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Practices of high-flow nasal therapy in acute and chronic respiratory failure: the Hi-Flow Survey

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ABSTRACT

Background High-flow nasal therapy (HFNT) is a widely used non-invasive respiratory support technique, but data on its clinical application remain limited. This study aimed to assess clinicians' self-reported practices, perceptions and barriers regarding HFNT use in acute and chronic respiratory failure.

Methods A cross-sectional web-based survey was disseminated among members of the European Respiratory Society's respiratory intensive care, rehabilitation and chronic care, and allied respiratory professionals assemblies from September to November 2023. Descriptive analysis was performed, with results presented as frequencies and percentages.

Results A total of 1176 clinicians from 104 countries participated, primarily pulmonologists (78.3%) and respiratory therapists (9.7%). HFNT was most commonly used for de novo acute respiratory failure (56.2%) and interstitial lung disease exacerbations (56.3%), with lower utilisation for chronic obstructive pulmonary disease with hypercapnia (47.4%) and trauma/atelectasis (41.5%). Despite guideline recommendations, 67% of respondents initiated HFNT only after conventional oxygen therapy failure. HFNT was also frequently used for symptom relief in palliative care, despite limited supporting evidence. Respiratory distress was the primary clinical trigger for HFNT initiation, while the ROX (Respiratory Rate-Oxygenation) index was rarely used to guide escalation of care (32%). Barriers to HFNT adoption included equipment costs (23%), lack of funding (22%) and limited clinician knowledge (18%). HFNT use increased during the COVID-19 pandemic (84%), but long-term application for chronic respiratory failure remained rare (16%).

Conclusions This survey highlights significant variability in HFNT practices and a disconnect between guidelines and real-world implementation. Addressing financial and educational barriers may improve adherence to evidence-based recommendations.

WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ High-flow nasal therapy (HFNT) is increasingly used in managing acute and chronic respiratory failure, but evidence on real-world clinical application remains limited.

WHAT THIS STUDY ADDS

⇒ This international survey of 1176 clinicians across 104 countries found major gaps between guidelines and real-world use of high-flow nasal therapy in acute/chronic care. Financial, educational and institutional barriers still hinder its adoption.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

⇒ These findings support the development of targeted educational initiatives, updated implementation strategies and policy changes to support evidence-based HFNT adoption globally, while informing future research to optimise its use across diverse care settings.

INTRODUCTION

High-flow nasal therapy (HFNT), introduced in the early 2000s, has become a valuable non-invasive respiratory support technique, transforming the management of both acute (ARF)[1] and chronic (CRF) respiratory failure.[2–6] HFNT offers key physiological benefits, including meeting patients' inspiratory demands, generating low levels of positive pressure, improving end-expiratory lung volume and alveolar recruitment, delivering a controlled and reliable FiO_2, and flushing out dead space.[7] Despite its increasing adoption, real-world data on its usage and potential barriers remain limited, as most epidemiological studies have focused on specific clinical settings or geographic regions.[8–12] While numerous studies have demonstrated HFNT's effectiveness in various clinical scenarios[13]—including de novo ARF,[14] chronic obstructive pulmonary disease (COPD) exacerbations,[15] post-extubation respiratory failure[16] and COVID-19 pneumonia[17–20]—there remains a

gap in understanding clinicians' practical experiences, preferences and decision-making processes regarding its use. Factors influencing HFNT initiation, such as patient selection criteria, timing and predominant clinical contexts, are not well defined. These decisions are likely shaped by institutional protocols, resource availability, clinician experience and patient characteristics.

This international survey aims to assess clinicians' real-world practices, perceptions and experiences with HFNT. Specifically, it explores HFNT utilisation for both ARF and CRF, identifying the key drivers of its prescription and application across diverse healthcare settings. By analysing these patterns, this study seeks to provide a comprehensive understanding of HFNT implementation, uncover barriers to its standardisation and highlight priorities for future research.

METHODS

This cross-sectional survey study was deemed exempt from the need for approval by the Policlinico G. Rodolico, Catania Ethical Committee. Voluntary completion of the survey was considered consent to participate in the study. The design, implementation and reporting of this survey followed the Checklist for Reporting of Survey Studies (CROSS),[21] which is available as online supplemental appendix 1.

