



The College of Emergency Medicine

Patron: HRH The Princess Royal

Churchill House
35 Red Lion Square
London WC1R 4SG

CLINICAL EFFECTIVENESS COMMITTEE

Exclusion of significant cervical spine injury in alert, adult patients with potential blunt neck trauma in the Emergency Department

- practical summary of the full guideline

November 2010

Scope

This guideline provides recommendations on best practice for the initial management of alert, co-operative adult patients whose mechanism of injury has the potential to result in blunt or penetrating injury to the cervical spine. It also provides guidance on which patients should have imaging of the cervical spine performed and the imaging modality of choice.

This guidance does not cover "clearance of the neck" in the following groups:

- unco-operative patients
- patients with a persistently low GCS
- children (16 years or younger)
- assessment in the pre-hospital setting

Reason for development

The previous College of Emergency Medicine (BAEM) guidelines on the management of patients with potential cervical spine injury were last updated in 2005. In 2007 NICE updated their guidelines¹ on the management of adults and children at risk of cervical spine injury following a head injury. This review considered the evidence base for the NICE recommendations and sought new evidence that has been published since 2006.

Contributing Experts

This guideline was prepared by Jason Lee (jason.lee@york.nhs.uk), Consultant in Emergency Medicine, for the Best Practice Subcommittee and ratified by the Clinical Effectiveness Committee of the College of Emergency Medicine.

Limitations of this guideline

Only studies published in English language were considered and although some study authors were contacted directly, an extensive review of the grey literature was not performed. This guideline was developed without input from other (Royal) Colleges.

Review date

November 2015 or sooner if important information becomes available.

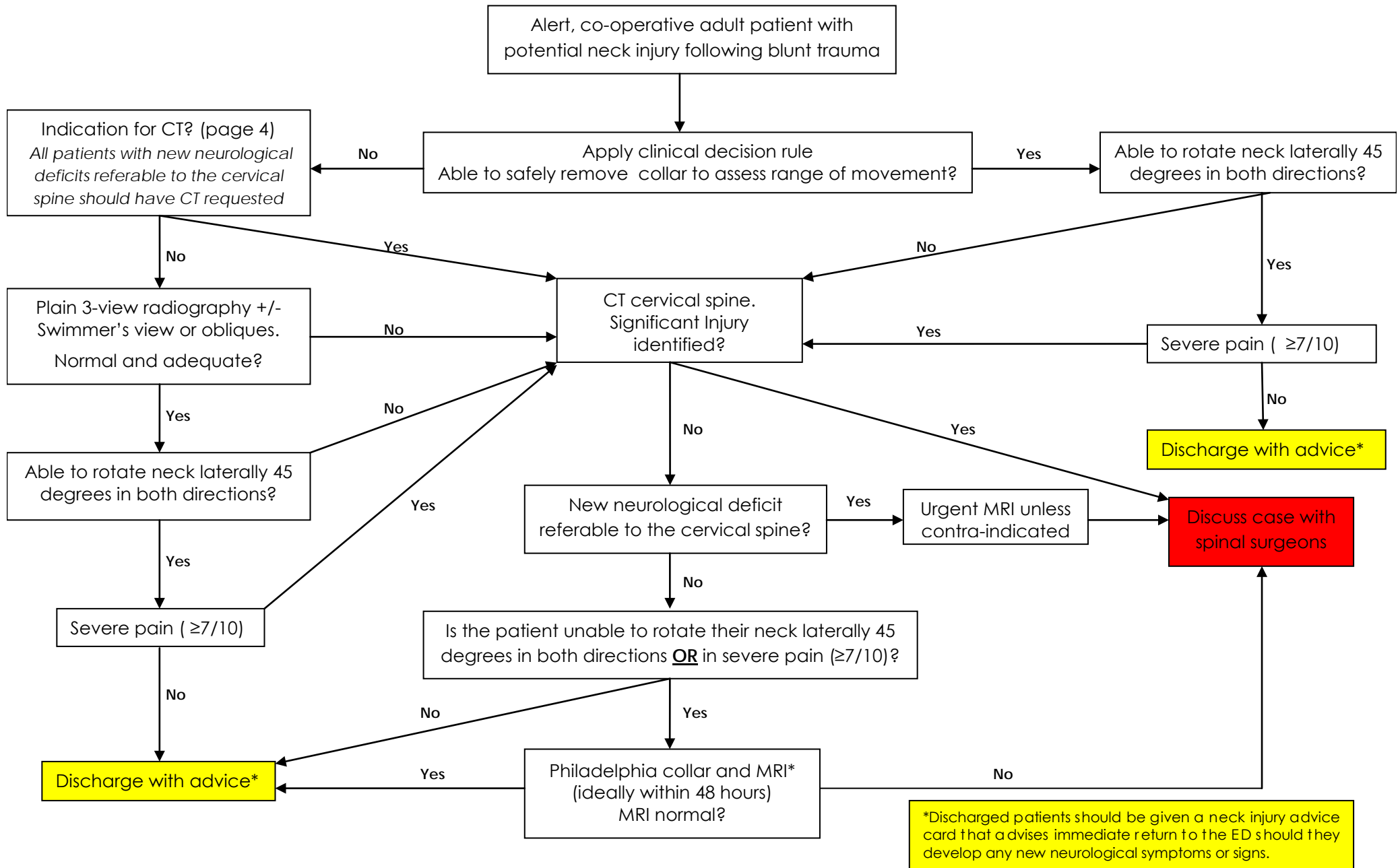
Disclaimers

The College recognises that patients, their situations, Emergency Departments and staff all vary. This guideline cannot cover all possible scenarios. The ultimate responsibility for the interpretation and application of this guideline, the use of current information and a patient's overall care and wellbeing resides with the treating clinician.

