process**).
5. Hard collars to be removed before patients depart Emergency. Patients with a suspected or confirmed cervical spine injury **must** have their hard collar replaced with a Philadelphia collar. (Unless taken to urgent treatment areas such as Operating Theatres or Angiography)
6. Motor–Sensory Spinal Observation Chart CR175.3 or the ICU Spinal Care Form is to be commenced depending on the admitting ward/unit.
7. ICU Spinal Care Form CR 124 is to be commenced on all ICU patients.
8. Preliminary report can be used to guide clinical practice. However the final report has the potential to have different information to aid definitive management.
9. CT scan can miss both stable and unstable cervical spine injuries in unreliable patients with unreliable exams and normal CT C-spines. MRI is useful as an adjunctive modality to assess for soft tissue/ligamentous injury in such patients⁹.

References:

1. Ryken T, Hadley M, Walters B, Aarabi B, Dhall S, Gelb D, Hurlbert J, Rozzelle C and Theodore N. Guidelines for the management of Acute Cervical Spine and Spinal Cord Injuries. Radiographic Assessment. Neurosurgery. 2013. 72 (Suppl2): 54-72.
2. <http://emcrit.org/images/part1/07t1.jpg> (Table 1 nexus criteria).
3. <http://www.implementationscience.com/content/2/1/4/figure/F1> (Canadian C-Spine)
4. The Alfred Spinal Clearance Management Protocol. The Alfred. Updated: November 2009. http://intensivecare.hsnet.nsw.gov.au/five/doc/victoria/alfred/spinal_clearance_S_s_alfred_vic.pdf
5. Padayachee L, Cooper J, Irons S, Ackland H, Thomson K, Rosenfeld J and Kossmann T. Cervical Spine Clearance in Unconscious Traumatic Brain Injured Patients: Dynamic Flexion – Extension Fluoroscopy versus Computed Tomography with three Dimensional Reconstruction. The journal of Trauma injury infection and Critical Care. 2006;60:341-345.
6. Panczykowski D, Tomyz N, Okonkwo D. Comparative effectiveness of using computed tomography alone to exclude cervical spine injuries in obtunded or intubated patients: meta-analysis of 14,327 patients with blunt trauma. Journal of neurosurgery 2011;115:541-549.

7. Freedman Ilan, Van Gelderen D, Cooper J, Fitzgerald M, Malham G, Rosenfeld M, Varma D, Kossmann T. Cervical Spine Assessment in the Unconscious Trauma Patient: A Major Trauma Service's Experience with Passive Flexion – Extension radiography. 2005;58:1183-1188
8. Stiell IG, Clement CM, McKnight RD, Brison R Wells GA. The Canadian C-Spine Rules versus the NEXUS Low-Risk Criteria in Patients with Trauma. N Engl J Med 2003;349;26:2510-2518
9. Menaker J, Philp A, Boswell S, Scalea T. Computed Tomography Alone for Cervical spine clearance in the Unreliable Patient – Are We There Yet? J Trauma2008;64:898-904.