Survey development and testing

The survey questionnaire was developed to describe the current clinical practice on the use of HFNT by clinicians across diverse social, geographical and economic contexts and identify the current practices, challenges and barriers related to HFNT initiation and withdrawal in acute and chronic settings. We used a rigorous survey methodology to design, test and administer the survey instrument.[22 23] Survey questions (item generation) were developed through a combination of literature review and input from 15 interdisciplinary clinicians (anaesthesiologists/intensivists, pulmonologists, respiratory therapists) members of the Steering Committee, with known research and clinical experience on HFNT. An assessment of content validity, clarity, length and completeness of the survey was performed through semistructured interviews (pretesting) by a convenient sample of 10 clinicians. The survey was then pilot-tested on 5 intensivists, 5 pulmonologists and 2 respiratory therapists. Inter-rater agreement was calculated using Fleiss' kappa to measure consistency across 12 raters, and a kappa value ≥0.75 was considered indicative of strong agreement. Adjustments were made based on the pilot participants' feedback. The final questionnaire (online supplemental appendix 2) consisted of 30 questions was approved by all members of the Steering Committee and endorsed by the European Respiratory Society (ERS). We collected information concerning respondents' primary location of practice, the number of years practising, primary specialty and experience treating the relevant patient populations. Limited demographic information was collected to decrease the likelihood of individual respondent identification. Participants indicated their responses on a 5-point scale from 1 (never use) to 5 (every time) or not important to extremely important or multiple-choice format. The survey was available in English language only.

Survey administration

The population of interest, purposively sampled, included anaesthesiologists/intensivists, pulmonologists with a specific interest in acute and chronic respiratory failure, general pulmonologists and respiratory therapists and the sampling frame for the survey was the ERS members. The survey was distributed via e-mail to members of ERS Assemblies 2 (respiratory intensive care), 1 (rehabilitation and chronic care) and 9 (allied respiratory professionals), with an invitation letter and a link to the questionnaire sent by their respective Assembly Chair or Secretary. Participants were purposively sampled (ensuring representation of different types of clinicians from both small and large wards/intensive care units and academic and non-academic hospitals from diverse geographic regions) to maximise the diversity of perspectives and experiences captured. The web survey was disseminated on 04 September 2023 and remained open until 30 October 2023 and administered through a secure online survey platform REDCap (Research Electronic Data Capture) and hosted at the University of Messina, under the supervision of an experienced data manager (AN). Potential respondents were sent multiple follow-up reminders at 2-week intervals to increase response rate (up to three reminders), followed by a closing soon e-mail at approximately 7–8 weeks. Non-participation reasons were not collected. The survey was voluntary, and consent was implied if the participants responded, and no incentives were offered for survey completion. Participant confidentiality was ensured through anonymisation methods in data storage and analysis.

Statistical Analysis

Descriptive statistics were used to express categorical variables as counts and percentages and median (IQR) for continuous variables. Data were presented using tables and graphs, as appropriate. Responses with missing data were reviewed, and the proportion of missing responses for each question was documented. Missing data were handled using pairwise deletion. All analyses were performed using R Statistical Software (v4.3.3; R Core Team 2024).

RESULTS

Participant Characteristics

A total of 1176 questionnaires were collected from 104 countries across six continents, with complete responses available for 59.1% (695) of respondents. The full characteristics of the respondents are presented in table 1.

Table 1 Characteristics of survey respondents

	HFNT use to treat ARF		
	No (n=101)	Yes (n=1075)	Total (n=1176)
Primary specialty			
Anaesthesia/critical care	0 (0.0%)	49 (4.6%)	49 (4.2%)
Emergency medicine	1 (1.0%)	5 (0.5%)	6 (0.5%)
Internal medicine	5 (5.0%)	41 (3.8%)	46 (3.9%)
Respiratory medicine	67 (66.3%)	854 (79.4%)	921 (78.3%)
Respiratory therapy	21 (20.8%)	93 (8.7%)	114 (9.7%)
Other	7 (6.9%)	33 (3.1%)	40 (3.4%)
Working unit			
Emergency room	1 (1.0%)	11 (1.0%)	12 (1.0%)
General ICU	10 (9.9%)	158 (14.7%)	168 (14.3%)
Internal medicine	16 (15.8%)	101 (9.4%)	117 (9.9%)
Pulmonary ward with HDU	12 (11.9%)	466 (43.3%)	478 (40.6%)
Pulmonary ward without HDU	21 (20.8%)	235 (21.9%)	256 (21.8%)
Rehabilitation/chronic ventilatory facilities	24 (23.8%)	53 (4.9%)	77 (6.5%)
Other	17 (16.8%)	51 (4.7%)	68 (5.8%)
Working experience			
<1 years	7 (6.9%)	28 (2.6%)	35 (3.0%)
1–5 years	11 (10.9%)	212 (19.7%)	223 (19.0%)
6–10 years	22 (21.8%)	175 (16.3%)	197 (16.8%)
>10 years	61 (60.4%)	660 (61.4%)	721 (61.3%)

Data are presented as numbers and percentages.
ARF, acute respiratory failure; HDU, high-dependency unit; HFNT, high-flow nasal therapy; ICU, intensive care unit.

