Guidelines & Recommendations for Management of BIG 1 Traumatic Brain Injury Patients in Rural Hospitals

(Non-Policy Document – Clinical Recommendations)
Last Updated: August 2025

Purpose

To provide rural healthcare facilities with safe, evidence-based recommendations for managing select patients with traumatic brain injury (TBI) meeting Montana specific Brain Injury Guidelines (BIG) 1 criteria, without requiring transfer to higher-level trauma centers.

Scope

These guidelines apply to adult patients (>18 years) with mild TBI who meet Montana Specific BIG 1 classification based on clinical and radiologic criteria.

Montana Specific BIG 1 Criteria Summary

Patients must meet all the following: (see Appendix A for Checklist)

- Neurological Exam: GCS = 15, no focal deficits
- No intoxication (above legal limit 0.08 g/dL for over 21 or 0.02 g/dL for under 21)
- No coagulopathy (including anticoagulants, antiplatelets and aspirin, INR>1.4, platelet <100k)
- No skull fracture
- No multi-system trauma (isolated head injuries only)
- CT Findings (Final read):
    - Subdural hemorrhage ≤ 4mm
    - Intraparenchymal hemorrhage ≤ 4mm and in 1 location
    - Subarachnoid hemorrhage limited to ≤ 3 sulci
    - No intraventricular hemorrhage or midline shift
    - No evidence of epidural bleed on CT imaging

Clinical Management Recommendations

Observation: 6-hour observation in ED or inpatient setting

Neurologic Checks: Q2H during observation (see Appendix B)

Repeat CT: Not required if patient remains stable

Neurosurgery Consult: Not required unless clinical status changes

Discharge Criteria:

- GCS 15, neurologically intact at baseline
- Caregivers are available if discharged home
- No concern for deterioration or other injuries

Discharge and Follow-Up Recommendations (see Appendix C)

Provide written discharge instructions with clear return instructions:

- Worsening headache, vomiting, confusion, seizure, focal weakness

Recommend follow-up visit with PCP or tele-neuro/trauma clinic within 1 week

Recommend referral to therapy for additional consultation (PT/OT/Speech) for return to work/school criteria

Optional repeat head CT if symptoms worsen

Telemedicine & Transfer Considerations

Initiate tele-neurosurgery or trauma consultation when local providers require additional support or clarification regarding patient management.

Clinical judgment takes precedence over protocol guidelines-when in doubt, err on the side of patient safety.

Immediate Transfer is Warranted if:

Evidence of Neurological deterioration

CT findings are reclassified as BIG 2 or BIG 3 (see Appendix D)

Local resources are insufficient to ensure safe monitoring or care, including:

- Inadequate staffing to provide the necessary neuro checks and care

- Lack of CT availability
- Limited/unavailable EMS transport or air medical access

Consider Transfer if:

Severe weather or transport-disrupting conditions are anticipated within next 24-48 hours

Performance Improvement and Documentation

Maintain detailed records of all patients classified under BIG 1, BIG 2, and BIG 3 with outcomes documented in the trauma registry.

Conduct routine chart reviews to evaluate:

- Compliance with Montana BIG 1 criteria and clinical pathway
- Safety metrics including:
    - Readmissions related to TBI
    - Unexpected clinical deterioration
    - Adherence to recommended follow-up care (e.g., PCP or tele-neuro visits)

Regional Trauma Advisory Committee (RTAC) indicator:

- Track all Montana BIG 1 patients who:
    - Met BIG 1 criteria and were appropriately transferred
    - Met BIG 1 criteria and remained at the facility
- Use this data to identify trends, ensure appropriate triage, and support performance feedback loops

Appendices

A: Provider Checklist

B: Neuro Exam for a TBI Patient

C: Discharge Criteria, Instructions & Follow-up

D: BIG 2 & BIG 3 Criteria

E: Resources & Follow-up for PCP