Indications for VA ECLS

VA ECLS

Veno-arterial ECLS is used for short-term support in patients with severe heart (or heart and lung) failure where volume therapy, vasoactive medication and intra-aortic balloon counter-pulsation have failed to provide adequate systemic perfusion. The decision to deploy VA ECLS is often made urgently in patients with acute circulatory shock not responding to conventional support therapies or not weaning from intra-operative cardiopulmonary bypass. There is an emerging role as a resuscitative tool in refractory cardiac arrest in highly selected cases.

Indices of tissue hypoperfusion include systemic hypotension, mental status changes, oliguria, core - peripheral temperature gradient, skin mottling, myocardial ischaemia and serum lactate concentration. In patients with satisfactory arterial oxygenation and haemoglobin concentration, inadequate systemic perfusion can be inferred by mixed venous oxygen saturation less than 70%.

Deoxygenated blood is drained from the inferior or superior vena cava and oxygenated blood is returned to the femoral artery (peripheral VA ECLS) or ascending aorta (central VA ECLS).

Peripheral VA ECLS can be deployed rapidly (femoral artery and vein cannulation) and is appropriate when native lung function is satisfactory and sternotomy or cardiac surgery is not applicable. Central VA ECLS is most often employed in patients who fail to wean from conventional intra-operative cardiopulmonary bypass after cardiac surgery. In patients with heart failure and poor native lung function, central VA ECLS is preferred to peripheral VA ECLS to avoid poorly saturated blood from the dysfunctional native lungs being ejected into the proximal aorta, however consideration of *peripheral* Veno-arterial-venous VAV ECLS is also possible.

Pathologic conditions that may require VA ECLS
Post-cardiotomy cardiogenic shock
Refractory cardiac arrest
Ischaemic cardiogenic shock
Bridge to decision regarding suitability for therapy (eg, revascularisation) or for longer term support (e.g. VAD, transplantation)
Acute decompensation of Dilated Cardiomyopathy
Massive pulmonary embolism
Acute fulminant myocarditis
Sepsis with profound cardiac depression Overdose of cardiac depressant medication

A scoring system the SAVE score may be useful to quantify the chances of survival in potential VA ECLS candidates.