

Clearing the Unclear C-Spine

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“Doctor, we need you to...”

We’ve all been there.

One day a ‘Dr’ appeared before your name, and along with the staggering enormity of all that you didn’t know, you were met with EXPECTATIONS. As you drifted around the hospital guzzling coffee and fielding bleeps, you had to deal with whatever came your way, at least until you could find the long-suffering Med Reg.

“Clearing the C-spine” is one of the tasks we have all been faced with, and armed with an idea of the process, marched into the cubicle.

One of the problems however, is the location of the mission: a hectic, crowded, stressed out Emergency Department. Not the ideal venue for a bit of a dither.

The second inconvenient location for inevitable fiasco is on the ward. After 5 pm. Where a lovely elderly lady has fallen and you have no idea where the cervical collar is, let alone how to apply it and who to call next.

Third and undoubtedly most terrifying- the elderly gentleman who fell over yesterday: you were peacefully typing out his discharge note and now his neck hurts and he can’t use his arms.

This is where the “C-Spine rules” come in. Having a quick glance at them before diving into the midst of the paramedic crew can make the process simpler, and most importantly, safer.

Two such decision rules are the Canadian C-Spine (CCR) Rule ¹, and the National Emergency X-Radiography Utilization Study (NEXUS) Low-Risk criteria²:

The Canadian C Spine Rule is for ALERT, STABLE trauma patients where cervical spine injury is a concern.

And who might they be?

Answer: They will not always present in a collar and blocks.

- Many trauma patients walk into minors and 3 hours later inform you that they fell off a horse and landed on their head.
- Patients with degenerative spinal conditions: The elderly patient with a crumbly spine may have actually fractured their vertebra when they bumped their head.

One radical aspect to this rule:

In the elderly patient (or the other high risk categories): a non-tender cervical spine is irrelevant. If you are concerned, they need

imaging. A good opportunity is when you send them for a scan of their bumped head. The NICE head injury guideline³ also has a section on cervical spine injuries⁴. This incorporates the Canadian C Spine rules, allowing you to review these while you decide if the patient needs a CT Brain.

The NEXUS Low-Risk criteria (NLC)²

Essentially the same as the rules set out in Advanced Trauma Life Support (ATLS)⁵

Cervical-spine radiography is indicated for patients with trauma unless they meet **all** the following criteria:

- No posterior midline cervical-spine tenderness
- No evidence of intoxication
- Normal level of alertness
- No focal neurologic deficit
- No painful distracting injuries

A useful mnemonic for this is NSAID⁶

N-Neurologic deficit

S-Spinal tenderness

A-Altered mental status

I-Intoxication

D- Distracting injury

These two rules were compared in a prospective cohort study conducted in the emergency departments of nine Canadian tertiary care hospitals⁷. The sensitivity of the CCR was 99.4%, as compared with 90.7% for the NLC. The respective specificities were 45.1% and 36.8 %.

Both these criteria make one thing clear: the patient must be alert. So, when you are asked to “clear the neck” of a patient who has had one too many, you are right to say that it will have to wait, and instead focus on finding out why they are GCS <15. ATLS says: when in doubt-leave the collar on.⁵ That being said, a patient who needs to stay in collar and blocks till they are safe to examine, does NOT need to stay on an uncomfortable spinal board.⁸ They can be log rolled off this with C Spine support and put back in blocks.

‘Social Admissions’ can belie spinal injuries.

Scenario:

The elderly lady with known spinal stenosis fell

headfirst into her garden fence. Her head was knocked backwards during the impact. Now she can't use her arms very well.

