



Queensland
Trauma Education

SPINAL TRAUMA

Neck assessment

Procedural skill

Facilitator resource kit

CSDS



Clinical Skills Development Service



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The resources developed for Queensland Trauma Education are designed for use in any Queensland Health facility that cares for patients who have been injured as a result of trauma. Each resource can be modified by the facilitator and scaled to the learners needs as well as the environment in which the education is being delivered, from tertiary to rural and remote facilities.

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Queensland Trauma Education

Neck and Spinal Trauma – Neck Assessment: Procedural skill – Facilitator resource kit Version 2.0

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About this training resource kit

This skills session is to assess participants in assessment for neck injury following trauma utilising structured clinical format.

National Safety and Quality Health Service (NSQHS) Standards



Target audience

Emergency department medical and nursing clinicians

Duration

15 minutes

Group size

Suited to small group participation

Learning objectives

By the end of this session the participant will be able to:

- demonstrate ability to perform anterior neck assessment
- demonstrate understanding of TWELVE-C prompt
- demonstrate the ability to assess for cervical spine injury
- identify risk factors for neck and cervical spine injury
- demonstrate ability to place a cervical spine collar
- demonstrate clinical clearance of cervical spine

Facilitation guide

1. Facilitator uses the part task trainer or manikin to demonstrate:
 - a. Anterior neck assessment (TWELVE-C)
 - b. Assessment of cervical spine
 - c. Application of cervical spine
2. Facilitator to lead discussion regarding significance of clinical findings, management options and clearance assessment of cervical spine

Supporting resources (in Printable resources)

1. National Emergency X-Radiology Utilization Study (NEXUS) Criteria
2. Canadian C-Spine Rule
3. Neck assessment procedural skill setup guide
4. TWELVE-C infographic poster

Procedural skill

Resources required

Equipment	<ul style="list-style-type: none">• Airway heads or Airway trainer model• Cervical collars- variety
Delivery tool	Small group practical session Laminated supporting resources

Case 1

24-year-old male is brought to ED following a fall at a construction site. He has no neck pain and walks into ED. He describes the height of the fall as >3 meters so he is brought to the resus bay for assessment.

Case 2

27-year-old male is riding a motorbike on a rural property and collides with a wire fence. His anterior neck has a large laceration across the midline with a deep wound and subcutaneous emphysema bilaterally.

Case 3

78-year-old man slips in the bathroom and is brought to the ED with a collar in situ. He is agitated and confused, moving all limbs, and pushing staff away.

Case 4

32-year-old female is involved in a high-speed rollover car crash. She is the restrained driver and complains of tingling in both hands as the ambulance got her out of the vehicle. She is alert, not intoxicated, has no other distracting injuries with normal vital signs.

Question and answer guide

How do you assess the neck in a trauma patient?

The neck is assessed during the primary survey, using the TWELVE-C method for the anterior neck and posterior cervical spine for possible bony and neurological deficit.

What are the clinical features in the TWELVE-C assessment?

- **T**racheal deviation
- **W**ounds
- **E**mphysema (subcutaneous)
- **L**aryngeal tenderness / crepitus
- **V**enous distension
- **o**esophageal injury (injury unlikely if able to swallow easily)
- **C**arotid haematoma / bruits / swelling

Why is the TWELVE-C assessment performed?

The examination aims to identify patients who are at risk from airway obstruction following trauma from local injury or expanding vascular trauma. In patients who may deteriorate, either due to direct trauma or an enlarging haematoma recognition of this to allow early referral for advanced airway management is desired.

What clinical rules can be used to assess a cervical spine for injury?

NEXUS and Canadian C-Spine rules (see supporting documents)

How are these rules used in clinical practise?

Decision rules are used to risk stratify patients into needing further investigation (imaging studies) before determining if the cervical spine is injured or can be 'cleared'.

What clinical examination is performed to determine if spinal cord injury is present?

In addition to local evidence of injury (midline bony tenderness, step, wounds, or haematoma overlying the spinal column), clinical evidence of cord injury is sought by examining for motor and sensory deficits distally in the limbs and head.

What role do emergency cervical collars provide in potential cervical spine injury?

Cervical spine collars are a reminder to the patient and clinical team caring for them that the spine needs further assessment and precautions should be undertaken until removed.

Emergency cervical spine immobilisation devices do not 'protect' the spine by limiting movement.

The use of hard collars has been discontinued in Queensland as the complications and risks outweighed the benefits of immobilisation. Soft collars are now used in the prehospital and early assessment phase of care.

Semi-rigid collars are still used in the management of cervical spine injury, but these are specifically sized and fitted to the individual patient to manage specific injury patterns in the hospital setting.

Other notes

- Facilitator to demonstrate performing anterior neck and cervical spine examination
- Discussion regarding application of NEXUS and Canadian C-spine rules
- Review of collar types and application technique

Acronyms and abbreviations

Term	Definition
NEXUS	National Emergency X-Radiology Utilization Study Criteria
ED	Emergency department

References

1. Vaillancourt, C., Charette, M., Kasaboski, A. et al. Evaluation of the safety of C-spine clearance by paramedics: design and methodology. (2011). *BMC Emerg Med* 11, 1. <https://doi.org/10.1186/1471-227X-11-1>
2. Hoffman, J. R., Wolfson, A. B., Todd, K., & Mower, W. R. (1998). Selective cervical spine radiography in blunt trauma: methodology of the National Emergency X-Radiography Utilization Study (NEXUS)". *Annals of Emergency Medicine*, 32(4), 461-469. [https://doi.org/10.1016/s0196-0644\(98\)70176-3](https://doi.org/10.1016/s0196-0644(98)70176-3)

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