APPENDIX A: GENERAL INDICATIONS

MONITORING & LABS	GENERAL INDICATIONS*
INTRACRANIAL PRESSURE (ICP)/ BRAIN TISSUE OXYGEN	Glasgow Coma Score of 3-8 with an abnormal CT scan (hematomas, contusions, edema, or compressed basal cisterns) or 2 or more of the following adverse features are present in a patient with severe head injury and a normal head CT scan: (Age > 40 years, Unilateral or bilateral motor posturing, systolic blood pressure < 90 mmHg).
ARTERIAL LINE	Any head trauma that requires tracheal intubation and/or for other medical indications.
CENTRAL VENOUS PRESSURE	When ICP or CPP management requires anything beyond simple measures and/or for other medical indications. Trendelenburg position will raise ICP. Line site of choice is subclavian, then femoral, lastly internal jugular
EXHALED CO2	Desirable when active measures are required to control ICP. Correlate to $PaCO_2$ initially/periodically.
NEUROIMAGING	Non-contrast head CT upon admission then within 24 hours after admission (or earlier to document stability of the bleed). Additional scans obtained as indicated (e.g. clinical deterioration). Penetrating head injuries should undergo CTA or DSA if available to evaluate for vascular injury.
LABS	ABG, CBC, Chem 10, TEG, PT, PTT, and INR at least q8 hrs during the acute phase.
GENERAL MANAGEMENT PRINCIPLES*	
PHILOSOPHY	▪ Maintain continuous communication between the care teams. ▪ Maintain the patient in a "hyperosmolar-but-euvolemic" state with adequate oxygen carrying capacity and a constant substrate delivery via adequate CPP of >60mm Hg. Unless a MAP Challenge shows intact cerebral autoregulation then CPP > 70 mmHg. ▪ Aggressively avoid hypotension, hypoxemia, fever (>99 F), hyponatremia and other CNS insults. ▪ The longer the ICP is elevated (> 22), and the MAP & CPP are low (< 60), and PbtO2 < 20 the worse the outcome! ▪ Brain injury is heterogeneous amongst patients and the process is dynamic: Treatment and management goals must be tailored accordingly
HYPEROSMOLAR TREATMENT	Bolus 3% hypertonic saline 250mL in 10-15 minutes.
MAINTENANCE FLUID	Normal saline (0.9%) or 3% hypertonic saline depending on sodium goals
SEDATION	Propofol 1st choice up to 72 hours. Other short-acting agents (Fentanyl, Versed) upon discretion of SICU or neurosurgical staff. Typical ICU **Propofol sedation dose range: 20-75 mcg/kg/min**. **Ketamine can also be considered** with dosages of **2mg/kg boluses for persistent elevated ICP** and/or with a continuous infusion.
ULCER PROPHYLAXIS	All patients.
DVT PROPHYLAXIS	Recognize high DVT risk in traumatic brain injury patients. Sequential Compression Device (SCD) and DVT prophylaxis should be started as soon as possible after a stable CT scan and in consultation with the theater Neurosurgeon.