Interpretation:

"Hyperextension injury to the neck followed by a disproportionally greater loss of motor strength in the upper extremities than in the lower extremities."⁹

Think of:

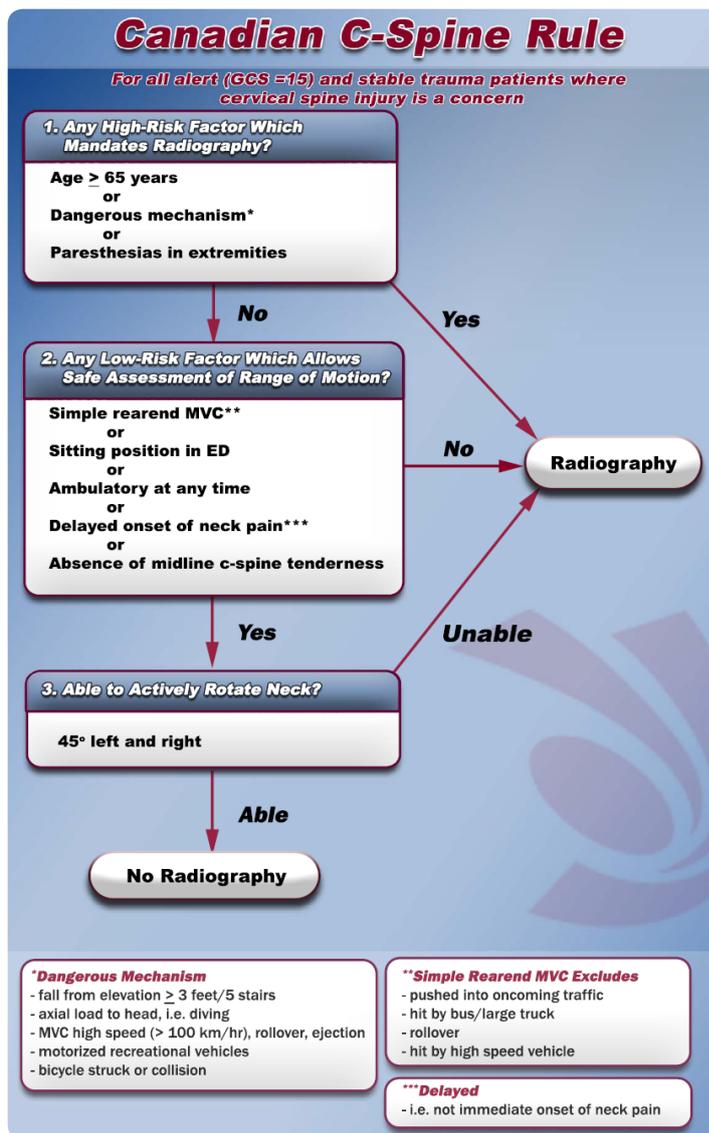
Central cord syndrome!

Hyperextension injuries in those with known spondylotic bony spurs, can result in damage to the central portion of the spinal cord. Here lies the corticospinal tract. The more medial fibres control the arms, and hence upper limb function is affected. This syndrome can occur in the absence of spinal column fracture, and hence is important to consider even in those patients with a 'normal CT'.

Lastly:

- If you suspect a spinal injury may have occurred, get help and advice.
- Have a low threshold for suspecting one!
- Don't force a collar.
- This is unlikely to be an injury you look after alone, so get the other team members involved sooner rather than later.
- Don't worry about being wrong in your suspicions. **Better to rule out than miss!**

Figure- The Canadian C Spine Rule^{1,7}



References:

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3. <https://www.nice.org.uk/guidance/cg176> [Nice Clinical guideline \(CG176\) Head injury: assessment and early management](#)
4. [Investigation for injuries to the cervical spine in patients with head injury](#) <https://pathways.nice.org.uk/pathways/head-injury#path=view%3A/pathways/head-injury/investigation-for-injuries-to-the-cervical-spine-in-patients-with-head-injury.xml&content=view-index>

5. American College of Surgeons Committee on Trauma. 2012. Box 7-1 Guidelines for screening patients with suspected spine injury. *Advanced Trauma Life Support ATLS Student Course Manual 9th Edition*.
6. https://wikem.org/wiki/NEXUS_cervical_spine_rule
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