Reply to the Editor:

We appreciate the interest in our article and commentary by Mariani and colleagues regarding our retrospective, single-center study of outcomes of patients successfully weaned from extracorporeal life support. First, we agree wholeheartedly that there is a need for standardized language in the extracorporeal membrane oxygenation (ECMO) space regarding what defines successful decannulation/weaning, myocardial recovery. In addition, we applaud Dr Mariani’s and Dr Lorruso’s team’s efforts to shed light on reporting differences in the literature and define the “venoarterial-ECMO gap,” or the patients who are weaned from ECMO but die before hospital discharge.

Our study focused on the outcomes of patients who were successfully decannulated from ECMO, which we defined as 30-day survival after decannulation or survival to hospital discharge if the discharge was 30 days or less after decannulation. Notably, in our study, patients who were bridged to a transplant or a ventricular assist device were excluded from our definition. As Mariani and colleagues point out, many studies define successful weaning as survival for 24 to 48 hours after decannulation. However, an analysis of death timelines after ECMO weaning in our patient cohort reveals a mortality peak within the first 48 hours after decannulation (Figure 1). In addition, many patients who are palliatively decannulated die well after 48 to 72 hours later. Thus, we argue that the definition of successful weaning as survival for 24 to 48 hours after decannulation is too narrow, potentially including patients who, despite being successfully weaned from ECMO, eventually succumb to single or multiorgan failure, which was temporarily managed with ECMO, pressor support, and additional life-supporting interventions. These patients, despite surviving the immediate postdecannulation period, are certainly not “successfully” decannulated from ECMO. Our definition of 30-day or to-discharge survival provides a more accurate measure of post-ECMO survival and recovery that is aligned with many prominent papers in the literature, as well as common surgical nomenclature.

It is important to note that there are distinct differences between successful weaning from ECMO and successful treatment with ECMO, and future studies should avoid conflating the two. Although a patient may be weaned from ECMO, their cardiac function may never recover to pre-ECMO baseline. In addition, myocardial recovery is difficult to parse out in practice. Given the emergent nature of many ECMO cannulations, preoperative echocardiogram data are not always available. Although echocardiogram data play a role in our institution’s weaning protocol, the lack of consistent baseline precludes the practicality of an imaging-based definition of successful ECMO treatment. Until a clinical definition can be collectively and realistically embraced, we propose our definition of 30-day survival after decannulation or survival to discharge as an appropriate standardized definition for “successful ECMO decannulation” in future studies.

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Conflict of Interest Statement
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References

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