

Guideline



CCHMC Trauma Service Guidelines

Title: Cervical Spine Clearance: Reliable Patient

Effective Date: 10/2020

Number:TR-07

Page: 1 of 4

1.0 SCOPE

- 1.1. Care of the Trauma Services Patient at CCHMC.

2.0 DEFINITIONS

- 2.1. **Reliable exam:** Evaluation of the cervical spine should assure ALL of the following criteria and be assessed in the primary exam, and reassessed in the secondary and tertiary exam as appropriate:
 - 2.1.1. Normal mental status: GCS \geq 14. No evidence of intoxication from drugs or alcohol; and no altered level of alertness.
 - 2.1.2. No developmental or pre-existing musculoskeletal concerns
 - 2.1.3. Careful consideration if under 2 years of age.
 - 2.1.4. No evidence or history of concerning mechanism: axial load, diving, "clothes-lining", suspicion for intracranial injury secondary to non-accidental trauma (NAT), or high risk MVC. High risk MVC includes: head-on collision, rollover, ejection from vehicle, death in the same crash, speed >55 mph.
- 2.2. **Clinical clearance** of the cervical spine may be performed if ALL of the following criteria are present:
 - 2.2.1. Normal neurologic exam; and
 - 2.2.2. No tenderness to palpation of the cervical spine; and
 - 2.2.3. No cervical spine pain with active range of motion; and
 - 2.2.4. No distracting injuries

3.0 GUIDELINE

- 3.1. Complete primary and secondary surveys per CCHMC guidelines.
- 3.2. If patient meets all criteria for reliable exam then clinical clearance of the cervical spine may be performed.
 - 3.2.1. Radiographic studies of the cervical spine are not indicated and the child is considered to have a stable cervical spine.
 - 3.2.2. Exam should be documented and collar removed.
- 3.3. If patient meets all criteria for reliable exam and does not meet clinical clearance criteria:
 - 3.3.1. Maintain inline cervical immobilization and apply cervical collar.
 - 3.3.2. A Neurosurgical consult should be obtained in the presence of any abnormal neurologic findings, ie, impaired motor or sensory exam. This may include weakness, paralysis, altered sensation, altered proprioception, or signs of autonomic dysfunction including skin flushing, altered perspiration, incontinence, priapism.
 1. Exit pathway
 - 3.3.3. Obtain radiographic imaging:
 1. Cervical spine radiographs:
 - a. For the child < 5 years of age: Anterior/posterior and lateral radiographs should be obtained (2view)
 - b. For the child > 5 years of age: Anterior/posterior, lateral and odontoid radiographs should be obtained (3 view).
 - c. Adequate cervical spine films:
 - Lateral cervical spine radiograph: must be of good quality and adequately visualize the base of the occiput to the upper part of the first thoracic vertebrae.
 - Anterior/Posterior cervical spine radiograph: must reveal the spinous processes of C2 to C7
 - Open mouth odontoid radiograph: must visualize the entire dens and the lateral masses of C1.
 - d. Repeat radiographs or oblique films should be obtained at the discretion or recommendation of the radiologist. Consideration should be given to obtaining additional radiographs if:
 - Cervical radiographs are inadequate: repeat films, oblique film or CT of cervical

spine.

- Cervical radiographs are suspicious or presence of cervical spine fracture: CT of cervical spine.

3.3.4. Consider cervical CT if:

- a. If fracture or bony abnormality identified on plain films
- b. Suspicious area identified on plain films or region of interest/concern is not adequately visualized on plain films.

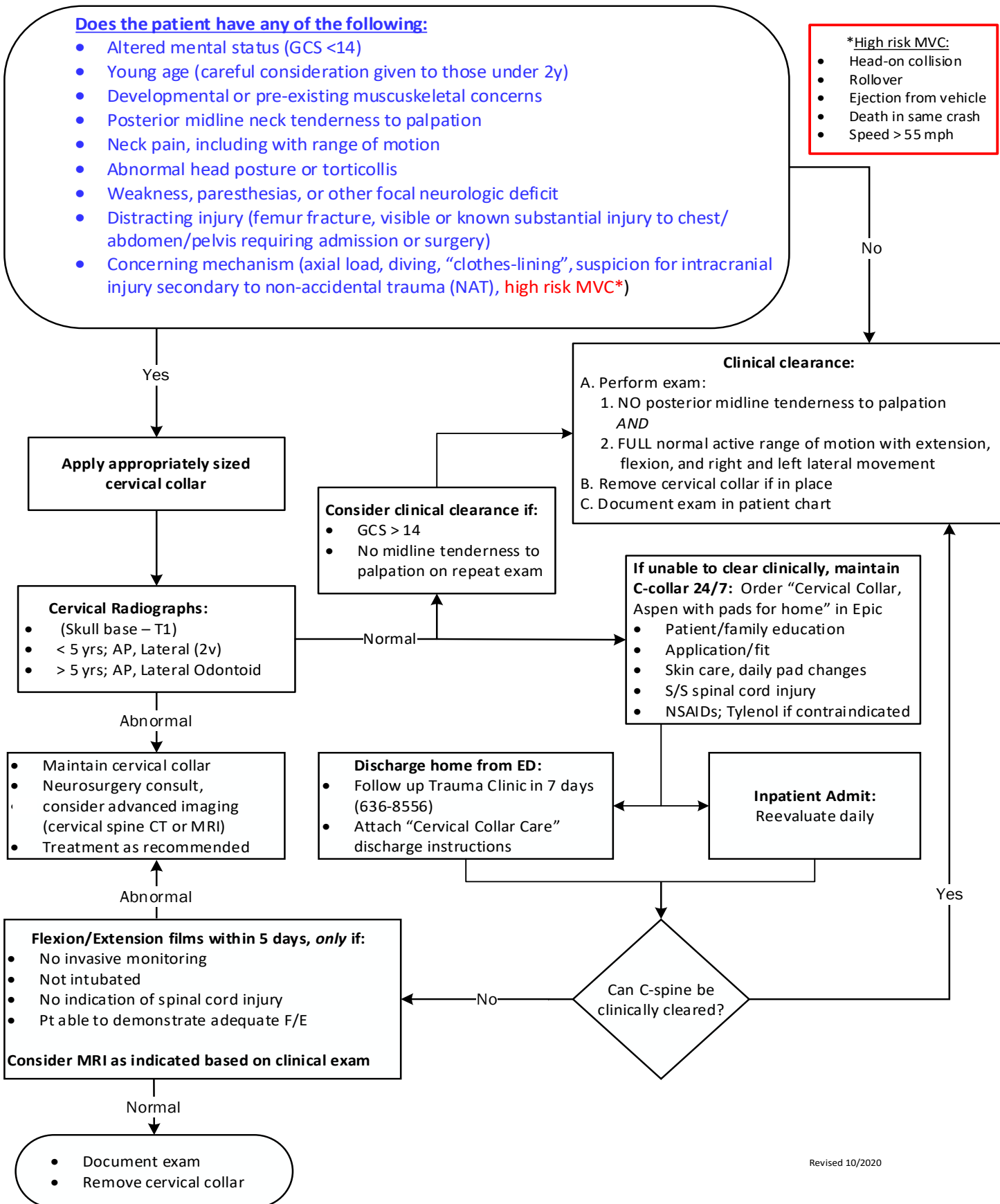
3.3.5. Consider cervical MRI:

