

3. CRANIOFACIAL, NECK & SPINE GUIDELINES
A. Cervical Spine

OBJECTIVE

Care of the trauma patient mandates evaluation for potential injury of the cervical spine. Specific issues addressed include the population requiring cervical spine imaging, which, if any additional diagnostic imaging is required, and application of these considerations to the comatose patient.

GUIDELINE

In conjunction with Radiology, Orthopedic Surgery, and Neurosurgery, the division of Trauma has developed the following recommendations, which represent the institutional adaptation of practice guidelines previously developed by the Eastern Association for the Surgery of Trauma and the New York State In-Hospital Cervical Spine Clearance Guidelines in Blunt Trauma with modifications based on established collective practice patterns and review of currently available literature. These guidelines are intended to assist in the evaluation of the trauma patient with suspected cervical spine injury.

A. IDENTIFICATION OF PATIENTS AT RISK FOR CERVICAL SPINE INJURY

1. All blunt trauma patients should be suspected of having sustained cervical spine injury until proven otherwise. Patients who arrive with adequate cervical spine immobilization in place should remain immobilized until evaluated by the treating physician. Patients who arrive without cervical spine immobilization should be immobilized at the discretion of the treating physician based on mechanism of injury and clinical suspicion of C-spine injury.
2. All life-threatening hemodynamic and pulmonary problems should be addressed before a prolonged cervical spine evaluation is undertaken.

B. NEED FOR RADIOGRAPHIC EVALUATION OF THE CERVICAL SPINE

1. Trauma patients may be considered to have a stable cervical spine and require no radiographic studies if they satisfy all of the following criteria:
 - a. normal level of alertness
 - b. no evidence of intoxication
 - c. no painful distracting injury
 - d. no focal neurologic deficit / paresthesias
 - e. no midline cervical spine tenderness
 - f. no pain on confrontational exam, in the absence of distracting injuries
 - g. no history of Ankylosing Spondylitis or cervical spine anomalies
2. All other trauma patients should undergo radiographic evaluation:
 - a. A high-quality axial CT scans with reconstruction should be the primary method of radiographic clearance for bony injury.
 1. MRI may also be used to evaluate for ligamentous injury.
 - b. Patients with focal neurologic deficits may require emergent or urgent MRI evaluation of the spinal cord in addition to CT evaluation of the axial bony spine. This test should be ordered in consultation with a spine service (orthopedic surgery or neurosurgery).
3. If radiographic examination fails to reveal injury and patient has no neurologic deficits, an attempt to clear the c-spine clinically may be undertaken.
 - a. If patient has no pain to palpation or passive movement (confrontational exam), immobilization (collar) may be removed.
 - b. If patient is found to have neck pain to palpation or movement, flexion/extension radiographs of the cervical spine / MRI should be performed (see above).
 - c. If no injury is identified during these studies, symptomatic treatment of neck pain is provided with a soft collar.

3. CRANIOFACIAL, NECK & SPINE GUIDELINES
A. Cervical Spine

- d. If cervical instability is identified, patient should remain immobilized and spine service consult should be obtained.

C. NEED FOR SPINE SERVICE CONSULTATION:

1. If radiographic abnormality is identified, cervical spine immobilization should be continued, and spine service consultation should be obtained.
2. Any patient found to display evidence of neurologic deficit must remain immobilized, *despite radiographic findings* until evaluated by spine service.

D. COMATOSE PATIENTS

Patients who present with altered level of consciousness, not expected to improve within 24 - 48 hours, should undergo the following studies:

1. Axial CT scan of cervical spine (see B.2.a. above).
2. If injuries are identified using the high-quality Axial CT scan, immobilization should be maintained, and spine service should be consulted.
3. If no injury is identified by CT, the cervical spine should be considered to be stable and immobilization (cervical collar) may be discontinued.

