



Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

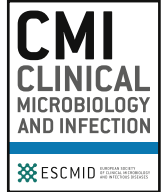
Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.



ELSEVIER

Contents lists available at ScienceDirect

Clinical Microbiology and Infection

journal homepage: www.clinicalmicrobiologyandinfection.com

Letter to the editor

Remdesivir for the treatment of COVID-19: author's response

Todd C. Lee^{1, 2, *}, Emily G. McDonald^{2, 3}¹ Division of Infectious Diseases, McGill University Health Centre, Montréal, Québec, Canada² Clinical Practice Assessment Unit, Royal Victoria Hospital, McGill University Health Centre, Montréal, Québec, Canada³ Division of General Internal Medicine, McGill University Health Centre, Montréal, Québec, Canada

ARTICLE INFO

Article history:

Received 22 September 2022

Received in revised form

24 September 2022

Accepted 25 September 2022

Available online xxx

Editor: L. Leibovici

To the Editor,

We thank Beccacece et al. for their letter to the editor notifying that a study that we included in our recent meta-analysis has since been retracted. We believe that it is paramount to avoid citing

retracted works, particularly in meta-analyses [1]. With respect to our publication [2], we originally conducted a sensitivity analysis that excluded the now-retracted trial, as it was at a high risk of bias; however, the sensitivity analysis did not include the final results of the WHO Solidarity trial [3]. To that end, we have updated our analysis herein. All patients in the retracted study were originally included in the supplemental oxygen without ventilation group; therefore, it is the only subgroup that has changed. In the original analysis, the frequentist meta-analysis yielded a relative risk in this subgroup of 0.89 (95% CI, 0.79–0.99). The corresponding Bayesian meta-analysis on the risk difference scale estimated the probability of any and $\geq 1\%$ mortality benefit at 93.7% and 77.4%, respectively. The revised frequentist random-effects meta-analysis (Fig. 1) now finds a relative risk within the subgroup of 0.88 (95% CI, 0.78–0.99). The Bayesian probability density function for patients in that specific subgroup (Fig. 2) now finds probabilities of any and $\geq 1\%$ mortality benefit of 95.5% and 83.2%, respectively.

DOI of original article: <https://doi.org/10.1016/j.cmi.2022.09.015>.

* Corresponding author: Todd C. Lee, Division of Infectious Diseases, McGill University Health Centre, 1001 Decarie E5-1820, Montréal, Québec, H4A3S1, Canada.
E-mail address: todd.lee@mcgill.ca (T.C. Lee).

<https://doi.org/10.1016/j.cmi.2022.09.020>

1198-743X/© 2022 European Society of Clinical Microbiology and Infectious Diseases. Published by Elsevier Ltd. All rights reserved.

