

See Article page 163.

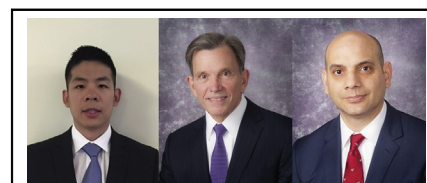


## Commentary: Recovery following COVID-19 infection: Are we truly ready for what is to come?

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At the time of this editorial, the global spread of coronavirus-2 has affected more than 72 million people and claimed 1.6 million lives.<sup>1</sup> The COVID-19 pandemic has tested our resilience, our sense of community, our ability to adapt, and our ability to produce science and therapies with the goal of caring and rescuing patients from this devastating disease. Now, with the first vaccines being distributed across the world, we are filled with a sense of relief and hope.

The COVID-19 infection has a wide range of presentations, from nonspecific symptoms to interstitial pneumonia or severe acute respiratory syndrome (SARS-CoV-2). Two distinct pathophysiologic phenotypes have been described: the L form (low recruitability), which frequently responds well to noninvasive ventilation, and the more virulent H form (high recruitability), which often requires invasive ventilatory support.<sup>2</sup> Mechanical ventilation strategies for SARS-CoV-2 rely on the principle of preventing alveolar overdistention. Extracorporeal membrane oxygenation (ECMO) can be instituted in cases in which severe hypoxemia persists in the setting of optimal ventilatory support, neuromuscular blockage, and proning. A recent analysis from the Extracorporeal Life Support Organization (ELSO) COVID-19 registry evaluating outcomes of 1035 SARS-CoV-2 patients requiring ECMO support, reported



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### CENTRAL MESSAGE

Although extracorporeal support can allow for recovery following COVID-19 infection, the grueling road to recovery remains relatively uncharted and persists well beyond the initial hospitalization.

that 57% were discharged alive, with 30% going home or to an acute rehabilitation center, 10% to a long-term acute care facility, and 17% to another hospital.<sup>3</sup> These results are consistent with previous literature describing the use of ECMO for other causes of severe hypoxic respiratory failure.

Although much has been reported about the initial hospital course of these patients, very little is known about the prognosis of SARS-CoV-2 survivors following initial discharge. An analysis describing index hospitalizations for COVID-19 to 132 Veteran Affairs hospitals reported that 27% of hospital survivors were readmitted or died within 90 days of discharge.<sup>4</sup>

Based on the current report by Mayer and colleagues,<sup>5</sup> The Outcomes and Recovery After COVID-19 Leading to ECMO (ORACLE) group was formed to investigate long-term concerns after COVID-19 infection.<sup>5</sup> This group of 5 academic centers has created a protocol to follow-up with patients recovering from COVID-19 who required ECMO support. Although the ORACLE group has not published their results yet, the current literature reports that 56% of patients had cognitive impairments and that another one-third expressed both emotional and cognitive deficits during recovery from severe COVID-19 infection. Although it is still early in the follow-up period, Mayer and colleagues emphasize that many of these deficits are seen in similar patients, such as the post-ARDS population, who exhibit similar lingering effects even at a 1-year follow-up.<sup>6</sup>

As the COVID-19 pandemic evolves, Mayer and colleagues emphasize the need to be attentive and document

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the current events to prepare for the future. One important point that will need to be addressed is the cost analysis and thus allocation of our limited resources to the thousands of once critically ill COVID-19 patients we were fortunate enough to treat. We applaud their efforts in forming the ORACLE group and look forward to future analyses that will be possible due to their timely efforts.

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