

# APPROACH TO EVALUATION OF CERVICAL SPINE INJURY

By: Brandon Chatani, MD

19mo F presenting after falling from her parents bed while co-sleeping. Mother's report indicates that the patient hit her head on the nearby nightstand and had hyperextension at the neck. On initial assessment, patient is fussy, moving all limbs, and unremarkable exam. Plain films show no evidence of fracture. 30min later patient appears to no longer be using her left arm.

- Most appropriate next step would be
  - A. MRI neck for possible spinal cord injury
  - B. Place patient in Halo brace for 3 months
  - C. CT Cervical Spine for possible fracture
  - D. Admit to floor for observation and repeat c-spine xrays
  - E. Consult Pediatric Neurosurg and Admit to PICU

○ Most appropriate next step would be

**A. MRI neck for possible spinal cord injury**

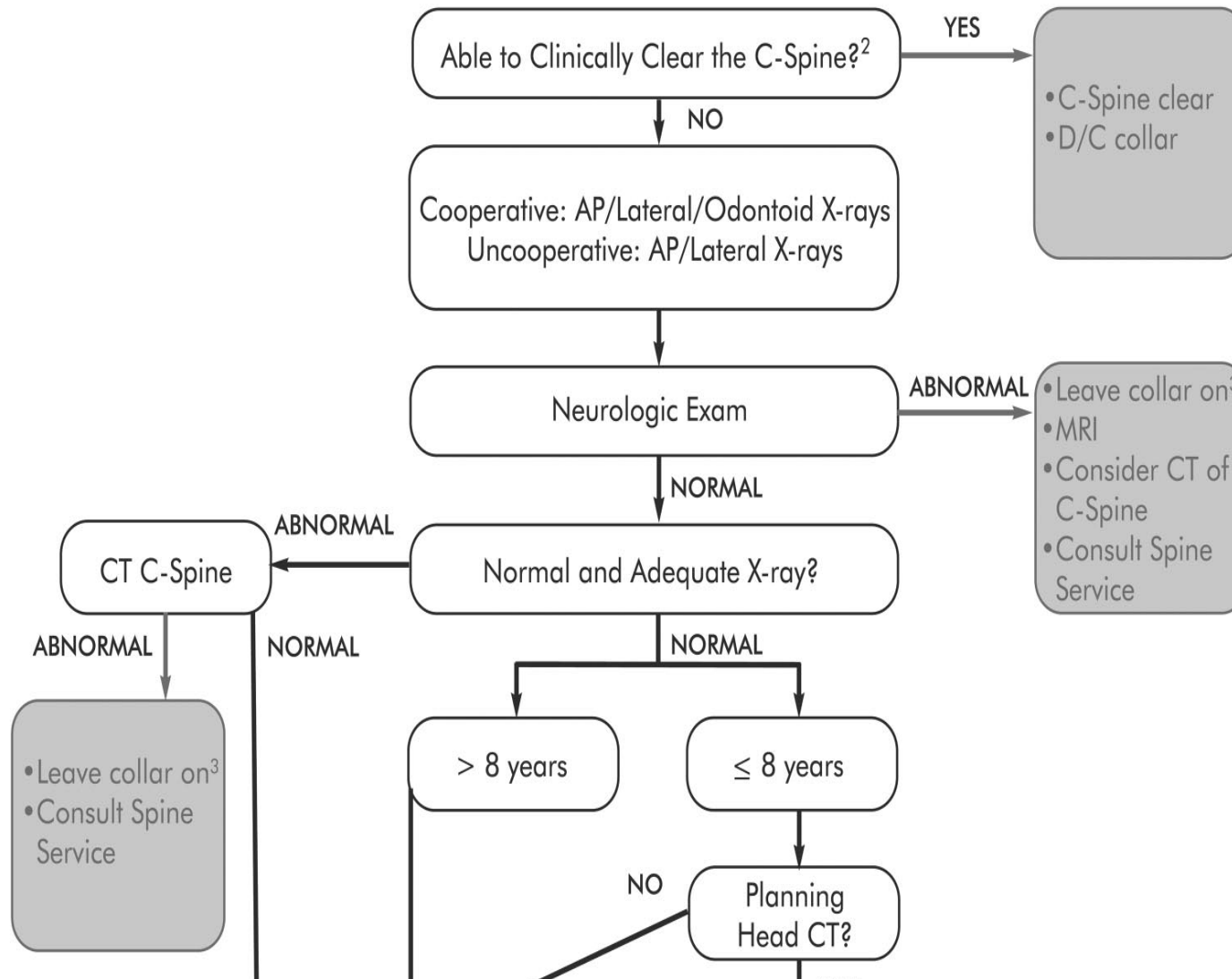
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Trauma Association of Canada (TAC) National Pediatric C-Spine Evaluation Pathway:  
 Reliable<sup>1</sup> Clinical Exam