Comparison between complete and partial respondents showed similar distributions by specialty and working unit (online supplemental table S1, online supplemental material). The most represented countries among respondents were Italy (10%), UK (8.2%), India (7.1%), Spain (5.5%), Portugal (4.3%) and Turkey (4.1%). Online supplemental figure S1, online supplemental material summarises the geographic distribution of respondents by country.

Attitudes towards the use of HFNT in acute settings

More than half of the respondents reported they are most likely to use ('Every time' + 'Almost every time') HFNT in de novo ARF (543/966, 56.2%) and interstitial lung diseases (ILDs) exacerbations (544/966, 56.3%), followed by do-not-intubate (DNI) patients (455/966, 47.1%) and during non-invasive ventilation (NIV) intervals (445/967, 46%). However, HFNT is rarely used ('Almost never' + 'Never use') in acute exacerbation of COPD (AECOPD) with hypercapnia (509/967, 52.6%) or trauma/atelectasis (401/967, 41.5%) (figure 1).

Overall, most respondents reported they initiate HFNT when patients fail to respond to conventional oxygen therapy (COT) across the majority of the explored clinical scenarios (de novo ARF, AECOPD with hypoxaemia, ILD exacerbations and palliative care for terminally ill patients as a ceiling treatment). As a first-line alternative to NIV, HFNT is most frequently used in post-extubation failure treatment (210/725, 29%) and prevention (219/761, 28.8%). Additionally, HFNT is commonly initiated after NIV failure, particularly in COPD patients with hypercapnic respiratory failure, where 33.5% (226/675) of clinicians reported switching to HFNT in this context, as shown in figure 2.

Interestingly, the most considered clinical characteristic to start the treatment is respiratory distress irrespective of oxygenation (PaO_2/FiO_2). The PaO_2/FiO_2 ratio is not frequently used as a criterion for starting HFNT, particularly in DNI patients and palliative care settings (315/667, 47.2%; 326/633, 51.5%, respectively) (Online supplemental figure S2, online supplemental material).

Figure 3 illustrates the initial HFNT settings (flow, temperature and FiO_2) most used by respondents. HFNT is most often used continuously until significant improvement in oxygenation is observed (467/671, 69.6%), while fixed sequential cycles of HFNT and COT are rarely used ('Almost never' + 'Never use') (352/670, 52.5%) and sequential cycles of HFNT and NIV are used only

