



ThinkAskLearn
Health Professional Education

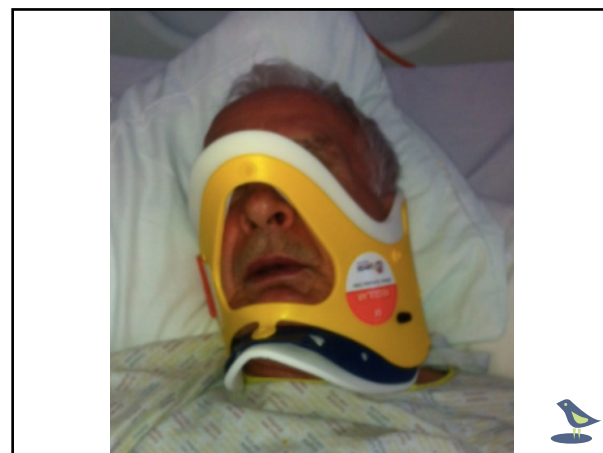
Managing a potential spinal injury

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Police and fire personnel work to extricate the injured woman from the vehicle.

The constabulary has issued a force-wide notice warning officers that they should place injured victims of road traffic incidents in patrol cars only when absolutely necessary after a £20,000 vehicle was written off when the roof was removed to retrieve a woman complaining of neck pain.

The incident happened in January when an officer comforted a woman who was suffering from shock following a collision in Gosport.

The woman, who was shivering and complaining of leg pain, walked to the marked vehicle, after being assessed by paramedics, and sat in the front passenger seat.

But during a second assessment, the 27-year-old complained of neck pain and concerned medics ruled she should be removed from the vehicle on a spinal board.

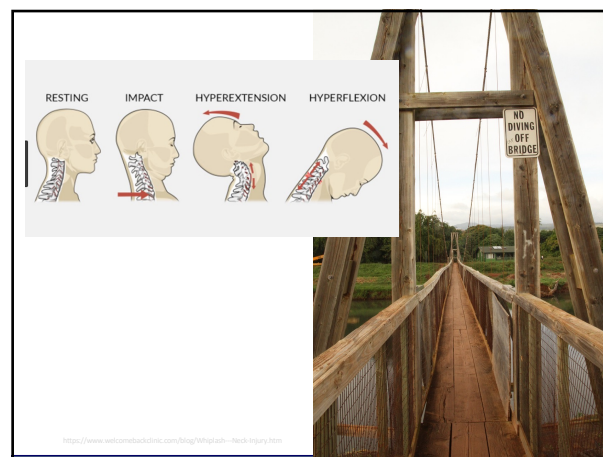
Sgt Andy Fadhnie, who reviews all Police Vehicle Incidents (PVI), said the episode illustrates why injured people should not be placed in police vehicles unless absolutely necessary.

He said: "I'd just remind officers that while the safety of injured parties is of course paramount, wherever possible, please do not put injured people in patrol cars. Obviously the injured person's health and welfare was our priority and would not have been compromised for the sake of a vehicle."

The injured woman's injuries were later deemed to be minor.

<https://www.westcoastchiro.com/blog/2019/01/15/neck-injury.htm>

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Assume Injury Present

Spinal Injuries are RARE

**DEVASTATING
IF MISSED**


C-spine **MUST** be presumed to be at risk for any MOI capable of causing c-spine damage



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Who to immobilise

- Any patients with a history of trauma if the patient is
 - Unconscious
 - Complaining of neck pain or tenderness or limitation of movement
 - Using hands to support neck
 - Has any neurological deficit
 - Significant head /facial injuries



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Who to immobilise

- Any patient with a mechanism which may indicate spinal injuries
 - Pedestrian / cyclist hit > 30km/hr.
 - Passenger – MVA collision > 60km/hr.
 - Fall - more than 3 metres.
 - Kicked by, or fall from a horse.
 - Backed over by a car.
 - Thrown from vehicle.
 - Thrown over handlebars of bike.
 - Severe electric shock.



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How to immobilise

- Apply
- Apply appropriate sizing
- If unable to immobilise
 - Unclear
 - Inferior
 - Child
- Ensure



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But do hard collars work???

