**Cervical spine imaging in alert and stable trauma patients**

**Descriptor:**

Is cervical spine imaging appropriately obtained on alert stable adult trauma patients?

**Background:**

The Canadian Cervical Spine rules are a prospectively validated set of criteria for plain radiograph of the cervical spine in adult patients with Glasgow Coma Scale score 15 and stable vital signs, following head or neck trauma.1

Significant exclusions include patients under 16 years, penetrating trauma, acute paralysis, known vertebral disease and pregnancy.

Patients who are alert and stable are risk stratified according to history and examination and imaged accordingly.

High-risk criteria comprise age over 65 years, paraesthesia in extremities, focal neurological deficit and dangerous mechanisms of injury. These include a fall from over 1 metre or stairs, axial loads to the head, high speed road traffic accident, rollover or ejection from a vehicle, motorized recreational vehicles or bicycle collision.

Low risk criteria include simple rear end motor vehicle collision, a sitting position in the A&E Department, ambulatory at any time and delayed onset neck pain with absence of midline cervical spine tenderness.

Low-risk patients should have their range of neck movement assessed in the A&E Department, with imaging if they demonstrate less than 45-degree rotation to each side. This algorithm has been demonstrated to have a 99% sensitivity for detection of clinically important cervical spine injury, and is incorporated into NICE guidance on cervical spine imaging in patients with head injury.2-5

## The Cycle

**The standard:**

Patients meeting the high-risk criteria should undergo cervical spine imaging.

Low-risk patients should only undergo imaging if they demonstrate reduced neck rotation on clinical assessment.

**Target:**

<5% cervical spine imaging for those in low-risk group with full range of neck movement.

100% cervical spine imaging for patients in high-risk group, or low risk group with decreased range of neck movement on examination.

## Assess local practice

**Indicators:**

Number/ percentage rate of cervical spine radiographs obtained for high-risk and low-risk patient groups

**Data items to be collected:**

1.  Identify the patient population from triage information on A&E Information System.

2.  Retrieve history and examination findings from computerised record to classify as high or low risk.

3.  Identify which of these patients have had cervical spine imaging from the computerised record.

4.  Retrieve report of radiograph from the Radiology Information System.

**Suggested number:**

50 consecutive trauma patients who are alert and stable and have undergone cervical spine radiographic imaging.

**Suggestions for change if target not met:**

1.  Circulate the Canadian Cervical Spine Rules to referrers and include the guidelines in a teaching session for A&E staff.

2.  Incorporation of Canadian Cervical spine criteria into authorisation guidelines for radiography and A&E Head Injury proforma.

3.  Re-audit in 6 months aiming for full compliance with guidelines.

**Resources:**

-  Radiologist or radiographer, audit staff, A&E staff.

-  Access to EDIS and CRIS.

-  Time for collecting and collating data, and presentation.

-  Data collection tool: as in an excel template below.

[-](https://www.rcr.ac.uk/sites/default/files/auditlivecr/160_AUDIT%20OF%20CERVICAL%20SPINE%20IMAGING%20OF%20ALERT%20STABLE%20TRAUMA%20PATIENTS.doc)Estimated time: 12 hours

[**160\_AUDIT OF CERVICAL SPINE IMAGING OF ALERT STABLE TRAUMA PATIENTS.doc**](https://www.rcr.ac.uk/sites/default/files/audit_template/cr/160_AUDIT%20OF%20CERVICAL%20SPINE%20IMAGING%20OF%20ALERT%20STABLE%20TRAUMA%20PATIENTS.doc)WORD - 44 KB

**References:**

1. Stiell, I.G. et al. The Canadian Cervical spine rule for radiography in alert and stable trauma patients. JAMA. 2001;286:1841–1848.
2. Stiell, I.G. et al. Multicenter Prospective Validation of the Canadian C-Spine Rule Acad Emerg Med 2002 9: 359-b-360.
3. Hoffman, J.R. et al. Low risk criteria for cervical spine radiography in blunt trauma. Ann Emerg Med 1992;21(12):1454-60.
4. Stiell, I.G. et al. The Canadian C-Spine Rule versus the NEXUS Low-Risk Criteria in Patients.
5. National Institute for Health and Clinical Excellence. Clinical Guideline CG176 Head Injury. London 2017. <http://www.nice.org.uk/guidance/cg176/chapter/1-recommendations>
6. Making the best use of clinical radiology. MBUR7/iRefer V. 7 T08. 2011 [www.rcr.ac.uk/content.aspx?pageid=995](http://www.rcr.ac.uk/content.aspx?pageid=995)

**Editor's comments:**

In order to identify all patients being assessed by the A&E Department and to best determine risk stratification this audit needs to be done in conjunction with A&E staff. This will also facilitate local changes if the target is not met.

Agree that this audit will need to be undertaken with ED as the Canadian C-spine rules predominantly benefit ED staff in practice.  However, it must be pointed out that the guidelines may not be as useful as previously given the low threshold for CT imaging nowadays (at least for high-risk patients).  Consider removing from the template library at the next review.

**Submitted by:**

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**Published Date:**

Wednesday 2 June 2010

**Last Reviewed:**

Saturday 23 July 2022