

Inclusion Criteria

Blunt trauma mechanism without known cervical spine injury

Exclusion Criteria

- Penetrating trauma mechanism
- Known Cervical spine injury prior to arrival (Maintain ccollar)

Signs & Symptoms

- Altered mental status -GCS ≤ 14 -Intoxication
- Abnormal airway, breathing or circulation
- Focal neurologic deficit
- Self-reported posterior midline neck pain
- Posterior midline neck tenderness on examination
- Substantial head or torso injury

For patients with concern for non-accidental injury, refer to the **Non-Accidental Clinical Pathway** and discuss further radiology studies with the Child Assessment Team

Cervical Collar Care Replace transport collar with rigid collar within 4 hours of arrival if collar not cleared

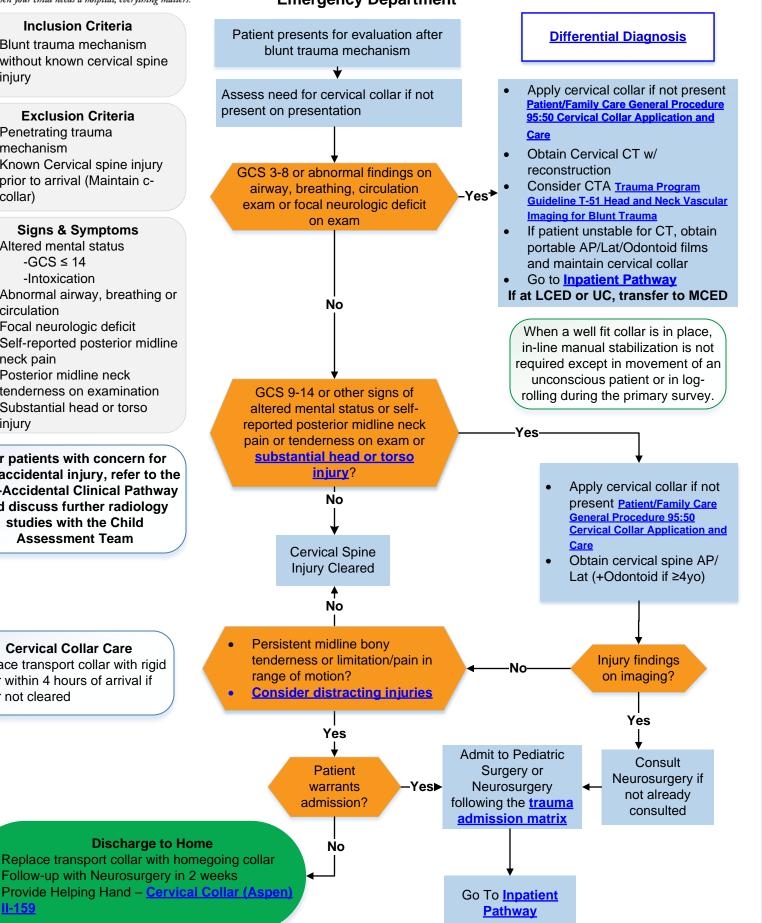
II-159

Cervical Spine Injury Evaluation

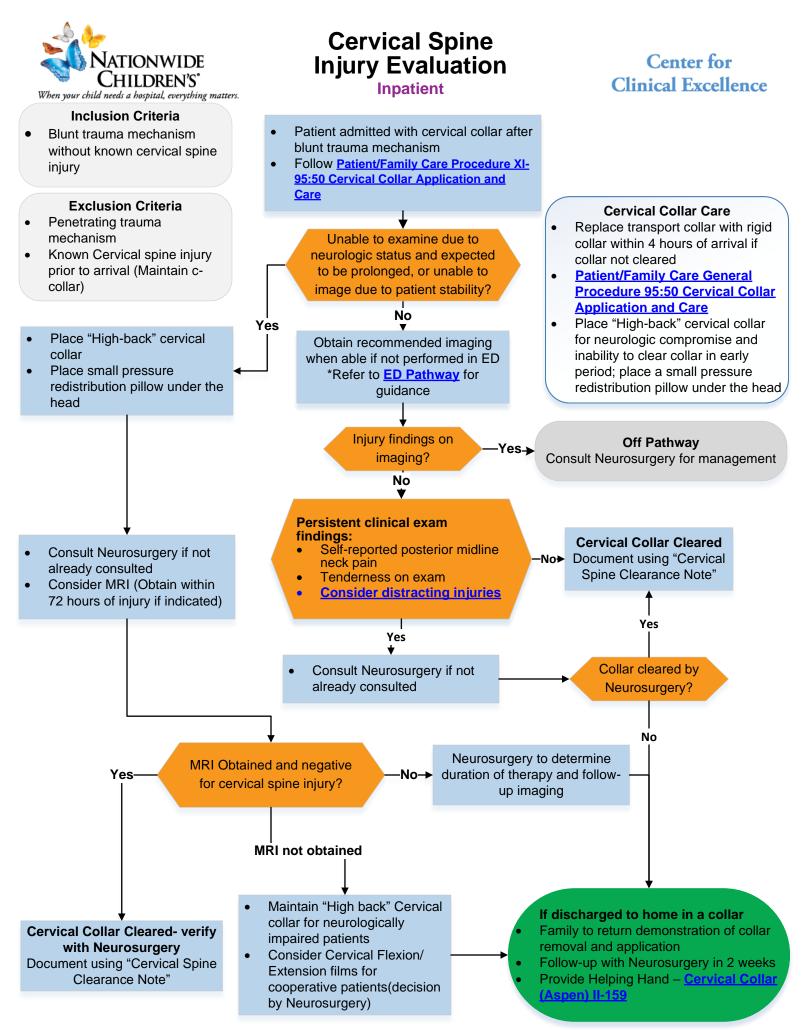
Center for

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Emergency Department



CPP-ED-IP-Surgery Cervical Spine Injury Evaluation Clinical Pathway Published: 5/9/2024; Last Revised: 5/9/2024



