



Extracorporeal Life Support Organization (ELSO)

Guidelines for ECPR Cases

Introduction

This ECPR guideline is a supplement to ELSO's "General Guidelines for all ECLS Cases" which describes prolonged extracorporeal life support (ECLS, ECMO). This supplement addresses specific discussion for ECPR cases.

This guideline describes prolonged extracorporeal life support (ECLS, ECMO). This guideline describes useful and safe practice, but these are not necessarily consensus recommendations. These guidelines are not intended as a standard of care, and are revised at regular intervals as new information, devices, medications, and techniques become available.

The background, rationale, and references for these guidelines are found in "ECMO: Extracorporeal Cardiopulmonary Support in Intensive Care (The Red Book)" published by ELSO. These guidelines address technology and patient management during ECLS. Equally important issues such as personnel, training, credentialing, resources, follow up, reporting, and quality assurance are addressed in other ELSO documents or are center-specific.

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ECPR Cases

I. Patient Condition:

A. Indications

AHA guidelines for CPR recommends consideration of ECMO to aid cardiopulmonary resuscitation in patients who have an easily reversible event, have had excellent CPR.

Contraindications: All contraindications to ECMO use (such as Gestational age < 34 weeks) should apply to ECPR patients.

DNR orders

Futility: Unsuccessful CPR (no return of spontaneous circulation) for 5-30 minutes. ECPR ma be indicated on prolonged CPR if good perfusion and metabolic support is documented.

II Vascular Access

A. Cannulation Site

Thoracic (for cardiac patients with recent sternotomy) or Peripheral vessel should be at discretion of the surgical team. Percutaneous cannulation of vessels for ECPR is only recommended if access to the vessels exists prior to CPR, and should only be performed providers who are skilled with vascular access. Percutaneous cannulation can be performed in patients >15 kgs. Placement in specialized areas such the cardiac catheterization (or interventional radiology) laboratory where the placement of these catheters can be directly observed is ideal but non mandatory.

III: Management during ECLS

A. Initiation of ECMO Flow: Once cannulation is achieved ECMO circuit management should continue as for all other ECMO uses. Because ECPR required rapid cannulation and ECMO access, correct connection of the arterial and venous cannulae to the corresponding limbs should be checked using a “Time-Out’ system prior to ECMO flow.

B. Patient Management on ECMO: CNS protection during and after CPR is critical. Therapies known to improve survival and CNS outcomes after CPR such as:

1. Total body hypothermia should be included. Cooling should be achieved by applying ice to the head during CPR and for 48 – 72 hours after ECMO cannulation.
2. Neurological exams should be performed following discontinuation of neuromuscular blocking agents after hemodynamic stability is achieved in collaboration with the neurologist.

C. Management of Left Atrial Hypertension: Evaluation for LA hypertension should be undertaken soon after the patient is placed on ECMO and LA decompression should be considered if left atrial pressure is thought to be elevated.

D. Diagnosis Procedures including: ECHO or cardiac catheterization or other imaging or laboratory test should be undertaken when the patient if has stable ECMO flows and perfusion, to evaluate the cause of cardiac arrest if once cannot be determined immediately

IV. Weaning

Weaning of ECMO should be undertaken when cardio-respiratory recovery has occurred and per institution's ECMO guidelines. . Long-term follow-up programs based in Neurology and Developmental pediatrics should be established.