BEST PRACTICES IN PEDIATRIC TRAUMA IMAGING

EIIC
EMSC Innovation and Improvement Center

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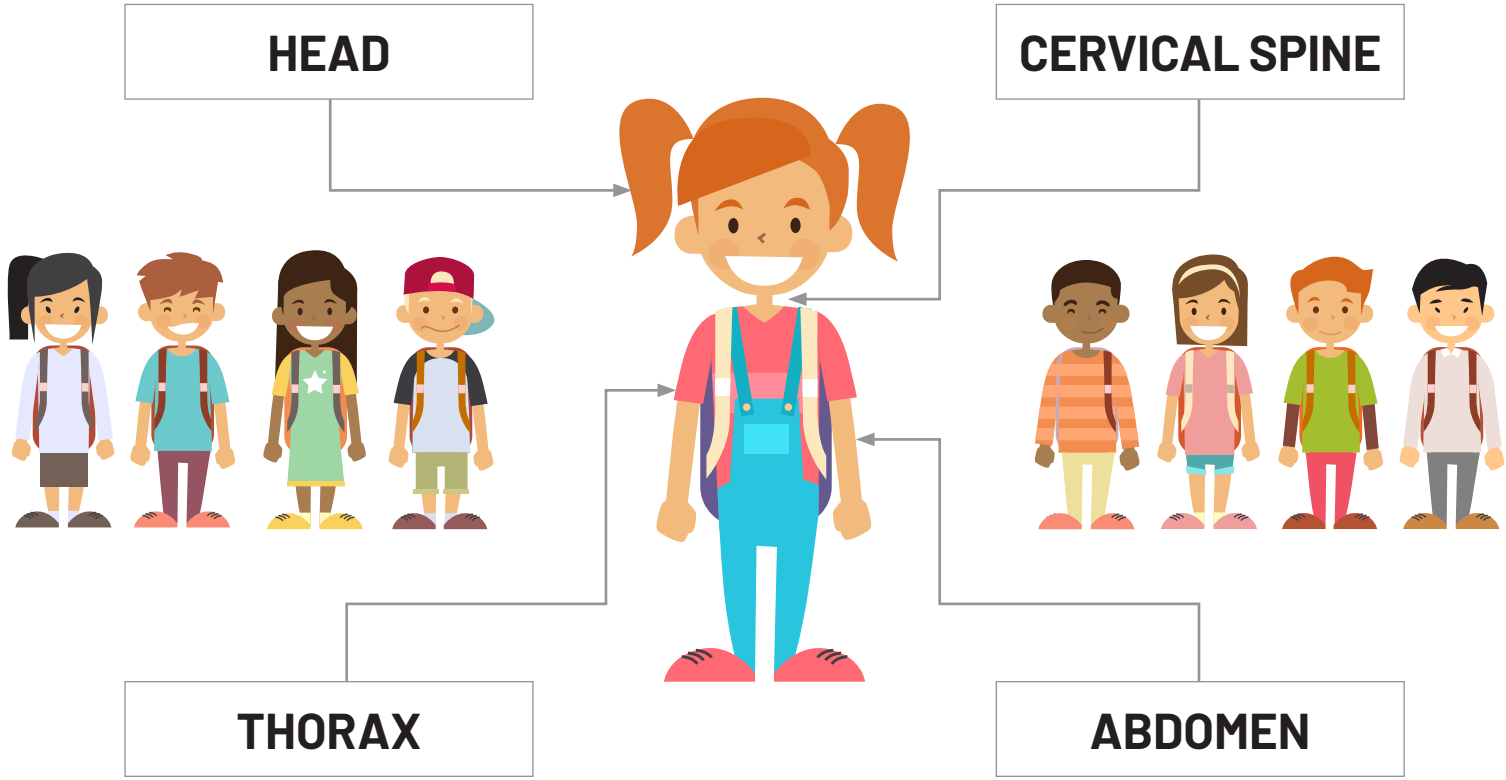
Imaging in Stable Pediatric Trauma



