



# MANAGEMENT OF Pediatric Minor Head Injury

(0-2 Years of Age)

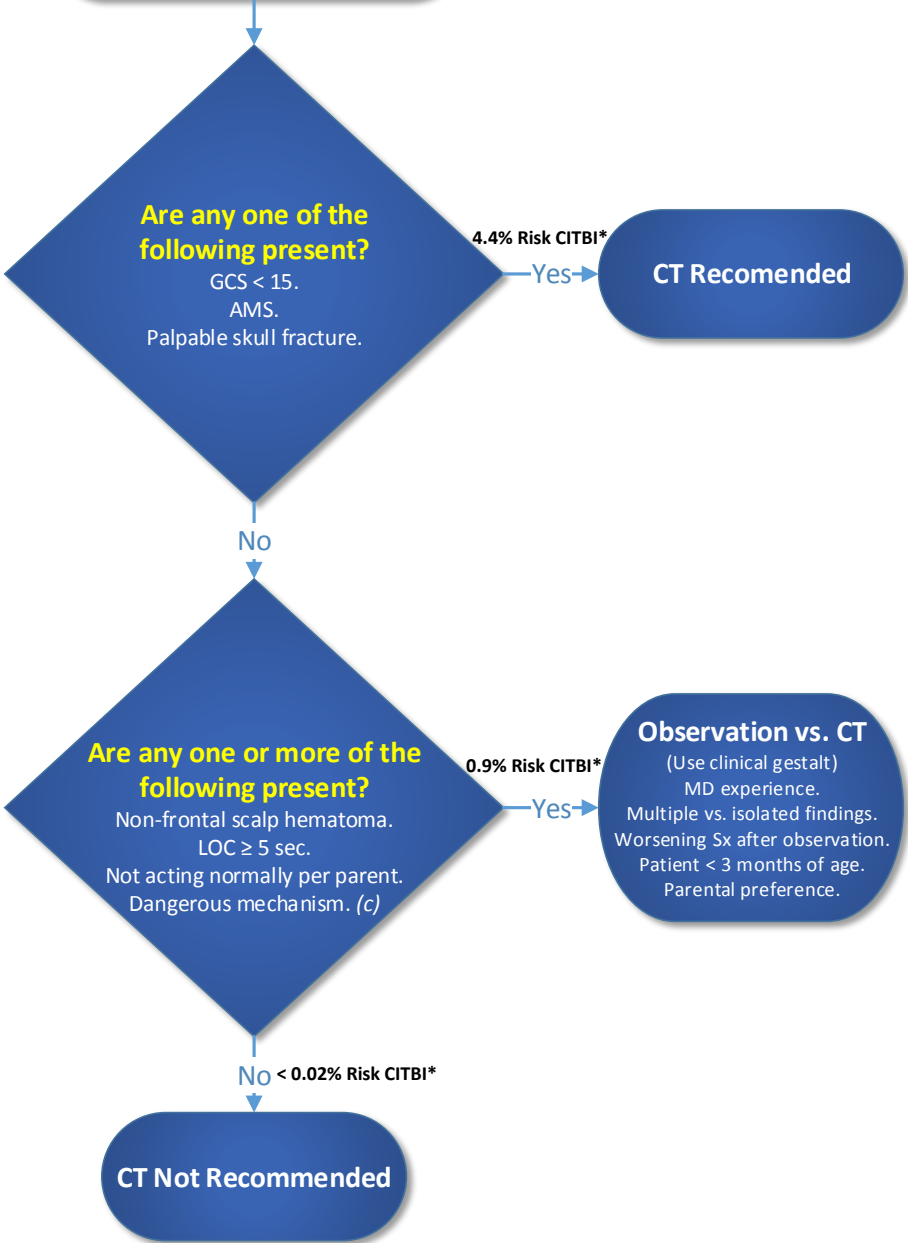
*This EPPA Clinical Guideline is intended to guide most, but not all, encounters involving pediatric minor head injury and should not replace clinical judgment; deviate from or adapt this guideline to meet the individual patient's needs.*

**Pediatric Patient Presents With Minor Head Injury (a) (b)**  
(0-2 Years of Age)

- Inclusion Criteria (a)**
- Age < 2 years.
  - Injury within 24 hours.
  - GCS 14 or 15.

- Exclusion Criteria (b)**
- Trivial mechanism.
    - Ground level fall.
    - Walking or running into stationary object and no signs of head trauma other than abrasion or laceration.
  - Penetrating trauma.
  - Known brain tumor.
  - Pre-existing neurologic disorder complicating assessment.
  - Pre-existing VP shunt.
  - Bleeding disorder.

- Dangerous Mechanism (c)**
- MVC with ejection, death in accident, rollover.
  - Pedestrian or bicyclist with helmet struck by vehicle.
  - Fall > 3 feet (< 24 hours) or 5 feet (> 24 hours).
  - Head struck by a high impact object.





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## References:

- Kuppermann N, et al. Identification of Children at Very Low Risk of Clinically-Important Brain Injuries After Head Trauma: A Prospective Cohort Study. *Lancet*. 2009; 374(9696): 1160-70.
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- Dayan PS, et al. Risk of Traumatic Brain Injuries in Children Younger Than 24 Months with Isolated Scalp Hematomas. *Ann Emerg Med*. 2014; 64(2): 153-62.

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## Key Points:

### **Pediatric GCS Scale**

<b>Eye Opening</b>	
Spontaneous	4
To Speech	3
To Pain	2
None	1
<b>Verbal</b>	
Coos, Babbles	5
Irritable	4
Cries to Pain	3
Moans to Pain	2
None	1
<b>Motor</b>	
Normal Spontaneous Movements	6
Withdraws to Touch	5
Withdraws to Pain	4
Abnormal Flexion	3
Abnormal Extension	2
Flaccid	1

### **\*Clinically Important Traumatic Brain Injury (CITBI) (Definition):**

- Death from TBI.
- Need for neurosurgical intervention.
- Intubation for > 24 hours for TBI.
- Hospital admission of > 2 nights associated with TBI on CT.

### **Original Study – 42,000 patients 25% Patients < 2 Years Old:**

- **Results < 2 Years Old**
  - Sens 100% (86% to 100% CI)
  - NPV 100% (99.7% to 100% CI)
- **Results > 2 Years Old**
  - Sens 96.8% (89% to 99.6% CI)
  - NPV 99.95% (99.8% – 99.9% CI)

### **Bottom Line:**

- If < 2 years of age, and no risk factors present, then likelihood CITBI = < 0.02%
- If > 2 years of age, and no risk factors present, then likelihood CITBI = < 0.05%

### **Risk of Radiation?**

- Average background radiation = 3 mSv/year
- CT Scan of Head = 2 mSv = Very Low Risk (1/10,000 to 1/100,000 Risk of Fatal Cancer)
- CT Scan of Neck = 6 mSv = Low Risk (1/1,000 to 1/80,000 Risk of Fatal Cancer)

## Follow-Up Resources:

- **Primary Care**
- **[HCMC Traumatic Brain Injury Center \(Click For Website\)](#)**
- **[Gillette Children's Specialty Healthcare \(Click For Website\)](#)**