

# Noninvasive mechanical ventilation on the ward for severe COPD: still unresolved question of balance among safety and drawbacks?

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## Dear editor,

We read with interest the study by Yalcinsoy et al<sup>1</sup> appreciating its relevance and clinical practice value. In the last decades, noninvasive ventilation (NIV) has revolutionized the management of acute respiratory failure (ARF) reducing the need for endotracheal intubation and its associated complications and also reducing the complications associated with a stay in the intensive care unit, the length of hospital stay, and mortality.<sup>2</sup>

Several studies investigated the factors associated with NIV failure in order to identify the high-risk subset of patients who are likely to fail a trial of NIV. Moreover, NIV has been proven as an effective modality in the management of ARF with a success rate significantly higher for ARF due to chronic obstructive pulmonary disease (COPD) than other causes of ARF.<sup>3</sup>

The work of Yalcinsoy et al<sup>1</sup> reported the effectiveness of NIV in moderate and severe ARF from COPD treated on respiratory wards. As observed in other studies, the factors predicting success or failure with NIV in hypercapnic respiratory failure include pH at admission, pH after 1 hour of NIV trial, and severity of underlying illness.<sup>3-5</sup>

This study,<sup>1</sup> as well as confirming the success of treatment with NIV for COPD patients with moderate and severe ARF, has interestingly pointed out the predictive value for NIV failure of delta pH value  $<0.30$  and pH  $<7.31$  after 2 hours of NIV application, rather than the initial values of pH.

This result may support the need to try initially an NIV treatment in almost all patients with moderate and severe ARF and assess the effectiveness after 1 or 2 hours. We consider that some key points are needed to consider for a proper clinical extrapolation.

First, a limitation of this retrospective study is the unavailability of the severity of the underlying illness as assessed by the APACHE II score or similar scoring systems, as predictors of NIV failure.<sup>5</sup>

Second, regarding the severity of acidosis and gas exchange: intriguing data not reported in the study involve the onset of hypercapnia – acute or chronic. Yalcinsoy et al report the efficacy of NIV on acidosis seems to be better in patients treated with NIV at home (~50%). However, in this study, nonresponders patients have values of pCO<sub>2</sub> (76.8) higher than responders (69.6), compared with pH values that are similar (7.26 vs 7.27). Is it only a matter of adaptation to the NIV?

In addition, initial values of bicarbonates and their change over time are not reported. It could be relevant to know the authors' opinion about the potential role of

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bicarbonate and creatinine values and their variation over next time in identifying NIV success.<sup>6</sup>

Third, another discussed and interesting confirmation of the study is the relationship between reasons of ARF and NIV response. Comorbidities and reasons of ARF result are not significant in the NIV success or failure.<sup>1</sup>

We strongly agree with the authors about experienced staff being essential in achieving an NIV success in patients with ARF, evaluating failure criteria after a few hours, and applying the possible corrections in ventilation parameters for improved adaptation of the patient.

In real-life setting, the use of the NIV in patients with ARF and severe acidosis is greatly increased in the respiratory ward.<sup>7</sup> So, it is crucial to identify in a few hours patients at risk of NIV failure or intubation through the assessment of practical and fast clinical parameters.

Further clinical trials need to define a solid tool for NIV applications for severe COPD in wards.

## Disclosure

The authors report no conflicts of interest in this communication.

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