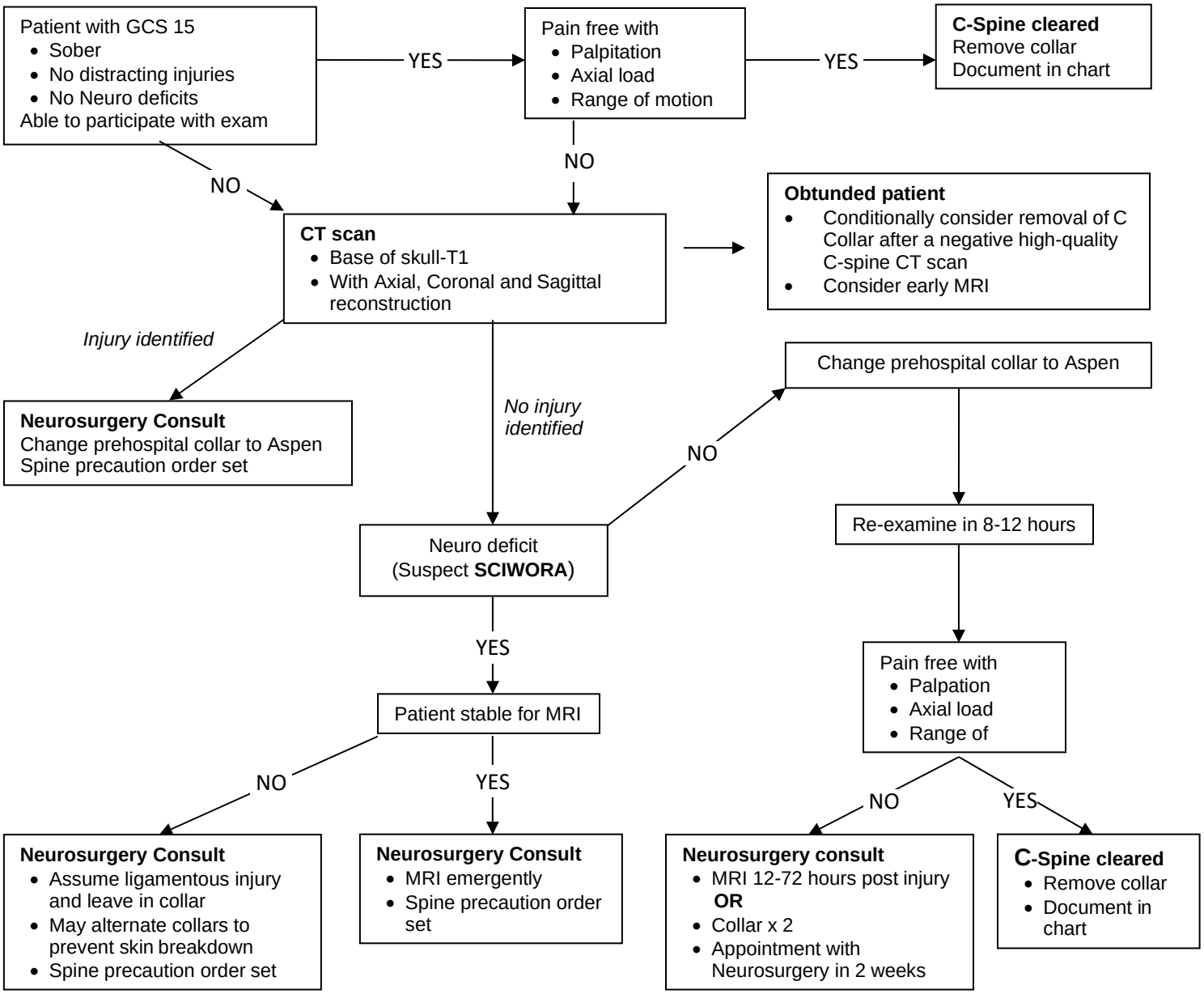
Trauma Center Practice Management Guideline

Iowa Methodist Medical Center — Des Moines

Adult C-Spine Algorithm

ADULT **Practice Management Guideline**	**Effective: 04/2014**
Contact: Trauma Center Medical Director/ Trauma Nurse Practitioner	**Last Reviewed: 04/2024**



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Cervical Spine Evaluation in the Adult Trauma Patients	
ADULT **Practice Management Guideline**	**Effective: 04/2014**
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PURPOSE

To address the evaluation and clearance of the cervical spine for adult trauma patients

DEFINITIONS

1. **Adult Trauma Patient:** Any patient greater than 17 years old admitted for an injury

2. **Physical Examination** (of the cervical spine) includes all of the following:

   A. Axial load/pressure without midline tenderness/pain
   B. Able to voluntarily rotate head/neck 45 degrees left and right
   C. Able to voluntarily flex and extend neck 30 degrees
   D. Movement without midline tenderness/pain

3. **Painful Distracting Injuries** include but are not limited to:

   A. Any long bone fracture
   B. Visceral injury requiring surgical consultation
   C. Large laceration, degloving injury, or crush injury
   D. Any other injury causing acute functional impairment
   E. Injury that impairs the patient's ability to appreciate other injuries

4. **Dangerous Mechanism of Injury** (as defined by the Canadian study):

   A. Fall from >= 1 meter (3 feet)/5 stairs
   B. Axial load to head (i.e., diving)
   C. Motor vehicle crash
   D. High speed (> 60 mph), rollover, ejection
   E. Motorized recreational vehicles
   F. Bicycle collision

POLICY STATEMENTS

1. Determining the stability of the cervical spine is commonly encountered by those caring for acutely injured patients.

2. Patient presentation, physical examination, mechanism of injury and past medical history are important determinants for further workup of the cervical spine in adult trauma patients.

