

**CLEARANCE OF A SUSPECTED CERVICAL SPINE INJURY IN THE EMERGENCY DEPT
ST GEORGE HOSPITAL**

Cross references (including NSW Health/ SESIAHS policy directives)	SGH CLIN352: Cervical Collars For Suspected Cervical Spine Injury In The Emergency Department SGH SGH-TSH CLIN048: Cervical (Philadelphia) Collar - Care of a Patient Requiring a
1. What it is	Guide to the “Clinical Flowchart for the Clearance of a Suspected Cervical Spine Injury in the Emergency Department”
2. Risk Rating	Medium
3. Employees it applies to	Medical staff assessing patients and nurses caring for a with a potential cervical spine injury in the Emergency Department

4. Process

4.1 The five NEXUS criteria that must all be met to classify a patient as low probability for a cervical spine injury and allow an attempt at clinical clearance without cervical spine radiological investigation are

- Normal alertness (GCS 15)
- No intoxication with medications, alcohol, illicit drugs
- No painful distracting injury
- No posterior midline cervical tenderness
- No focal neurological deficit or symptoms (paraesthesia)

4.2 Even if the patient fulfils all of the NEXUS criteria that would allow assessment of the cervical spine without radiology, it does not mean that the cervical spine can automatically be clinically cleared. Patients with complaints of neck pain, non-midline tenderness, movement difficulty or high risk mechanisms may still warrant cervical spine radiology to further assess areas of interest.

4.3 If likelihood of injury is high and likely to proceed to a CT cervical spine in the event of normal cervical spine Xrays, it is better to proceed to CT in the first instance. High risk clinical features include

- Age >65 (Higher incidence degenerative disease)
- Axial load to head (e.g diving)
- High risk MVC/MBC (Rollover, ejection, high speed)
- Coincident traumatic brain injury
- Coincident fractures of the thoracic or lumbar spine or face

4.4 If patients require imaging and further assessment of their cervical spine, early imaging should be emphasised, and should be available while patient is still in ambulance stiffneck collar. If the cervical spine cannot be cleared within an hour, then a soft (foam) collar should be applied until formal clearance is possible. If the patient arrived to the ED without a stiffneck collar, and has no neurologic deficit, then a soft (foam) collar should be applied pending clearance – see [Clinical Business Rule SGH CLIN352: Cervical collars for suspected cervical spine injury in the emergency department](#)

4.5 For patients with cervical cord neurology or radiological evidence of a cervical spine injury, a Philadelphia collar should be applied until neurosurgical review and advice

- 4.6 Cervical spine Xrays can be used in patients at low risk for bony cervical spine injury. Adequate Cspine Xray series consists of a lateral (with vertebrae C1 – C7, the C7 – T1 junction as well as all spinous processes visible), AP (C2 – C7 visible) and an odontoid peg view (with the entire peg as well as the articulation between the lateral masses and body of C2 visible).
- 4.7 Spinous processes may be easier to visualise if the patient is on a mattress; C7 – T1 view aided by a controlled pull on the shoulders or a ‘Swimmer’s view’; ‘Peg Views’ improved by maximising patient mouth opening, but ensuring spinal immobilisation.
- 4.8 Patients deemed to require radiological imaging of the cervical spine, who have an indication to undergo a CT scan of another body region, should have a cervical spine CT (C1-T1) as their investigation, and not undergo any plain cervical spine Xrays.
- 4.9 When ordering a CT scan, the reason and clinical assessment findings (eg site of spine tenderness) should be clearly documented in the radiology request
- 4.10 CT scanning of areas of injury, abnormality, inadequate plain Xray visualisation as well as areas of clinical and/or radiological suspicion should be performed after discussion and consultation with Senior ED or Radiology Staff. This should be coordinated with the scanning of other areas of interest in the trauma patient
- 4.11 CT scans of the cervical spine must be interpreted and results documented by either the Radiology Registrar/Consultant or Neurosurgical Registrar/Consultant prior to cervical spine clearance. While awaiting formal reporting, and if no obvious abnormality seen on the CT scan by the treating emergency physician, the patient can be placed in a soft (foam) collar, maintaining routine spinal precautions, per [Clinical Business Rule SGH CLIN352](#)
- 4.12 Patients with midline cervical tenderness, significant pain with neck movement or reluctance to move their necks are suspicious for cervical ligament injury. Consultation with neurosurgery should occur and a soft (foam) collar applied. Flexion-extension radiography and MRI may be ordered at the discretion of the neurosurgical service
- 4.13 If clinical or radiological concerns continue, despite consultation by Registrars from ED, Neurosurgery, Trauma or Radiology, then the issue should be escalated to the Consultant responsible for that Registrar, for final resolution

