

PEER-REVIEW REPORT

Name of journal: World Journal of Critical Care Medicine

Manuscript NO: 59555

Title: Utilization of extracorporeal membrane oxygenation during the COVID-19 pandemic

Reviewer's code: 03201903

Position: Peer Reviewer

Academic degree: PhD

Professional title: Assistant Professor

Reviewer's Country/Territory: China

Author's Country/Territory: United States

Manuscript submission date: 2020-09-16

Reviewer chosen by: Xi-Fang Chen (Part-Time Editor)

Reviewer accepted review: 2020-11-11 06:14

Reviewer performed review: 2020-11-12 06:17

Review time: 1 Day

Scientific quality	<input type="checkbox"/> Grade A: Excellent <input type="checkbox"/> Grade B: Very good <input checked="" type="checkbox"/> Grade C: Good <input type="checkbox"/> Grade D: Fair <input type="checkbox"/> Grade E: Do not publish
Language quality	<input checked="" type="checkbox"/> Grade A: Priority publishing <input type="checkbox"/> Grade B: Minor language polishing <input type="checkbox"/> Grade C: A great deal of language polishing <input type="checkbox"/> Grade D: Rejection
Conclusion	<input type="checkbox"/> Accept (High priority) <input checked="" type="checkbox"/> Accept (General priority) <input type="checkbox"/> Minor revision <input type="checkbox"/> Major revision <input type="checkbox"/> Rejection
Re-review	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Peer-reviewer statements	Peer-Review: <input checked="" type="checkbox"/> Anonymous <input type="checkbox"/> Onymous Conflicts-of-Interest: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No



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SPECIFIC COMMENTS TO AUTHORS

The spread of coronavirus disease 2019 (COVID-19) continues to grow exponentially in most countries, posing an unprecedented burden on the healthcare sector and the world economy. Unfortunately, there is no effective medication other than comprehensive support. However, the mild type of COVID-19 patients can recover shortly after appropriate clinical intervention. The moderate type patients, especially the elderly or the ones with comorbidity, can worsen and become severe, indicating high mortality rate. The mortality in mechanically ventilated COVID-19 patients remains high, and it is unclear if some of these patients may be rescued with ECMO. This review is mainly introduced from the following aspects: Rationale for using Extracorporeal Membrane Oxygenation (ECMO) in COVID-19 Patients, Special Considerations for ECMO Use in COVID-19 Patients, and Future of ECMO Use. In conclusions, ECMO remains a valid treatment option for patients when other conventional treatment strategies fail. I think that although ECMO has a role in critically ill patients, there is currently inadequate data to determine the efficacy, optimal patient selection and management on ECMO. It is essential that we learn and understand throughout the current pandemic, in order to determine the risk-benefit ratio of ECMO in COVID-19.

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Title: Utilization of extracorporeal membrane oxygenation during the COVID-19 pandemic

Reviewer's code: 02726701

Position: Editorial Board

Academic degree: MD

Professional title: Associate Professor

Reviewer's Country/Territory: Chile

Author's Country/Territory: United States

Manuscript submission date: 2020-09-16

Reviewer chosen by: Xi-Fang Chen (Part-Time Editor)

Reviewer accepted review: 2020-11-14 22:46

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Scientific quality	<input type="checkbox"/> Grade A: Excellent <input type="checkbox"/> Grade B: Very good <input checked="" type="checkbox"/> Grade C: Good <input type="checkbox"/> Grade D: Fair <input type="checkbox"/> Grade E: Do not publish
Language quality	<input checked="" type="checkbox"/> Grade A: Priority publishing <input type="checkbox"/> Grade B: Minor language polishing <input type="checkbox"/> Grade C: A great deal of language polishing <input type="checkbox"/> Grade D: Rejection
Conclusion	<input type="checkbox"/> Accept (High priority) <input type="checkbox"/> Accept (General priority) <input checked="" type="checkbox"/> Minor revision <input type="checkbox"/> Major revision <input type="checkbox"/> Rejection
Re-review	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Peer-reviewer statements	Peer-Review: <input checked="" type="checkbox"/> Anonymous <input type="checkbox"/> Onymous Conflicts-of-Interest: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No



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Comments on Utilization of ECMO during the COVID-19 Pandemic This is a well round review about SARS-CoV-2 pandemic and its effects on morbidity and mortality of those who suffers from coronavirus disease (Covid-19). Nevertheless, it is necessary to clarify some issues. Pathophysiology section: Please, add an explanation about how severely ill patients develop end stage disease and die because of the virus. This is an important consideration because, the main issue of the review is ventilator support, but without considering what happens in other organs while other therapies do their job. Rationale of ECMO section: ECMO intends to improve lung gas exchange while other therapies do the same in other organs. Please, add comments about specific considerations in cardiovascular, renal and other supports while ECMO is working. At the same time, please, explain ECMO usefulness in other critical respiratory failures. For example, it appears that ECMO does not add value to Adult Respiratory Distress Syndrome (ARDS) as reported by Combes et al in NEJM in 2018 (N Engl J Med. 2018 May 24; 378(21):1965-1975. doi: 10.1056/NEJMoa1800385). These data can improve our rationale about if it is convenient to work in introducing ECMO to care patients severely ill because of Covid-19. How many patients do the authors think will be candidates to use ECMO? For example, from the early American, experience published in MMWR on March 27th 2020, 5-11% of Covid patients go to an ICU and one third of those finally die (1-3% of all hospitalized patients), presumably with respiratory and multiorgan failure. This number is the core of the problem, because as the authors point, it is necessary to comply with a series of requisites to implement ECMO. Reference 15 (Extracorporeal Life Support Organization (ELSO). June 6 2020) is not clear to describe the 55% survival rate after ECMO. Could it be that those patients were less sick that those intended to put in ECMO as Table 1 point out? In this same line of thinking. Please comment about the



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cost of implementing ECMO or designing a referral system to send eventual candidates for ECMO and from the ethical point of view, how that figure compares with opening new critical care beds with classic equipment for respiratory and other organs support. How do the author reconcile their point of view about ECMO in Covid-19 with ELSO recommendation: “There are insufficient data to recommend either for or against the routine use of extracorporeal membrane oxygenation (ECMO) for patients with COVID-19 and refractory hypoxemia” (<https://www.covid19treatmentguidelines.nih.gov/critical-care/>). Figures, Table, References and Abstract are all OK.

RE-REVIEW REPORT OF REVISED MANUSCRIPT

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Reviewer's Country/Territory: Chile

Author's Country/Territory: United States

Manuscript submission date: 2020-09-16

Reviewer chosen by: Pan Huang

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Review time: 1 Hour

Scientific quality	<input type="checkbox"/> Grade A: Excellent <input checked="" type="checkbox"/> Grade B: Very good <input type="checkbox"/> Grade C: Good <input type="checkbox"/> Grade D: Fair <input type="checkbox"/> Grade E: Do not publish
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The manuscript was much improved after all corrections. It is suitable to be published.

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Scientific quality	<input type="checkbox"/> Grade A: Excellent <input type="checkbox"/> Grade B: Very good <input checked="" type="checkbox"/> Grade C: Good <input type="checkbox"/> Grade D: Fair <input type="checkbox"/> Grade E: Do not publish
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The current versuin is all right.