



Trauma: Cervical Spine Clearance Clinical Pathway Synopsis

Objective of Clinical Pathway

To provide evidence-informed care standards for the pediatric trauma patient with concern for cervical spine injury, or who has a cervical collar placed. The Cervical Spine Clearance Clinical Pathway aims to guide decision-making in the evaluation and use of diagnostic imaging to clear the cervical spine.

Background

Cervical spine injury (CSI) in pediatric patients is uncommon, occurring in approximately 1-2% of children evaluated after blunt injury, yet carries a high risk of morbidity when missed due to the potential for permanent neurologic injury.^{1,2} Cervical spine clearance in children is particularly challenging because developmental anatomic features predispose younger patients to unique injury patterns that may not be readily visible on initial radiographs or computed tomography (CT).²⁻⁴

Although CT imaging offers high sensitivity for osseous injury, its use in children is associated with substantially higher ionizing radiation exposure and increased lifetime malignancy risk, underscoring the importance of radiation-sparing strategies.^{2,5} Adult clinical decision rules, such as the National Emergency X-Radiography Utilization Study (NEXUS) and the Canadian C-Spine Rule, have not been consistently validated in younger pediatric populations, contributing to practice variation and inconsistent imaging utilization.^{4,6-8}

Recent multicenter, prospective research conducted by the Pediatric Emergency Care Applied Research Network (PECARN) has derived and validated a pediatric-specific cervical spine injury prediction rule that stratifies children by risk and supports selective imaging while minimizing unnecessary CT use.⁹ The Cervical Spine Clearance Clinical Pathway Committee seeks to provide age-appropriate guidance on reliable clinical examination, judicious selection of imaging, and timely removal of the cervical collar, optimizing patient safety and resource utilization in pediatric trauma care.

Target Users

- Physicians (Emergency Medicine, Intensivists, Hospitalists, Fellows, Resident Physicians)
- Advanced Practice Providers
- Nurses
- Spine Consult Service (Orthopedic Surgery, Neurosurgery, General Surgery, Fellows, Rotating Residents, Advanced Practice Providers)

Target Population

Inclusion Criteria

- Patient in the emergency department or inpatient setting with concern for a cervical spine injury or who has a cervical collar placed

Exclusion Criteria

- If concern for spinal cord injury or the patient presents with focal neurologic deficits following a traumatic event, refer to the [Spinal Cord Injury Clinical Pathway](#)
- If non-accidental trauma is suspected, refer to the [Child Physical Abuse Clinical Pathway](#)

Practice Recommendations

In lieu of a clinical practice guideline fully addressing cervical spine clearance in pediatric and adolescent patients, guidance from the pediatric literature was used in conjunction with the expert consensus of the Cervical Spine Clearance Clinical Pathway Committee to inform the evaluation, diagnostic imaging, and consultation within this pathway.¹⁻¹⁵

Additional Questions Posed by the Clinical Pathway Committee

No additional clinical questions were posed for this review.

These clinical pathways do not establish a standard of care to be followed in every case. It is recognized that each case is different, and those individuals involved in providing health care are expected to use their judgment in determining what is in the best interests of the patient based on the circumstances existing at the time. It is impossible to anticipate all possible situations that may exist and to prepare a clinical pathway for each. Accordingly, these clinical pathways should guide care with the understanding that departures from them may be required at times.



Measures

- Access of the clinical pathway (website hits)

Value Implications

The following improvements may increase value by reducing healthcare and non-monetary costs (e.g., missed school/work, lost wages, family stress) for patients and families, while also reducing costs and resource utilization for healthcare facilities.

- Decreased risk of missed cervical spine injury
- Decreased risk of unnecessary imaging and associated radiation exposure
- Decreased risk of overtreatment (e.g., prolonged cervical immobilization when not clinically indicated)
- Decreased unwarranted variation in care delivery

Organizational Barriers and Facilitators

Potential Barriers

- Variability of the acceptable level of risk among providers
- Variability in experience among clinicians
- Need for effective communication and coordination among clinicians and specialties
- Challenges with access to healthcare and health literacy faced by some families

Potential Facilitators

- Collaborative engagement across the continuum of clinical care settings and healthcare disciplines during clinical pathway development
- Anticipated high rate of use of the clinical pathway

Bias Awareness

Our goal is to recognize the social determinants of health and minimize healthcare disparities, while acknowledging that our unconscious biases can contribute to these disparities.