Identification of patients requiring transfer to Pediatric Trauma Center early

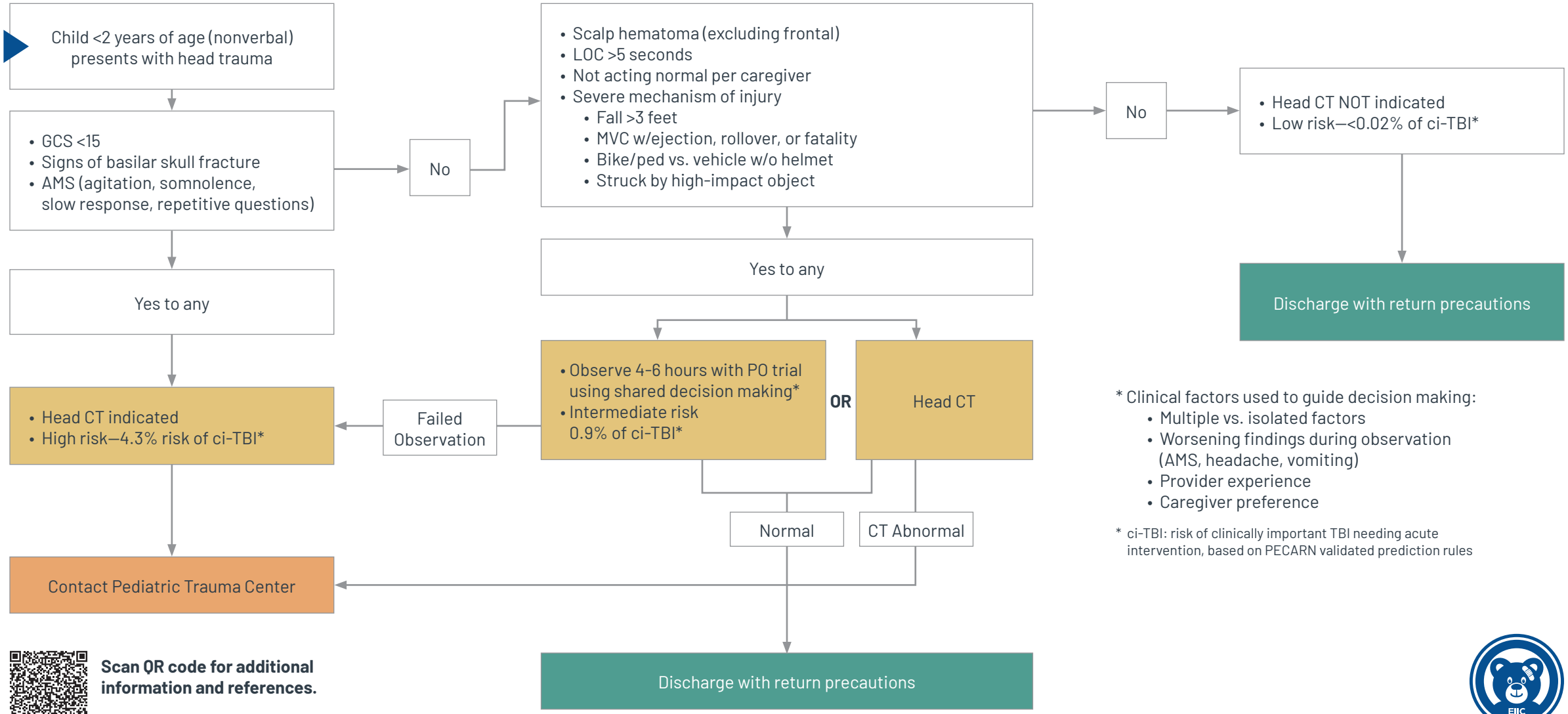
- For patients who have an identified indication for transfer, do not delay transfer to Pediatric Trauma Center (PTC) while awaiting CT
- Discuss with PTC if CT scans should be obtained while waiting for transport
- CT of thorax, abdomen/pelvis must be with IV contrast
- Utilize pediatric-specific dosing for all imaging studies

Routine whole body CT (WBCT) should NOT be routinely undertaken in pediatric trauma patients.

Pediatric Head Trauma Screening

for children under two years old (nonverbal) with blunt head trauma

<2 Years



* Clinical factors used to guide decision making:

- Multiple vs. isolated factors
- Worsening findings during observation (AMS, headache, vomiting)
- Provider experience
- Caregiver preference

* ci-TBI: risk of clinically important TBI needing acute intervention, based on PECARN validated prediction rules

