

Pediatric Patient with Traumatic Brain Injury (TBI)



Patients with > 1 ICH type should be automatically classified as kBIG 3

Patients can have a non-displaced or minimally displaced skull fracture in addition to a bleed in kBIG 1 & 2.

Are ANY of the following present?

Radiographic Findings

- IVH
- EDH ≥8mm
- SDH ≥8mm
- IPH ≥ 8mm or multiple
- SAH >3 sulci AND bi-hemispheric
- Displaced skull fracture > 1 cranium width

Clinical Findings

- GCS ≤12
- Anticoagulation or antiplatelet
- Non-accidental trauma (NAT) mechanism

YES

kBIG 3 High Risk

Transfer / Admit to pediatric trauma center with neurosurgery consultation available

Are ANY of the following present?

Radiographic Findings

- EDH <8mm
- SDH 4.1 – 7.9mm
- IPH 4.1 – 7.9mm
- SAH >3 sulci, single hemisphere

Clinical Findings

- GCS 13-14
- Persistent nausea, vomiting, intractable headache
- Intoxication

YES

kBIG 2 Medium Risk

Transfer / Admit to pediatric trauma center with neurosurgery consultation available

- NO neurosurgical consultation
- NO repeat head CT
- GCS 15 at discharge
- Follow up concussion clinic

If worsening:
neuro exam

Confirm Intracranial Hemorrhage Size

Radiographic Findings

- SDH ≤4mm
- IPH ≤4mm
- SAH ≤3 sulci (total)

Clinical Findings

- GCS 15

YES

kBIG 1 Low Risk

- Discharge from Emergency Department
- NO repeat head CT
- NO neurosurgical consultation
- Follow up concussion clinic

If worsening:
neuro exam

Isolated Skull Fracture

Radiographic Findings

- No ICH
- Non-displaced skull fracture or mildly displaced < 1 cranium width

Clinical Findings

- GCS 15

YES

kBIG 0 Low risk isolated skull fracture

- Discharge from Emergency Department
- NO repeat head CT
- NO neurosurgical consultation
- Follow up concussion clinic

If worsening:
neuro exam

- Low risk isolated skull fracture and concern for child physical abuse: please call safe and healthy families for recommendations. Otherwise treat as kBIG 0. (801) 442-SAFE (7233)
- Patients meet criteria if they have either the radiographic or clinical finding: don't have to have both
- Non-displaced skull fracture can be present in addition to bleed or symptoms for any kbig level but if isolated and non-displaced = kbig 0; if displaced = kbig 3
- Extra axial hemorrhage with fracture then treat as EDH, extra axial hemorrhage without associated fracture then treat as SDH
- Isolated Pneumocephalus: likely resulting from fracture, off protocol unless altered GCS or another finding. Always consider may need temporal CT scan
- If history of traumatic mechanism is unclear, injury pattern is outside of what is listed or is concern for aneurysmal bleed; should consult Pediatric Telehealth; available 24/7

Abbreviations

IVH: Intraventricular Hemorrhage
EDH: Epidural Hematoma

SAH: Subarachnoid Hemorrhage
SDH: Subdural Hematoma

ICH: Intracranial Hemorrhage
IPH: Intraparenchymal Hemorrhage