

Pittsburgh EMS ECMO Protocol for Refractory Cardiac Arrest

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Pittsburgh EMS: ECMO Candidate Checklist



Initiate maximal resuscitative efforts on scene for 10 minutes, if refractory arrest and you believe the patient to be an ECMO Candidate, run the checklist with the Facility MD at 10 minutes

Criteria	Yes?
Witnessed Cardiac Arrest	
Rapid Bystander CPR	
Initial shockable rhythm or PEA > 20/minute <ul style="list-style-type: none"> Includes shock by AED prior to ALS arrival 	
Age 18 - 60	
Good functional status (living independently – not a nursing home or long term care facility resident)	
No prior neurocognitive dysfunction	
No signs of end stage disease <ul style="list-style-type: none"> COPD Renal failure with dialysis Liver failure Terminal cancer 	
Not morbidly obese (can fit LUCAS Device on)	
EtCO2 > 10 mm/hg with CPR	
Estimate arrival at ECMO capable ED within 30 minutes of collapse	
Run checklist with Facility MD	
Apply LUCAS Device ASAP	
Start packaging/moving patient in 10 minutes	
Goal: < 20 minutes on scene, arrive ED in 30	

Operational Approach

- Initiate High Performance CPR and maximum resuscitative ACLS efforts
- If no early response (< 10 minutes) to resuscitative efforts start considering ECMO
 - Witnessed arrest
 - Immediate bystander CPR
 - Initial rhythm VF or PEA
- At ten (10) minutes start running the ECMO Checklist with the Faculty Command MD and prepping for early patient move
 - Apply LUCAS device

Criteria	Yes?
Witnessed Cardiac Arrest	
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Initial shockable rhythm or PEA > 20/minute <ul data-bbox="941 829 985 1759" style="list-style-type: none">• Includes shock by AED prior to ALS arrival	

Age 18 - 60	
Good functional status (living independently – not a nursing home or long term care facility resident)	
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Apply LUCAS Device ASAP	
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Start packaging/moving patient in 10 minutes	
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Goal: < 20 minutes on scene, arrive ED in 30	
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Case Report

- 53 y/o male witnessed collapse on the street
 - Initially “breathing” but becomes apneic
- Bystander CPR initiated
- Fire First Responder Engine arrives
 - CPR continued
 - AED applied with shock x1
- Medic Unit arrives 9 minutes after dispatch
 - VF on the monitor

Case Progression

- High Performance CPR continued
- Defibrillated x4
 - Refractory VF
- IO access obtained
 - Epinephrine
 - Amiodarone
- King Airway Placed
 - EtCO₂ = 28 mm/hg
 - Patent having spontaneous respirations with CPR

Case Progression

- Patient identified as an ECMO candidate at **13 minutes**
- LUCAS Device applied at **17 minutes**
- On scene time **20 minutes**
- ED arrival at **28 minutes**
 - Defibrillated x 10
 - Epinephrine x 5
 - Amiodarone x2: 300mg/150 mg
 - Etomidate 30 mg

Hospital Course

- Complicated ECMO Placement
 - Femoral artery lacerated
- Patient goes to cardiac catheterization lab
 - LAD Occlusion – stent placement
- ROSC after LAD opened
- To OR for Femoral artery repair

Hospital Course

- Patient wakes up the next morning
 - Weaned from ECMO
- Extubated on Day 6
- Left ICU on Day 9
- Discharged home on Day 15

Questions ?

