11-May-2020
BMJ-2020-057265.R1
Factors associated with hospitalization and critical illness among 5,279 patients with COVID-19 disease in New York City: A prospective cohort study

Dear Dr. Horwitz (Leora)

Thank you for sending us your revision paper, which we sent back to one peer reviewer (who had no further concerns) and our statistical consultant (who had a few relatively minor points needing attention, as below). Please revise your manuscript in light of the remaining points, or let us know why you disagree. I look forward to hearing back from you as soon as possible.

Yours sincerely,

David Ludwig
Professor David Ludwig
Associate Research Editor
The BMJ
dludwig@bmj.com

To start your revision, please click this link or log in to your account: *** PLEASE NOTE: This is a two-step process. After clicking on the link, you will be directed to a webpage to confirm. ***

https://mc.manuscriptcentral.com/bmj?URL_MASK=3f933740020347bfaa69003c53d145f6

Reviewer: 1
This paper has been revised to take account of many of the statistical issues previously raised.

Follow-up has been extended and thus there are fewer patients with no set outcome data which reduces bias with respect to the critical illness logistic regression analysis. More details are provided about those who test negative. The analyses now include study week as a covariate and adjust for hospital. A new survival analysis (mortality) is also presented, and sensitivity analyses have also been carried out. The analysis involving critical illness in relation to all patients has been omitted, and the decision tree classification analysis has been removed from the paper.

There are just a few points that remain:

1. I agree that the very heterogenous group of tested subjects does not necessarily result in bias when comparing hospitalised vs non-hospitalised Covid-19 patients, although I am still concerned the decision to admit may be influenced by the 'reason/site for testing' which would, in turn, affect the hospitalised vs non-hospitalised comparison. It is useful to have the site data (Appendix Table S2) which shows that 59% of positive tests were carried out in the ED, and 96% of those hospitalised were tested in the ED. But it would be useful to know whether (in a sensitivity-type analysis) restricting the study sample to those tested in the ED gave similar results.

2. Tables 2-4. Because some of the significant multivariable-adjusted factors need to be interpreted carefully (eg a 'change' from a higher to a lower risk for hyperlipidema with statistical adjustment in Table 2) it would seem useful to add 'univariate' OR/HR results alongside the multivariable results here. This would highlight the sometimes complex relationship between a risk factor and hospitalisation/critical illness etc. Alternatively, specific factor relationships should be discussed more extensively in the text and the univariate results included in Supplementary Tables.

3. Out of interest, in the multivariable analyses, were interactions between any of the factors considered?

4. Table 1. I would suggest omitting the temperature and oxygen saturation results here as they are open to misinterpretation.

5. Figures. The time axis should include the units, ie. 'days'.

Additional Questions:
The BMJ uses compulsory open peer review. Your name and institution will be included with your comments when they are sent to the authors. If the manuscript is accepted, your review, name and institution will be published alongside the article.

If this manuscript is rejected from The BMJ, it may be transferred to another BMJ journal along with your reviewer comments. If the article is selected for publication in another BMJ journal, depending on the editorial policy of the journal your review may also be published. You will be contacted for your permission before this happens.

For more information, please see our peer review terms and conditions.

Please confirm that you understand and consent to the above terms and conditions.: I consent to the publication of this review

Please enter your name: Julie Morris

Job Title: Honorary Reader in Medical Statistics

Institution: University of Manchester

Reimbursement for attending a symposium?: No

A fee for speaking?: No

A fee for organising education?: No

Funds for research?: No

Funds for a member of staff?: No

Fees for consulting?: No

Have you in the past five years been employed by an organisation that may in any way gain or lose financially from the publication of this paper?: No

Do you hold any stocks or shares in an organisation that may in any way gain or lose financially from the publication of this paper?: No

If you have any competing interests (please see BMJ policy) please declare them here:

Reviewer: 2
The authors have addressed my main comments and those of the other reviewers. The added figures showing cumulative incidence functions for mortality/discharge are of great value. Congratulations to the authors for a very informative study undertaken under extraordinarily difficult circumstances.

Additional Questions:
The BMJ uses compulsory open peer review. Your name and institution will be included with your comments when they are sent to the authors. If the manuscript is accepted, your review, name and institution will be published alongside the article.

If this manuscript is rejected from The BMJ, it may be transferred to another BMJ journal along with your reviewer comments. If the article is selected for publication in another BMJ journal, depending on the editorial policy of the journal your review may also be published. You will be contacted for your permission before this happens.

For more information, please see our peer review terms and conditions.

Please confirm that you understand and consent to the above terms and conditions.: I consent to the publication of this review

Please enter your name: Joseph Lewnard

Job Title: Assistant Professor

Institution: University of California Berkeley

Reimbursement for attending a symposium?: No

A fee for speaking?: No

A fee for organising education?: No

Funds for research?: No

Funds for a member of staff?: No

Fees for consulting?: No

Have you in the past five years been employed by an organisation that may in any way gain or lose financially from the publication of this paper?: No

Do you hold any stocks or shares in an organisation that may in any way gain or lose financially from the publication of this paper?: No

If you have any competing interests (please see BMJ policy) please declare them here: