

All criteria assume optimal support of respiratory and/or cardiovascular failure including mechanical ventilation, trial of nitric oxide, and appropriate inotropic support. Stress hydrocortisone may also be indicated. We recommend not exceeding: a PIP of 35 (30 for diaphragmatic hernia patients) on conventional ventilation, a Jet PIP of 45, an HFO AMplitude of 45 or a MAP of 20 (15 for CDH patients), prior to qualifying for ECMO. A transient improvement should not cancel plans for ECMO.

Any 1 of the following criteria qualifies a patient for ECMO:

Respiratory Criteria-

_____ **Oxygenation Index (OI)** =MAPx F_{iO_2} x100/PaO₂ :

All Infants

- >60 for 30 min.
- >40 for 60 min
- >35 for 6 hours
- >30 for 24 hours
- >25 for 72 hours

Infants with Diaphragmatic Hernia:

- >35 for 30 min.
- >30 for 2 hours
- >25 for 4 hours
- OR need for MAP>15, Jet PIP or HFO AMP>45, or conventional PIP>30

_____ **Barotrauma:**

- Ventilator settings exceeding: PIP>35, MAP>20, Jet PIP or HFO AMP>45.
- Hypercarbia with pH <7.10 for 4 hours on: PIP>35, Jet PIP or HFO AMP >45.
- Severe air leak unresponsive to other therapies.

_____ **Acute Deterioration:**

- PaO₂ <30 at a single time point or preductal SaO₂ <70%

Cardiovascular/Oxygen Delivery Criteria-

_____ **Plasma lactate:** >45 mg/dl (5 mM/L) and not improving, despite volume expansion and inotropic support.

_____ **Inotropic equivalent (IE):** >50 for 1 hour or >45 for 8 hours.

IE=DOPamine (mcg/kg/min) + DOBUTamine (mcg/kg/min) + EPIneprine (100Xs mcg/kg/min) + NORepineprine (100Xs mcg/kg/min) + ISOproterenol (100Xs mcg/kg/min) + MILrinone (15Xs mcg/kg/min).

_____ **Mixed Venous Sat** of <55% for 60 min. (<60% for CDH patients)

_____ **Rapidly deteriorating or severe ventricular dysfunction**

_____ **Intractable arrhythmia with poor perfusion**

_____ **Cardiac Arrest**

Exclusions & References: see General Exclusions to Neonatal ECMO.

Provider Signature: _____ MD Date: _____ Time: _____



Exclusions to Neonatal ECMO

1. Gestational age <34 weeks
2. Birth weight or current dry weight <1700 grams
3. Serious ongoing hemorrhage
4. Coagulopathy that is unlikely to resolve with transfusion therapy (i.e. severe liver failure).
5. Recent (<3 days) intracranial hemorrhage > Grade I germinal matrix hemorrhage
6. Irreversible lung disease, or high pressure mechanical ventilation >14 days
7. Cardiac lesion that cannot be corrected or palliated
8. Lethal condition incompatible with long life including trisomy 13 and 18
9. Evidence of serious brain injury or asphyxia – may be difficult to define but some experts recommend using:
 - a. Severe neurological syndrome persisting after respiratory and metabolic resuscitation (i.e. stuporous, flaccid, and absent primitive reflexes)
 - b. Plasma lactate >225 mg/dL (25 mM/L). Note: >225 mg/dl is highly predictive of death, whereas >135 mg/dl (15 mM/L) is highly predictive of adverse neurologic outcome.
 - c. Base deficit >30 on 2 ABGs
10. Disseminated herpes
11. Renal agenesis or severe irreversible renal failure

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