5. Keywords	Cervical Spine, Clearance, Trauma
6. Functional Group	Emergency, Trauma, Surgery
7. External references	<p>1. Bush et al. Evaluation of Cervical Spine Clearance by Computed Tomographic Scan Alone in Intoxicated Patients With Blunt Trauma. <i>JAMA Surg.</i> 2016;151(9):807-13</p> <p>2. Hoffman et al (1998) Selective cervical spine radiography in blunt trauma: methodology of the National Emergency X-Radiography Utilization Study (NEXUS). <i>Ann Emerg Med</i> 32:461–469</p> <p>3. Hoffman JR et al (2000) Validation of a set of clinical criteria to rule out injury to the cervical spine in patients with blunt trauma. <i>N Engl J Med</i> 34:94–99</p> <p>4. Stiell IG et al (2001) The Canadian C-spine rule for radiography in alert and stable trauma patients. <i>JAMA</i> 286:1841–1848</p> <p>5. Therese et al (2016) Defining the cervical spine clearance algorithm. <i>Journal of Trauma and Acute Care Surgery</i> 81:3, 541-547.</p> <p>6. Brandon et al. Cervical spine clearance in the traumatically injured patient: is multidetector CT scanning sufficient alone? <i>Journal of Neurosurgery: Spine.</i> 2013;19(5):576-81.</p>
9. Implementation and Evaluation Plan	Monitoring of cervical spine clearance processes and compliance exists as part of SGH trauma quality improvement program.
10. Knowledge evaluation	<p>Q1: What are the NEXUS criteria?</p> <ul style="list-style-type: none"> - Normal alertness - No intoxication with medications, etoh, illicit drugs - No painful distracting injury - No midline cervical tenderness - No neurological deficit or symptoms (paraesthesias) <p>Q2: At what time point should a Philadelphia Collar be applied?</p> <p>A: In patients with a neurological deficit or radiological evidence of a cervical spine injury or cervical cord neurology,</p> <p>Q3: What is the appropriate course of action if a patient has a normal CT scan but ongoing cervical midline tenderness?</p> <p>A: Neurosurgical consult.</p>
11. Who is responsible	St George Hospital Trauma Committee

Approval for CLEARANCE OF A SUSPECTED CERVICAL SPINE INJURY IN THE EMERGENCY DEPT	
*Specialty/Department Committee	Committee title: Trauma Committee Chairperson name/position: A/Prof Richard Morris Date: 03.11.16
Executive Sponsor	Name/Position: Dr Geoff Westwood, A/Director Clinical Services SGH Date: 05.12.16
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Revision and Approval History

Date	Revision number	Author (Position)	Revision due
Oct 2002	0		Oct 2007
Oct 2007	1		Oct 2010
Aug 2013	2	Dr Donovan Dwyer (ED SS)	Aug 2016
Nov 2016	3	Trauma CNC SGH	Nov 2019

General Manager's Ratification	
Name Leisa Rathborne (SGH)	Date: 07.12.16

Clinical Flowchart for the Clearance of a Suspected Cervical Spine Injury in the ED

