Ascension

Pediatric Severe Traumatic Brain Injury Guideline

Purpose: Utilization of best practice guidelines to assist with the management of pediatric trauma patients who have sustained a severe traumatic brain injury.

Scope: Pediatric trauma patients who have suffered a severe traumatic brain injury.

Inclusion/Exclusion Criteria

- Inclusion
  1. Abnormal CT scan with hematomas, swelling, herniation, compressed basal cistern, or diffuse axonal injury AND either A or B below
     A. Traumatic brain injury (TBI) with GCS ≤ 8 (field, transport, or ED)
     B. TBI patient admitted with GCS >8, with deterioration to GCS ≤ 8
- Exclusion
  1. Hypoxic ischemic injuries
  2. Patient that is deemed non-salvageable after discussion/agreement by clinical care team
  3. Infants with open fontanelles

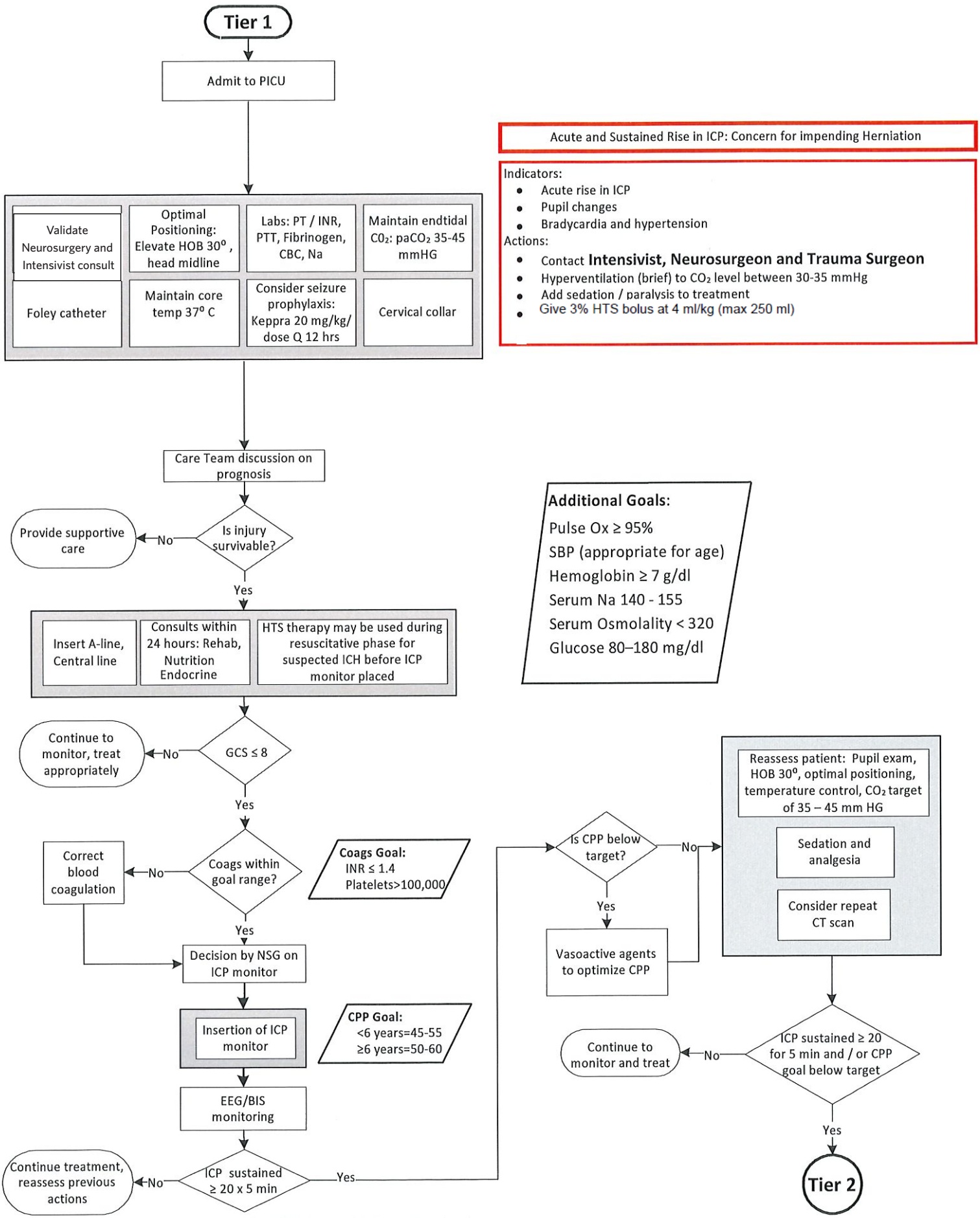
Guideline:

- Complete primary and secondary survey per guidelines
- Refer to Severe TBI algorithm on next page

