Clinical Practice Guideline

Management of suspected or confirmed spinal injury in adults (16 years and older)

Trauma Services BC

Specialist Trauma
Advisory Network of BC

Legend

- Investigation
- Action
- Diagnosis
- Teleconsult

Initiate ATLS protocol

- Maintain airway, high flow O_2
- C-spine protection (Aspen collar, spine board)
- Prioritize concomitant injuries based on ATLS protocols
- Call **Trauma Services** for triage of polytrauma patients

SUSPECTED SPINAL INJURY
(Isolated spine injury, age ≥16 years)

Suspect c-spine injury?

- No → See CPG for **Suspected Thoracolumbar Spinal Injury**
- Yes → **Patient awake & alert?** (GCS=15, absence of intoxication/sedation)

Patient awake & alert?

- Yes → **Pre-existing vertebral disease?** (e.g. ankylosing spondylitis, rheumatoid arthritis, spinal stenosis, previous c-spine surgery)
- No → **CT C-Spine (non-contrast)** (From base of skull to bottom of T1)

Pre-existing vertebral disease?

- Yes → **CT C-Spine (non-contrast)**
- No → Clinical signs/diagnosis apply **Canadian C-Spine Rules:**

Clinical signs/diagnosis apply **Canadian C-Spine Rules:**

High risk factor?

- Age ≥65; or
- Dangerous mechanism[1]; or
- Parasthesia in extremities

- Yes → **CT C-Spine (non-contrast)**
- No → **Can do safe assessment of range of motion?**

Can do safe assessment of range of motion?

- Simple rear end MVC[2]; or
- Sitting position in ED; or
- Ambulatory at any time; or
- Delayed onset of neck pain; or
- Absence of midline c-spine tenderness

- No → **CT C-Spine (non-contrast)**
- Yes → Able to rotate neck 45 degrees left & right?

Able to rotate neck 45 degrees left & right?

- No → **CT C-Spine (non-contrast)**
- Yes →
  - Remove collar
  - Off spine board
  - Document on chart
  - Clear c-spine

CT C-Spine (non-contrast)
(From base of skull to bottom of T1)

Reformats:
Standard — Transverse 2–3mm
Bone — Transverse 2–3mm,
Coronal 2–3mm, Sagittal 2–3mm

- No CT available on site → Complete **Spine Checklist**
- CT normal → Patient evaluable?
- CT abnormal → Patient evaluable?

Complete **Spine Checklist**

Contact **PTN** immediately to initiate teleconsult with **Spine Services** and to determine logistics

If neurologic deficit based on physical exam, and only if imaging does not delay higher level of care, obtain **plain film x-ray**

(Minimum views needed: Lateral include C7–T1, AP, open mouth odontoid; obliques not necessary)

Patient evaluable?

- Yes →
  - Document on chart
  - Clear c-spine
  - Mobilize/ Analgesia
- No →
  1. Do **NOT** remove collar
  2. Maintain c-spine precautions
  3. Complete **Spine Checklist**

  1. Contact **PTN** to upload CT images to grid
  2. PTN initiates teleconsult
  3. Teleconsult with **Regional Spine Services** to determine logistics

Patient evaluable?

- Yes → Complete **Spine Checklist** (See below)
- No → Complete **Spine Checklist** (See below)

Complete **Spine Checklist** (See below)

- ASIA score E → See CPG for **Confirmed Spinal Fracture with No Cord Injury**
- ASIA score A–D → See CPG for **Confirmed Spinal Fracture with Cord Injury**

[1] **Dangerous mechanism:**
- fall from elevation ≥3 feet (or 5 stairs)
- axial load to head, e.g. diving
- MVC high speed (>100km/hr), rollover, ejection
- motorized recreational vehicles
- bicycle collision

[2] **Simple rear-end MVC does NOT include:**
- pushed into oncoming traffic
- hit by bus or large truck
- rollover
- hit by high speed vehicle

[3] **Delayed:** Not immediate onset of neck pain

[4] **High risk for intubation:**
- The elderly
- C5 injury or higher, regardless of age
- T1 injury or higher in patients age >60 years
- Chronic obstructive pulmonary disease (COPD)
- Morbidly obese
- Vital capacity <15 mL/kg
- Increasing pCO_2
- Maximum respiratory pressure of <20 cm of water

Spine Checklist

(Complete prior to teleconsult with Spine Services)

- ___ CT results (if available)
- ___ ASIA scores
- ___ Basic neurologic exam
- ___ Age
- ___ Mechanism of injury
- ___ Vital signs
- ___ Rectal exam
- ___ Associated injuries
- ___ High risk for intubation[4]

Abbreviations

- ATLS — Advanced Trauma Life Support
- TL spine — thoracolumbar spine
- GCS — Glasgow coma scale
- SCI — spinal cord injury
- PTN — Patient Transfer Network