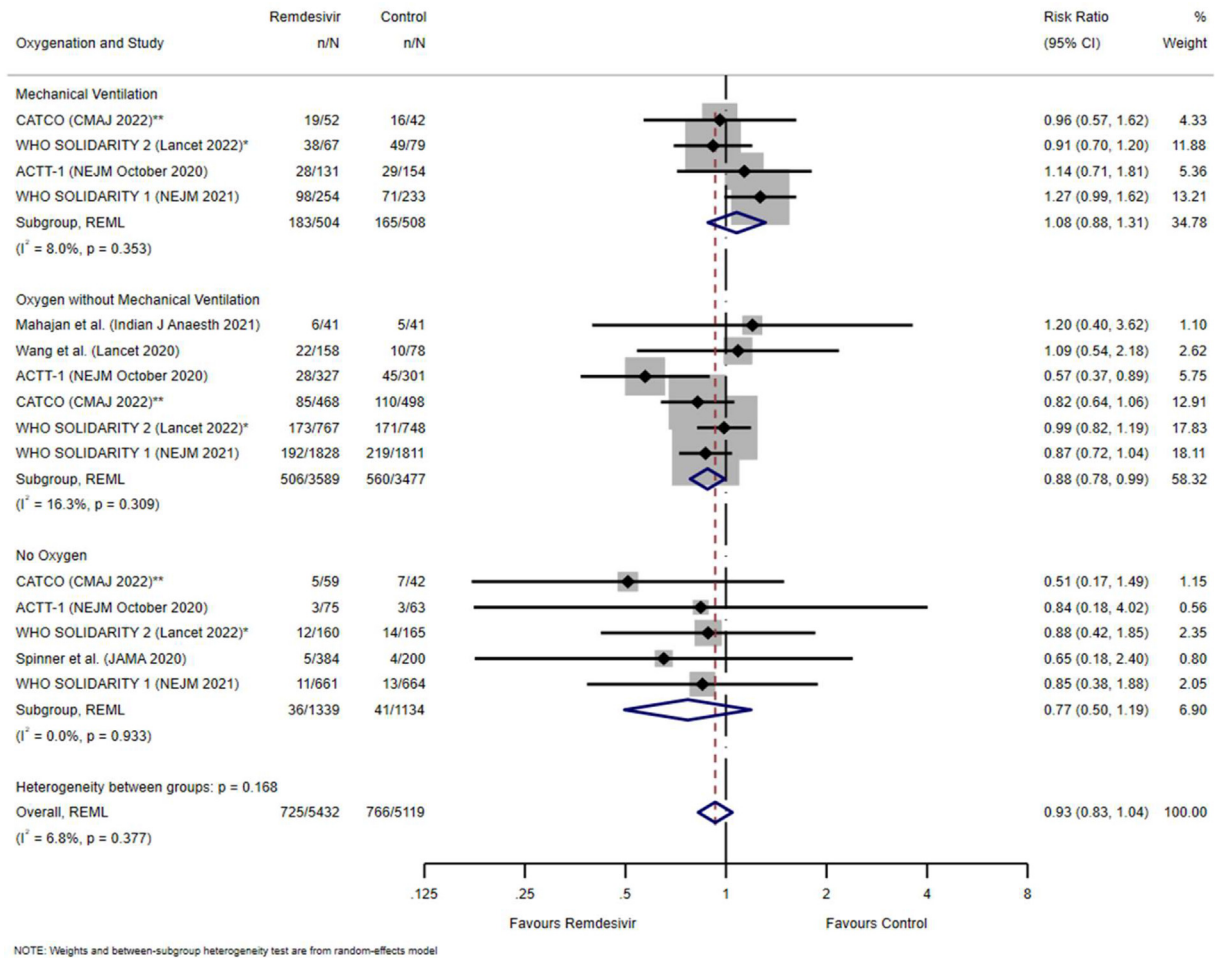


Fig. 1. Random-effects meta-analysis stratified by oxygenation requirements. ACTT, Adaptive Covid-19 Treatment Trial; CATCO, Canadian Treatments for COVID-19. *Excludes patients already reported in the Solidarity 1 (NEJM 2020) and CATCO (CMAJ 2022) trials. **Excludes patients reported in the Solidarity 1 (NEJM 2022) trial.

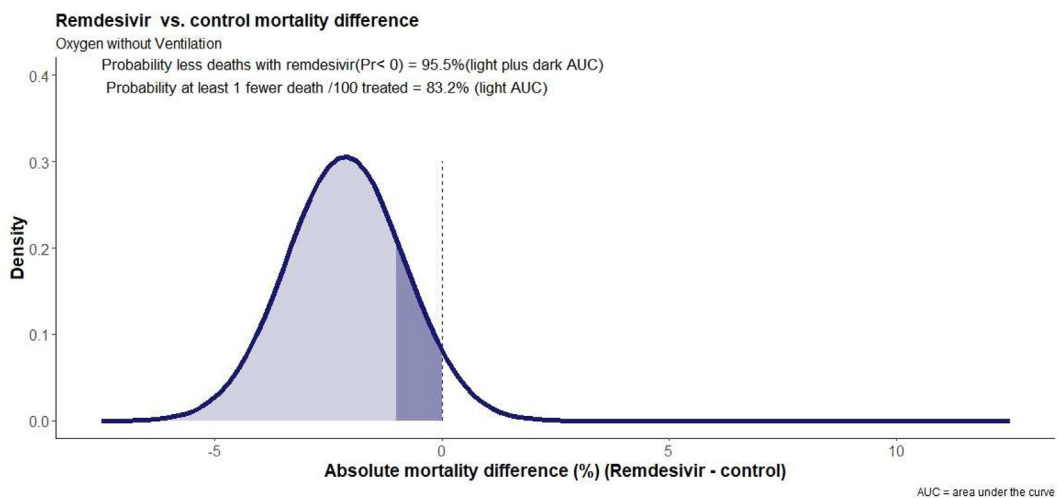


Fig. 2. Probability density functions for combined posterior distributions of the included remdesivir trials in patients requiring supplemental oxygen without mechanical ventilation. AUC, area under the curve.

The conclusions of the original paper are unchanged; however, these figures and numbers should now supersede those presented in the original paper. The issue of how to address results

that are retracted after their inclusion in a published meta-analysis needs to be better addressed by the scientific community at large.

Author contributions

T.C.L. is the lead author, and E.G.M. is the senior author. The contributions to the paper are as follows. Conceptualization: T.C.L. and E.G.M.; methodology: T.C.L.; validation: T.C.L.; formal analysis: T.C.L.; data curation: T.C.L.; writing: T.C.L. and E.G.M.; and visualization: T.C.L.

Transparency declaration

T.C.L. was a co-investigator on CATCO, the Canadian arm of the WHO Solidarity trial, which was funded by the Canadian Institutes of Health Research grant numbers 422549, 446637, and 424701. T.C.L. and E.G.M. receive research salary support from the Fonds de

Recherche Québec - Santé. The funders had no influence on the conduct or content of this article.

References

- [1] Lee TC, Senecal J, Hsu JM, McDonald EG. Ongoing citations of a retracted study involving cardiovascular disease, drug therapy, and mortality in COVID-19. *JAMA Intern Med* 2021;181:1535–7. <https://doi.org/10.1001/jamainternmed.2021.4112>.
- [2] Lee TC, Murthy S, Corpo OD, Senécal J, Butler-Laporte G, Sohani ZN, et al. Remdesivir for the treatment of COVID-19: a systematic review and meta-analysis. *Clin Microbiol Infect* 2022;28:1203–10. <https://doi.org/10.1016/j.cmi.2022.04.018>.
- [3] WHO Solidarity Trial Consortium. Remdesivir and three other drugs for hospitalised patients with COVID-19: final results of the WHO Solidarity randomised trial and updated meta-analyses. *Lancet* 2022;399:1941–53. [https://doi.org/10.1016/S0140-6736\(22\)00519-0](https://doi.org/10.1016/S0140-6736(22)00519-0).