Clinical Alignment Summary: Veno-venous Extracorporeal Membrane Oxygenation (ECMO)

The purpose of this summary is to display how clinical guidance from different organizations is aligned in this topic area.

**INDICATIONS**
- Screen intubated patients daily for ECMO eligibility (1,3)
- Presence of any of the following despite maximal conventional therapy:
  - PaO2:FIO2 60-80 (1) <80 (3)
  - Respiratory instability with prolonged desaturations (1)
  - Lung compliance ≤30 (1)
  - pH <7.25 with PaCO2 >60 (3)
  - Elevated airway pressures (3)
- *Maximal conventional therapy (3)*:
  - Low tidal volume ventilation
  - PEEP optimization
  - Prone positioning
  - Consideration of inhaled vasodilators
  - Consideration of neuromuscular blockade

**CONTRAINDICATIONS for COVID-19 Veno-venous ECMO**
- Significant acute organ failure (other than cardiopulmonary or renal) (1)
- Severe chronic cardiac, pulmonary, renal or hepatic disease (1)
- Unknown neurological status (1)
- Active malignancy (1)
- ANC < 1000 (1)
- BMI > 40 (1)
- Age > 60 (1,3)
- Prolonged mechanical ventilation >7 days (3)
- Significant chronic renal, cardiac, pulmonary, or hepatic disease (3)
- Immunocompromise (1,3)
- Other significant chronic condition, including
  - dementia (3) or unknown neurologic status (1)
  - disseminated malignancy (1,3), neutropenia, ANC < 1000 (1)
  - uncontrolled diabetes with chronic end-organ dysfunction (3)
  - severe deconditioning or protein calorie malnutrition (3)
  - severe peripheral vascular disease (3)
  - other pre-existing life-limiting medical condition (3)
- Refractory shock requiring >0.5 mcg/kg/min norepinephrine or equivalent (3)
- Acute liver injury with synthetic dysfunction (elevated INR) (3)
- Active bleeding and inadequate hemostasis, contraindications to anticoagulation, or inability to accept blood products (3)
- Active intracranial hemorrhage, cerebral vascular accident, poor neurologic exam (3)
- Ongoing CPR (1,3)/recent cardiac arrest
- Secondary Infections with MDR organisms (1)
- Obesity, BMI >35 (1,3)
- No DPOA or legal medical decision maker available (3)

**SOURCE DOCUMENTS**
1. Massachusetts General Hospital COVID-19 ECMO Protocol, Updated 5/14/20
2. NIH COVID-19 Treatment Guidelines: Extracorporeal Membrane Oxygenation, Updated 4/21/20