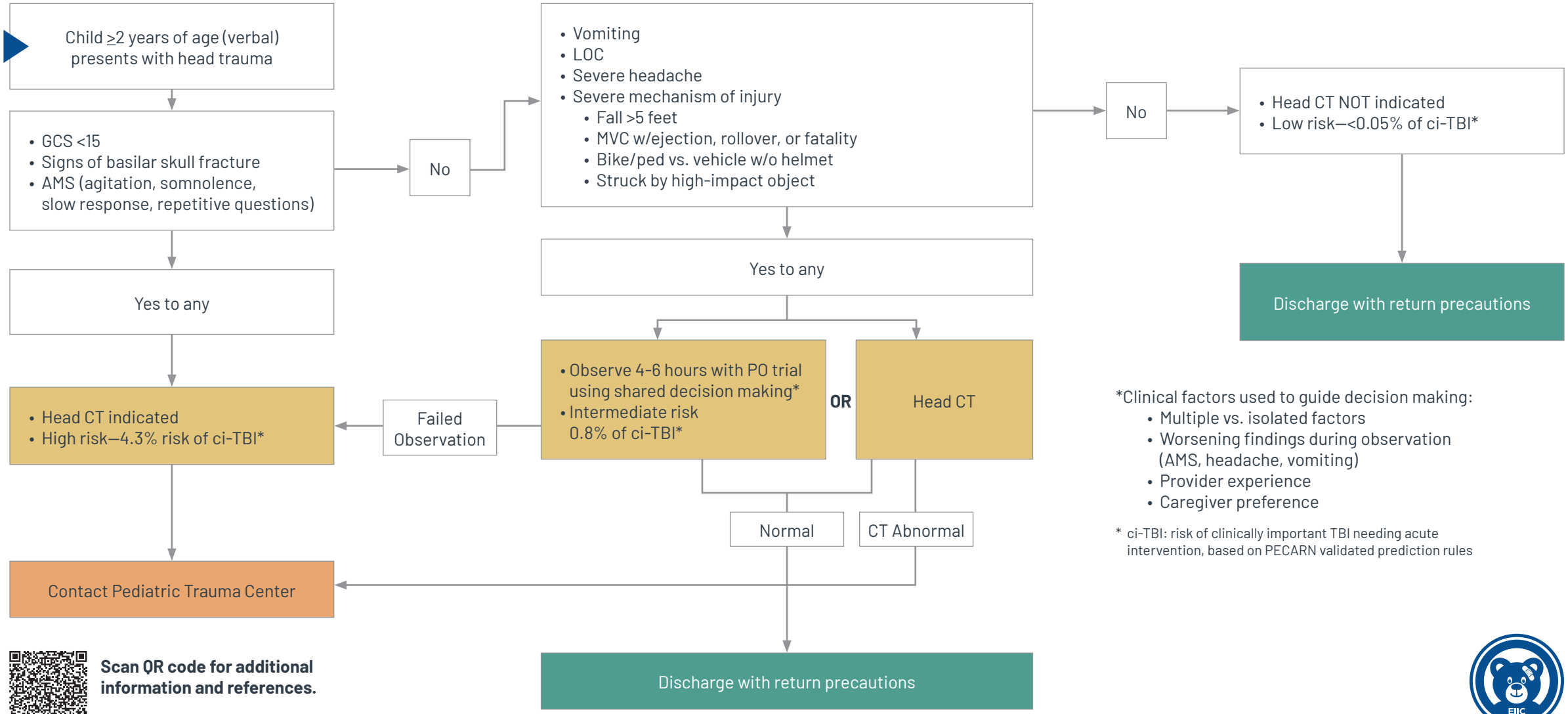
Scan QR code for additional information and references.

Algorithm is not intended for suspected child physical abuse.

Pediatric Head Trauma Screening

for children two years and older (verbal) with blunt head trauma

≥2 Years



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Pediatric Cervical Spine Injury Screening

Child presents with possible c-spine injury after blunt trauma

High Risk Factors (12.1% chance of injury)
- GCS score 3-8 or unresponsive on AVPU scale
- Abnormal airway, breathing, or circulation
- Focal neurological deficits on examination

Yes → **Consider C-spine CT**
This patient likely exceeds the treatment capabilities of most centers and will require transfer out - consider discussion with PTC prior to imaging. This patient may also require CT arteriogram depending on mechanism given low GCS.

A negative CT scan is inadequate to clear a collar with GCS 3-8 or persistent neurologic deficits.

No

Intermediate Risk Factors (2.8% chance of injury)
- Altered mental status
- Self-reported neck pain or tenderness on examination
- Substantial head or torso injury

Yes → **Consider Lateral C-spine X-ray**
A negative x-ray is insufficient to clear a collar with persistent symptoms.

If imaging is normal, consider interval re-evaluation and if symptoms persist discuss case with PTC and consider sending home in a collar with outpatient spine follow-up.

