Bridging hope: South Africa's ECMO reporting journey begins

Extracorporeal membrane oxygenation (ECMO) is a specialised life support technology that utilises an external membrane oxygenator and centrifugal pump to maintain oxygenation (venovenous, VV-ECMO) and haemodynamics and oxygenation (venoarterial, VA-ECMO) in patients with severe respiratory or cardiac failure, respectively.[1,2] Owing to its inherent complexity and the intensive personnel and resources it requires, ECMO is typically used as a last resort when other treatments have failed, and should be offered in specialised referral centres with the necessary expertise. Access to ECMO, particularly in the private sector, is expanding, and while the true number of ECMO-capable hospitals in South Africa (SA) is not known, only 5 centres (1 public and 4 private) in Cape Town, Durban, Johannesburg and Pretoria are registered with the international Extracorporeal Life Support Organization (ELSO).[3]

The indications for VV-ECMO encompass most causes of acute respiratory failure and include, but are not limited to, any cause of acute respiratory distress syndrome (ARDS), severe pneumonia, aspiration, reperfusion injury after pulmonary endarterectomy for chronic thromboembolic pulmonary hypertension, and primary graft dysfunction following lung transplantation.[4,5] ECMO as a modality for respiratory support first gained traction during the H1N1 influenza pandemic in 2009 and was also widely employed during the COVID-19 pandemic, with in-hospital mortality of ~40%.[6-8] In contrast, VA-ECMO can provide temporary support in patients with cardiogenic shock, myocarditis, massive pulmonary embolism, failure to wean from cardiopulmonary bypass, or severe heart failure as a bridge to heart transplantation or implantation of a ventricular assist device.[9,10] VA-ECMO generally carries a higher risk of complications due to arterial cannulation and the strict requirement for therapeutic anticoagulation, and may have a lower survival rate because of the additive organ failures (respiratory and cardiac) of the conditions it supports.[11,12]

In this issue of *AJTCCM*, Van Zijl *et al.*[13] retrospectively report the outcomes of all patients supported with VV- and VA-ECMO at Netcare Milpark Hospital, a high-volume centre (defined as >20 cases per year[14]) in Johannesburg, SA, that treated 107 patients over >2 years during a period predating the COVID pandemic. Most patients (73%) had respiratory failure as their indication for ECMO, with 54% of the cohort receiving VV-ECMO. Overall, survival to hospital discharge in the cohort was 44%. As Milpark Hospital is also a centre for thoracic transplantation, 29% of the patients in this study were being supported for primary graft dysfunction after either heart or lung transplantation; when these were excluded, outcomes between patients treated for respiratory and cardiac failure were broadly similar (42% v. 35%, respectively).

While the relatively small sample size and the heterogeneous mix of indications for both modalities make interrogation of the risk factors associated with poor outcome and comparisons of mortality with international studies challenging, the authors are nevertheless to be commended on publishing the first report of ECMO outcomes in the SA context. There is a pressing need for more comprehensive local data on this treatment modality from both the private and public sectors, as outcomes can vary greatly depending on patient selection, timing of ECMO initiation, institutional protocols and access to critical care infrastructure. In addition, further reports on the outcomes of ECMO for severe COVID-associated ARDS from the SA setting are eagerly awaited. The ECMO and broader critical care community need these data to guide efforts to align practices with international best practices, potentially improving outcomes.

The scarcity of data on ECMO outcomes in SA underscores the importance of contribution to international registries (such as the ESLO registry) to better understand ECMO efficacy, challenges and potential usefulness. Such efforts are essential for refining clinical practices, optimising patient selection, and enhancing the overall quality of care. Contributing to registries also allows SA to add to global research efforts and collaborate with experts worldwide. This first report acts as a catalyst, drawing attention to the urgency of the further research and data gathering that is needed to ultimately contribute to better patient outcomes and more informed decision-making among healthcare providers using ECMO in SA.

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