# Pediatric Trauma Imaging Guide

Children's MINNESOTA
The Kid Experts®
Level I Pediatric Trauma Center

## CONSIDER HEAD CT

- GCS ≤ 14
- Non-frontal hematoma
- Loss of consciousness
- Palpable skull fracture
- Signs of basilar skull fracture
- Severe headache with trauma mechanism
- Severe injury mechanism*

** Severe injury mechanism = MVC with ejection, rollover or fatality, bike/ped vs vehicle w/o helmet, head struck by high impact, fall > 3 ft (< 2 years) or > 5 ft (2 years or older)*

## CONSIDER MAXILLOFACIAL CT IF PATIENT MEETS CRITERIA FOR CT HEAD AND:

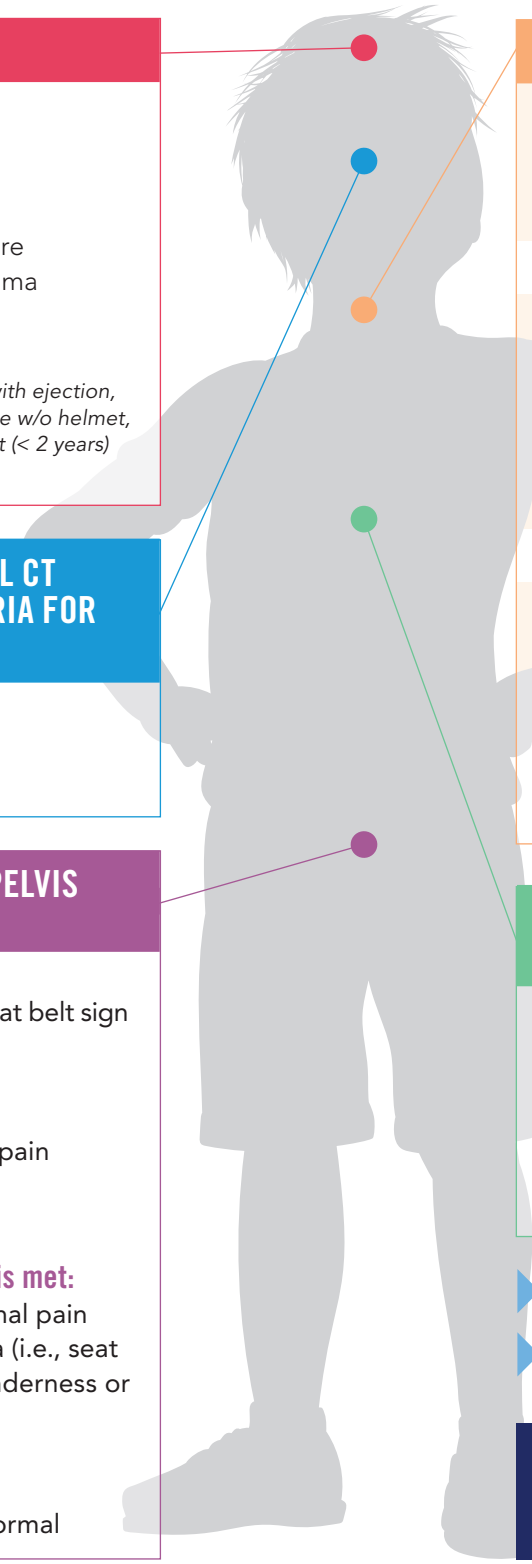
- Malocclusion
- Mandibular deformity
- Significant dental injury

## CONSIDER CT ABDOMEN/PELVIS WITH IV CONTRAST IF:

- Positive FAST
- Abdominal wall bruising/seat belt sign
- GCS < 14
- Abdominal tenderness
- Thoracic wall trauma
- Complaints of abdominal pain
- Decreased breath sounds
- Vomiting

### Avoid CT if the criteria below is met:

- No complaints of abdominal pain
- No abdominal wall trauma (i.e., seat belt sign, ecchymosis), tenderness or distention
- CXR is normal
- AST is < 200
- Pancreatic enzymes are normal



## CONSIDER C-SPINE CT

- GCS 3-8 or AVPU=U
- Abnormal airway, breathing, or circulation
- Focal neuro deficits

→ **CONSIDER CT CERVICAL SPINE WITHOUT CONTRAST**

NO

- GCS 9-14 or AVPU=V or P
- Other signs of AMS
- Self-reported neck pain or neck tenderness on exam
- Substantial* head or torso injury

→ **CONSIDER 2-VIEW CERVICAL SPINE X-RAYS**

NO

- No risk factors

→ **CONSIDER CLINICAL CLEARANCE**

** Substantial injuries = warranting inpatient obs or surgical intervention (e.g. skull fracture, pneumothorax, solid organ injury, pelvic fracture, thoracic or lumbar spine fracture)*

## CHEST CT WITH IV CONTRAST IS RARELY INDICATED

- Majority of injuries can be identified by CXR
- Traumatic vascular injuries are rare in children
- If strong suspicion for cardiac or vascular injury, consult pediatric trauma surgeon.

**Always use dose reduction techniques.**

**Do not delay transfer to obtain CT imaging.**

**866-755-2121** CHILDREN'S MINNESOTA PHYSICIAN ACCESS
24/7 access to referrals, consults and admissions.

SOURCES: Pediatric Trauma Society. (2020). Imaging in Pediatric Trauma: Thoracic imaging assessment in the setting of blunt trauma. https://www.ptsf.org/wp-content/uploads/2020/11/Barbara-Gaines-PTSF-2020.pdf. Streck, Christian J., et al. "Identifying Children at Very Low Risk for Blunt Intra-Abdominal Injury in Whom CT of the Abdomen Can Be Avoided Safely." Journal of the American College of Surgeons, vol. 224, no. 4, Apr. 2017, pp. 449-458.e3; Nguyen, B., Edwards, M., Srivatsa, S., et al. (2022). Clinical and radiographic predictors of the need for facial CT in pediatric blunt trauma: a multi-institutional study. Trauma Surgery & Acute Care Open, 7, e000899.; Kuppermann N, Holmes JF, Dayan PS, et al. Identification of children at very low risk of clinically-important brain injuries after head trauma: a prospective cohort study. The Lancet. 2009;374(9696):1160-1170. Leonard J, Harding M, Cook L et al. PECARN prediction rule for cervical spine imaging of children presenting to the emergency department with blunt trauma: a multicentre prospective observational study. The Lancet Child & Adolescent Health, 2024; 8, 482-490.

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