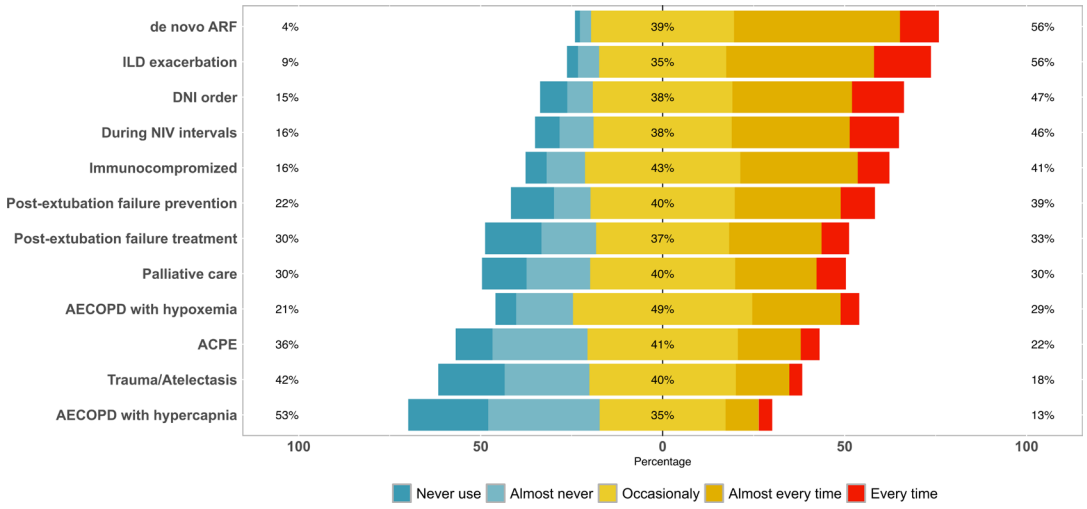

Figure 1 HFNT use in ARF scenarios. Perceived use of HFNT in ARF scenarios. Bars represent the percentage of responses across five rating categories. Percentages on the left side of each bar indicate the combined proportion of 'Never' and 'Almost never' ratings. Percentages on the right side of each bar indicate the combined proportion of 'Every time' and 'Almost every time' ratings. ACPE, acute cardiogenic pulmonary oedema; AECOPD, acute exacerbation of chronic obstructive pulmonary disease; ARF, acute respiratory failure; COT, conventional oxygen therapy; DNI, do not intubate order; FiO_2, fraction of inspiratory oxygen; HFNT, high-flow nasal therapy; ILD, interstitial lung disease; NIV, non-invasive ventilation.

occasionally (323/670, 48.2%). In terms of monitoring during HFNT, peripherally oxygen saturation (SpO_2) is the most frequently monitored parameter (650/665, 97.7%), followed by patient comfort (634/665, 95.3%) and respiratory rate (620/665, 93.2%), while ROX (Respiratory Rate-Oxygenation) index is considered less frequently (269/665, 40.5%), as shown in figure 4a. The most common reason for discontinuing HFNT in favour of escalation therapy (NIV or tracheal intubation) is hypercapnia with respiratory acidosis (537/650, 82.6%), followed by failure to achieve target SpO_2 (472/649, 71.9%), while ROX index was used only by 39.2% (255/650) of clinicians as shown in figure 4b. De-escalation from HFNT to COT typically occurs when SpO_2 exceeds 96% with fraction of inspired oxygen (FiO_2) <30% (508/636, 79.8%), while very few respondents continue HFNT until discharge (39/636, 6.1%).

The majority of respondents stated that physicians are primarily responsible for setting up HFNT (271/636, 42.6%), followed by the nurse under physician

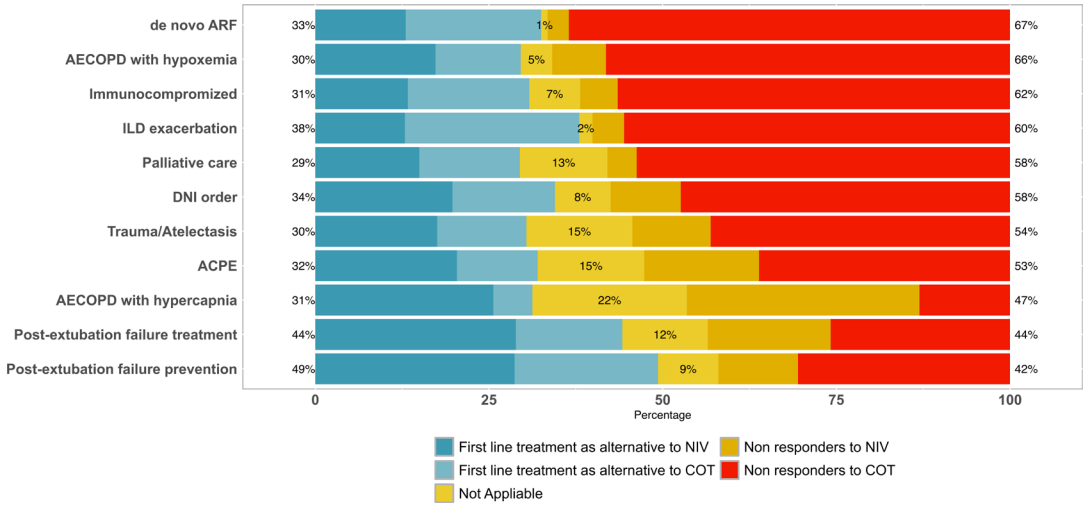

Figure 2 Timing of HFNT initiation in ARF scenarios. Perceived timing of HFNT initiation in ARF scenarios. Bars represent the percentage of responses across five time points. Percentages on the left side of each bar indicate the combined proportion of 'First line alternative to NIV' and 'First line alternative to COT' ratings. Percentages on the right side of each bar indicate the combined proportion of 'Non responders to NIV' and 'Non responders to COT' ratings. ACPE, acute cardiogenic pulmonary oedema; AECOPD, acute exacerbation of chronic obstructive pulmonary disease; ARF, acute respiratory failure; COT, conventional oxygen therapy; DNI, do not intubate order; HFNT, high-flow nasal therapy; ILD, interstitial lung disease; NIV, non-invasive ventilation.

