***Potential Complications upon Initiation of ECLS:***

**1. Hypovolemia:**

Patients may become hypotensive secondary to hypovolemia during the initiation of ECLS. Hypovolemia can result from adjustment to prime, bleeding, hemodilution and patient vascular dilatation. The hypovolemic patient will not have sufficient right atrial volume to support full flow. Giving blood and/or crystalloid (10-20 mL/kg) may correct hypovolemia. However, it is important to determine if the patient is truly hypovolemic prior to volume administration. Observe heart rate, blood pressure, CVP, and LA pressure. Other causes of inadequate venous return may also include:

* Inadequate venous cannula diameter
* Improper cannula position
* Kink of cannula or ECLS tubing

Fluid boluses should only be given after other causes of insufficient venous return, particularly those related to the venous cannula, have been eliminated.

**2. Hypertension:**

Patients may also become hypertensive secondary to the vasopressor they were on prior to ECLS. Hypertension may also be the result of inadequate pain control/sedation as the ECLS circuit will quickly decrease the circulating levels of these medications. Increased frequency and larger doses of sedation are often required for the ECLS patient. Ensure adequate sedation/pain control have been achieved prior to weaning vasopressors. In the presence of adequate sedation/pain control, without vasopressor support, hypertension should be treated by vasodilator therapy ie. Nitroprusside, Nitroglycerin, Nicardipine, etc.

**3. Arrhythmias**

These may occur during the placement of the venous cannula or at the initiation of ECLS. These are often the result of stimulation of the SA node by the cannula or from electrolyte imbalances, particularly Ca and K. Corrections may include cannulae reposition and/or electrolyte treatment.

Arrhythmias may occur with crystalloid initiation, in which case the initiation should proceed more slowly allowing better mixing of the crystalloid prime and patient blood. *Immediate PRBC administration should be considered.*

**4. Ventilation**

When the patient stabilizes on VA ECLS the ventilator settings may be decreased to “rest” settings. Cardiac patients should remain on reasonable vent settings, and should not have their ventilator set to rest settings.

On VV ECLS, the ventilator FiO2 will be weaned over several hours. Moderate levels of ventilatory support may be required throughout the ECLS run to achieve the desired level of patient support.

Emergency ventilator settings should be a written order within the patient’s medical record.

**5. Full Flow**

Inotropes are weaned and usually discontinued on VA ECLS. On VV ECLS inotropes are weaned slowly. Some VV patients may require inotropes throughout the entire run.

On VA ECLS the arterial tracing must be watched closely as the pump flow is increased. The tracing should begin to dampen as 100-150 ml/kg/min of flow is achieved. **Monitoring of SvO2, base excess, serum lactate and cerebral oximetry may be used as a guide for blood flow adequacy.**