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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EUROPEAN RESUSCITATION COUNCIL

Letter to the Editor

Performance of NEWS and NEWS-C in acute medical no COVID-19 patients

To the Editor,

COVID-19 pandemic has overwhelmed several national healthcare systems; hospital overcrowding and increase of Intensive Care Units' (ICUs) bed occupancy rate up to saturation explain the great need for a close monitoring for worsening of respiratory status and identifying high-risk patients.

In pre-COVID era, early warning scores (EWS) have been strongly recommended in acute hospital settings to detect patients at risk of clinical deterioration. NEWS, that is immediately available and does not require laboratory data, was validated as the more reliable score in acute settings (e.g. in Emergency Departments, EDs and Acute Medical Units, AMUs) especially to predict in-hospital mortality and ICUs admissions.

A modified version of NEWS (NEWS-C), including age in addition to vital signs, was proposed but not validated to predict adverse events in COVID-19 patients.[1,2]

Covino et al. outlined in this journal that the accuracy of NEWS-C was lower than that of NEWS considering ICUs transfers and deaths at 48 hours and 7 days after Emergency Department admission.[3] Su et al., instead, reported that NEWS-C was the most accurate scoring system among common EWS for predicting early deterioration of respiratory function and need of intensive respiratory support in COVID-19 patients.[4] Finally, in a previous letter to this editor Peng et al. concluded that the ability of NEWS-C to predict deterioration in COVID-19 patients was as good as NEWS.[5]

The relatively small studies' populations could explain these apparently controversial results. Moreover, setting of application in the acute care chain (EDs, general inpatients wards, AMUs or ICUs), clinical characteristics with possible selection biases and criteria to define adverse events should always be considered when evaluating performances of different scoring systems.

To compare prognostic powers of NEWS and NEWS-C we conducted a retrospective analysis on all consecutive patients admitted to the AMU of a first-level ED hospital in Lombardy (Italy) from December 2017 to November 2019, considering in-hospital mortality, deaths within 72 hours and transfers to ICUs as outcomes.

2162 patients have been evaluated, mean age 77.3 ± 14.3, 49.3% male. The median values of NEWS-C and NEWS were 5 (IQR 3–7) and 2 (IQR 1–4) respectively, with higher values in non-survivor patients and in the ones transferred to ICUs ($p < 0.0001$). Considering in-hospital mortality the AUROCs were 0.77, 95% CI 0.73–0.80 for NEWS-C and 0.75, 95% CI 0.71–0.79 for NEWS, $p = 0.0011$. Less differences were found in predicting deaths within 72 h (0.79, 95% CI 0.75–0.84 for NEWS-C and 0.78, 95% CI 0.73–0.83 for NEWS, $p = 0.008$) and transfers to ICUs (0.64, 95% CI 0.58–0.70 for NEWS-C and 0.67, 95% CI 0.62–0.72 for NEWS, $p = 0.03$) Fig. 1.

In this first analysis of NEWS and NEWS-C in no COVID-19 patients, NEWS has confirmed its good performances in AMU in providing early warning of dismal outcomes (ICUs transfers and deaths

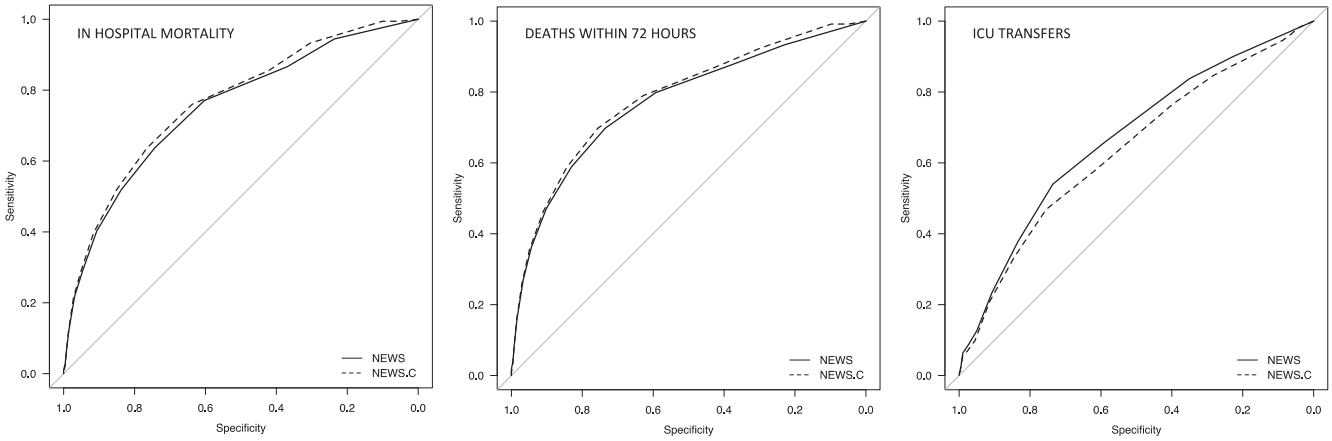

Fig. 1 – Area Under the Receiver Operator Characteristic of NEWS and NEWS-C for different adverse outcomes.

within 72 h), while NEWS-C has shown a better discrimination power to predict overall in-hospital mortality. Validation studies in different cohorts and settings are warranted to define the usefulness of NEWS-C and its possible advantages over NEWS.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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