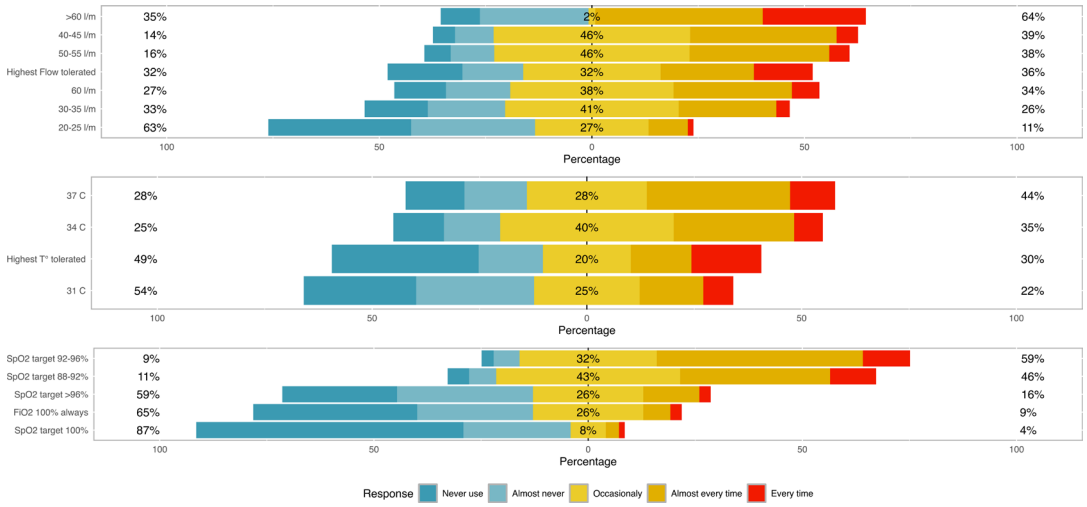

Figure 3 HFNT initial settings in ARF scenarios. Perceived HFNT initial settings used in ARF scenarios. Bars represent the percentage of responses across five rating categories. Percentages on the left side of each bar indicate the combined proportion of 'Never' and 'Almost never' ratings. Percentages on the right side of each bar indicate the combined proportion of 'Every time' and 'Almost every time' ratings. ARF, acute respiratory failure; FiO_2, fraction of inspiratory oxygen; HFNT, high-flow nasal therapy; l/min, litre per minute; SpO_2, peripheral oxygen saturation.

prescription (227/636, 35.7%) and respiratory therapist (138/636, 21.7%). Respondents reported similar tolerance to COT with more stable and reliable FiO_2 delivery (476/630, 75.6%), ease of application (462/630, 73.3%) and better tolerance than NIV (452/630, 71.8%) as the main reasons for choosing HFNT in the management of ARF (online supplemental figureS3, online supplemental material). The most expected physiological benefit of HFNT is reducing the work of breathing (540/624, 86.5%), while CO_2 clearance is the least expected (164/624, 26.3%) (online supplemental figure S4, online supplemental material). Regarding the role of HFNT, the majority of respondents see it as a step-up therapy from COT before continuous positive airway pressure (CPAP) or NIV (374/614, 60.9%), with fewer considering it an alternative to CPAP/NIV (123/614, 20%) (Figure 5). Finally, 34.8% (409/1176) of respondents view HFNT as a true innovation in medicine, with 20.2% (237/1176) considering it a game changer in the way of managing patients with ARF and only 1.8% (21/1176) of respondents considering it a new gadget on the market that does not change clinical practice. The most common barriers to HFNT adoption in acute settings are lack of equipment (270/1176, 22.9%) and the high cost of the device (262/1176, 22.3%), followed by the lack of knowledge about the physiological mechanism (217/1176, 18.5%) and lack of scientific evidence supporting its use (206/1176, 17.5%). Stand-alone HFNT devices are preferred by 81.4% (499/613) of respondents, while 84.2% (575/683) believe that the COVID-19 pandemic has increased their use of HFNT in clinical practice.

