
Out-of-Hospital Cardiac Arrest: Can Outcomes Improve?

ECPR

Patients who experience out-of-hospital cardiac arrest (OHCA) rarely survive. Only five percent survive, and even fewer (1-3%) survive with no or minimal neurological sequelae. Experts were on hand at the European Society of Cardiology Congress in Rome this week to sum up current best practice.

Alain Combes, Professor of Intensive Care Medicine, University of Paris Pierre et Marie Curie, Paris, France summarised the conditions for selecting patients to receive ECPR:

- a cardiac arrest that was witnessed
- no-flow < 5 minutes
- received bystander cardiopulmonary resuscitation (CPR)
- age less than 50, or perhaps 60?
- cardiac arrest of presumed cardiac origin and initial shockable rhythm
- ensure efficient CPR
- EtCO₂ > 10mmHg under CPR

Refractory cardiac arrest patients can benefit from ECPR, but only if ECMO runs within 60 minutes of the patient collapsing. It requires the high commitment of the ECMO rescue team, and organisation of an efficient -n-hospital rescue team, Combes emphasised.

See Also: [Extracorporeal Membrane Oxygenation for Immunocompromised Patients with ARDS](#)

Should ECPR be performed for out-of-hospital cardiac arrest? The decision should be made after only 10 minutes of refractory CPR, advised Combes. "Scoop and Run" the patient to the nearest ECMO centre. ECPR is not indicated if time from collapse to receiving ECMO would be more than 60 minutes.

Christian Spaulding, Professor of Cardiology, Paris Descartes University, France, noted that there is limited data and low quality evidence on cardiac support in shock after out-of-hospital cardiac arrest (OHCA). Shock is multifactorial and appears early before the neurological damages can be assessed. Patients in whom cardiac support may be used should have the following indications:

- a high probability of recovery: short no-flow and low-flow duration, young age, ventricular tachycardia/ ventricular fibrillation (VT/VF)
- shock and arrest due to a cause that can be cured, such as acute coronary occlusion treated successfully by percutaneous cardiac intervention (PCI)
- neurological and haemodynamic evaluation after 48-72 hours should be conducted

Coronary angiogram should be considered at admission if there is ST segment elevation, and at less than 2 hours after admission if there is a cardiac cause of arrest, he said.

Francesco Romeo, Professor of Cardiology, Tor Vergata University of Rome said that ECPR should be considered for refractory CA and post-arrest shock, by specialised teams with pre-defined protocols and in patients with short duration of no and low flow, of young age, with VT/VF. The cardiologist should be involved in the survival chain as team leaders, he emphasised. He advised that immediate coronary angiography and PCI should be performed, as coronary artery disease is the main cause of OHCA. However, patients with evident non-cardiac causes and with very long resuscitation time or no bystander CPR should not go to the cath lab, he advised.

Expert opinion differs on the feasibility of pre-hospital ECMO to improve outcomes. A clinical trial in France will compare pre-hospital and in-hospital ECMO ([A Comparative Study Between a Pre-hospital and an In-hospital Circulatory Support Strategy \(ECMO\) in Refractory Cardiac Arrest \(ACPAR2\)](#)).

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