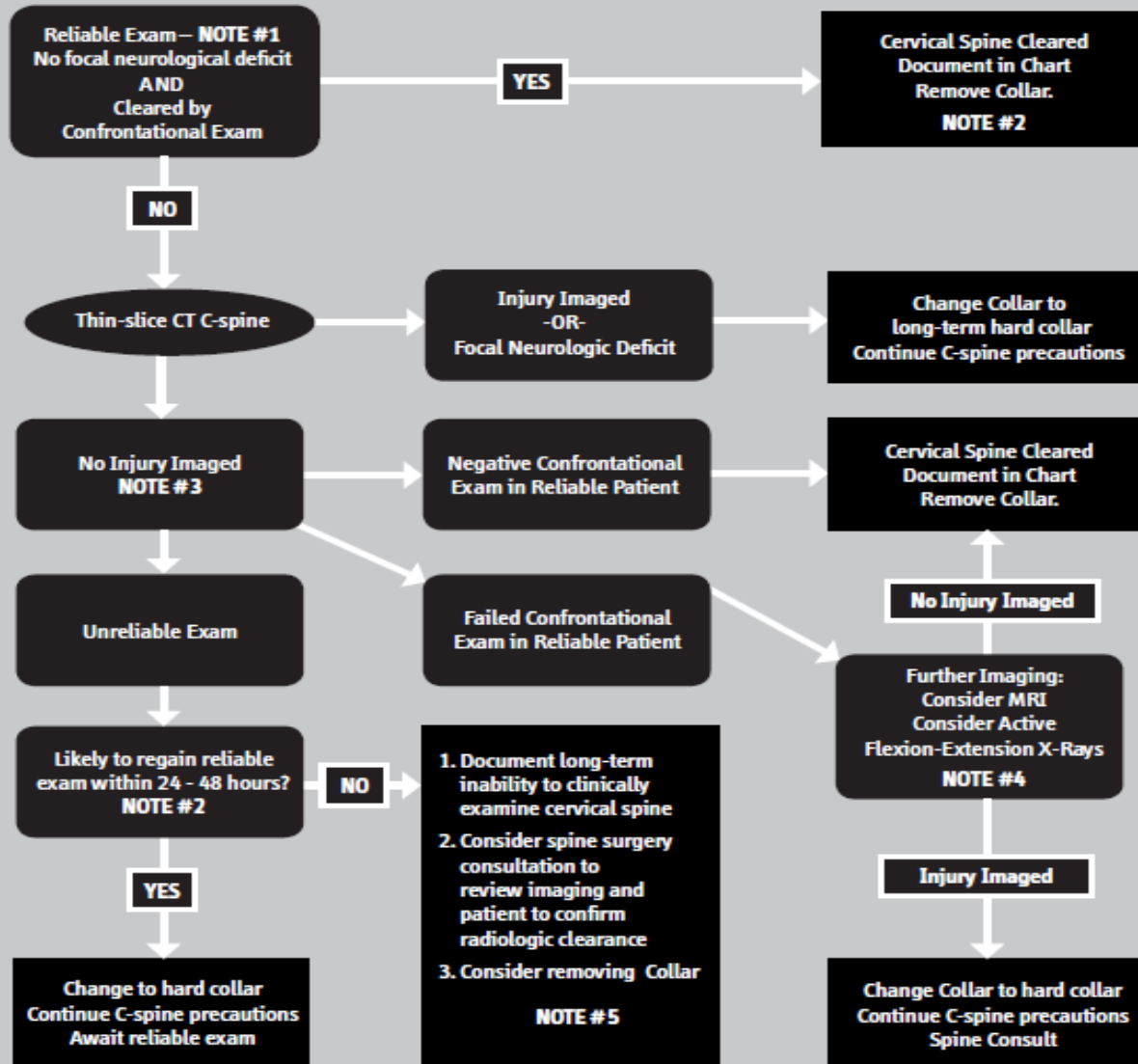
REFERENCES

1. Patel MB, Humble SS, Cullinane DC, Day MA, Jawa RS, Devin CJ, Delozier MS, Smith LM, Smith MA, Capella JM, Long AM, Cheng JS, Leath TC, Falck-Ytter Y, Haut ER, Como JJ. 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 Acute Care Surg.* 2015 Feb;78(2):430-41.
2. Stiell IG, Clement CM, McKnight RD, et al. The Canadian c-spine rule versus the NEXUS low-risk criteria in patients with trauma. *NEJM* 349:2510-2518, 2003.
3. Hoffman JR, Mower WR, Wolfson AB, et al. Validity of a set of clinical criteria to rule out injury to the cervical spine in patients with blunt trauma. *NEJM* 343:94-99, 2000.
4. Theologis AA, Dionisio R, Mackersie R, McClellan RT, Pekmezci M. Cervical spine clearance protocols in level 1 trauma centers in the United States. *Spine.* 2014; 39: 356-361.
5. Griffen MM, Frykberg ER, Kerwin AJ, et al. Radiographic clearance of blunt cervical spine injury: Plain radiograph or computed tomography scan? *J Trauma* 55:222-227, 2003.
6. Berne JD, Velhams GC, El-Tawil Q, et al. Value of complete cervical helical CT scanning in identifying cervical spine injury in the unevaluable blunt trauma patient with multiple injuries: A prospective study. *J Trauma* 47:896, 1999.
7. Barba C, Taggart J, Morgan AS, et al. A new cervical spine clearance protocol using CT. *J Trauma* 51:652-657, 2001.
8. Raza M, Elkhodair S, Zaheer A, Yousaf S. Safe cervical spine clearance in adult obtunded blunt trauma patients on the basis of a normal multidetector CT scan – a meta-analysis and cohort study. *Injury.* 2013; : 17.
9. Satahoo SS, Davis JS, Garcia GD, Alsafran S, Pandya RK, Richie CD, Habib F, Rivas L, Namias N, Schulman CI. Sticking our neck out: is magnetic resonance imaging needed to clear an obtunded patient's cervical spine? *J Surg Res.* 2013; 187: 225-259. Schenarts PJ, Diaz J, Kaiser C, et al. Prospective comparison of admission CT scan and plain films of the upper cervical spine in trauma patients with altered mental status. *J Trauma* 51:663-669, 2001.
10. NEW YORK STATE IN-HOSPITAL CERVICAL SPINE CLEARANCE GUIDELINES IN BLUNT
11. TRAUMA, STAC Evaluation Subcommittee, Authors: Jamie S. Ullman, MD FACS, Matthew Bank, MD, FACS, Nelson Rosen, MD, FACS, Robert Madlinger, DO, FACOS, Palmer Q. Bessey, MD, FACS., David L. Cornell, MD



3. CRANIOFACIAL, NECK & SPINE GUIDELINES
A. Cervical Spine

APPENDIX: New York State Inpatient Cervical Spine Clearance Guidelines





3. CRANIOFACIAL, NECK & SPINE GUIDELINES
A. Cervical Spine

New York State Inpatient Cervical Spine Confrontational Exam Protocol



Approved Date: 04/30/2013

Last Revised Date: 12/20/2023

To be Reviewed: 12/2026