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Can the NIVO and modified NIVO scores predict in-hospital and late mortality in COPD patients with acute hypercapnic respiratory failure?

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Dear Editor,

We congratulate Yavuz Yıldırım and colleagues for their study on hypercapnic COPD exacerbations[1] and would like to highlight that certain methodological and reporting issues in the manuscript warrant further discussion and clarification.

First and foremost, the presentation of the data is suboptimal. The manuscript lacks a comparative table of baseline characteristics between patients who survived and those who did not. This is a critical omission, as identifying the distribution of comorbidities and clinical variables between these groups is essential for understanding the independent contribution of the NIVO score to mortality. Although the authors mention that comorbidities were evaluated in the methods section, no corresponding data are presented in the results.

Furthermore, the study introduces a "modified NIVO score," replacing "time from admission to acidemia >12 hours" with "acidemia duration from admission >12 hours," yet assigns it the same score weight without statistical justification. When modifying a clinical score, it is essential to first confirm each variable's independent association with the outcome through multivariate analysis, and then assign point values based on effect sizes. This modification lacks both derivation and validation-internally or externally.

The authors state in the methods that the ROC curves of the original and modified NIVO scores were similar and therefore the same scoring weights were retained. However, this is not methodologically sound. ROC similarity alone is insufficient to justify equal point assignments for altered variables. Moreover, this ROC analysis is not presented in the results section, nor are the curves shown or AUC values reported. To formally compare the discriminatory ability of the two scoring systems, the use of DeLong's test would have been appropriate and is notably absent.

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As for the tables, additional improvements are needed to enhance clarity and utility. Following the tables which defines the scoring systems, we strongly recommend including a table comparing baseline characteristics between survivors and non-survivors. Table 5 reports the median NIVO and modified NIVO scores only in the rehospitalized group; however, values for the non-rehospitalized group are missing, rendering the comparison incomplete. In Table 6, laboratory parameters of patients who died in-hospital or after discharge are reported, but again, corresponding values for survivors are not shown, and it is unclear what specific comparisons the p-values refer to. As such, the table in its current form fails to provide meaningful interpretive value.

Finally, the manuscript concludes that both the NIVO and modified NIVO scores can predict NIMV failure, and that the modified version may be more useful in certain patients. This conclusion is not supported by the analyses presented. To substantiate such a claim, formal ROC analysis comparing the two scores' performance in predicting NIMV failure would be necessary, including graphical curves, AUC values, and statistical comparison.

In summary, we believe that a clearer presentation of the study data, particularly in terms of group comparisons and validation metrics, is essential to strengthen the scientific conclusions. We hope the authors will consider addressing these points to enhance the transparency and clinical applicability of their important work.

Conflicts of Interest Statement

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