

Extracorporeal Membrane Oxygenation (ECMO) Consultation Guidelines

The criteria are intended as guidelines for ADULTS. Providers are to rely on their clinical judgement for each individual patient encounter.

RESPIRATORY

Consider ECMO

for the following Diagnostic Indications

- Acute Respiratory Distress Syndrome (ARDS)
- Hypercapnic respiratory failure
- Bridge to lung transplantation
- Primary graft dysfunction after lung transplantation
- Status asthmaticus

DO NOT Consider ECMO

for the following Diagnostic Indications

- Absolute
- Disseminated malignancy
 - Known severe brain injury
 - Prolonged cardiopulmonary resuscitation (CPR) without adequate tissue perfusion
 - Severe chronic organ dysfunction (emphysema, cirrhosis)
 - Severe chronic pulmonary hypertension
 - Non-recoverable advanced comorbidity such as central nervous system (CNS) damage or terminal malignancy
- Relative
- Where anticoagulation precluded, advanced age, obesity
 - End-stage renal disease

Recommended Interventions for Patients with ARDS

Initial Assessment and Management

1. Diagnose and treat underlying ARDS | 2. Measure patient height and calculate predicted body weight
3. Standard lung-protective ventilation strategy | 4. Diuresis or resuscitation as appropriate

MILD

Criteria	Recommended Intervention
<ul style="list-style-type: none"> <input type="checkbox"/> PaO₂/FiO₂ Ratio 200 - 300 mm Hg <input type="checkbox"/> pH > 7.20 <input type="checkbox"/> PEEP ≥ 5cm H₂O 	<p>Noninvasive ventilation</p> <p><u>Recommended:</u></p> <ul style="list-style-type: none"> • Lung Protective Strategy: Low Tidal Volume Ventilation <p><u>Consider:</u></p> <ul style="list-style-type: none"> • Consultation for Level 3 ICUs • Continue current strategy and deescalate interventions when possible after patient improves

MODERATE

Criteria	Recommended Intervention
<ul style="list-style-type: none"> <input type="checkbox"/> PaO₂/FiO₂ Ratio 150 - 200 mm Hg <input type="checkbox"/> pH < 7.20 <input type="checkbox"/> PEEP > 5cm H₂O 	<p>Controlled Mechanical ventilation</p> <p><u>Recommended:</u></p> <ul style="list-style-type: none"> • Lung Protective Strategy: Low Tidal Volume Ventilation <p><u>Consider:</u></p> <ul style="list-style-type: none"> • Check esophageal pressure to help guide ventilator management • Recruitment maneuvers* • High PEEP Strategy* <p><small>* Consider with caution</small></p>

SEVERE

Criteria	Recommended Intervention
<ul style="list-style-type: none"> <input type="checkbox"/> PaO₂/FiO₂ Ratio < 150 mm Hg <input type="checkbox"/> Uncompensated hypercapnia with pH < 7.20 <input type="checkbox"/> PEEP > 5cm H₂O 	<p>Controlled Mechanical ventilation</p> <p><u>Strongly Recommended:</u></p> <ul style="list-style-type: none"> • Prone positioning (unless contraindicated) <p><u>Recommended:</u></p> <ul style="list-style-type: none"> • Lung Protective Strategy: Low Tidal Volume Ventilation • Neuromuscular blocking agent • High PEEP Strategy <p><u>Consider:</u></p> <ul style="list-style-type: none"> • Inhaled pulmonary vasodilators • Recruitment maneuvers
<ul style="list-style-type: none"> <input type="checkbox"/> If PaO₂/FiO₂ Ratio ≤ 80 mm Hg: <ul style="list-style-type: none"> • < 80 mm Hg for > 6 hours • < 50 mm Hg for > 3 hours • PaCO₂ ≥ 60 mm Hg for > 6 h** <p><small>** With respiratory rate increased to 35 breaths per minute and mechanical ventilation settings adjusted to keep a plateau airway pressure of ≤ 32 cm of water.</small></p>	<p>CONSIDER REFFERAL FOR POTENTIAL ECMO</p> <p><u>Patient Consideration:</u></p> <ul style="list-style-type: none"> • Mechanically ventilated < 7 days • BMI ≤ 40kg/m² or Weight ≤ 125 kg • Age: 18-65

ALL ADULT CONSULTATIONS FOR ECMO SHOULD BE COORDINATED THROUGH CRITICAL ONTARIO: 1-800-668-4357

CARDIAC

Consider ECMO

for the following Diagnostic Indications

- Myocardial infarction-associated cardiogenic shock
- Fulminant myocarditis
- End stage pulmonary hypertension
- Extracorporeal cardiopulmonary resuscitation
- Post-cardiotomy cardiogenic shock
- Bridge to ventricular assist device (VAD) implantation or heart transplantation
- Primary graft failure after heart transplantation
- Prevention of acute right ventricular failure after left ventricular assist device (LVAD) implantation

DO NOT Consider ECMO

for the following Diagnostic Indications

- Absolute:
- End stage heart failure and not a candidate for transplant or destination therapy of VAD support
 - Disseminated malignancy
 - Known severe brain injury
 - Unwitnessed cardiac arrest
 - Prolonged CPR without adequate tissue perfusion
 - Unrepaired aortic dissection
 - Severe aortic regurgitation
 - Severe chronic organ dysfunction (emphysema, cirrhosis)
 - Peripheral vascular disease
 - Non-recoverable advanced comorbidity such as CNS damage or terminal malignancy
- Relative:
- Where anticoagulation precluded, advanced age, obesity
 - End-stage renal disease

For Paediatric and Neonate patients, please consult your appropriate Paediatric ECMO Centre OR call CritiCall Ontario.