ECMO GOALS
- Maintain adequate tissue oxygenation to allow recovery from potentially reversible cardiopulmonary failure
- Adjust ventilator settings with very low tidal volumes, allowing for lung rest, minimizing further ventilator-induced lung injury
- ECMO is a bridge, not a destination

HOW DOES IT WORK?
- Veno-Arterial (VA)
  - Supports heart and lungs (complete cardiopulmonary support)
  - Blood drains – venous system
  - Blood returns – arterial system
- Veno-Venous (VV)
  - Supports lungs (pulmonary support only)
  - Blood drains – venous system
  - Blood returns – venous system
- E-CPR
  - Rapid deployment of VA-ECMO when CPR is unsuccessful in achieving sustained return of spontaneous circulation

PARAMETERS
- Flow (mL/kg/min)
  - Dial in RPMs and flow depends on resistance in patient & circuit
  - Generally set between 4-6 L/min (100-150 mL/kg/min in children)
  - On VA-ECMO – flow supports cardiac output
  - On VV-ECMO – flow supports oxygenation
- Sweep (L/min)
  - Sweep gas flow determines PCO₂ clearance (ie, ventilation) for both VV- & VA-ECMO

OXYGEN DELIVERY
- From both lungs & oxygenator
- Assess perfusion (eg, NIRS, SVO₂, lactate)

ANTICOAGULATION
- To reduce risk of thromboembolism in circuit
- Done per institutional protocol

ELECTROLYTE REPLACEMENT
- Particularly Ca⁺ due to citrate binding

MECHANICAL ISSUES
- Circuit thrombus or hemolysis
- Differences between pre- and post-pressures across oxygenator can provide early warning about potential thrombus
- Oxygenator failure or thrombus
- Pump failure or air emboli rare

POTENTIAL COMPLICATIONS

ISCHEMIA & END ORGAN FAILURE
- Stroke or limb ischemia
- Renal injury, lung injury

DELIRIUM & MUSCLE WEAKNESS
- From prolonged sedation & immobilization
- Early mobilization & rehab are crucial

BLEEDING
- Cerebral hemorrhage or insertion site bleeding
- Common complication (30%-40%)

INFECTION & SYSTEMIC INFLAMMATORY SYNDROME
- May not have fever due to circuit temp regulation