

UK Adult ECMO Emergency Algorithm

**ECMO patient unresponsive and/or not breathing normally AND
Confirmed MAP <30mmHg**
(+/- Sudden unexpected drop in end tidal CO₂, no ECMO flow)

**Dial:
State:**

**2222
"Cardiac arrest" & Ward/Area**

Start CPR

ECMO Team

Expose patient and inspect circuit
Assess for kinks in tubing or cannula movement & adjust position of patient/tubing

Patient Team

Standard ALS - EXCEPT adrenaline (expert input only)
Assess for 4H & 4Ts:
Hypoxia, Hypovolaemia, Hypo/hyperkalaemia, Hypothermia
Thrombosis, Tamponade, Tension, Toxin

Assess ECMO blood flow

(Check flow sensor position & orientation + check interventions)

No Flow

1. Clamp return line and check for signs of:
Air embolus
Motor failure
Accidental decannulation
Circuit rupture
If found use specific SOP
2. Reset any pump interventions

Low Flow (<2L/min)

1. Reduce RPM until suction resolved, then gradually increase flow as tolerated
2. Give fluid bolus (eg 2.5ml/kg)
3. If bleeding consider reversing anticoagulation and major haemorrhage protocol

Normal Flow (>2L/min)

Check gas line connected to oxygenator and confirm gas flow present

Pause CPR - Is there adequate circulation?

Assess MAP, Flow, SpO₂

MAP >55, Flow >2L, SpO₂ >88%

Complete A to E assessment

MAP 30-55, Flow <2L, SpO₂ <88%

1. Assess if need for circuit change: rising membrane resistance, falling post-oxy PaO₂
2. Echo to assess cannula position & reversible pathology

If Impella present increase P setting & follow Impella algorithm
If VV ECMO consider escalation to VVA ECMO
If VA ECMO increase flows to highest tolerated

MAP <30, No Flow, No SpO₂

Restart CPR
If <10d post-sternotomy consider chest re-opening