Attitudes towards the treatment in chronic settings

The majority of respondents (519/707, 73%; missing: 469) do not prescribe domiciliary long-term HFNT (LT-HFNT). The full characteristics of respondents who reported to prescribe LT-HFNT are presented in online supplemental table S2, online supplemental material. The estimated LT-HFNT prescription rate after acute phase initiation was 13.5% (IQR: 5%–33%). Most common indications for LT-HFNT prescriptions are shown in figure 6. The typical median prescription duration is 12 hours per day (IQR: 9 to 16 hours). These prescriptions are most reimbursed by the government (61/187, 32%) or social security (44/187, 23%), followed by hospital (32/187, 17%) and patient payments (29/187, 15%). The most frequently used flow rate in domiciliary HFNT is 30–35 l/m (70/184, 38%), with a median FiO_2 of 42% (IQR: 33% to 60%) and a temperature of 34°C (65/181, 36%) or 37°C (60/181, 33%), while the most tolerated temperature was used (57/181, 31.49%). Only 10% of practitioners (IQR: 0% to 50%) estimate to prescribe HFNT without additional oxygen, indicating that oxygen supplementation is a critical component of HFNT in most clinical scenarios. The most significant barriers perceived in prescribing LT-HFNT were costs (83/188, 44.1%) and lack of funding (78/188, 41.4%).

DISCUSSION

This international survey revealed significant variability in HFNT use across acute and chronic settings. To our knowledge, this is the largest international study assessing clinicians' attitudes and practices regarding HFNT use, offering valuable insights into factors influencing clinical decision-making and perceived barriers. Clinicians primarily use HFNT for de novo ARF, yet 40% of respondents do not consider it the reference treatment, despite evidence supporting its mortality benefit over COT.[14] Its frequent use for ILD exacerbations, despite limited supporting evidence,[24 25] suggests that clinicians'