Order Sets

- There are no order sets associated with the Cervical Spine Clearance Clinical Pathway

Educational Materials

No education tools were developed for the Cervical Spine Clearance Clinical Pathway

Clinical Pathway Preparation

This pathway was prepared by the EBP Department in collaboration with the Cervical Spine Clearance Clinical Pathway Committee, composed of content experts at Children's Mercy. If a conflict of interest is identified, the conflict will be disclosed next to the committee member's name.

Cervical Spine Clearance Clinical Pathway Committee Members and Representation

- Shahab Abdessalam, MD, FACS, FSSO | Surgery | Committee Chair
- David Seastrom, MSN, RN | Trauma Services; Program Manager, Trauma | Committee Member
- Efua Bolouvi, MD | Pediatric Surgery Fellow | Committee Member
- Elise Wright, DNP, APRN, CPNP AC-PC, CCRN | Surgery | Committee Member
- Allison Adam, MD | Pediatric Emergency Medicine | Committee Member
- Aaron Shaw, DO, FAAOS | Orthopedic Surgery | Committee Member
- Michael Benvenuti, MD | Orthopedic Surgery | Committee Member
- John Anderson, MD | Orthopedic Surgery | Committee Member
- David Garcia, MD | Neurosurgery | Committee Member
- Christian Kaufman, MD, FAANS | Neurosurgery | Committee Member
- Jessica Wallisch, MD | Critical Care Medicine | Committee Member
- Yong Han, MD | Critical Care Medicine | Committee Member

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- Sarah Dierking, MSN, RN, CPHQ | Clinical Practice and Quality | Committee Member

EBP Committee Members

- Todd Glenski, MD, MSHA, FASA | Anesthesiology, Evidence Based Practice
- Kelli Ott, OTD, OTR/L | Evidence Based Practice

Clinical Pathway Development Funding

The development of this clinical pathway was underwritten by the following departments/divisions: Trauma Services, Surgery, Pediatric Emergency Medicine, Orthopedic Surgery, Neurosurgery, Critical Care Medicine, Clinical Practice and Quality, and Evidence Based Practice

Conflict of Interest

The contributors to the Cervical Spine Clearance Clinical Pathway have no conflicts of interest to disclose related to the subject matter or materials discussed.

Approval Process

- This pathway was reviewed and approved by the EBP Department and the Cervical Spine Clearance Committee after committee members garnered feedback from their respective divisions/departments. It was then approved by the Medical Executive Committee.

Review Requested

Department/Unit	Date
Trauma Services	July 2026
Surgery	July 2026
Orthopedic Surgery	June 2026
Neurosurgery	July 2026
Pediatric Emergency Medicine	July 2026
Critical Care Medicine	June 2026
Clinical Practice and Quality	June 2026
Evidence Based Practice	July 2026

Version History

Date	Comments
August 2026	Version one: Converted the trauma guideline into the Cervical Spine Clearance Clinical Pathway and developed the synopsis

Date for Next Review

- August 2030

Implementation & Follow-Up

- Once approved, the pathway was implemented and presented to the appropriate care teams:
 - Announcements made to relevant departments
 - Additional institution-wide announcements were made via the hospital website and relevant huddles
- The associated policies were reviewed for consistency with this pathway. The policies outline the care given by physicians, advanced practice providers, and Radiology to protect an injured patient's cervical spine and the process for nursing staff to apply and manage cervical collars.
- Care measurements may be assessed and shared with appropriate care teams to determine if changes need to occur.
- Pathways are reviewed every 4 years (or sooner) and updated as necessary within the EBP Department at Children's Mercy. Pathway committees are involved with every review and update.

Disclaimer

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When evidence is lacking or inconclusive, care options are provided in the supporting documents and in the order set(s) and/or order panel(s) that accompany the clinical pathway.

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