3. Prolonged immobilization can increase the risk of pulmonary complications, decubitus ulcers, and venous thromboembolism. Prompt injury identification and management of spine fractures can allow for early mobilization and risk reduction.

4. Any cervical spine fracture identified on radiograph is considered clinically significant until a Spine Service is consulted.

PROCEDURE STATEMENTS

1. Trauma patients meeting ALL of the following criteria are able to be clinically cleared.

A. Patient presentation and physical examination
- Alert with a Glasgow Coma score of 15
- Neurologically intact
- Stable vital signs
- No painful or distraction injury
- No evidence of ethanol or drug intoxication

B. Patient history of event and present complaint
- Delayed onset of spine pain
- Low energy mechanism of injury
- Absence of midline spine tenderness
- Simple rear-ended motor vehicle crash

2. Radiologic workup is indicated for

A. Dangerous mechanism of injuries

B. Patient presentation and physical exam
- Altered mental status with a Glasgow Coma Score of less than 15
- Unstable vital signs
- Painful or distraction injury
- Neurologic compromise
- Evidence of ethanol or drug intoxication

C. Past medical history of known vertebral disease (i.e., spinal stenosis, rheumatoid arthritis, ankylosing spondylitis and/or spine surgery)

3. Radiological Evaluation

A. Radiographic screening of the spinal axis can be performed by a number of means.
- Axial CT Cervical spine with sagittal and coronal reconstruction in all patients.
- MRI evaluation may be indicated for the following:
  - Neurologic abnormalities (i.e., closed head injury, confusion, sedation…)
    - Anticipated greater than 48 hours
    - Inability to complain of neck pain
  - Clinical suspicion despite normal studies (SCIWORA)

- Radiologic findings or clinical presentation suspicious for epidural, ligamentous injury or acute disc herniation

4. Plan of Care

A. C-spine immobilization must be continued until the radiographs are read by a radiologist AND the patient has been cleared by physical examination.

B. If a neurologic deficit that may be attributable to a cervical spine injury is present
- Continue total spine precautions with cervical collar
- Assure pre-hospital cervical collar is changed
- Immediate Spine Service consultation
  - Any further spine clearance and activity restrictions will be managed by their recommendations

C. If an injury is identified from the imaging
- Continue total spine precautions with cervical collar
- Assure pre-hospital cervical collar is changed to Aspen collar
- Consult Spine Service
  - Any further spine clearance and activity restrictions will be managed by this service

D. If an injury is not identified from CT imaging **AND** the patient has significant distracting pain, intoxication or has enough analgesia or sedation to alter their sensorium, or has altered mental status from a brain injury
- Continue cervical collar until the distracting pain has been addressed and their sensorium cleared or consider MRI
- Assure pre-hospital cervical collar is changed to Aspen collar

E. If an injury is not identified from the imagining **AND** no midline tenderness to palpation **AND** the patient has been cleared by clinical exam
- Discontinue spine precautions
- Consult PT/OT as needed

F. If an injury is not identified from the imaging **BUT** patient complaints of midline tenderness to palpation or physical examination
- Continue cervical collar and assure pre-hospital cervical collar is changed to Aspen collar
- Flexion and extension radiographs of the cervical spine should be obtained or consider MRI
  - If inadequate (voluntary, painless excursion does not exceed 30 degrees)
    - Continue cervical collar and assure pre-hospital cervical collar is changed to Aspen collar
    - Repeat flexion/extension cervical spine films in 2 weeks with appointment to see Spine Service Clinic.

5. Older patients (55+)

A. The presence or absence of pain may be an unreliable indicator of c-spine fracture in an aging population. When used in conjunction with existing clearance guidelines, denial of pain may lead to missed injury. We recommend liberal c-spine imaging for older trauma patients with significant/dangerous mechanism of trauma

Related References:

1. Asymptomatic cervical spine fractures: Current guidelines can fail older patients.
   J Trauma Acute Care Surg. 2017 Apr 20. Healey CD[1], Spilman SK, King BD, Sherrill JE 2nd, Pelaez CA.

2. Patel, MB., et al. Cervical spine collar clearance in the obtunded adult blunt trauma patient: A systematic review and practice management guideline from the Eastern Association for the Surgery of Trauma. J Trauma. 78(2):430-441, February 2015

3. Practice Management Guidelines for the Screening of Cervical Spine Fracture
   Eastern Association for the Surgery of Trauma: Practice Management Guideline Committee
   Revised 2009

4. Ciesla, D. J., Shatz,et.al.. (2019). Western Trauma Association critical decisions in trauma: Cervical spine clearance in trauma patients. ˜ *the œJournal of Trauma and Acute Care Surgery*, *88*(2), 352–354. https://doi.org/10.1097/ta.0000000000002520