ECMO Neuromonitoring and Acute Brain Injury:
Post-Neurosurgical Intervention on ECMO
Associated Power Plan: ECMO Bleeding Algorithm

Children's Mercy KANSAS CITY | Evidence Based Practice

Exclusion criteria:
- Ischemic brain injury without hemorrhage

Neurosurgical Intervention:
- External ventricular drain (EVD) placement
- Intracranial pressure (ICP) monitor placement

QR code for mobile view

Patient on ECMO following neurosurgical intervention

Following the procedure, is the patient stable enough to decannulate?

Yes →
Off Pathway.
- **Re-establish** neuroprotective goals
- **Reassess** transfusion thresholds

No

- **Ensure** discussion with Neurosurgery occurs before restarting anticoagulation
  - ***Start*** heparin at 10 units/kg/hr then follow heparin goal adjustment per ECMO Bleeding Algorithm
- **Consider** antifibrinolytic infusion as needed for up to 24 hours
- **Continue** ECMO Bleeding Algorithm for up to 24 hours, then slowly relax goals
- **Assess** ECMO circuit for fibrin and clots every hour and as needed
  - ***Ensure*** saline-primed back-up circuit readily available
  - ***Attempt*** to hold changing of circuit until patient is back on stable anticoagulation (*ECMO circuit or component change may be needed sooner due to excessive clot*)
- **Consider** higher ECMO flows to avoid areas of stasis in ECMO circuit and discuss post-op upper limit MAP goals with Neurosurgery to reduce likelihood of rebleeding
- **Neuromonitoring** every hour post-neurosurgical intervention
- **Re-establish** neuroprotective goals with multidisciplinary team
- **Obtain** imaging as clinically indicated

Removal of EVD/ICP Monitor
- Remove the device when no longer clinically indicated and in discussion with multidisciplinary team
- Ensure fibrinogen > 200 mg/dL; platelet count > 120K, PT normal; hPTT 50 - 70 seconds
- Make a plan for the duration to hold anticoagulation prior to and following device removal
- Consider device removal early in the day to allow for optimal neuromonitoring
  - Additionally, consider removing around the time of a circuit change

Intracranial Hemorrhage on ECMO