- Kwan et al 2009 Cochrane
 - No evidence found
- Millar et al 2012
 - Patient moves neck, does not immobilise
- Holla, 2012
 - Head blocks do not work
- Bergan et al 2009
 - No more hard collar in awake conscious patients
 - Position of comfort



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But what about...

- Spinal boards
 - Used for transfer
 - Remove asap
- Taping
 - No evidence
 - Can cause harm
- Head blocks, Sandbags, Bags of Fluid
 - No longer recommended



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Spinal Board Graveyard



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But it is a simple hard collar

- Painful
- Airway occlusion
- Unable to visualise neck
- Vomiting/ Aspiration risk
- Non compliance in all age groups
- Poorly fitting
- Development of pressure area
- Able to move neck



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NEW ZEALAND
Resuscitation Council
WHAKAHAUDORA AOTEAROA

January 2016

ANZCOR Guideline 9.1.6 – Management of Suspected Spinal Injury The information in this Guideline is current as of: 21/05/2025 11:35pm

- “Those with significant spinal pain will likely have muscle spasm which acts to splint their injury.” – Conscious Pt
- “Airway management takes precedence over any suspected spinal injury. It is acceptable to gently move the head into a neutral position to obtain a clear airway.”
- If the victim is breathing but remains unconscious, it is preferable that they be placed in the recovery position.
- Jaw thrust and chin lift should be tried before head tilt.



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NEW ZEALAND
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January 2016

ANZCOR Guideline 9.1.6 – Management of Suspected Spinal Injury The information in this Guideline is current as of: 21/05/2025 11:35pm

- “The clinical importance of prehospital immobilisation in spinal trauma remains unproven. There have been no randomised controlled trials to study immobilisation techniques or devices on trauma victims with suspected spinal cord injury.”



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  **NEW ZEALAND Resuscitation Council**
WIKAKAHIAORA AOTEAROA


January 2016

ANZCOR Guideline 9.1.6 – Management of Suspected Spinal Injury

The information in this Guideline is current as of: 21/05/2025 11:35pm

‘Consistent with the first aid principle of preventing further harm, the potential benefits of applying a cervical collar do not outweigh harms such as...’

“...In suspected cervical spine injury, ANZCOR recommends that the initial management should be manual support of the head in a natural, neutral position, limiting angular movement (expert consensus opinion). In healthy adults, padding under the head (approximately 2cm) may optimise the neutral position.”

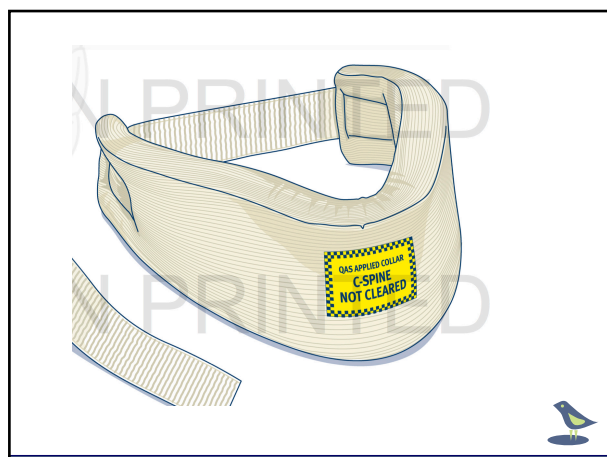


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ANZCOR Guideline – Spinal Care




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NEXUS rule for Clearing Spine

- **N**eurological signs/deficit
- **S**pinal tenderness (Cervical midline)
- **A**ltered Mental Status
- **I**ntoxication
- **D**istracting injury


- If **NO** > remove collar, rotate neck 45° to left & right, if no pain on movement > collar may be left off
- If **YES** to any of these > spinal imaging



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Canadian C-Spine Rule

- From the authors of the Ottawa ankle rule and Ottawa knee rule
- More depth than NEXUS
- Less x-rays need to occur with same high sensitivity



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Canadian C-Spine Rule

For alert (Glasgow coma score=15) and stable trauma patients where cervical spine injury is a concern

Any high risk factor that mandates radiography?