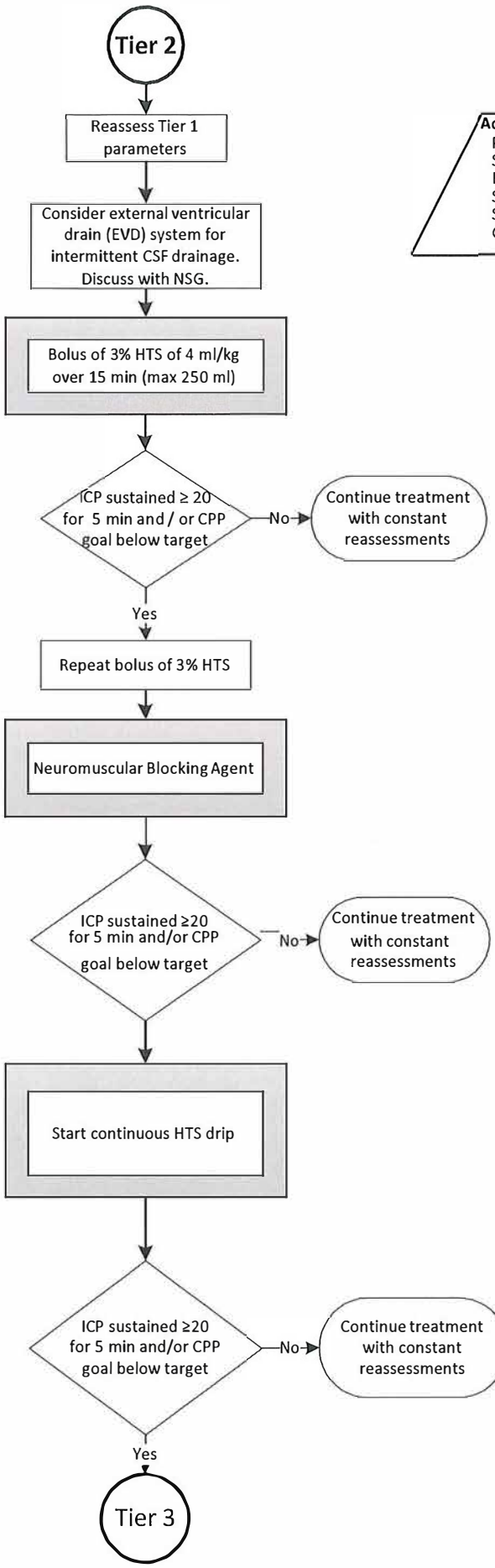
Review/Revision History:

Review/Revision Date:	Approved by:
Created 02/2018	Trauma Services
Revised 02/2022	Trauma Services
Revised 04/2024	Trauma Services

Pediatric severe traumatic brain injury: Guideline for management of ICH in STICU

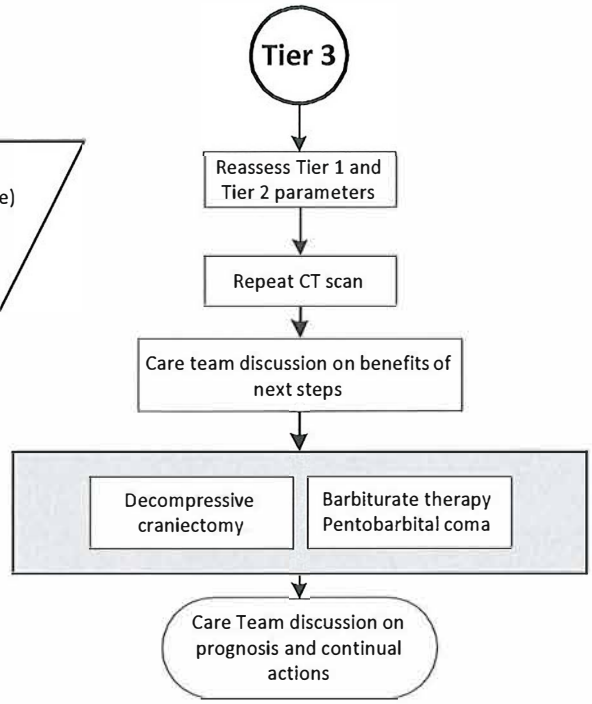


Tier 2: ICP Non Responsive to Tier 1 Therapy



Additional Goals:
- Pulse Ox ≥ 95%
- SBP(appropriate for age)
- Hemoglobin ≥ 7 g/dl
- Serum Na 140-155
- Serum Osmolality<320
- Glucose 80-180 mg/dl

Tier 3: ICP Non Responsive to Tier 2 Therapy



Barbiturate Therapy
- Pentobarbital loading dose: 5 mg/kg over 30-60 minutes
- Continuous drip 0.5–1 mg/kg/hr; titrate in increments of 0.5 mg/kg/hr for burst suppression (max dose = 5 mg/kg/hr)

Hyperosmolar Therapy
- 3% HTS bolus, 4 ml/kg over 15 minutes (max of 250 ml)
- Typical range of 3% HTS continuous infusion, 0.5 – 1 ml/kg/hr; titrate to keep ICP < 20 or Na level below 160
- Concentrate maintenance fluids where possible
- When treating with hyperosmolar therapy, serum sodium and serum osmolality should be assessed every 6 hours.
- Caution should be used if serum osmo exceeds 360 mEq/L
- Consider Mannitol, if osmo < 320; maintain osmo < 360