



# MANAGEMENT OF Adult Minor Head Injury

Canadian CT Head Rule (CCHR)

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

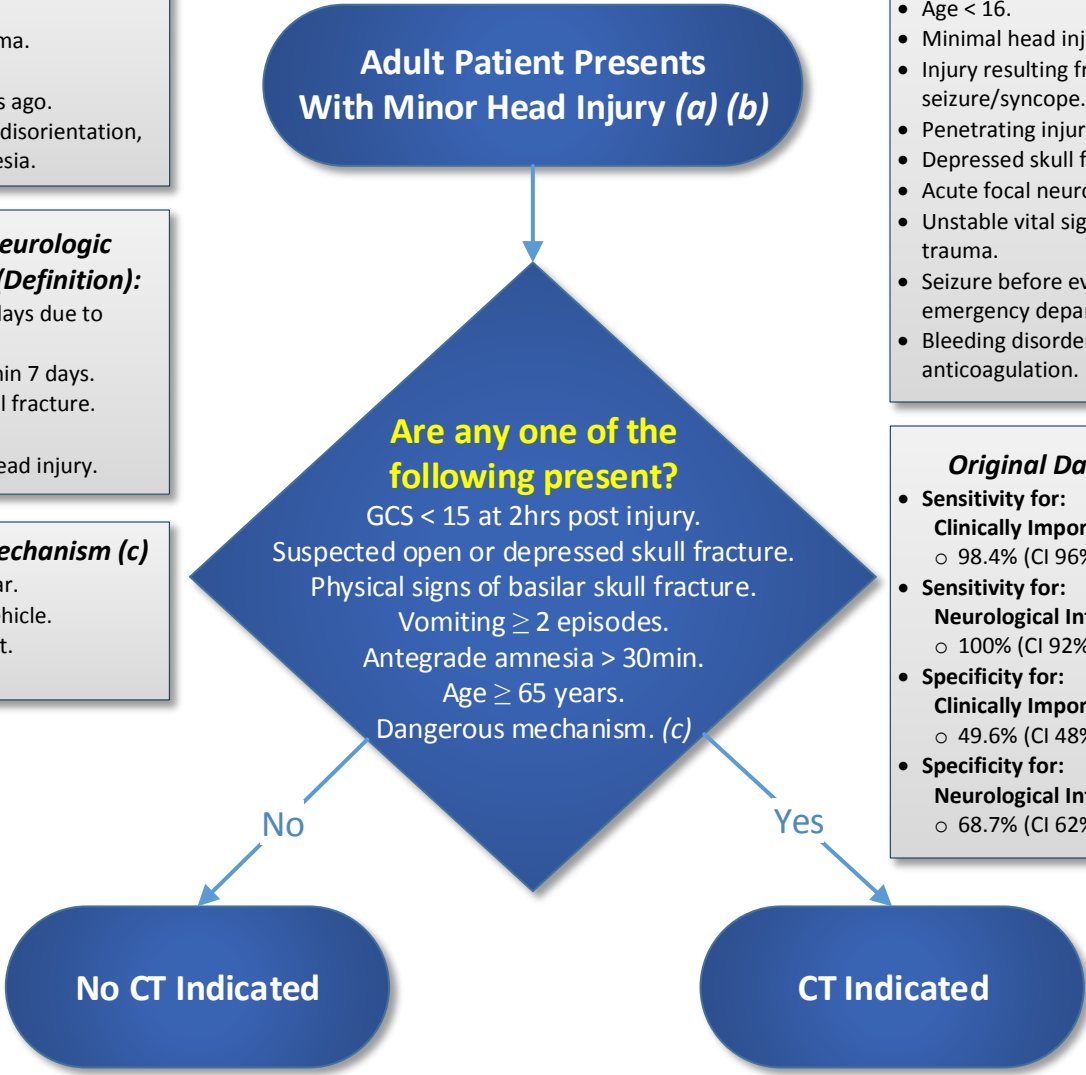
- Inclusion Criteria (a)**
- Age > 16.
  - Blunt head trauma.
  - GCS 14 or 15.
  - Injury < 24 hours ago.
  - Witnessed LOC, disorientation, or definite amnesia.