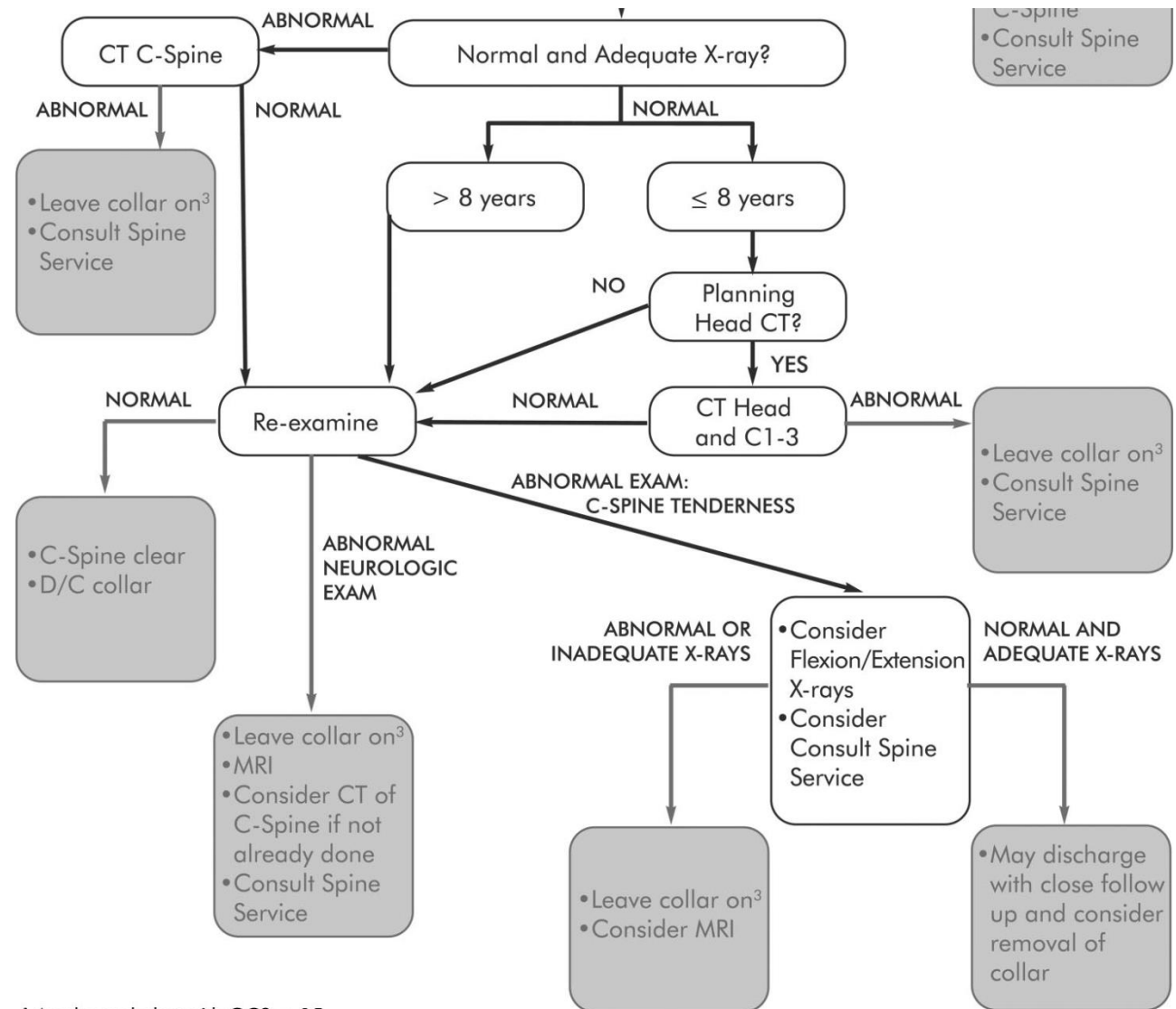
- ◉ ANY neurologic deficit after possible cervical spine injury requires MRI
- ◉ Also indicated when considering SCIWORA (spinal cord injury without radiologic abnormality)
- ◉ Infants have large head to body ratio and lack the musculature to buffer cervical spine injury
- ◉ In infants and children, anterior wedging of the vertebral bodies permits for increased forward bony movement
- ◉ The growth zone of the vertebral body endplate is brittle and readily splits from the centrum

6yo M presents with neck pain and cervical bony tenderness s/p MVA involving the ejection of a passenger. Patient's neurologic exam is within normal limits. Initial plain films show abnormality in C2. On re-examination, patient continues to have bony tenderness localized to the upper cervical spine.

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<sup>1</sup> Awake and alert with GCS = 15

<sup>2</sup> Meets NEXUS criteria AND moves head in flexion/extension AND rotate 45 degrees to both sides with no pain.

<sup>3</sup> Change to long term cervical spine collar as soon as appropriate.

- ◉ In a 12 year review (1985-1997) involving 6795 patients <14yo, prevalence of c spine injuries was 0.8%
- ◉ Children less than 8yo have greatest risk of “true missed” fractures on plain film and are at higher risk of injury involving upper cervical spine
- ◉ Children greater than 9yo can consider adding open mouth odontoid views
- ◉ Children do not achieve full maturation of c-spine until 16yrs

# REFERENCES

- ◉ Caviness, A. , Bachur, R. and Wiley, J. Evaluation of cervical spine injuries in children and adolescents . UpToDate Jun 17 2013.
- ◉ Caviness, A. , Bachur, R. and Wiley, J. Spinal Cord Injury without radiologic abnormality (SCIWORA) in children . UpToDate Apr 29 2013.
- ◉ Chung, S. , Mikrogianakis, A. , Wales, P. , et al . Trauma Association of Canada Pediatric Subcommittee National Pediatric Cervical Spine Evaluation Pathway: Consensus Guidelines . J Trauma 2011;70:873-884