Continuing ECMO with no possible transition to recovery or transplant

Published Online
September 4, 2024
https://doi.org/10.1016/
S2213-2600(24)00260-1

Controversy has emerged around how to treat patients who were placed on extracorporeal membrane oxygenation (ECMO) expecting recovery, organ transplant, or durable device, but who can no longer be transitioned to those goals.[1–3] Many physicians hold that, in such cases, ECMO should be withdrawn, even over the objections of patients or their legally authorised representatives. Many other physicians, however, object to unilateral withdrawal.[4,5]

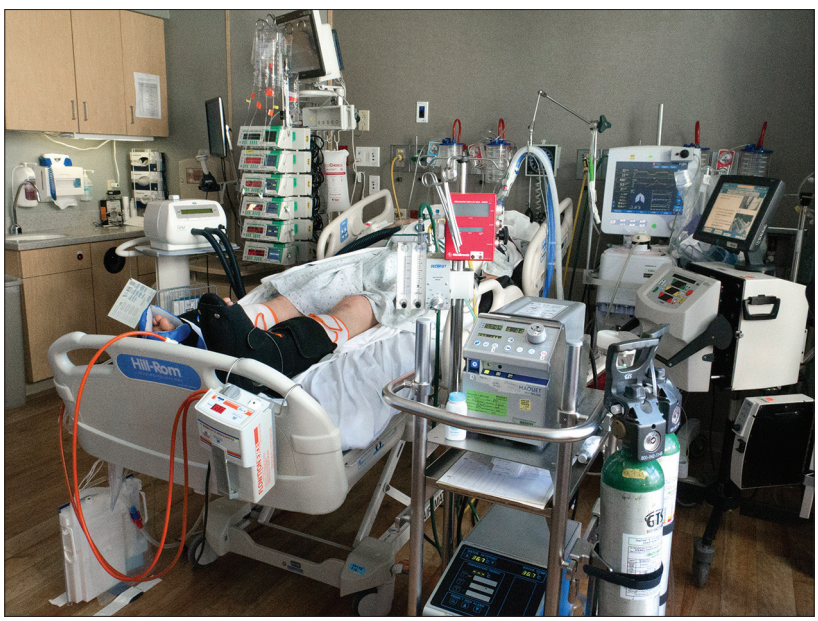
Proponents of unilateral withdrawal argue that the exclusive purpose of ECMO is transition and thus, when that purpose is no longer possible, ECMO should be withdrawn. However, this is an insufficient reason to withdraw ECMO. There is no reason that ECMO cannot be used for other purposes, such as continued survival, even if that survival is not long term. The original purpose of a medical intervention does not preclude extension or evolution to achieve other purposes. For

example, renal replacement therapy and left ventricular assist devices were originally intended as transitions to transplant but are now used to keep patients alive even when they are no longer transplant candidates.

Proponents of unilateral withdrawal contend that renal replacement therapy and left ventricular assist devices are distinguishable from ECMO because they allow patients to leave the intensive care unit (ICU) and return to a significant quality of life outside the hospital. This argument presumes that continued survival limited to the ICU is of such poor quality that no patient would want to continue that way. We disagree. Although some patients might decline continued life support when there is no chance to leave the ICU, some patients find life, even that restricted to the ICU, to be meaningful. We should not paternalistically question the patient's own quality-of-life assessment.

Some proponents of unilateral withdrawal emphasise professional integrity. They argue that physicians should be the final arbiters of which medical interventions are appropriate and which inappropriately go beyond the bounds of medical practice. Thus, they contend that once transition to recovery or transplant is no longer possible, continued ECMO goes beyond legitimate medical practice. We are not convinced. To justify unilateral withdrawal, such claims must be based on a very substantial consensus within the profession. No such consensus exists. Empirical surveys of physicians show considerable divergence. One survey indicated that only 53% of physicians consulted patients' legally authorised representatives, and only 45% consulted awake patients before withdrawing ECMO.[6] However, another survey indicates that withdrawal decisions in most centres were made by both professionals and family.[7] This is far from the sort of professional consensus required to justify unilateral withdrawal on the basis of professional integrity.

Another argument for unilateral withdrawal points to the high costs of ECMO relative to limited financial and human resources.[4,8,9] However, while the costs of this complex and highly invasive treatment must be considered, the relatively small number of patients eligible for indefinite ECMO materially limits the costs imposed on a hospital or on a country's health system. Therefore, ECMO should not be singled out as too expensive for conscious patients with no hope of transitioning off ECMO and leaving the ICU.



Dr Barry Slaven/Science Photo Library

Another argument for unilateral withdrawal is that ECMO for these patients is futile or potentially inappropriate. Futile treatments "cannot accomplish the intended physiologic goal".[10] They are not medically indicated and should not be provided, even if requested by a patient or legally authorised representative. By contrast, potentially inappropriate treatments "have at least some chances of accomplishing the effect sought by the patient, but some clinicians believe that competing ethical considerations justify not providing them". Unlike futile treatments, potentially inappropriate treatments should not be unilaterally terminated, except in the case we argue below.

The justifiability of withdrawing ECMO differs substantially depending on the patient's consciousness. For persistently unconscious patients, continuing ECMO is frequently considered potentially inappropriate because they cannot appreciate the potential benefits of the treatment. Clinicians should seek agreement of the legally authorised representative to withdraw ECMO in these cases. If the legally authorised representative refuses to withdraw ECMO, these steps are recommended before unilateral withdrawal: (1) refer to a fair and transparent process of conflict resolution, including hospital review; (2) try to find a willing provider at another institution; and (3) offer the opportunity for external review of decisions.[10] Unilateral withdrawal, even after these procedural steps, however, is not legally available in many jurisdictions.

