



# **ECMO and ECCO<sub>2R</sub> for acute respiratory failure, Current global trend and future perspective**

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Extracorporeal life support (ECLS) can support gas exchange in patients with the acute respiratory distress syndrome (ARDS). During ECLS, venous blood is drained from a central vein via a cannula, pumped through a semipermeable membrane that permits diffusion of oxygen and carbon dioxide, and returned via a cannula to a central vein. Two related forms of ECLS are used. Venovenous extracorporeal membrane oxygenation (ECMO), which uses high blood flow rates to both oxygenate the blood and remove carbon dioxide, may be considered in patients with severe ARDS whose oxygenation or ventilation cannot be maintained adequately with best practice conventional mechanical ventilation and adjunctive therapies, including prone positioning. Extracorporeal carbon dioxide removal (ECCO<sub>2R</sub>) uses lower blood flow rates through smaller cannulae and provides substantial CO<sub>2</sub> elimination (~20–70% of total CO<sub>2</sub> production), albeit with marginal improvement in oxygenation. The rationale for using ECCO<sub>2R</sub> in ARDS is to facilitate lung-protective ventilation by allowing a reduction of tidal volume, respiratory rate, plateau pressure, driving pressure and mechanical power delivered by the mechanical ventilator.