No

No Risk Factors (0.2% chance of injury)

Yes → **Clear collar clinically (including ensuring full range of active motion) without imaging**

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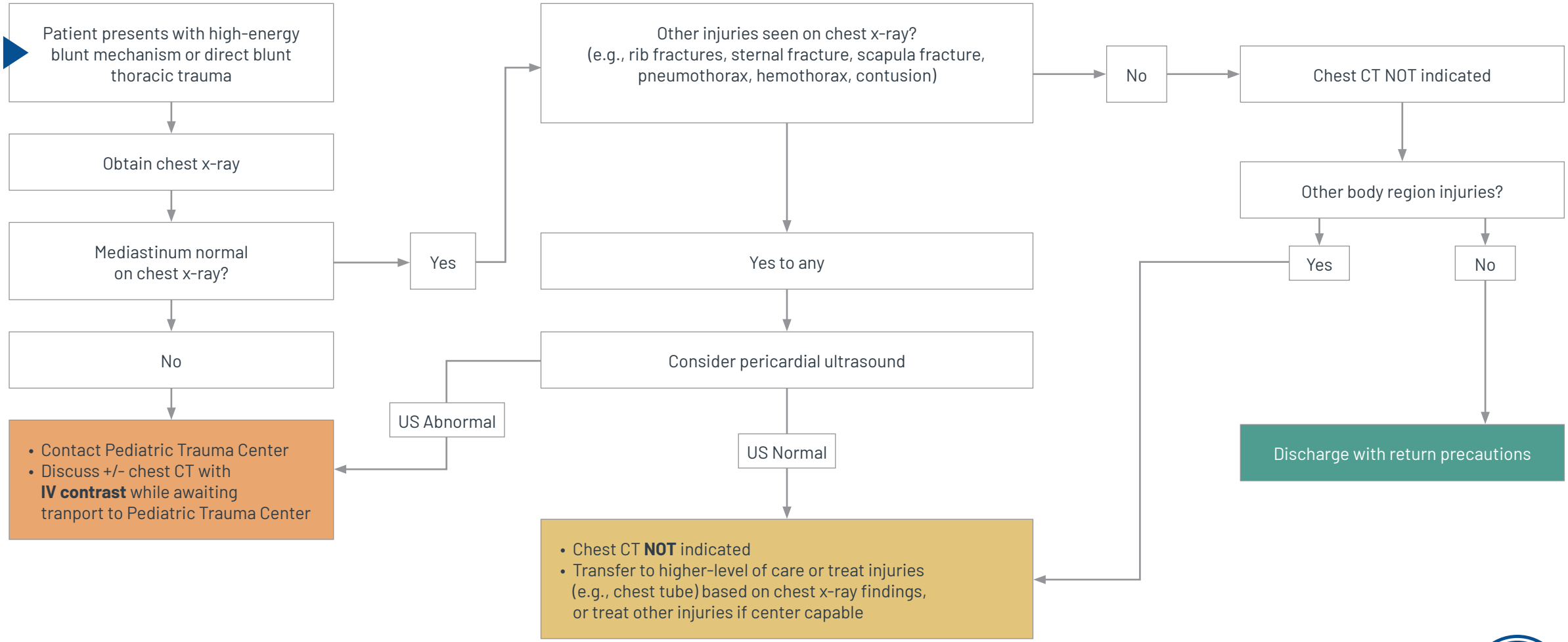
Pediatric Blunt Thoracic Trauma Screening

for patients with high-energy blunt mechanism or direct blunt abdominal trauma



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Pediatric Blunt Abdominal Trauma Screening

for patients with high-energy blunt mechanism or direct blunt abdominal trauma

Patient presents with high-energy blunt mechanism or direct blunt abdominal trauma

- Abdominal tenderness
- Abdominal wall bruising
- Seatbelt sign
- GCS ≤ 13
- Hemodynamic instability
- Concern for child abuse

No

- Evidence of thoracic wall trauma
- Complaints of abdominal pain
- Decreased breath sounds
- History of vomiting after the injury

No

- Abdominal/pelvis CT with **IV contrast** NOT indicated

Observe 4-6 hours and PO trial

Abdominal pain or tenderness during observation

Yes

- Contact Pediatric Trauma Center
- Discuss +/- abdominal/pelvis CT with **IV contrast** while awaiting transport to Pediatric Trauma Center

No

Discharge with return precautions

Yes to any

- AST>200 / ALT > 125
- Abnormal Amylase/Lipase
- Hct < 30%
- Abnormal chest x-ray
- Gross hematuria

No

Yes to any

Consider

- CT Abdominal/pelvis with **IV contrast** if negative result will yield immediate ED discharge

OR

- If center capable, 24 hour observation with serial abdominal exams by a surgeon

CT Normal

CT Abnormal **OR** Develops abdominal pain or tenderness during observation

Yes to any

- Contact Pediatric Trauma Center
- Discuss +/- abdominal/pelvis CT with **IV contrast** while awaiting transport to Pediatric Trauma Center

Scan QR code for additional information and references.

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- FAST is unreliable in hemodynamically normal children and should not be used to rule out intra-abdominal injury or lead to an abdominal/pelvis CT with IV contrast in an asymptomatic child.