By contrast, ECMO for awake patients is neither futile nor potentially inappropriate. They can appreciate the potential benefits of treatment and interact with friends, family, and their environment. Unilaterally withdrawing ECMO in these patients is ethically unacceptable.

Critical care medicine has seen increasing international policy emphasis on shared decision making and patient-centred medicine. Accordingly, clinicians should recognise that continuing ECMO without prospect of transition can be a legitimate preference-sensitive choice for some patients.

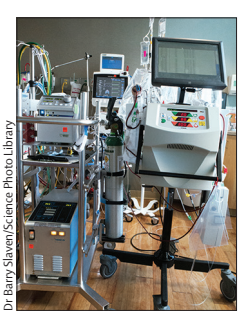
AS reports research grants and lecture fees from CytoSorbents, lecture fees from AstraZeneca and Getinge, and travel support and consulting fees from ARTCLINE, all outside of the submitted work. All other authors declare no competing interests. This Comment developed from discussion with the ECMO Ethics Workgroup of the American Society for Bioethics and Humanities Clinical Ethics Consultation Affinity Group.

*Alexander Supady, William L Allen, Thaddeus M Pope
alexander.supady@uniklinik-freiburg.de

Interdisciplinary Medical Intensive Care, Medical Center—University of Freiburg, Faculty of Medicine, University of Freiburg, 79106 Freiburg, Germany (AS); University of Florida College of Medicine, Gainesville, Florida, USA (WLA); Mitchell Hamline School of Law, Saint Paul, MN, USA (TMP)

1 Abrams DC, Prager K, Blinderman CD, Burkart KM, Brodie D. Ethical dilemmas encountered with the use of extracorporeal membrane oxygenation in adults. *Chest* 2014; **145:** 876–82.
2 Lamas DJ. When the treatment of last resort sends a life into limbo. Nov 22, 2022. https://www.nytimes.com/2022/11/22/opinion/hospital-death-ecmo.html (accessed June 6, 2024).
3 Mulaikal TA, Nakagawa S, Prager KM. Extracorporeal membrane oxygenation bridge to no recovery. *Circulation* 2019; **139:** 428–30.
4 Meltzer EC, Ivascu NS, Stark M, et al. A survey of physicians' attitudes toward decision-making authority for initiating and withdrawing VA-ECMO: results and ethical implications for shared decision making. *J Clin Ethics* 2016; **27:** 281–89.
5 Gedge E, Giacomini M, Cook D. Withholding and withdrawing life support in critical care settings: ethical issues concerning consent. *J Med Ethics* 2007; **33:** 215–18.
6 Abrams D, Pham T, Burns KEA, et al. Practice patterns and ethical considerations in the management of venovenous extracorporeal membrane oxygenation patients: an international survey. *Crit Care Med* 2019; **47:** 1346–55.
7 Lepper PM, Barrett NA, Swol J, et al. Perception of prolonged extracorporeal membrane oxygenation in Europe: an EuroELSO survey. *Perfusion* 2020; **35** (suppl)**:** 81–85.
8 Elpern EH, Covert B, Kleinpell R. Moral distress of staff nurses in a medical intensive care unit. *Am J Crit Care* 2005; **14:** 523–30.
9 Peek GJ, Mugford M, Tiruvoipati R, et al. Efficacy and economic assessment of conventional ventilatory support versus extracorporeal membrane oxygenation for severe adult respiratory failure (CESAR): a multicentre randomised controlled trial. *Lancet* 2009; **374:** 1351–63.
10 Bosslet GT, Pope TM, Rubenfeld GD, et al. An official ATS/AACN/ACCP/ESICM/SCCM policy statement: responding to requests for potentially inappropriate treatments in intensive care units. *Am J Respir Crit Care Med* 2015; **191:** 1318–30.

ECMO: more than just a bridge over troubled waters?


Dr Barry Slaven/Science Photo Library

Published **Online** September 4, 2024 https://doi.org/10.1016/S2213-2600(24)00261-3

See **Comment** page 754

Extracorporeal membrane oxygenation (ECMO) is used in severe cardiorespiratory failure refractory to conventional management, often as a bridge to recovery, long-term support, or transplant. However, some patients might not be candidates for destination therapy at the outset, and others might die or lose their candidacy due to complications, which are more likely the longer ECMO is continued.[1] When patients remain ECMO-dependent with no prospects of recovery, and when they are not candidates for destination therapy, the patient, their next of kin, and the health-care team face an ethical dilemma: what next?

In *The Lancet Respiratory Medicine*, Alexander Supady and colleagues[2] outline several points and argue against the unilateral withdrawal of ECMO when recovery or transition to a final therapy might no longer be feasible. Drawing from other devices, such as dialysis and ventricular assist devices (VADs), they argue that quality of life, although limited to the ICU while on ECMO, might still be meaningful to some patients. They also highlight that most decisions regarding life-sustaining therapy and their withdrawal should always be made in consultation with the patient or their next of kin. This remains standard intensive care practice in most jurisdictions, and unilateral withdrawal of life support without the assent of family can be ethically and legally challenging.

Although studies have shown that a prolonged run of venovenous ECMO is not associated with poorer outcomes,[3] longer runs of venoarterial ECMO might be associated with reductions in survival.[4] However, this association is unclear beyond day 12 of ECMO, and varies considerably by indication for ECMO cannulation in the first place. Nonetheless, there are several challenges of prolonged ECMO, including but not limited to complications,[5,6] which might affect quality of life and prolong suffering. How, then, should we deal with these complications, if patients are receiving ECMO indefinitely? What would our threshold be for escalating and de-escalating therapy?

Beyond the ethical dilemma and moral distress of continuing ECMO for an individual with little to no prospects of recovery or destination therapy, continuing ECMO indefinitely would siphon resources away from others who might benefit more from ECMO. Yet, ECMO