

# Extracorporeal Membrane Oxygenation (ECMO) during COVID 19 pandemic:

Offering the service will depend on:

ICU Staffing capabilities <50%	ICU Staffing capabilities 50-75%	ICU Staffing capabilities >75%
Equipment availability <50%	Equipment availability 50-75%	Equipment availability >75%
Intensive care units' beds' situation <50%	Intensive care units' beds' situation 50-75%	Intensive care units' beds' situation >75%

Available for in-house patients and transfers from the MedStar system	
<p><b>Indications for VV ECMO:</b> Severe acute respiratory distress syndrome that fails traditional management of ARDS (Low tidal volume, optimum PEEP, prone positioning, inhaled epoprostenol) as evident by:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> P/F ratio of less than 50 for 3 hours</li> <li><input type="checkbox"/> P/F ratio of less than 80 for 6 hours</li> <li><input type="checkbox"/> P/F ratio of less than 100</li> </ul> <p><b>Indications for VA ECMO:</b> Cardiogenic shock as indicated by any dose of vasopressors or inotropes and documents acute decline in LV function by echocardiogram and pulmonary artery catheter</p>	<p><b>Contraindications for all forms of ECMO:</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Advanced directives or power of attorney declining ECMO</li> <li><input type="checkbox"/> Poor underlying functional status</li> <li><input type="checkbox"/> Ongoing cardiac arrest</li> <li><input type="checkbox"/> Severe acute brain injury or possible anoxic brain injury</li> <li><input type="checkbox"/> Active malignancy associated with unfavorable outcome</li> <li><input type="checkbox"/> Contraindication to systemic anticoagulation or unacceptance for blood transfusion (e.g., Jehovah witness)</li> <li><input type="checkbox"/> Difficult vascular access (infected site, peripheral vascular disease)</li> <li><input type="checkbox"/> Irreversible forms of RV failure without an exit strategy</li> <li><input type="checkbox"/> Irreversible organ failure including multi-organ system failure, kidney, or liver failure</li> <li><input type="checkbox"/> A non-survivable condition or multi-organ system failure (MOSF) as evident by SAP II &gt; 90</li> <li><input type="checkbox"/> Prolonged hypoperfusion as suggested by serum lactate &gt;10 or elevated liver enzymes in the thousands</li> <li><input type="checkbox"/> Severe coagulopathy as indicated by thrombocytopenia &lt;50, INR &gt; 2, fibrinogen &lt;150</li> <li><input type="checkbox"/> Age more than 70 years old</li> </ul>

	<p><b>Contraindications for VV ECMO:</b></p> <ul style="list-style-type: none"> <li>❑ Previous mechanical ventilation with high peak air-way pressure or high FiO<sub>2</sub> for more than seven days</li> <li>❑ Presence of additional severe chronic/end-stage organ failures (cirrhosis, acute hepatic failure, severe pulmonary disease)</li> </ul>
<p><b>Partially available for in-house patients only and NO transfers accepted</b></p>	
	<p>The above contraindications apply but with <b>age more than 60 years old</b></p>
<p><b>No ECMO service</b></p>	

Please consider

- ECMO is labor-intensive and can utilize the ICU staff used for two mechanical ventilated patients
- The family should consent that this is a time-limited intervention, and it is up to the medical team to stop / withdrawal ECMO
- Palliative care medicine/ethics should be consulted on all ECMO patients