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Considerations in Concern for Cervical Spine Injury

- **Substantial head or torso injury:** injury to the head, chest, abdomen, or pelvis that will require admission to the hospital for observation or surgery
- **Substantial distracting injury** is present when pain or anxiety interfere with the assessment of pain and/or ROM. The presence of an injury in an otherwise calm and cooperative patient is not considered distracting and cervical collar clearance can and should proceed.

Return to Emergency Department Algorithm

Differential Diagnoses

- Cervical Spine Fracture
- Cervical Spinal Cord Injury
- Cervical Ligament Injury
- Neck Strain

Return to Emergency
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Diagnostic Testing

Cervical Spine Radiographs

- Obtain AP/Lateral for ages 0-3 years and patient unable to cooperate with exam
- Obtain AP/Lateral/Odontoid for ages 4 years and above if able to cooperate during exam

Cervical Flexion/Extension

• Only obtained at the direction and to be performed by Neurosurgery

Cervical Spine CT with Reconstruction

- Indicated if other CT scans are being obtained
- Consider CTA neck per: <u>Trauma Program Guideline T-51 Head and Neck Vascular</u> <u>Imaging for Blunt Trauma</u>

MRI Cervical Spine without contrast

• Obtain within 72 hours of injury if indicated, consult Neurosurgery prior to ordering

Return to Emergency
Department Algorithm

Metrics

Pathway Goal

- To reduce variation in cervical spine injury evaluation and support efficient evaluation of potential cervical spine injuries.
- To expedite the clearance of cervical spine precautions and reduce the risk of complications of cervical collar utilization.

Quality Measures

Outcome Metrics

- Primary Outcome metric: Reduction in time from admission to cervical collar clearance
- Reduction in cervical collar related pressure injuries

Process Metrics

Pathway Tool Utilization

Balancing Metrics

Increase utilization of CT scans

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Patient & Caregiver Education

- ED and Inpatient discharge instructions
- Provide patient education documents:
 - o Helping Hand: Cervcial Collar (Aspen) HH-II-159
- RN instructs and has caregiver(s) return demonstration of cervical collar removal/ application and skin inspection prior to discharge.

Return to Emergency
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References

- 1. Leonard JC, Harding M, Cook LJ, et al. PECARN prediction rule for cervical spine imaging of children presenting to the emergency department with blunt trauma: a multicentre prospective observational study. *Lancet Child Adolesc Health*. 2024. doi:10.1016/S2352-4642(24)00104-4.
- Leonard JR, Jaffe DM, Kuppermann N, Olsen CS, Leonard JC; Pediatric Emergency Care Applied Research Network (PECARN) Cervical Spine Study Group. Cervical spine injury patterns in children. *Pediatrics*. 2014;133(5) .doi:10.1542/peds.2013-3505. PMID: 24777222; PMCID: PMC9923608.
- 3. Browne LR, Ahmad FA, Schwartz H, et al. Prehospital factors associated with cervical spine injury in pediatric blunt trauma patients. *Acad Emerg Med.* 2021;28(5):553-561. doi:10.1111/acem.14176. Epub 2020 Dec 15. PMID: 33217762.
- 4. Leonard JC, Browne LR, Ahmad FA, et al. Cervical spine injury risk factors in children with blunt trauma. *Pediatrics*. 2019;144(1) .doi:10.1542/peds.2018-3221. PMID: 31221898; PMCID: PMC6615532.
- 5. Lupton JR, Davis-O'Reilly C, Jungbauer RM, et al. Mechanism of injury and special considerations as predictive of serious injury: a systematic review. *Acad Emerg Med.* 2022;29(9):1106-1117. doi:10.1111/acem.14489. Epub 2022 Apr 22. PMID: 35319149; PMCID: PMC9545392.
- 6. Byfield D. Fluidized positioner to prevent occipital pressure injury. *J Wound Ostomy Continence Nurs*. 2022;49(2):121-123.
- Leonard JC, Kuppermann N, Olsen C, et al. Factors associated with cervical spine injury in children after blunt trauma. *Ann Emerg Med.* 2011;58(2):145-155. doi:10.1016/j.annemergmed.2010.08.038. Epub 2010 Oct 29. PMID: 21035905.

Return to Emergency
Department Algorithm



Team & Process

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		Origination Date: May, 2024
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Clinical Pathway Development

This clinical pathway was developed using the process described in the NCH Clinical Pathway Development Manual Version 6, 2022. Clinical Pathways at Nationwide Children's Hospital (NCH) are standards which provide general guidance to clinicians. Patient choice, clinician judgment, and other relevant factors in diagnosing and treating patients remain central to the selection of diagnostic tests and therapy. The ordering provider assumes all risks associates with care decisions. NCH assumes no responsibility for any adverse consequences, errors, or omissions that may arise from the use or reliance on these guidelines. NCH's clinical pathways are reviewed periodically for consistency with new evidence; however, new developments may not be represented, and NCH makes no guarantees, representations, or warranties with respect to the information provided in this clinical pathway.

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