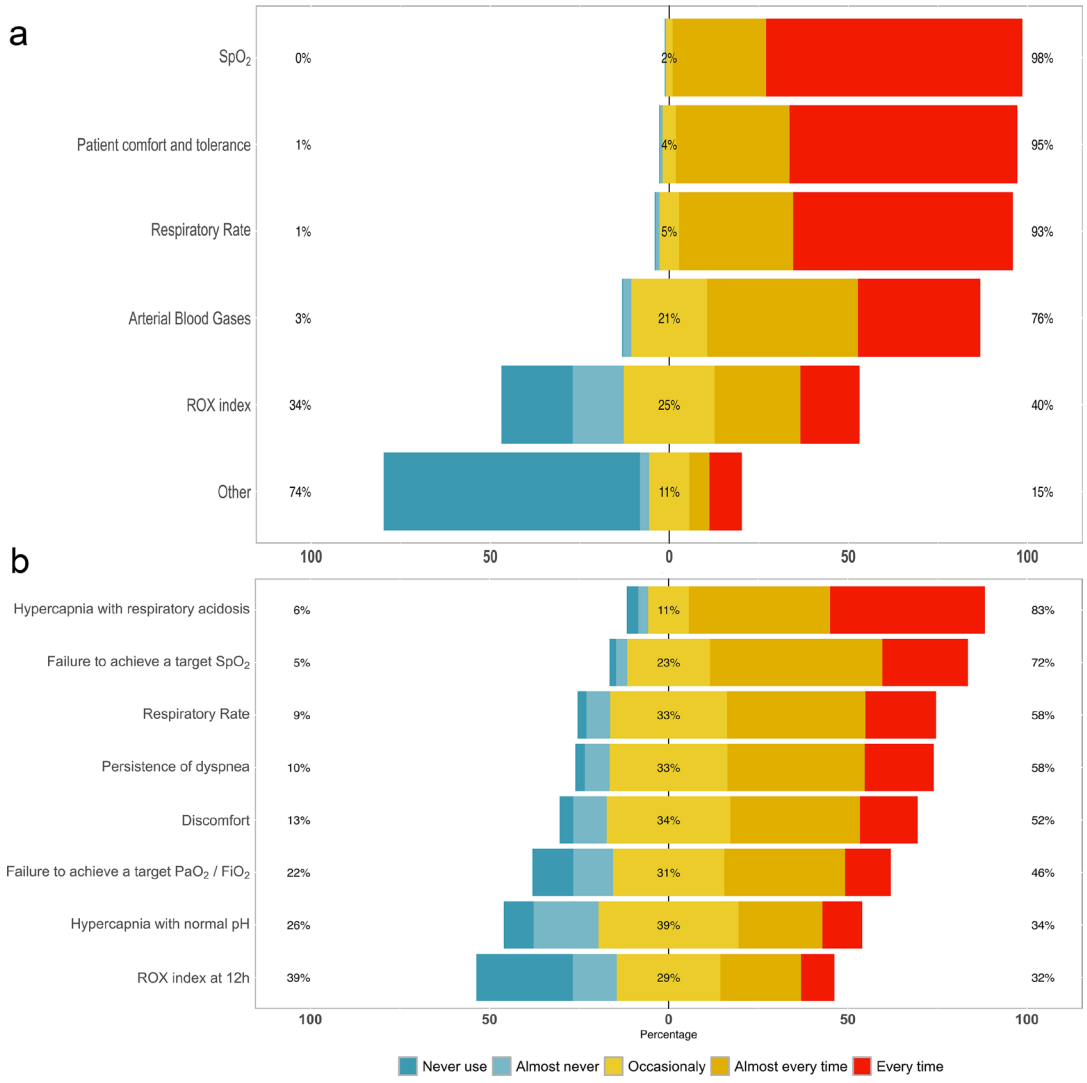

Figure 4 Monitoring parameters and escalation criteria during HFNT. (a) Perceived parameters used to monitor patients during HFNT. (b) Perceived criteria used to discontinue HFNT in favour of escalation of care to NIV or ETI. Bars represent the percentage of responses across five rating categories. Percentages on the left side of each bar indicate the combined proportion of 'Never' and 'Almost never' ratings. Percentages on the right side of each bar indicate the combined proportion of 'Every time' and 'Almost every time' ratings. ETI, endotracheal intubation; HFNT, high-flow nasal therapy; l/min, litre per minute; NIV, non-invasive ventilation; P/F, PaO_2/FiO_2 (ratio of partial pressure of oxygen in arterial blood (PaO_2) to the fraction of inspiratory oxygen concentration (FiO_2)); ROX, Respiratory Rate-Oxygenation index; SpO_2, peripheral oxygen saturation.

decisions may often be influenced by their practical experience and local context rather than by the available research evidence. Conversely, clinicians remain hesitant to use HFNT in AECOPD with hypercapnia and trauma/atelectasis, likely due to well-established NIV efficacy for AECOPD[26] and uncertainty about HFNT's benefits in these scenarios. Most respondents initiate HFNT as a step-up therapy after COT failure, despite guidelines recommending it as a first-line treatment for de novo ARF to prevent intubation.[1 27 28] This gap between evidence-based recommendations and practice suggests a persistent reliance on COT as the default management strategy for ARF. Notably, one-third of respondents use HFNT for palliative care in terminally ill and DNI patients, highlighting its perceived comfort benefits despite limited supporting evidence.[29–31] To date, only one small randomised controlled trial has evaluated HFNT use in patients with cancer[29] and current American Society of Clinical Oncology guidelines list HFNT as a non-pharmacological option for dyspnoea palliation, with low certainty of evidence.[30]

HFNT plays a crucial role in critical care, particularly in the management of ARF. The most recent international guidelines for severe community-acquired pneumonia (sCAP)[31] now recommend HFNT over NIV in most patients requiring non-invasive respiratory support, reflecting its advantages in reducing intubation rates and improving outcomes. This reinforces the importance of aligning clinical practice with current evidence to optimise patient management and ensure the best possible care for those with severe pneumonia and other causes of ARF. Interestingly, respiratory distress emerged as the