Use of the clinical decision rule may lead to patients being discharged without imaging with the following "insignificant" cervical spine injuries:

- Isolated spinous process fracture not involving the lamina
- Isolated osteophyte fracture (not corner or teardrop fracture)
- Isolated transverse process fracture not involving the facet joint
- Simple vertebral compression fracture (<25% loss of height)

Management of alert, co-operative adult patients with potential neck injury following blunt trauma



Modified Canadian cervical spine rule

Cervical spine imaging should be requested for the following patients that have been subjected to blunt trauma with a mechanism that may have injured the neck:

- GCS < 15 on assessment in the ED (level one evidence)
- Paralysis, focal neurological deficit, or paraesthesia in the extremities (level one evidence)
- Patients with abnormal vital signs (systolic BP < 90mmHg or respiratory rate outside of the range 10-24 breaths per minute) (level five evidence)
- Urgent requirement to identify a cervical spine fracture (eg prior to surgery) (level five evidence)
- Severe neck pain ($\geq 7/10$ severity) (level four evidence)
- Patients with neck pain and any of the following high risk factors (level one evidence unless otherwise stated):
 - a fall from greater than one metre or five stairs
 - an axial load to the head eg diving
 - a high-speed motor vehicle collision (combined speed > 60mph)
 - a rollover motor vehicle accident
 - ejection from a motor vehicle
 - an accident involving motorised recreational vehicles
 - a bicycle collision
 - age 65 years or more
 - injured more than 48 hours earlier (level five evidence)
 - re-attending with the same injury (level five evidence)
 - known vertebral disease (eg ankylosing spondylitis, rheumatoid arthritis, spinal stenosis, or previous cervical surgery) (level four evidence)
- Patients with a dangerous mechanism of injury (see above) and either a visible injury above the clavicles or a severely painful ($\geq 7/10$ severity) thoracic injury even if there is no neck pain or tenderness (level four evidence)

If none of the high risk factors above are present and any of the following low risk factors are identified then the patient can have their collar removed and their range of movement assessed (level one evidence):

- simple rear-end motor vehicle collision (but not if pushed into another vehicle, or if hit at high speed or by a large vehicle)
- sitting position in ED
- ambulatory at any time since injury
- delayed onset of neck pain (ie not immediate)
- absence of midline cervical spine tenderness

Patients stratified to a low risk category that can actively rotate their necks 45 degrees to the left and right should be considered to have had a "significant" cervical spine injury excluded without need for imaging. Patients that are unable to rotate their neck 45 degrees in both directions or report severe pain ($\geq 7/10$ severity) on doing so should have cervical spine imaging performed.

Indications for CT of the cervical spine

CT should be used as the primary imaging modality for excluding cervical spine injury in adults following blunt trauma if any of the following criteria are met:

- **GCS below 13 on initial assessment** (level two evidence)
- **Intubated patients** (level two evidence)
- **Inadequate plain film series** (level two evidence)
- **Suspicion or certainty of abnormality on plain film series*** (level two evidence)
- **Patient's being scanned for head injury or multi-region trauma** (level two evidence)
- **Patient has dementia** (or a chronic disability precluding an accurate clinical assessment) (level five evidence)
- **Patient has new neurological signs or symptoms** (level two evidence)
- **Patient has severe neck pain ($\geq 7/10$ severity)** (level four evidence)
- **Patient has a significantly reduced range of neck movement** (level four evidence)
- **Patients with known vertebral disease** (eg ankylosing spondylitis, rheumatoid arthritis, spinal stenosis, or previous cervical surgery) (level four evidence)

**As a minimum the CT should cover the area from the cranio-cervical junction to the thoraco-cervical junction since selective scanning may miss injuries.*

Guidelines should be agreed with local radiologists as to the most appropriate primary imaging modality for patients aged ≥ 65 years.

Indications for MRI of the cervical spine

Recommendation:

MRI should be used to exclude cervical spine injury* in adults following blunt trauma if any of the following criteria are met (level two evidence):

- Neurological signs and symptoms referable to the cervical spine
- Suspicion of vertebral artery injury (eg spinal column displacement, foramen transversarium or lateral process fracture, posterior circulation syndromes).

MRI should also be used to exclude cervical spine injury* in adults with severely restricted neck movement or severe pain ($\geq 7/10$) despite a normal CT (level four evidence).

**MRI should always be used in conjunction with another modality, preferably CT, in order not to miss bony injuries*