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Comment 1: Introduction: the theoretical framework must be more specific and must accentuate the purpose and importance of the study.

Reply 1: Thank you for the insight. If we could predict the development of respiratory distress and the need for mechanical ventilation within 30 days after a patient's admission to a hospital, we could pay more attention to their care and prepare for mechanical ventilation ahead of time. This would facilitate reasonable early triage of patients and allow us to prepare the required medical resources, and thus, the patient could be managed in a timely and efficient manner. Thus, the purpose of this study is to identify the factors that can predict respiratory distress and the need for mechanical ventilation in the early stages of the disease in patients with COVID-19.

Changes in the text

This line was added to indicate the purpose and the importance of the study: *This will facilitate reasonable early triage of patients and adequate preparation for the provision of the required medical resources* (see Page 3, lines 8-10).

Comment 2:

Please explain the following inconsistencies:

- (a) Is it about adults or a mixed group, which includes children, adults, and older people?
- (b) What was the proportion of the older people in the group?
- (c) Was the initial diagnosis of COVID-19 real or not, in the group of subjects?
- (d) If we are talking about very different age groups, did you consider the normal values of the investigated parameters with the ontogenetic stages?
- (e) Given that SARS-CoV-2 virus infection mainly affects the older adults, a group in which the forms are more severe, with greater complications, don't you think it would have been useful to introduce age as a predictor of respiratory distress?

Reply 2:

- (a) We are sorry for these oversights in the description of the data processing workflow. In China, pediatricians take care of children under 14 years old, and

those above 14 years old are treated in an adult specialty. So the IWCH-COVID-19 cohort we defined in the paper includes all patients older than 14 years. It is a mixed group.

Changes in the text:

I have clarified this in the revised manuscript (Page 4, lines 21–25 and Page 5, lines 1-5) and Figure 1.

- (b) The total number of patients in the cohort was 863, and there were 323 (37.43%) older people (age > 65 years).

Changes in the text:

I have added the description to the revised manuscript (Page 8, line 7).

- (c) The patients included in the cohort had a diagnosis of COVID-19 at the time of discharge, irrespective of their diagnosis of the time of admission.

Changes in the text:

I have emphasized the screening criterion for patients in the cohort was the discharge diagnosis.

- (d) The normal values of the investigated parameters according to the ontogenetic stage should be considered. This is a very good, but controversial, question. In *Reference intervals for blood cell analysis* (WS/T 405-2012), the reference population ranged from 20 to 79 years old. People younger than 10 or older than 79 were not mentioned in the document. However, the normal ranges of older people and newborn tests are specified in the old edition of *Clinical basic laboratory science* (People's Medical Publishing House), but they are not mentioned in the newest edition. Therefore, we considered the same range of 14 to 19 years and the age group of 20 to 79 years, based on the current standards in clinical practice. The normal range of the age group above 80 years may have some incongruity.

Changes in the text:

We have mentioned this limitation in the discussion section. (see Page 13, lines 4–6)

- (e) I agree with you. We included age as a predictor of respiratory distress in step 1 of the univariate Cox model (see Supplementary Appendix Table 1 and Supplementary Appendix Figure 1 A). During the screening of univariate Cox models, p value < 0.001 was considered to indicate statistical significance. But in the multivariate Cox model with backward stepwise regression, age was not

selected, so it was not included in our final model (the process is shown in Supplementary Appendix Table 3). Also, I have mentioned the following in **Discussion/Comparison with previous studies** (paragraph 3): *We also used these predictors as our potential predictors. Gender, age, number of breaths, pulse, comorbid diabetes, and high-sensitive cardiac troponin I were also found to be statistically significant in our univariate Cox models. However, these factors were not included in our final multivariate Cox model.* I have added this information about the univariate Cox models in the discussion section.

Changes in the text:

We have modified the last paragraph of **Comparison with previous studies** to emphasize age as a possible predictor (see Page 12, lines 11–14).

Comment 3: However, the lack of homogeneity of the sample with age should be mentioned in the limits of the study section.

Reply 3: This is true. We have mentioned this limitation in the revised manuscript.

Changes in the text:

I have added the limitation (see Page 13, lines 11 and 12).

Comment 4: Discussion: this section needs to be developed in the sense of presenting information on important related studies, to explain and interpret the main findings of the study.

Reply 4: I agree. We have dedicated a separate section named **Comparison with previous studies** to shed light on this. (see Page 11, lines 21–25; Page 12, lines 1–14)

Comment 5: Also, the authors must put into evidence the implications and clinical applications of the results and the degree to which the results fit /or do not fit with what was already known.

Reply 5: We have tried to shed light on these points in the revised manuscript.

Changes in the text:

We have added a new **Application of the model** section in the **Results** and a new nomogram (Figure 4), in which we use the example of a patient to show the clinical applications of the model (see Page 10, lines 18–25; Page 11, lines 1–2).

Comment 6: Another observation refers to the fact that the conclusions from the

abstract do not reflect the significance and usefulness of the main results obtained in the study.

Reply 6: We agree that the conclusions in the abstract did not do justice to the results.

Changes in the text:

We have made modifications accordingly, to reflect the main findings and their impact. (see Page 3, lines 3-6)