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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Resuscitation

journal homepage: www.elsevier.com/locate/resuscitation

Letter to the Editor

The performance of the National Early Warning Score in hospitalised patients infected by Covid-19

To the Editor,

We read with great interest the recent topical article from Portsmouth and the accompanying Bangor editorial strongly endorsing the utilisation of National Early Warning Score (NEWS2) in hospitalised Covid-19 patients.[1,2]

Both articles interpret the high AU-ROC (to predict an adverse outcome within 24 h) as evidence against the need to change current NEWS2 weightings. The Portsmouth consortium cites the April 2020 Royal College of Physicians of London (RCPL) statement (in italics below) that NEWS2 should be used when managing patients with COVID 19 - but fails to emphasise the main RCPL message which highlights a major practical limitation of NEWS2.[3]

> '*The NEWS2 scoring system for oxygen supplementation is binary (yes/no). In patients with COVID-19 infection, once hospitalised and treated with oxygen, their oxygen requirement might increase rapidly if their respiratory function deteriorates but* ***this may not result in any additional significant increase in the NEWS2 score***.

A basic premise of the NEWS2 is that one standard scoring system is suitable for all adult in-patients without type 2 respiratory failure. Although the Portsmouth consortium calls for future research to investigate the limitations of using a binary oxygen supplementation, they fail to discuss previously published work addressing this scenario that has been available in electronic format since July 2019.[4] Estimated FiO2 was shown to be a strong predictor of adverse postoperative respiratory events both in terms of current status (logistic EWS)[4] and historic trajectory (DyniEWS) in two multicentre postoperative studies.[5]

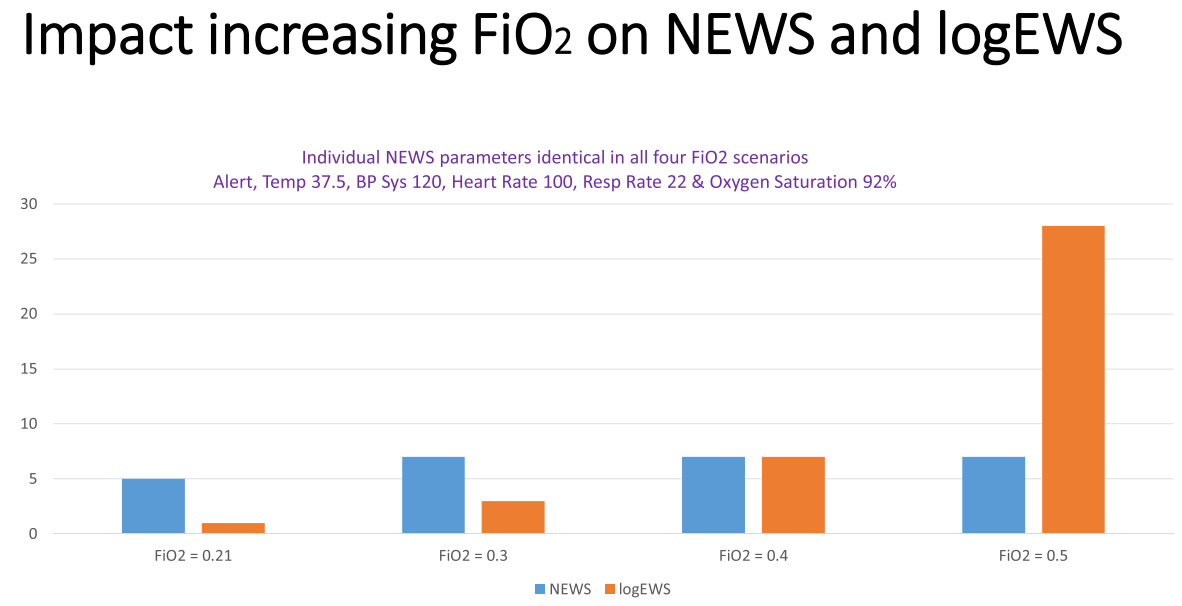

Fig. 1 – Standard (non FiO2) individual NEWS2 parameters are maintained constant throughout.
i) The total initial NEWS2 score (FiO2 0.21) is five due to respiratory rate of 22, heart rate 100 and 92% oxygen saturations (see left hand bars).
ii) The NEWS increases to 7 at three higher FiO2 values (0.3, 0.4 or 0.5) in the bars to the right.
iii) In contrast to the plateau with NEWS2, the log EWS app generates a risk of 1% on air, increasing to 3%, 7% and 28% at increasing FiO2 values of 0.3, 0.4 and 0.5 respectively.

Cambridge MRC has developed an app https://yidachiu.shinyapps.io/vitalpac_log_ews_app/ that illustrates differences in risk assessment made by two different snapshot scores.[4] Fig. 1 illustrates a common postoperative respiratory deterioration scenario (moving left to right) and the dramatic impact on logistic EWS (logEWS) versus NEWS of increasing FiO_2 *without additional changes in other physiological parameters.* In contrast to the plateau with NEWS2, the log EWS app generates a risk of 1% on air, increasing to 3%, 7% and 28% with increasing FiO2 values of 0.3, 0.4 and 0.5 respectively. We believe these studies and the case scenario make a strong case for subdividing oxygen therapy based on inspired FiO2.[4,5]

In conclusion, we believe it is important to recognise the limitations of using AU-ROC values to measure NEWS performance.[5] In a Covid era, when the general population understands that the R number changes over time and needs to be re-estimated constantly, we believe electronic scores including specialty specific calibration and patient trajectory are the next step in the journey to optimise hospital physiological surveillance.

Conflict of interest

None.

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