

# eCPR / ECMO Guideline

**Designation of Condition:** Extracorporeal Cardiopulmonary Resuscitation (eCPR) is a type of Extracorporeal Membrane Oxygenation (ECMO) that bypasses the function of the heart and lungs to provide hemodynamic support to a patient with a potentially reversible cause of cardiac arrest (STEMI, PE, hypothermia). This is a time-sensitive process with strict inclusion and exclusion criteria, and is most beneficial for otherwise healthy patients who experience cardiac arrest with a very short downtime.

## INCLUSION CRITERIA:

Must meet all of the following:

- Adults 18-75 years
- Bystander CPR
- EtCO<sub>2</sub> > 10mmHg
- Initial rhythm **anything but asystole**
- Current rhythm VF / VT or PEA with cardiac activity on ultrasound

## EXCLUSION CRITERIA:

Cannot have any of the following:

- Suspected significant co-morbidities (e.g. liver or kidney failure, advanced cancer, prior stroke, bleeding disorders, sepsis).
- Likely respiratory arrest leading to cardiac arrest (e.g. Overdose, Trauma, Strangulation/ Hanging).

## ECMO-1 Activation

Mon-Fri  
8am-5pm

1. **Dispatch activation** based on prearrival information.

2. **Provider activation** if **total patient downtime** (time from patient collapse to time of ECMO-1 dispatch) is **less than 15 minutes**.

## Patient Contact

## Assess Patient Eligibility

Goal:  
<5 min from patient contact

## Initiate Resuscitation

**B**

**Initiate Resuscitation**  
Pit Crew CPR  
Attach defibrillator, shock if indicated.  
Place nonrebreather mask and deliver oxygen.  
Place mechanical CPR device (e.g. Lucas).  
Place **Extraglottic Device (EGD)** (e.g. LMA/King LTS-D) & obtain EtCO<sub>2</sub>.

**I**

Place IV/IO. Administer first dose of epinephrine.

**P**

Attach cardiac monitor. Note initial rhythm.  
Continue ACLS per cardiac arrest guideline.

Does patient meet **all** ECMO inclusion / exclusion criteria?

**Yes**

**No**

**\*\*Not an ECMO candidate\*\***  
**Cancel ECMO-1 Response**  
**Continue Conventional Resuscitation**

Is ECMO-1 available?

**Yes**

**No**

Can patient **arrive** at UNMH or Pres DT within **30 min of collapse**?

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**Yes**

**No**

Coordinate with ECMO-1 to estimate whether an ECMO Alert or ECMO-1 Response will be faster.

**Yes**

## ECMO-1 Response

Prepare for Field Cannulation

## ECMO Alert

Expedite Transport to Hospital

Contact ECMO-1 and provide patient downtime to confirm eligibility.

Preferentially place IV/IO in humerus to keep the lower extremities unobstructed for the ECMO cannulator.

Prepare to move patient out to the ECMO-1 unit.

Utilize mechanical CPR to continue compressions while transferring patient to the stretcher.

Load the patient backwards onto the stretcher.

Continue ACLS per guidelines.

Issue an **"ECMO ALERT"** via AAS base ASAP.

Prioritize short scene time.

Utilize mechanical CPR to continue compressions during patient movement.

Continue ACLS per guidelines.

**NOTE:** The duration of low-flow time (time before eCPR is started) impacts patient outcomes. Every effort should be made to **safely** expedite the care or transport of a patient who is an ECMO candidate.

**If patient has ROSC and ECMO-1 is en route, do not cancel the response.**

Contact ECMO-1 to update status and coordinate response.

The incidence of re-arrest after ROSC is estimated at 40%, and the patient may still be an ECMO candidate.