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.

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Letter to the editor

Re: Predicting critical illness on initial diagnosis of COVID-19 based on easily-obtained clinical variables

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To the Editor,

We read with interest the recently Spanish study of Martinez-Lacalzada et al. [1], which validated a new prognostic score for COVID-19 patients (the PRIORITY score). COVID-19 has spread worldwide for 2 years now, disrupting daily life and hospital organization. Outcome predictions in hospitalized patients with COVID-19 are mandatory to assist risk stratification. Many predictive scores are now available but none have been validated on a worldwide scale [2,3]. The validation of an easily applicable score is still in question. The PRIORITY model has been developed and validated on a large multicentric cohort in Spain from hospitalized patients. The model showed high discrimination to estimate the risk of critical illness (in-hospital death, mechanical ventilation, or admission to the intensive care unit), based on nine easily obtained clinical variables [1]. However, some points deserve further discussion.

First, among the nine significant clinical variables, not all of them have the same weight in the predictive model. For instance, age had an important impact, as shown in the multivariable logistic regression (adjusted OR 14.339 per 10-year increment [95% CI, 10.054–20.532]). This is of paramount importance since we may expect that a significant proportion of the patients included in the model underwent therapeutic limitation, especially due to an advanced age. In this study, we did not see the proportion of patients undergoing therapeutic limitation. We think that this may have biased the prognostic performance of the score, especially in patients without any therapeutic limitation. Therapeutic limitation would have been considered in the multivariable logistic regression.

Second, National Early Warning Score 2 (NEWS2) has already been well studied the last two years in COVID-19 hospitalized patients and showed high discrimination to predict outcomes [2,3]. This score is widely used, and especially in the emergency departments, not only for sepsis but also for COVID-19 as well. We found in our cohort of hospitalized patients with COVID-19 that a NEWS2 $\geq$6 at admission predicted unfavourable outcome (defined as transfer to intensive care unit and/or death) at day 28 with similar performances than those of the PRIORITY model [4]. The comparison of predictive values of the PRIORITY and NEWS2 scores would have been relevant since the latter is an already widely studied easily and rapidly applicable score.

Third, the initial thoracic computed tomography (CT) scan has also been shown as an independent prognostic factor of poorer outcomes for hospitalized patients with COVID-19 [5]. Since CT scan is now widely performed in many countries for those patients, this prognostic information deserves to be taken into consideration to assess patient outcomes. However, this information is lacking in the study of Martinez-Lacalzada et al. It would have been interesting to compare its prognostic performance to that of the PRIORITY model and its added prognostic value in such a model.

In conclusion, the PRIORITY model is interesting because of the simplicity to get clinical variables but should be evaluated considering the decision to limit care, compared to other available prognostic scores or other tools, such as CT scan, and deserves to be evaluated regarding the evolution of the pandemic in an increasingly immune population thanks to new variants.

Transparency declaration

The authors report no potential conflicts of interest. All authors have submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest.

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Author contributions

FM: conceptualization and writing. TS: conceptualization and review. MB: conceptualization and review. LP: conceptualization and review. All authors critically assessed the final version of the submitted manuscript.

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