

Safety of initiation of High-Flow Nasal Oxygen outside the ICU in patients with severe COVID-19

M.L. Janssen^{1,2,3}, Y. Türk⁴, S. Baart⁵, E-J. Wils^{1,2}, on behalf of the Dutch HFNO COVID study group

Author affiliations:

- 1) Department of Intensive Care, Franciscus Gasthuis & Vlietland Hospital, Rotterdam, The Netherlands
- 2) Department of Intensive Care, Erasmus MC, Rotterdam, The Netherlands
- 3) Department of Respiratory Medicine, Erasmus MC, Rotterdam, The Netherlands
- 4) Department of Respiratory Medicine, Franciscus Gasthuis & Vlietland Hospital, Rotterdam, The Netherlands
- 5) Department of Biostatistics, Erasmus MC, Rotterdam, The Netherlands

Funding: This study was funded by an unrestricted grant from Indorama Ventures Europe B.V.

Introduction: Despite concerns over complications, High-flow nasal oxygen (HFNO) therapy is used outside ICU setting in patients with severe COVID-19-associated hypoxemia. We aimed to determine the safety of the initiation and use of HFNO in COVID-19 on respiratory wards.

Methods: In this prospective observational study including 10 hospitals, adult patients treated with HFNO for severe COVID-19 were included. Patients with Do-not-intubate order were excluded. The intubation rate, mortality rate and time course of hospital admission were compared between patients who initiated HFNO out- and inside ICU (ward- versus ICU-starters). Also, respiratory parameters prior to intubation were compared. Propensity matching was used to control for confounders.

Results: Out of 608 patients, 379 started on the ward and 229 in ICU, none of which died prior to intubation. In total, 277 (46%) patients were intubated. There were no differences between ward-starters (n=139) and ICU-starters (n=138) in PaO₂- FiO₂ ratio, respiratory rate and ROX-index prior to intubation (p>0.05). In the matched cohort, 214 patients with equal baseline characteristics were compared: The intubation rate was 53% in ward-starters and 60% in ICU-starters (p=0.41). In-hospital mortality (13 vs. 18%, p=0.45) and 28-day mortality (8% vs. 13%, p=0.28) were statistically equal between groups. Of note, ICU-free days at day 28 were higher in ward-starters, compared to ICU-starters (21 vs. 17, p<0.001).

Discussion: In patients with severe hypoxemia due to COVID-19, HFNO can safely be used on respiratory wards. Moreover, the use of HFNO on wards may save ICU-time without the cost of excess adverse events.