Cincinnati Children's Neurosurgery Minor Head Injury Algorithm

GCS 13-15

SPECIFIC CRITERIA
Recommend Head CT
- Abnormal mental status
- GCS < 13 any time since surgery
- GCS 13-14 2 hrs post-injury
- All children < 3 months of age
- Asymmetric neurologic exam
- Suspected basilar skull fracture
- High velocity injury
- Unwitnessed injury
- Suspected non-accidental trauma

NON-SPECIFIC CRITERIA
Consider Head CT
- LOC > 5 minutes
- Headache
- Amnesia
- Behavioral change (s)
- All children < 2 years of age

Indeterminate Criteria
- Vomiting
- Post-contact seizure

Decision for CT per EM provider

CT Findings

ABNORMAL HEAD CT HIGH RISK
- Epidural hematoma (> 2mm)
- Subdural hematoma
- Intraparenchymal hematoma
- Petechial contusions or shear injury (≥ 3 in number)
- Ventricular enlargement
- Ischemia, focal edema
- Abnormal brain attenuation
- Diffuse brain swelling
- Complex comminuted depressed fractures

- Neurosurgery Consult in ED
- Admit to PICU or Ward

Repeat Head CT within 12 hours OR based on exam
OR
No Repeat CT if patient meets discharge criteria

ABNORMAL HEAD CT LOW RISK
- Epidural Hematoma (≤ 2mm)
- Subarachnoid hemorrhage (Fisher grade 1-2)
- Intraventricular hemorrhage without ventriculomegaly
- Petechial contusions or shear injury (≤ 2 in number)
- Pneumocephalus

- Notify on-call Neurosurgery Provider
- Admit to PICU or Ward
- Request non-urgent neurosurgery consult

- Clinical change: repeat CT
- Clinically stable: no repeat CT

Repeat Head CT

WORSE → Operating Room if indicated → Admit/Transfer to PICU

CT stable

NEGATIVE CT
No intracranial hemorrhage
Minimal Risk
- Absent extra-axial or parenchymal lesions
- Linear/non-displaced fractures
- Facial/orbital fractures
- Soft tissue injury

- No Neurosurgery Consult
- Potential discharge per ED

DISCHARGE CRITERIA
- GCS 15
- Tolerating PO
- Activity restrictions: No gym, sports, recess until cleared by practitioner at follow-up
- PCS: graded return to activity
- School: When PCS are manageable

FOLLOW-UP
- Trauma clinic vs. PMD in 1-2 wks
- Neurosurgery clinic if indicated in 1-2 wks
- Rehab clinic if indicated in 1-2 wks
- If symptomatic > 7 days, referral to Head Injury Clinic
- Repeat CT for high and low risk patients when asymptomatic