



More than 30% of patients are mask intolerant³

5% of patients admitted to ICU represent 20% of hospital care⁴

Average cost per patient is \$6,000⁵

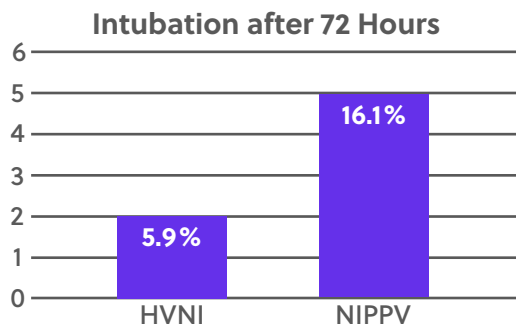
- **No increased risk** of intubation compared to NiPPV among COPD patients studied²
- **Similar trends for PCO₂ and pH changes** between HVNI and NiPPV patients in this study²
- HVNI patients in this study **spent less time in the ICU** and significantly more time in step-down units²

Treating Respiratory Distress in COPD Patients with Mask-Free NIV¹

Non-invasive positive pressure ventilation (NiPPV) is regarded as the gold standard for stabilizing patients with COPD exacerbations. Despite its clinical efficacy, this modality presents some challenges, especially in patients with mask-intolerance and anxiety. Around a third of all NiPPV failures can be attributed to mask-intolerance.³ A subgroup analysis suggests that high velocity nasal insufflation (HVNI)—i.e. Mask-Free NIV¹—may be a viable alternative to NiPPV among the COPD patient subgroup studied.

“The ventilatory effect of high velocity nasal insufflation compared to non-invasive positive-pressure ventilation in the treatment of hypercapnic respiratory failure: a subgroup analysis.”

A multi-center, randomized, controlled, non-inferiority trial found HVNI was comparable to NiPPV in treating adults in undifferentiated respiratory distress presenting in the Emergency Department (ED).⁶ Doshi and colleagues, published a subgroup analysis examining the COPD population of that larger trial.



Key Findings

34 of these patients who met the a priori subgroup criteria were treated with HVNI and 31 with NiPPV. Findings among these studied patients included:

- No difference in intubation or treatment failure
- Similar trends of pH and PCO₂
- No overall length of stay difference, but HVNI patients spent less time in the ICU and more time in step-down units

Limitations

It's important to note that there were several limitations, including that the original trial could not be blinded and that the study was a subgroup analysis from a larger appropriately powered study.

Key Take-Aways

There was no increased risk of intubation between NiPPV and HVNI in the patients in this study. The authors conclude that the results of these analyses suggest that HVNI “may be considered another noninvasive ventilation therapy, that is available in managing patients with acute hypercapnic respiratory failure.”

2. Doshi, P. et al. The ventilatory effect of high velocity nasal insufflation compared to noninvasive positive-pressure ventilation in the treatment of hypercapnic respiratory failure: A subgroup analysis. *Heart & Lung* 000 (2020)

3. Carron M. et al. Complications of non-invasive ventilation techniques: a comprehensive qualitative review of randomized trials. *British Journal of Anaesthesia*. 110(6):896-914. (2013)

4. Dalal, Anand A. et al. Costs of COPD exacerbations in the emergency department and inpatient setting. *Respiratory Medicine* Volume 105, Issue 3, March 2011, Pages 454-460

5. 2017 Medicare DRG Summary

6. Doshi, Pratik et al. High-Velocity Nasal Insufflation in the Treatment of Respiratory Failure: A Randomized Clinical Trial. *Annals of Emergency Medicine*, 2018. <https://www.ncbi.nlm.nih.gov/pubmed/29310868>