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Effectiveness and use of home high flow nasal cannula in Portugal: Where are we?

KEYWORDS High flow nasal cannula (HFNC); home care; interstitial lung disease; neoplasia; non-invasive ventilation (NIV)

Over the past two decades, high flow nasal cannula (HFNC) has emerged as a home treatment for patients with chronic respiratory diseases and chronic respiratory failure. This therapy provides heated and humidified gas admixture at a high flow rate (up to 60 L/min) via a wide-bore nasal cannula and its key benefits include its ability to deliver precise oxygen concentrations and reduce work of breathing.¹ It serves as an alternative to traditional home respiratory treatments by improving oxygenation, enhancing carbon dioxide clearance and promoting mucociliary clearance.²

HFNC is simple to use and improves patient comfort.³ In a qualitative study, patients using home HFNC reported better sleep and increased energy for daily activities and found the ease of use of the device to be a strong motivator for adherence.⁴ Additionally, HFNC is easy to implement and requires minimal technical skill for setup, effectively addressing some major drawbacks of non-invasive ventilation (NIV).⁵ These drawbacks include the need to select the proper interface to minimise leaks and prevent skin breakdown, as well as making ventilator setting adjustments to reduce patient-ventilator asynchronies.⁵ In fact, HFNC therapy has been associated with a lower incidence of skin breakdown and greater comfort compared to NIV.⁶

In patients with chronic obstructive pulmonary disease (COPD), two systematic reviews showed that home HFNC improves quality of life when compared to long-term oxygen therapy⁶ and reduces the rate of exacerbations when compared to usual care.⁷ Yet, these reviews included mainly experimental and quasi-experimental studies.^{6,7} In a broader systematic review conducted by the authors, HFNC appeared more effective than usual care or other home respiratory therapies in reducing exacerbations and improving quality of life in both patients with COPD and bronchiectasis.⁸ In addition, patients showed good adherence to HFNC, which was shown to be safe.⁸ This review included two retrospective studies, one of which was in patients with interstitial lung disease, demonstrating that this therapy is not restricted to patients with COPD and bronchiectasis.⁸ Despite the valuable evidence synthesis provided in these reviews, it is noteworthy that none of the original studies included were from Portugal.

The absence of clinical international guidelines is a key reason why this therapy is not yet widely adopted. Despite the lack of specific clinical guidance, the European Respiratory Society recognises the routine use of HFNC and has launched a survey to characterise this practice (results are not yet available). Considering national context, the Danish guidelines were pioneering,² although based mostly on narrative review of findings and expert opinion. In Portugal, there are no guidelines for the use of HFNC, and this therapy is still awaiting reimbursement by the National Health Service. However, in the Autonomous Region of the Azores, a different reality is in place as the therapy is being fully reimbursed by the Regional Health Service.

Despite these country-specific circumstances, based on the established effectiveness of home HFNC, the therapy is being prescribed to selected patients when reimbursement is provided by the hospital or the patient themselves. For instance, analysis of anonymised healthcare data from a home respiratory care provider (Nippon Gases Portugal, entity recognised for its suitability in R&D activities by the National Innovation Agency) shows that, since 2017, 23 adult patients – mostly with interstitial lung disease, lung cancer and COPD – have been prescribed home HFNC (Table 1). This demonstrates that HFNC therapy is applicable beyond chronic respiratory diseases. It has been prescribed by pulmonologists in both public and private hospitals, predominantly in the North region and Lisbon Metropolitan area. Addressing these potential disparities is crucial to ensure equitable access to advanced respiratory treatments like HFNC for all patients, regardless of geographic location. No serious adverse events were reported and around ¼ of patients used the therapy more than 100 days, underscoring its safety and tolerability. The main reason for suspending

Table 1. Patient and home high-flow nasal cannula (HFNC) regimen characteristics (*n* = 23).

Characteristic	
Sex	
Male	14 (61%)
Female	9 (39%)
Age ^a yrs, M[p25, p75](range)	70 [63, 76.5] (49-80)
Region	
North	13 (57%)
Lisbon Metropolitan Area	9 (39%)
Center	1 (4%)
Setting	
Public hospital	17 (74%)
Private hospital	6 (26%)
Therapy payment	
Hospital	19 (83%)
Patient	4 (17%)
Disease ^b	
Interstitial lung disease	6 (26%)
Neoplasia	5 (22%)
COPD	4 (17%)
COVID-19	3 (13%)
Neuromuscular	1 (4%)
HFNC inpatient adaptation ^c	21 (91%)
HFNC prescription	
Flow ^d L/min, M[p25, p75](range)	37.5 [25, 45] (20-60)
Temperature ^d	35.5 [34, 37] (34-37)
O ₂	9 (39%)
Duration of HFNC ^c	
<10 days	6 (26%)
10-99 days	9 (39%)
≥100 days	6 (26%)
Reason to suspend HFNC	
No need of O ₂	9 (39%)
Death	9 (39%)
LTOT prescribed	3 (13%)

Data shown as absolute number (*n*) and relative frequency (%), unless otherwise indicated. a 8 missing information; b 4 missing information; c 2 missing information; d 11 missing information. Abbreviations: LTOT, long-term oxygen therapy; M, median; O₂, oxygen.

the therapy was patient death, suggesting that healthcare providers and institutions are probably prescribing this innovative therapy in later stages of the diseases.

We believe that retrospective studies using healthcare administrative data, such as the example provided, will offer valuable insights into the real-world feasibility of HFNC in the home setting, particularly regarding its safety and adherence. Future studies with the healthcare data from all the home respiratory care providers operating in Portugal would be representative of the broader patient population. The perspective of health professionals working in the field regarding the HFNC implementation issues, the technical skills needed and the possible challenges of integrating this therapy into the NHS model of home respiratory care would also be of value.⁹

Prospective studies will also improve our knowledge on the effectiveness of home HFNC as well supporting the identification of the most suitable patient responders (underlying condition, exacerbation history, etc.).¹⁰ It is essential for these future studies to consider patient preferences and experiences,¹¹ as these will be key factors in demonstrating the acceptability of HFNC compared to other therapies.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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