Guide for Adult Extracorporeal Life Support (ECLS) and ECMO Patient Selection during COVID-19 Surge

Content Applies To: Rochester
Scope: Physicians, Nurse Practitioners and Physician Assistants, Perfusionists, ECMO Primers and ECMO Specialists

General ECMO Absolute Contraindications
- Pre-existent Terminal diagnosis (life expectancy <6 weeks)
- End-stage (irreversible) Heart/Lung disease AND not likely a transplant candidate or VAD candidate
- Catastrophic (non-recoverable) CNS injury

Comments
- These patients are highly unlikely to benefit from ECMO

Respiratory ECMO Exclusion Criteria
Absolute Contraindications:
- High pressure mechanical ventilation for ≥7 days prior to initiation of ECMO
- Baseline Frailty
- Severe chronic lung disease

Cardiac ECMO Exclusion Criteria
(If refractory cardiac arrest, see ECPR)
Strong Relative Contraindications:
- Relative contraindication to therapeutic systemic anticoagulation*
- End stage renal or liver disease
- Baseline Frailty

ECPR
Absolute Contraindications:
- Unwitnessed Arrest
- Initial rhythm was Asystole
- No flow time ≥5 min
- Estimated low flow (CPR) time ≥60 min before initiation of ECMO flow
- End stage renal or liver disease

*Only proceed if no absolute contraindications are present

*Relative contraindications to therapeutic systemic anticoagulation include: intracranial hemorrhage, ischemic stroke within 2 weeks, large untreated esophageal varices, intracranial malignancy, acute trauma with active hemorrhage.
## Respiratory ECMO Patient Selection Criteria

Relative Contraindications:
- Contraindications to therapeutic systemic anticoagulation*
- Refractory vasodilatory shock
- Multiorgan failure

Indications:
- Acute, persistent hypoxia and/or severe hypercapnia despite following Refractory Hypoxemia Protocol
- Primary graft dysfunction

## Cardiac ECMO Patient Selection Criteria

Relative Contraindications:
- Severe peripheral arterial disease
- Severe metabolic acidosis (lactate >12) for >12h
- Aortic dissection
- Aortic regurgitation
- Multiorgan failure

Indications:
- Cardiogenic shock which is expected to be reversible
- VT Ablations
- High risk PCI
- Primary graft dysfunction
- See supplemental material for list of conditions most suitable for ECMO

MCSD= mechanical circulatory support device

## ECPR Patient Selection Criteria

**Strong** Relative Contraindications:
- Pre-EMS arrest
- ETCO$_2$ ≤10 mmHg during CPR
- Age >65 years
- Cause of arrest was hypoxia or hemorrhage
- Severe peripheral arterial disease
- Relative contraindication to therapeutic systemic anticoagulation*
- BMI >40
- Lactate > 17
- Known/Suspected COVID-19 with significant comorbidities

Indications:
- Refractory VF/VT
- Hypothermia
- Suspected massive pulmonary embolism

*Relative contraindications to therapeutic systemic anticoagulation include: intracranial hemorrhage, ischemic stroke within 2 weeks, large untreated esophageal varices, intracranial malignancy, acute trauma with active hemorrhage.