



High flow nasal therapy in Acute Exacerbation of COPD: Ready for the prime time?



We read with great interest the review article by Long and colleagues [1] as the manuscript highlights in detail the role of high flow nasal therapy (HFNT) in the management of patients with acute respiratory failure (ARF) admitted to the Emergency Department (ED). The Authors should be congratulated for providing a practical overview of the current evidence and insights for timely application of HFNT as a first-line approach of ARF, specifically in the ED settings where patients usually presented at the very early stage of their symptoms and appropriate initial therapeutic choices are crucial.

HFNT is relatively easy to administer and, therefore, represents an attractive treatment option from both patients and clinicians' perspectives, overcoming barriers to the use of noninvasive ventilation (NIV) in the ED [2] and improving patients comfort and dyspnea [3], being careful and gentle on patients' face/skin and allowing for patient interaction and expectoration [4]. Moreover, growing evidence reported the underlying physiological mechanisms leading to HFNT beneficial effects such as the reduction of the work of breathing, the increase of positive end-expiratory pressure, end-expiratory lung volume and the clearance of anatomical dead space in upper airways, together with the ability to deliver a reliable FiO₂ and proper humidification to enhance mucociliary clearance, leading to an improvement in gas exchange [5].

As correctly addressed by the Authors, despite the recognized value of HFNT and its physiological rationale, guidelines recommended its use only in selected patients with ARF [6]. NIV still represents the standard of care for managing COPD exacerbation (AECOPD) with acute hypercapnic respiratory failure (AHRF) [7]. Currently, two randomized controlled trials [8,9] compared the efficacy of HFNT with NIV as initial form of noninvasive respiratory support in the management of AHRF due to AECOPD and only one of them was conducted mainly in EDs [9]. Both trials showed no significant difference in PaCO₂ reduction and pH between the two treatments at various time points (2 h–6 h [9] and 12 h–5 days [8], respectively) with similar reductions in dyspnea score and higher patient comfort with HFNT. Nevertheless, nearly 30% of patients failed HFNT and needed escalation of treatment to NIV within 6 h and 57% of patients on HFNT subsequently received NIV during hospitalization and had a longer duration of NIV during hospital stay [9]. Doshi and coworkers also reported similar findings in a sub-group analysis of patients with AHRF due to AECOPD from a large RCT comparing a form of HFNT, High velocity nasal insufflation, to NIV and showing non-inferiority between the two treatments in terms of failure at 72 h [10]. Data from non-randomized trials also reported similar treatment effects between HFNT and NIV [11,12]. Taken together, these findings suggest that HFNT might be a feasible strategy for delivering noninvasive respiratory support in AHRF due to mild-to-moderate AECOPD.

From a clinical perspective, it is essential to remember that COPD is an umbrella of different clinical phenotypes that varies from patient to patient, and COPD exacerbations are heterogeneous events [13]. Therefore, in the era of precision medicine, management strategies of AHRF due to AECOPD should include tailored interventions [13] with pharmacological treatment to reverse the precipitating factors of exacerbation in conjunction with noninvasive respiratory support aiming at improving gas exchange, decreasing dyspnea and respiratory muscle load.

Although heterogeneous and with limitations, these data should call into question whether there is a time window for HFNT use in the initial management of AECOPD. Ideally, dealing with an effective type of noninvasive respiratory support with the added benefit of not having to worry too much about nonintentional leaks and poor fitting interfaces, patient/machine interactions and waveforms is the dream of every ED clinician.

Is the future of AHRF management of AECOPD even more noninvasive than today? To date, this question remains unanswered; thus, further studies are very much needed to clarify timely initiation and discontinuation criteria for HFNT use in the treatment of AHRF due to AECOPD, with adequate follow-up time points to assess its failure.

Over the past three decades, NIV has been the long-lasting cornerstone of respiratory support for patients with AECOPD [14]. While waiting for more evidence from RCTs ([Clinicaltrials.gov](https://clinicaltrials.gov) NCT 03014869, NCT03466385, NCT04881409, NCT03033251) clinicians should balance the potential benefit of using HFNT in properly selected patients with mild-to-moderate AECOPD.

Declaration of Competing Interest

None.

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