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.”

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Commentary: The prodigal son returns

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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

Ashish S. Shah, MD

CENTRAL MESSAGE

How should we manage extracorporeal life support outside of the intensive care unit?

of dollars in the United States alone. Moreover, the mortal-

ity 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, puts intense pressure on health care systems, because such

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Disclosures: The author reported no conflicts of interest.

The *Journal* policy requires editors and reviewers to disclose conflicts of interest and to decline handling or reviewing manuscripts for which they may have a conflict of interest. The editors and reviewers of this article have no conflicts of interest.

Received for publication Nov 3, 2020; revisions received Nov 3, 2020; accepted for publication Nov 4, 2020; available ahead of print Nov 19, 2020.

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J Thorac Cardiovasc Surg 2022;163:1376-7

0022-5223/\$36.00

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<https://doi.org/10.1016/j.jtcvs.2020.11.022>

advanced therapies are limited by capital equipment. With all of this, someone in the accounting department was certainly going to notice.

Hospital systems have traditionally struggled to manage and organize ECLS programs. The patients are complicated and diverse, and there is an absence of standards regarding staffing and patient management. Yet the demand grows. In response, hospital systems have finally begun the task of making the wayward child a respectable member of medical ecosystems.

In their article in this issue of the *Journal*, Schwartz and colleagues at Baylor Scott and White Health system describe one such effort.² To improve outcomes and control costs, the 52-hospital group embarked on a system-wide remodeling of ECLS services, centered around shared decision making, education, clinical protocols, and outcomes reporting. Four hospitals formed a hub to support the system. With successful implementation, and despite similar patient acuity, Baylor Scott and White Health experienced significant improvements in outcomes.

The concept of organizing ECLS programs both within hospitals and among hospitals is important and timely. How to do it remains the challenge, and the current study provides a glimpse of key process improvements. First, the group planned a multiphase implementation. Second, they leveraged an Extracorporeal Life Support Organization–based registry for internal reporting and a broad educational program for all providers. Finally, they strengthened centralized steering committees.

The authors report significant improvements in adverse events. For example, limb complications were decreased, likely due to a better surveillance program.

In their model, vascular surgery is consulted on every case, which may be impractical and unnecessary in other programs. What we really need insight into is the care model to use for ECLS patients; is ECLS just dialysis or a ventilator, or should there be specialized ECLS units? Underlying these considerations are labor costs, which the authors do not address. The focus of the study was improving important outcomes, and a systematic approach to ECMO will certainly mediate adverse events. Frankly, every hospital system and geographic region should consider some formalization and collaboration. ECLS is expensive, strains hospital capacity, and can be emotionally exhausting for bedside teams. However, ECLS saves lives and will fundamentally change how we manage critically ill patients. Inotropes and exotic ventilator modes will be replaced by software-driven artificial circulation. But as ECLS grows, institutional risk and pressures also grow. As demonstrated by the current study, these pressures are potentially manageable with a systematic approach. What may be lost with ECLS can now be found.

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