**Neonatal Criteria:**

***After meeting basic requirements listed, a patient must meet at least one of the criteria listed below prior to beginning ECLS:***

Oxygen Index = MAP X Fi02 X 100/ PaO2

Aagradient= 713 – PaC02– PaO2/FiO2

* Oxygen index greater than 40 for 0.5- 6 hours
* AaDO2 >605-620 mm Hg for 4-12 hours
* Pa02 < 40 mmHg for > 2 hours
* Acute deterioration despite maximal therapy
* Failure to respond to maximal therapy
* Acidosis and shock with pH < 7.25 for > 2 hours or with hypotension
* Failure to improve after 5 – 7 days of maximal supportive therapy
* Congenital diaphragmatic hernia: Extreme lability in gas exchange with OI >30 or PaO2 < 45 on MAP>15 cm H2O

The route of perfusion used will be veno-venous or veno-arterial. In neonatal patients, the venous catheter will be inserted via the internal jugular vein and the tip threaded into the right atrium. The arterial catheter will be inserted into the common carotid artery and threaded to the aortic arch. In pediatric patients, catheters may be placed in the neck, groin or chest. The blood is drained from the right atrium or femoral vein, oxygenated outside the body, and returned to the systemic circulation.

Prior to beginning ECLS, the neonatal patient will have a neuro-ultrasound done to rule out intraventricular hemorrhage.

* Grade I bleed: the patient is still eligible for ECLS.
* Grade II bleed: cases will be considered on an individual basis.
* Grade III or grade IV bleed: ECLS is no longer a treatment choice.

The neonatal patient on ECLS will have frequent NUS to rule out IVH. If at any time a grade II or high bleed is diagnosed, the ECLS procedure may be terminated and conventional treatment resumed.

Prior to beginning ECLS, the patient will have an echocardiogram done to rule out structural heart disease.