This is a general guideline and does not represent a professional care standard governing providers' obligations to patients. Care may be revised to meet individual patient needs.

UNC Pediatric Traumatic Brain Injury Clinical Pathway

Alarming signs
- Blown pupil: enlarged and fixed
- New lateralizing exam

Preferred mode of administration for 3% saline is central line. 23.4% saline **cannot** be administered without central access.

Abbreviations used:
- PCC = prothrombin complex concentrate
- CPP = cerebral perfusion pressure
- ICP = intracranial pressure
- CVP = central venous pressure
- HOB = head of bed
- NIRS = near infrared spectroscopy

23.4% saline dose:
0.5 mL/kg
- Max 30 mL/dose

ATTENDING ORDER ONLY

GCS < 9
Inability to follow neuro exam

Early operative intervention
-Start available therapies w/ 3% NaCl, mannitol, hyperventilation
-**Any** coagulopathy: give PCC

Start comprehensive monitoring:

Art line	EtCO2
TCD qd x2	Stat Peds Neuro consult
ICP	continuous vEEG
Foley temp probe	NIRS x 48 hrs

Goals of management:
1. **ICP < 20 mmHg**
2. **Maintain CPP goals**
3. In absence of ICP monitoring, normotension for age
4. CVP 5-10 mmHg
5. Na 140-160
   - Check serum Na q2h
6. Hgb > 8
7. Adequate sedation & analgesia
8. Core temp 36º C (±0.5º)
9. S_pO_2 > 96%
10. P_aCO_2 37±2
11. Seizure prophylaxis (levetiracetam)
12. Prompt seizure treatment
13. HOB 30º - 90º
14. NIRS: no change > 20%
15. Monitor for and address coagulopathy (INR ≥ 1.6)
    - If requiring operation or cranial procedure, correct w/PCC
16. Early nutritional support within 72 hours

CPP goal:

0-1y	>50 mmHg
1-12y	>55 mmHg
>12y	>60 mmHg

ICP >20 for >5 mins

Check monitor accuracy
Check/adjust sedation and meds

Elevate HOB more
Remove or loosen C-collar

Hyperosmolar therapy
Adjust sodium goals - (max benefit @160)
Increase sedation

3% saline dose:
2-5 mL/kg (10-20 mins)
- Max 500 mL/dose

Persistent elevated ICP
Inability to meet CPP goals

Consider repeat CT

Contact NSG – consider decompressive surgery and/or pentobarbital

MAP below goals

Fluid therapy
Vasopressors

PCC DOSING:

INR	Dose
2 to <4	25 U/kg; max 2500 U
4 to 6	35 U/kg; max 3500 U
>6	50 U/kg; max 5000 U

(Max dosing wt = 100 kg)

Rate: Administer @0.12 mL/kg/min (~3 U/kg/min) **not to exceed** 8.4 mL/min

Labs: Recheck INR and coag profile 30 mins after dose, then q6h for 24h

Kochanek, Patrick M et al. "Guidelines for the Management of Pediatric Severe Traumatic Brain Injury, Third Edition: Update of the Brain Trauma Foundation Guidelines, Executive Summary." *Neurosurgery* vol. 84,6 (2019): 1169-1178. doi:10.1093/neuros/nyz051

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