

Cervical Spine Clearance

FAST FACTS

~2%

of children admitted to the hospital for traumatic injuries have pediatric cervical spine injuries

high-risk mechanism for C-spine injury

include axial load, diving injury, “clothes-lining,” child physical abuse and high-risk motor vehicle collision

WHEN TO REFER TO TRAUMA CLINIC

If concerned about clearance of cervical spine or other issues upon evaluation, please refer patient to Cincinnati Children's Trauma Clinic at 513-636-8556.

URGENT REFERRALS

With urgent concerns, please contact the Trauma team.

- Monday—Friday business hours: Page the trauma nurse practitioner at 513-736-2082.
- After hours and weekends: Call Physician Priority Line and ask to speak with the PPL pediatric surgeon on call.

For more information, contact the Cincinnati Children's Trauma Clinic, 513-636-8556.

Cervical spine injuries, though rare in children, can occur from any mechanism of trauma. This tool applies to patients who were evaluated at a Cincinnati Children's emergency department or urgent care center with concern for neck injury and:

- Had midline cervical tenderness
- Had negative cervical spine X-rays
- Were discharged home in a cervical collar (c-collar) due to ongoing cervical spine tenderness and/or pain with range of motion
- Were instructed to wear the c-collar 24/7 and follow-up with their PCP or Cincinnati Children's Trauma Clinic in 5–7 days for further evaluation

ASSESSMENT

Full Neurological Exam

Without removing the c-collar, perform a full neurological exam including:

- Evaluation of sensation and strength to all extremities
- Eye exam: pupils and extraocular muscles
- Cranial nerves exam

If any part of the neurological exam is abnormal, keep c-collar in place and refer the patient to the Cincinnati Children's Emergency Department—main campus.

Perform Full Concussion Symptom Assessment

C-Spine Assessment

Remove the c-collar. Perform full-spine midline palpation assessing for:

- Midline, paraspinal and lateral neck tenderness
- Ability to perform range of motion of neck with lateral rotation and full flexion/extension (Lateral neck tenderness alone does not qualify as cervical spine tenderness.)

MANAGEMENT/TREATMENT

If **no** cervical spine tenderness with midline palpation and full ROM without pain or limitation, **clear c-collar**.

If **persistent midline cervical tenderness and inability** to perform full ROM due to pain, replace c-collar and follow up in 1 week.

Indications for additional C-spine X-rays

- If midline cervical tenderness is present, but the patient **can perform full flexion/extension (even if pain is present)**, replace c-collar and send patient for flexion/extension C-spine X-rays. In order:
 - Request an assessment for ligamentous injury/stability.
 - X-ray order comments must state that the patient is cleared to remove the c-collar and perform full ROM for X-ray. C-collar should be replaced after X-ray.
- If X-rays show adequate flexion/extension and no signs of instability, **clear c-collar**.
- If X-rays show inadequate flexion/extension, **patient should remain in c-collar 24/7 and follow-up with PCP in 1 week for a repeat exam**.

Indications for cervical spine MRI without contrast

- If unable to clear c-collar either clinically or with flexion/extension X-rays after two follow-up visits, **order cervical spine MRI without contrast**.
- If there are findings of injury, instability or retro/anterolisthesis, **patient should remain in the c-collar 24/7 and refer to neurosurgery**.
- If flexion/extension xrays indicate instability or retro/anterolisthesis.

If you would like additional copies of this tool, or would like more information, please contact the Physician Outreach and Engagement team at Cincinnati Children's.

Cervical Spine Clearance

Inclusion Criteria

- Patients who were evaluated at a Cincinnati Children's emergency department or urgent care center with concern for neck injury and:
- Had midline cervical tenderness and/or pain with ROM
 - Had negative cervical spine X-rays
 - Were discharged home in a cervical collar (c-collar) due to ongoing cervical spine tenderness and/or pain with range of motion
 - Were instructed to wear the c-collar 24/7 and follow-up with their PCP or Cincinnati Children's Trauma Clinic in 5–7 days for further evaluation

Patient Presents

Standard Workup

- Without removing c-collar, perform full neurological exam.
- Assess cranial nerves, pupils and EOMs, and sensation and strength to all extremities.
- Perform concussion symptom assessment

If any part of the neurological exam is abnormal, keep c-collar in place and refer to Cincinnati Children's ED-Main Campus.

If neurological exam is normal, remove the c-collar.

Perform full spine midline palpation assessing for midline, paraspinal and lateral neck tenderness. Assess ability to perform ROM of neck with lateral rotation and full flexion/extension. Lateral neck tenderness alone does not qualify as cervical spine tenderness.

If no cervical tenderness and able to perform full ROM without limitation or midline pain

Clear c-collar. Patient can start normal ROM and stretches and slow return to activities (if no concussion).

If persistent midline cervical tenderness and inability to perform full ROM due to pain

Replace c-collar and follow up in 1 week

If midline cervical spine tenderness and/or midline pain upon ROM

Replace c-collar. Order flexion/extension cervical X-rays to assess for ligamentous injury/stability. State in order comments:

- C-collar may be removed for X-ray and replaced afterward
- Encourage full ROM

X-rays with adequate flexion/extension and no signs of instability

Clear c-collar

X-rays with inadequate flexion/extension

Remain in c-collar 24/7 and return in 1 week for repeat exam (start from top again)

Indications for cervical spine MRI w/o contrast

- If unable to clear c-collar either clinically or with flexion/extension X-rays after two follow-up visits
- If X-rays indicate instability or retro/anterolisthesis

Remain in c-collar 24/7

MRI normal:
Clear c-collar

MRI with injury findings:
Remain in c-collar 24/7 and refer to neurosurgery (513-636-4726)

For urgent issues, or to speak with the specialist on call 24/7, call the Physician Priority Link® at 1-888-987-7997.