

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	DO NOT Consider ECMO for the following Diagnostic Indications
<ul style="list-style-type: none"> <input type="checkbox"/> Acute Respiratory Distress Syndrome (ARDS) <input type="checkbox"/> Hypercapnic respiratory failure <input type="checkbox"/> Bridge to lung transplantation <input type="checkbox"/> Primary graft dysfunction after lung transplantation <input type="checkbox"/> Status asthmaticus 	<p><u>Absolute</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Disseminated malignancy <input type="checkbox"/> Known severe brain injury <input type="checkbox"/> Prolonged cardiopulmonary resuscitation (CPR) without adequate tissue perfusion <input type="checkbox"/> Severe chronic organ dysfunction (emphysema, cirrhosis) <input type="checkbox"/> Severe chronic pulmonary hypertension <input type="checkbox"/> Non-recoverable advanced comorbidity such as central nervous system (CNS) damage or terminal malignancy <p><u>Relative</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Where anticoagulation precluded, advanced age, obesity <input type="checkbox"/> 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 style="font-size: small;">* Consider with caution</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 style="font-size: x-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.</p>	<p>CONSIDER REFERRAL 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	DO NOT Consider ECMO for the following Diagnostic Indications
<ul style="list-style-type: none"> <input type="checkbox"/> Myocardial infarction-associated cardiogenic shock <input type="checkbox"/> Fulminant myocarditis <input type="checkbox"/> End stage pulmonary hypertension <input type="checkbox"/> Extracorporeal cardiopulmonary resuscitation <input type="checkbox"/> Post-cardiotomy cardiogenic shock <input type="checkbox"/> Bridge to ventricular assist device (VAD) implantation or heart transplantation <input type="checkbox"/> Primary graft failure after heart transplantation <input type="checkbox"/> Prevention of acute right ventricular failure after left ventricular assist device (LVAD) implantation 	<p><u>Absolute:</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> End stage heart failure and not a candidate for transplant or destination therapy of VAD support <input type="checkbox"/> Disseminated malignancy <input type="checkbox"/> Known severe brain injury <input type="checkbox"/> Unwitnessed cardiac arrest <input type="checkbox"/> Prolonged CPR without adequate tissue perfusion <input type="checkbox"/> Unrepaired aortic dissection <input type="checkbox"/> Severe aortic regurgitation <input type="checkbox"/> Severe chronic organ dysfunction (emphysema, cirrhosis) <input type="checkbox"/> Peripheral vascular disease <input type="checkbox"/> Non-recoverable advanced comorbidity such as CNS damage or terminal malignancy <p><u>Relative:</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Where anticoagulation precluded, advanced age, obesity <input type="checkbox"/> End-stage renal disease

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