MONITORING & LABS	GENERAL INDICATIONS*	
SEDATION	Propofol 1st choice up to 72°. 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 if the patient is hypotensive** or propofol is causing significant hypotension. **Ketamine infusion dosage ranges are from 20mcg/kg/min up to 100mcg/kg/min with 2mg/kg boluses for ICP spikes.**	
TEMPERATURE	Aggressive temperature management. Consider cooling measures (Tylenol, cooling blanket) even for modest temperature elevations (>98.6° F).	
INTRACRANIAL DYNAMICS	▪ Treat sustained ICP elevations >22 ▪ Treat sustained PbtO2 readings < 20 ▪ Always consider an expanding mass lesion with ICP elevations refractory to therapy or NPi decreasing less than 3.0.	
TREATMENT PARADIGM FOR THE TRAUMATIC BRAIN INJURY PATIENT*[(75)]		
ICP Elevated Brain Not Hypoxic **ICP >22mmHg** **PbtO2 > 20mmHg**	Tier 1	▪ Maintain CPP 60-70mmHg. ▪ Increase analgesia to lower ICP. ▪ Increase sedation to lower ICP. ▪ Maintain $PaCO_2$ 35-45mmHg ▪ Hypertonic saline by intermittent bolus ▪ CSF Drainage by EVD
	Tier 2	▪ Neuromuscular paralysis ▪ Perform MAP Challenge to assess cerebral autoregulation if autoregulation is intact. ▪ Raise CPP by fluid boluses, vasopressors, or inotropes. ▪ Ketamine bolus of 2ml/kg
	Tier 3	Consider secondary decompressive craniectomy
ICP Normal Brain Hypoxic **ICP < 22mmHg** **PbtO2 < 20mmHg**	Tier 1	▪ Increase FiO2 to 100% for 10 minutes to ensure the monitor is working and the PbtO2 improves. If the monitor is working proceed with further steps. ▪ Maintain CPP 60-70mmHg. ▪ Increase CPP to a maximum of 70mmHg with fluids, vasopressors, and inotropes. ▪ Maintain $PaCO_2$ > 35mmHg. ▪ If $PaCO_2$ is already in target range increase PaO2 to 60mmHg
	Tier 2	▪ Ventilator management to increase PaO2 as high as 150mmHg. ▪ Decrease ICP to less than 20mmHg. ▪ Consider CSF drainage ▪ Increase sedation to improve mechanical ventilation. ▪ Neuromuscular paralysis ▪ Perform MAP challenge to assess if cerebral autoregulation is intact. ▪ If cerebral autoregulation is intact, raise CPP to increase $PbtO_2$. ▪ Maintain ICP greater than 70mmHg with vasopressors, inotropes, fluid boluses
	Tier 3	▪ Maintain PaCO2 35-45mmHg (avoid intracranial hypertension) ▪ Consider normobaric hyperoxia to a PaO_2 above 150mmHg. ▪ If PbtO2 remains < 20 with CPP/MAP optimization, consider transfusing 1 Unit PRBC's if Hgb < 9g/L
ICP Elevated Brain Hypoxic **ICP > 22mmHg** **PbtO2 < 20mmHg**	Tier 1	▪ Maintain CPP 60-70mmHg. ▪ Increase CPP to a maximum of 70mmHg with fluid vasopressor, inotropes. ▪ Increase analgesia ▪ Increase sedation ▪ Maintain $PaCO_2$ > 35mmHg. ▪ Hypertonic saline by intermittent bolus ▪ CSF drainage ▪ If PaO_2 already in the desired range further increase PaO_2 by increasing $PaCO_2$ to 60mmHg