- Need for Neurologic Intervention (Definition):**
- Death within 7 days due to head trauma.
  - Craniotomy within 7 days.
  - Elevation of skull fracture.
  - ICP monitoring.
  - Intubation for head injury.

- Dangerous Mechanism (c)**
- Pedestrian vs. car.
  - Ejection from vehicle.
  - Fall from > 3 feet.
  - Fall > 5 stairs.

- Exclusion Criteria (b)**
- Age < 16.
  - Minimal head injury.
  - Injury resulting from seizure/syncope.
  - Penetrating injury.
  - Depressed skull fracture.
  - Acute focal neurologic deficit.
  - Unstable vital signs with major trauma.
  - Seizure before evaluation in emergency department.
  - Bleeding disorder or anticoagulation.

- Original Data CCHR:**
- Sensitivity for: Clinically Important Injury
    - 98.4% (CI 96% to 99%)
  - Sensitivity for: Neurological Intervention
    - 100% (CI 92% to 100%)
  - Specificity for: Clinically Important Injury
    - 49.6% (CI 48% - 51%)
  - Specificity for: Neurological Intervention
    - 68.7% (CI 62% to 70%)



- Clinically Important Traumatic Brain Injury (Definition):**
- (CITBI) Any injury on CT that would normally require admission to a hospital and/or neurologic follow-up.



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## References:

- Stiell IG, et al. The Canadian CT Head Rule Study for Patient with Minor Head Injury: Rationale, Objectives, and Methodology for Phase I (Derivation). *Ann Emerg Med.* 2001; 38(2): 160-9.
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- Bouida W, et al. Prediction Value of the Canadian CT Head Rule and the New Orleans Criteria for Positive Head CT Scan and Acute Neurosurgical Procedures in Minor Head Trauma: A Multicenter External Validation Study. *Ann Emerg Med.* 2013; 61(5): 521-7.
- Haydel M, et al. Indications for Computed Tomography in Patients with Minor Head Injury. *N Engl J Med.* 2000; 343: 100-105.
- Kavalci C, et al. Comparison of the Canadian CT Head Rule and the New Orleans Criteria in Patients with Minor Head Injury. *World J Emerg Surg.* 2014; 9: 31.
- Smits M, et al. External Validation of the Canadian CT Head Rule and the New Orleans Criteria for CT Scanning in Patient with Minor Head Injury. *JAMA.* 2005; 294(12): 1519-25.

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## Key Points:

### **Alternate:**

#### ***New Orleans Criteria (NOC)***

#### **Are any one of the following present?**

- GCS < 15.
- Vomiting.
- Age > 60.
- Alcohol or drug intoxication.
- Short term memory deficit.
- Visible trauma above clavicles.
- Seizure.

**If yes, CT indicated.**

### **LOC and Amnesia:**

- LOC and amnesia are not significant independent risk factors
  - OR LOC = 1.9 (1.3 to 2.6)
  - OR Amnesia = 1.7 (1.3 to 2.3)

*\*Smits et al. 2005*

### **Comparison Studies CCHR vs. NOC:**

- **Papa et al 2012 ~ 431 Patients (GCS 15)**
  - CCHR: Sens 100% ~ Spec 30% to 90%
  - NOC: Sens 100% ~ Spec 9% to 10%
- **Stiell et al 2005 ~ 1800 Patients (GCS 15)**
  - CCHR: Sens 100% ~ Spec 10.6%
  - NOC: Sens 100% ~ Spec 12.7%
- **Smits et al 2005 ~ 3181 Patients (GCS 13-15)**
  - CCHR & NOC: Sens 100% Neurosurgical Intervention
  - Any Intracranial Injury
    - CCHR: 83.4% to 87.6%
    - NOC: 97.9% to 99%

### **Important Note (CCHR):**

- Both decision rules perform with high sensitivity. However, CCHR benefits from a higher specificity and focuses on patient centered outcomes (CITBI and need for neurosurgery) rather than any abnormality on CT scans.

## Follow-Up Resources:

- **Primary Care**
- **[HCMC Traumatic Brain Injury Center \(Click For Website\)](#)**