

Trauma Center Practice Management Guideline

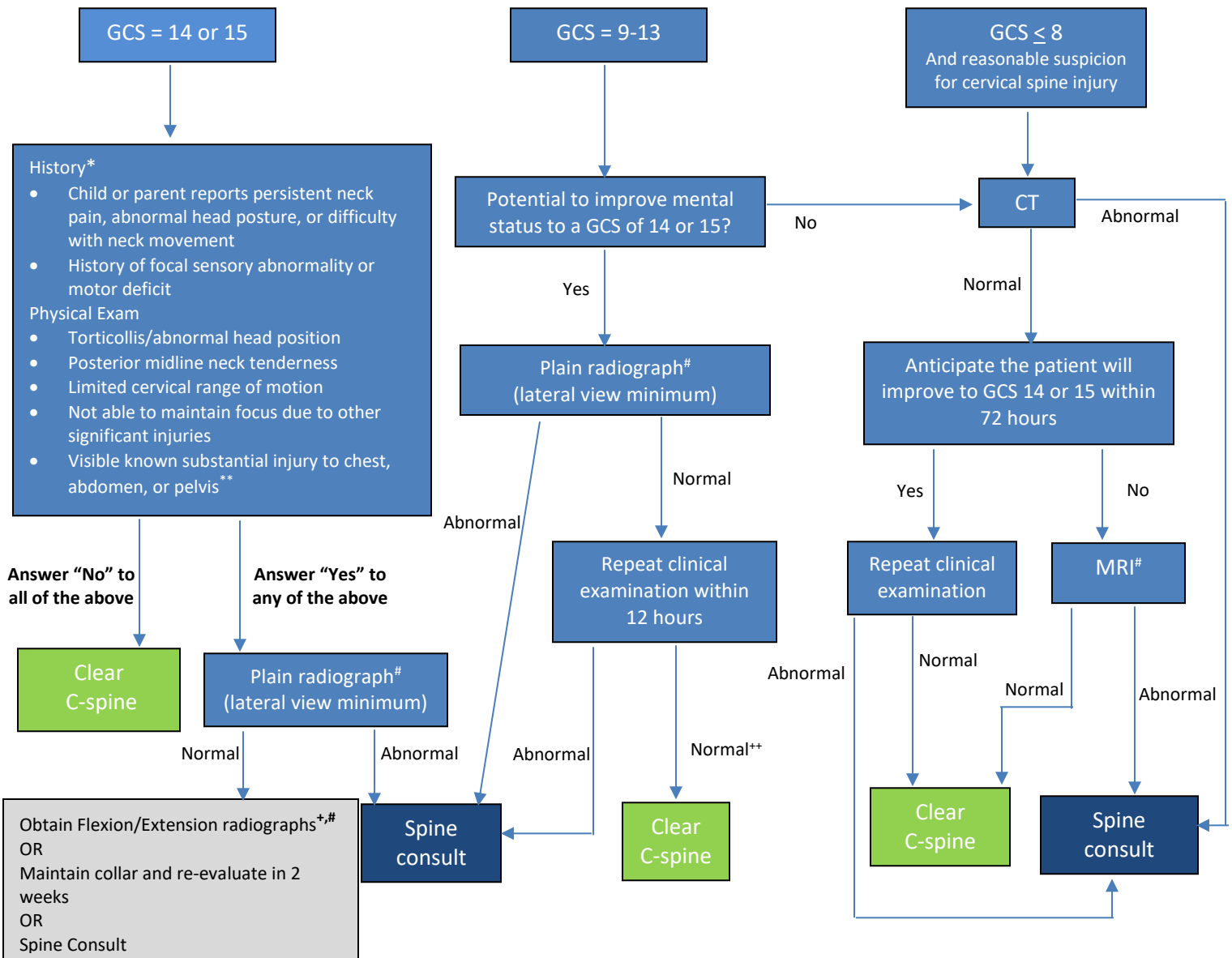
Blank Children's Hospital — Des Moines

Pediatric Cervical Spine Evaluation and Clearance

PEDIATRIC
Practice Management Guideline
Contact: Trauma Medical Director

Effective: 04/2014
Last Reviewed: 04/2024

Pediatric Cervical Spine Clearance Algorithm



*Stronger consideration for imaging should be given towards patients with the following mechanisms of injury (MOI): diving, axial load, close-lining and high-risk MVC (HR-MCV), however the literature findings are controversial. HR-MCV is defined as a head-on collision, rollover, ejected from the vehicle, death in the same crash, or speed > 55mph

**Substantial injury is defined as an observable injury that is life-threatening, warrants surgical intervention, or warrants inpatient observation.

All imaging should be read by an attending physician

+ Adequate Flexion/Extension is defined as ≥ 30 degrees of flexion and ≥ 30 degrees of extension

**Patient is achieved GCS 14 – 15 and no longer with abnormal head posture, persistent neck pain, or difficulty in neck movement

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PURPOSE

To identify significant cervical spine injuries in children who have sustained blunt trauma while minimizing unnecessary radiation exposure.

DEFINITIONS

Radiologic clearance of the cervical spine should occur only after the hemodynamic, respiratory, and surgical stabilization of the patient is complete. During such stabilization the cervical spine should be kept in spinal movement restriction with an approved well fitted cervical spine collar.

Cervical spine injury occurs in 1-2% of all children who are admitted to the hospital after a trauma. Diagnostic imaging includes radiographs, CT of the cervical spine, and MRI of the cervical spine.

The radiation dose should be adjusted according to the "as low as reasonably achievable" (ALARA) principle. Blank Children's Hospital radiology department has a dedicated pediatric protocol that minimizes radiation in children while optimizing imaging quality.

MRI should be performed in patients with an abnormal neurologic examination or when imaging of the spinal cord or other soft tissues of the spinal column is required. MRI is less sensitive than CT for the detection of fractures of the posterior elements of the cervical spine and injuries to the craniocervical junction. Spinal MRI may also be performed for documentation of the full extent of injury in children who are victims of abusive head trauma.

GUIDELINES

Pathway 1: GCS 14 or 15

This pathway focuses on two critical aspects of pediatric cervical spine clearance.

1. Physical examination and mechanism of injury, focusing on clinical clearance without radiographic imaging.
2. Radiographic imaging recommendation for awake and alert patients.

Pathway 2: GCS 9-13

This pathway focuses on the judicious use of CT and the restriction of cervical spine motion with a collar until mental status returns to normal and a follow up examination can be performed. This group primarily included intoxicated patients with altered mental status and children who initially may not be able to focus during the clinical evaluation.

Pathway 3: GCS \leq 8

This pathway focuses on cervical spine clearance when a complete physical examination cannot be performed and when recovery of neurological function to normal mental status within 72 hours of injury is unlikely.

If plain radiographs are obtained, anteroposterior (AP) and lateral views should be considered. Inclusion of odontoid view is not necessary.

SCIWORA, spinal cord injury without radiological abnormality is commonly used to describe neurological deficit in absence of findings on plain radiographs or CT scan. MRI is recommended, but up to 40% of all affected patients do not have an injury detected by MRI.

To help minimize risk of repeat imaging while obtaining high quality radiographic studies, sedation should be considered for a child depending on physiological parameters, age, size, and cognitive level. During initial trauma evaluation, the trauma surgeon and pediatric emergency physician will collaborate to determine the appropriate need for sedation and monitoring. For follow up imaging after admission, the pediatric sedation team should be consulted.

REFERENCES

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