Age ≥65 years
or
Dangerous mechanism* of injury
or
Paresthesias in extremities

↓ No

Any low risk factor that allows safe assessment of range of motion?

Simple rear end motor vehicle collision†
or
Sitting position in emergency department
or
Walking at any time
or
Delayed onset of neck pain‡
or
Absence of midline cervical spine tenderness

↓ Yes

Able to actively rotate neck?
45° left and right

↓ Able

No radiography

Yes → **Radiography**

No → **Radiography**


Unable → **Radiography**

Rule not applicable if: non-trauma cases, Glasgow coma score <15, unstable vital signs, age <16 years, acute paralysis, known vertebral disease, or previous surgery of cervical spine

*Fall from elevation >0.9 m (3 feet)/five stairs, axial load to head – for example, diving, motor vehicle collision high speed, >100 km/h, rollover, ejection, motorised recreational vehicles, bicycle struck or collision

†Excludes: pushed into oncoming traffic, hit by bus or large truck, rollover, hit by high speed vehicle

‡Not immediate onset of neck pain



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Any hi
Age > 6

For alert (Glasgow coma score

Paresthesias in extremities

Dange

Any low risk factor that will change the mechanism?
Simple rear end motor vehicle
or
Sitting position in emergency
or
Walking at any time
Delayed onset of neck pain
or
Absence of midline cervical tenderness

Able to actively rotate neck?
65° left and right

↑ Able
↓ No radiography

Rule not applicable if: non-trauma trauma cases, Glasgow coma score known vertebral fracture, or previous history of cervical spine

*Fall from elevation (≥6.9 m (22 feet)/five stairs, axial load to neck, >1000 N (225 lb)), reflexive, electric, motorised recreation

*Fall from: pushed into oncoming traffic, hit by bus or large

†Immediate onset of neck pain

Dangerous mechanism of Injury


- Fall >3ft/Five Stairs
- Axial load to head
- Undertake a clinical assessment if MVA >100km/hr
- Rollover
- Ejection
- Motorised recreational vehicle
- Bicycle collision

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Lesson of the Week

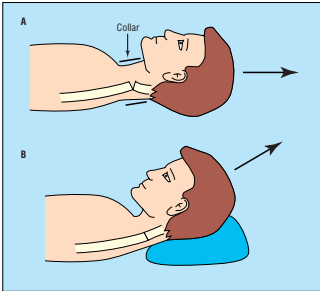
(1999 Papadopoulos et al)

- 82 year old – Fall down stairs
- Walked into the ED – c/o Neck Pain
- Long standing spinal stiffness (Ankylosing spondylitis)
- Tender over C6/C7 with no neurological deficit
- Manipulated into neutral position for Hard Collar
- Developed Sudden Paralysis and Paraplegia
- Intubated in ED – developed pneumonia, renal failure, MI, cardiac dysrhythmias
- Died 2 days later



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Manipulation of the Neck



The diagram illustrates two methods of neck manipulation, labeled A and B, within a light blue rectangular frame. In method A, a person with brown hair is lying on their back with their head tilted back. A hand is shown applying a collar to the neck, with an arrow pointing to the collar and another arrow pointing to the right. In method B, the same person is lying on their back with their head tilted back, but their head is resting on a blue pillow. A hand is shown applying a collar to the neck, with an arrow pointing to the collar and another arrow pointing upwards and to the right.


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Ankylosing spondylitis : inadvertent application of a rigid collar after cervical fracture, leading to neurological complications and death

Acta Orthop. Belg., 2010, 76, 413-415

Andrew CLARKE, Stuart JAMES, Sashin ASHUA

No Hard Collar



Supine

Hard Collar Applied





Figure 1 shows two lateral X-ray images of the cervical spine. The left image, labeled 'Supine', shows a clear fracture at the C6 level. The right image shows the same patient with a hard collar applied, which appears to be restricting movement and potentially exacerbating the injury.

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Figure 1 The lateral trauma position. A patient has been positioned in the lateral trauma position on a stretcher. Observe that the most cephalic stretcher belt has been placed above the shoulder to prevent forward movement on the stretcher.

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