

CRITERIA FOR PEDIATRIC AND YOUNG ADULT ECMO

These criteria and exclusions apply to patients **30 days** to 25 years of age with an acute reversible disease process and evidence of either cardiovascular and/or respiratory failure. Consultation with an ECMO consultant is recommended.

For patients less than 30 days of age refer to neonatal criteria

INCLUSION CRITERIA:

Any one of the following criteria qualifies the patient for ECMO, *check all that apply*.

Any one of the below signs of hypoperfusion or severe cardiac dysfunction, following appropriate volume resuscitation (≥ 60 mL/kg and/or CVP > 10) and inotropic/ vasopressor support:

- Plasma lactate > 45 mg/dl (> 5 mM/L) and not improving for > 30 minutes
- $SVO_2 < 55\%$ (estimated Cardiac Index < 2) for > 1 hour
- Rapidly deteriorating or severe ventricular dysfunction
- Intractable arrhythmia with poor perfusion
- Failure to wean from cardiac bypass
- Need for CPR
- Cardiogenic Shock with an inotropic equivalent (IE) > 50 for 1 hour, or >45 for 8 hours

For patients with acute myocarditis or post cardiectomy, IE >40 .

Sepsis with severe distributive shock—After the first 6 hours of goal directed resuscitation per current sepsis guidelines, and assuming adequate volume resuscitation and source control measures have been accomplished:

- Inotropic equivalent > 100 **with** any of the following
 - $SvO_2 < 65\%$
 - Lactate > 45 and not improving
 - Urine output < 0.5 ml/kg/hr

$IE = DOPamine (mcq/kg/min) + DOBUTamine (mcq/kg/min) + EPInephrine (100Xs mcq/kg/min) + NORepinephrine(100Xs mcg/kg/min) + ISOproterenol(100Xs mcg/kg/min) + MILrinone(15Xs mcg/kg/min) + VASOpressin(10XmUnits/kg/min)$

Any one of the following signs of severe respiratory failure with predicted high mortality rate; all values assume an attempt to optimize mechanical ventilation

- Oxygenation Index (OI) = $MAP \times FiO_2 \times 100$ divided by PaO_2
 - OI > 45 for 6 hours on Conventional Ventilation and/or HFOV
 - OI > 35 for > 12 hours
- Exceeding recommended maximal ventilator settings of:
 - Conventional ventilator plateau pressure (Pplat) of >35
 - HFO AMPLitude of >55 for 8 hours
- Severe Air Leak unresponsive to other therapies.
- Hypercarbia with pH <7.10 for 4 hours
- Acute deterioration on optimal therapy
 - $PaO_2 < 30$ at any time
 - $PaO_2 < 40$ for 2 hours
- Accidental Hypothermia
 - Core temperature $< 32^\circ C$ with hemodynamic instability, non-perfusing rhythm or cardiac arrest
 - Core temperature $< 28^\circ C$ (due to high risk of hemodynamic deterioration)

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EXCLUSIONS FROM PEDIATRIC ECMO:

Any one of the following underlying imminently fatal or irreversible disease states excludes the patient from ECMO:

- Severe CNS injury or asphyxia
- Persistent plasma lactate > 225 mg/dl is highly predictive of death
Note: > 135 mg/dl is highly predictive of adverse neurologic sequela in neonates
- Base deficit > 30 on 2 ABG's
- Severe neurological exam persistent after respiratory and metabolic resuscitation
- End-stage malignancies or advanced AIDS Severe acquired or congenital immunodeficiency
- Major burn
- Advanced liver failure
- Evidence of ongoing uncontrolled bleeding.
- A potentially correctable coagulopathy is not an exclusion.
- Severe fibrosis on lung biopsy
- Severe pulmonary disease ventilated aggressively for > 14 days
- Lethal condition incompatible with long life, including trisomy 13 and 18
- Disseminated herpes disease
- Accidental hypothermia patients with an initial K level > 8meq/l or pH <6.6
- Warm water drowning

Provider Signature: _____ MD

Date: _____ Time: _____

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