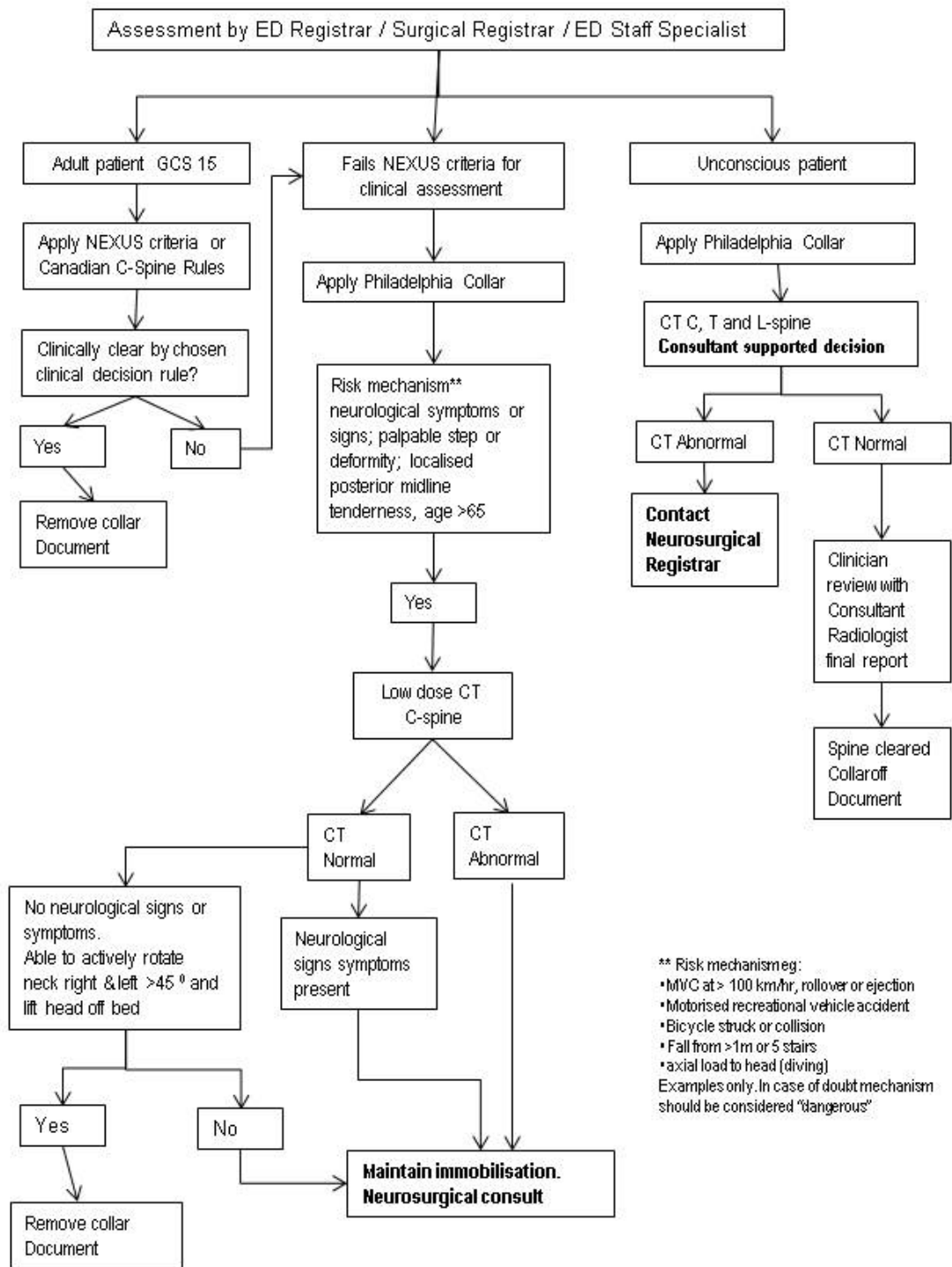
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Endorsed: Liverpool Hospital Policy and Guideline Committee November 2016

Clinical Flowchart for Clearance of Suspected Cervical Spine Injury in Trauma Patient



Neurosurgical consult may include consideration of need for MRI for patients with persistent neurological signs or unreliable exams despite a normal CT C-spine.

Appendix 1 The NEXUS Low-Risk Criteria*

C-spine imaging is recommended for patients with trauma unless they meet all of the following criteria:

- Absence of posterior midline cervical-spine tenderness #
- No evidence of intoxication, ø
- A normal level of alertness and consciousness (baseline mental status), ▲
- Absence of focal neurological deficit, ■
- Absence of any distracting injuries. ▼

Midline posterior bony cervical-spine tenderness is present if the patient reports pain on palpation of the posterior midline neck from the nuchal ridge to the prominence of the first thoracic vertebra, or if the patient expresses pain with direct palpation of any cervical spinous process.

ø Patients should be considered intoxicated if they have a recent history provided by the patient or an observer of intoxicating ingestion or evidence of intoxication on physical exam such as an odor of alcohol, slurred speech, ataxia, or any behavior indicative of intoxication. Patients may also be considered to be intoxicated if laboratory tests are positive for alcohol or drugs that affect the level of alertness.

▲ An altered level of alertness can include any of the following: a GCS score of 14 or less; disorientation to person, place, time, or events; inability to recall three objects at five minutes; a delayed or inappropriate response to external stimuli; or alternative findings consistent with altered mental status.

■ A focal neurological deficit is any focal neurological finding on motor or sensory examination.

▼ A distracting injury is any condition that, in the examiner's judgment could be producing enough pain so as to distract the patient from another, particularly cervical, injury. Such injuries may include a long-bone fracture; a visceral injury; a significant laceration, degloving injury, or crush injury; large burns; or any other injury causing acute functional impairment.

** Adapted from Hoffman and colleagues, as presented by Stiell et al 2003*

Appendix 2 Canadian C-Spine Rule

