**Surgical Procedures on ECLS:**

Background:

ECLS patients may require surgical interventions prior to and during ECLS. Blood loss can be minimized by minimizing systemic anticoagulation: discontinuation of heparin to promote clot formation and use of the antifibrinolytic agent, tranexamic acid (TXA) to prevent clot breakdown. These steps are done in conjunction with providing optimal platelets and clotting factors to the patient and should be incorporated prior to, during, and following the surgical procedure.

Procedure:

* Use a new Bioline coated ECLS circuit (< 1 week old) when possible. Consider changing the circuit prior to discontinuation of heparin if necessary.
* Discontinue heparin for 4-6 hours prior to the procedure to minimize bleeding.
* Give a loading dose of TXA 10 mg/kg 1 hour prior to surgical start time. If not given before the procedure, then start as soon as possible. Then begin a continuous TXA infusion of 1 mg/kg/hr.
* Monitor the circuit closely for clot formation.
* Low dose heparin (5 units/kg/hr) should be restarted post procedure when there is minimal or no surgical site bleeding or when the patient has been off of heparin for 8 hours. Titrate heparin to keep the anti-Xa level between 0.1-0.2. If the bleeding risk is extremely high due to the extent of the procedure, then anticoagulation may be withheld for 12 -24 hours.
* The TXA infusion should continue for 72-96 hours post procedure depending on the difficulty in achieving hemostasis versus the extent of circuit clotting.
* Keep platelets > 150k and fibrinogen > 200.
* When transfusing large volumes of PRBCs for bleeding > 10ml/kg/hr, keep the transfusion ratio of PRBC:FFP:platelets 1:1:0.5
* A saline primed circuit should be immediately available should it become emergently necessary to change the circuit.