- a. Neurologic deficit attributable to spinal cord injury
- b. Neurologic deficit unexplained by brain injury

3.3.6. Flexion / Extension films: obtained to document stability of cervical spine in a reliable patient who demonstrates persistent midline tenderness in follow up clinic or while inpatient and deemed stable per care team's discretion.

- a. Patient should be: reliable, able to self-protect, and demonstrates midline cervical pain without neurologic deficit
- b. Initial cervical spine radiographs are negative
- c. A clinician from the requesting service may need to accompany patient to Radiology to remove collar and to monitor the patient. The presence of a cervical collar implies the potential for cervical spine injury, and personnel in Radiology are not qualified to remove the collar. Trauma NP/MD may place in order comment okay for patient to remove C Collar for x-rays per provider's discretion and replace afterward.
- d. Negative flexion/extension radiographs:
 - Collar may be removed. Document findings and symptom management
- e. Abnormal flexion/extension radiographs:
 - Maintain cervical collar and obtain Neurosurgery consult

Cervical Spine Evaluation
RELIABLE Exam Algorithm



4.0 REFERENCES

- 4.1. American College of Surgeons Committee on Trauma. (2012). Spine and spinal cord trauma. In Advanced trauma life support: Student course manual,(9th ed. (p. 185-189). Chicago: Il.
- 4.2. Como, JJ, Diaz, JJ, Dunham, CM, Chiu, WC, Duane, TM, Capella, JM, Holevar, MR, Khwaja, KA, Mayglothing, JA, Sharior, MB, & Winston, ES. (2009). EAST guideline: Identification of cervical spine injuries. Journal of Trauma, 67(3), 651-59.
- 4.3. Rozzelle, CJ, Arabi, B, Dhali, SS, Gelb, DE, Hurlbert, RJ, Ryken, TC, Theodore, N, Walters, BC, & Hadley, MN. (2013). Management of pediatric cervical spine and spinal cord injuries. Neurosurgery supplement, 72(3), 205-226.
- 4.4. Ryken, TC, Hadley, MN, Walters, BC, Aarabi, B, Dhali, SS, Gelb, DE, Hurlbert, RJ, Rozzelle, CJ, & Theodore, N. (2013). Radiographic assessment. Neurosurgery supplement, 72(3), 54-72.
- 4.5. Baerg J, Thirumoorthi A, Vannix R, Taha A, Young A, Zouos A. Cervical spine imaging for young children with inflicted trauma: expanding the injury pattern. Journal of Pediatric Surgery 52 (2017); 816-821.
- 4.6. Leonard JC, Browne LR, Ahmad FA, et al. Cervical spine injury risk factors in children with blunt trauma. Pediatrics. 2019;144(1):e20183221,
- 4.7. Herman MJ, Brown KO, Sponseller PD, et al. Pediatric cervical spine clearance. A consensus statement and algorithm from the pediatric cervical spine clearance working group. Journal Bone Joint Surgery American Volume. 2019;101:e1(1-9).
- 4.8. Rabbitt AL, Kelly TG, Yan K, Zhang J, Bretl DA, Quijano CV. Characteristics associated with spine injury on magnetic resonance imaging in children evaluated for abusive head trauma. Pediatric Radiology (2020) 50:83-97.

5.0 APPROVALS

All revisions of this guideline are approved by the Trauma Services Department. This guideline is reviewed every three years or sooner if deemed necessary. Policy authority for this document resides with the Trauma Service Department. This guideline is approved by the Trauma Service Manager and the Director of Trauma Services.

HISTORY	
Original Date	10/06
Revision Date	11/10, 10/13, 5/15. 6/18, 10/20
Review Date	