Commentary: Stronger together: Interinstitutional collaboration is a key step to improving patient outcomes after contemporary extracorporeal membrane oxygenation

Weiang Yan, MD, and Rakesh C. Arora, MD, PhD, FRCSC

Timely use of extracorporeal membrane oxygenation (ECMO) in adults is rapidly evolving from a salvage rescue therapy to becoming an expected “standard of care” for patients with severe cardiopulmonary illnesses. Over the past decade, both the number of centers offering ECMO and the volume of ECMO cases has increased exponentially worldwide. However, rapid diffusion of this complex, resource-intensive therapy across centers and indications raises significant concerns regarding maintaining both quality and efficacy. Numerous contemporary studies have already demonstrated decreased patient survival among patients receiving ECMO treated at lower-volume centers. One approach to improve patient outcomes at these centers may be the use of collaborative, interinstitutional quality improvement initiatives.

In this issue of the Journal, Schwartz and colleagues described the results of a multi-institutional, interdisciplinary ECMO quality improvement collaborative among 4 ECMO-capable centers. This included 1 specialty cardiac hospital and 3 general, acute care hospitals, with case volumes ranging from 15 to greater than 120 cases annually. Key deliverables were standardized across all sites, including the patient selection criteria, ECMO credentialing process, electronic order sets, management and weaning protocols, and inter-institutional transfer processes. In particular, the standardized credentialing criteria set out requirements for both formal extracorporeal life support training and minimum biannual case volumes. Finally, and perhaps most important, was the provision for a comprehensive ECMO database to regularly provide system-wide and institutional quality evaluations.

After a 6-month implementation period, the authors noted an impressive 25% improvement in survival to hospital discharge or transfer to other hospitals and a 40% decrease in ECMO-related complications. Numbers of cardiovascular, limb, infectious, and mechanical complications decreased significantly postimplementation. The authors, however, could not find a clear association between the reduction in complications and the improvement in survival. Survival improvements appeared to be largely driven by the veno-arterial ECMO cohort, whereas complication rates decreased most in the veno-venous ECMO and extracorporeal cardiopulmonary resuscitation cohorts. Instead, there is something less tangible driving the improvement in survival. The authors attributed this to improved patient selection during the postimplementation period. Indeed, substantial variations exist in ECMO outcomes depending on the indication for ECMO and patient comorbidities at the time of ECMO initiation. However, detailed baseline characteristics were not reported as a part of this study, making it difficult to identify specific areas of improvement.
for patient selection. Meticulous collection of these variables will be critical in ensuring the ability to clinically translate any future studies.

Nevertheless, the results from this study are important. Collaboration, measurement, and reporting are key steps in improving outcomes after complex, low-volume procedures. This is supported by the notion that outcomes for patients requiring ECMO are generally improved when cared for by an interdisciplinary team.7,8 In this study, the establishment of an interinstitutional and interdisciplinary quality improvement team allowed a system-wide improvement in outcomes over a short period of time. A dynamic feedback system with ongoing iterative changes, standardized auditing process, and postdischarge/transfer follow-up processes may further improve outcomes.9,10 Ultimately, region-wide organization and broad implementation of system-wide quality improvement collaborations will be essential to improve the accessibility, quality, and efficacy of this upcoming “standard of care.”

References

Commentary: The prodigal son returns

Ashish S. Shah, MD

Enthusiasm for extracorporeal membrane oxygenation and life support (ECLS) has grown considerably over the last 2 decades. With great enthusiasm, however, comes great headaches—financial, ethical, and clinical. ECLS case growth is mirrored by hospital charges reaching billions of dollars in the United States alone. Moreover, the mortality attributable to ECLS-supported patients also hovers between 40% and 50% depending on the indication.1 Finally, pandemic respiratory failure, be it influenza or COVID-19,