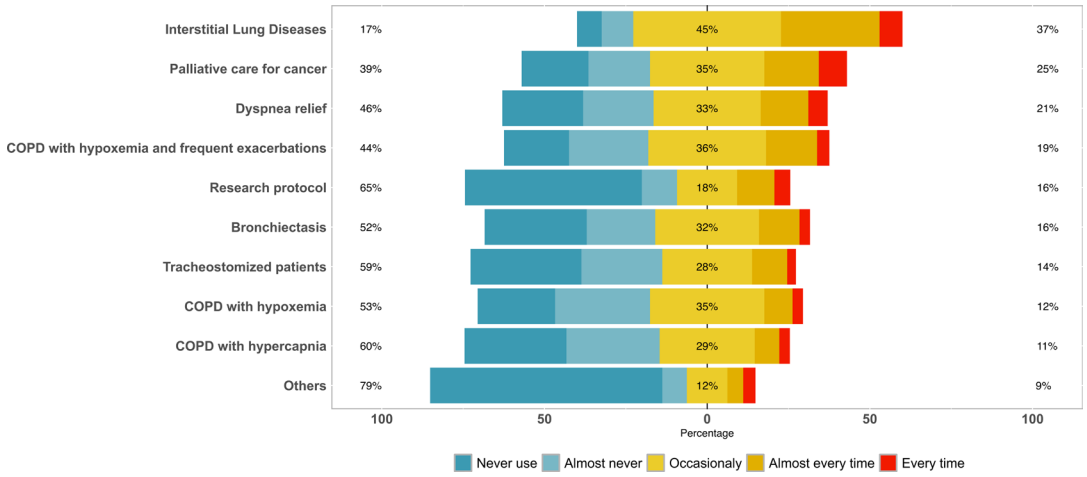

Figure 5 Perceived role of HFNT in managing ARF. Perceived role of HFNT in ARF management. Bars represent the percentage of responses across five importance levels. Percentages on the left side of each bar indicate the combined proportion of 'Never' and 'Almost never' ratings. Percentages on the right side of each bar indicate the combined proportion of 'Every time' and 'Almost every time' ratings. ARF, acute respiratory failure; COPD, chronic obstructive pulmonary disease; CPAP, continuous positive airway pressure; HFNT, high-flow nasal therapy; NIV, non-invasive ventilation.

most frequently considered clinical characteristic for initiating HFNT, regardless of the patient's oxygenation status (eg, PaO_2/FiO_2); this suggests that clinicians may prioritise signs of laboured breathing as a marker of ARF severity over objective oxygenation measures in their decision-making to initiate HFNT.

Clinicians largely view HFNT as a step-up therapy from COT, a bridge before escalating to CPAP or NIV rather than a stand-alone modality. This perspective has important clinical implications, as HFNT failure is associated with delayed intubation and increased mortality,[32] and an inappropriate delay or inadequate transition to CPAP or NIV may prolong spontaneous respiratory effort, potentially increasing the risk of patient self-inflicted lung injury.[33] The COVID-19 pandemic significantly accelerated HFNT adoption despite conflicting evidence on its impact on relevant clinical outcomes.[17–20]

HFNT was perceived as a versatile and well-tolerated therapy, with respondents highlighting reliable FiO_2 delivery, ease of use and superior patient tolerance compared with NIV as its most valued advantages. However, high costs, lack of funding and clinician knowledge gaps remain key barriers to broader adoption of HFNT. Addressing these issues through targeted funding, reimbursement policies and education initiatives is essential to ensuring broader, standardised and effective implementation. Despite these challenges, HFNT is

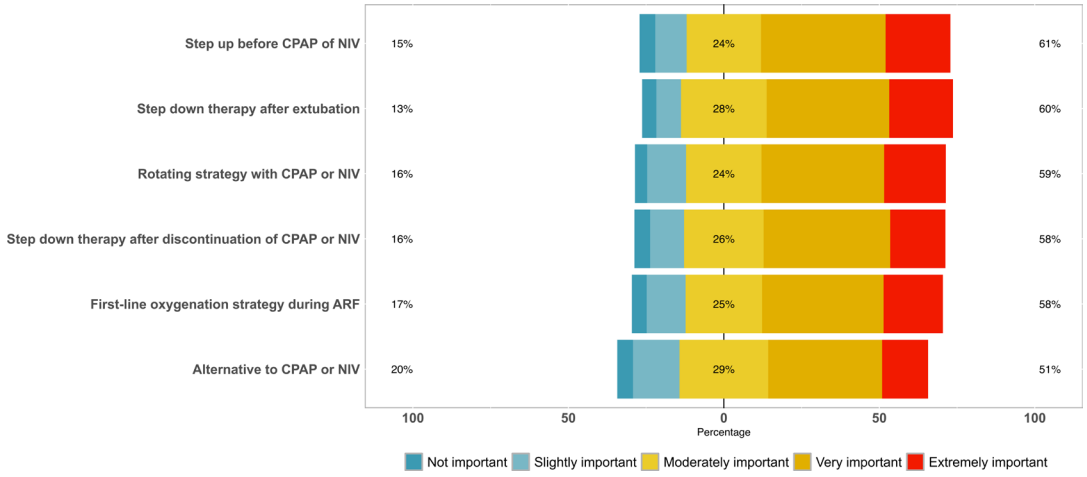

Figure 6 Long-term HFNT use in CRF scenarios. Perceived use of domiciliary long-term HFNT in CRF scenarios. Bars represent the percentage of responses across five rating categories. Percentages on the left side of each bar indicate the combined proportion of 'Never' and 'Almost never' ratings. Percentages on the right side of each bar indicate the combined proportion of 'Every time' and 'Almost every time' ratings. ARF, acute respiratory failure; COPD, chronic obstructive pulmonary disease; CPAP, continuous positive airway pressure; CRF, chronic respiratory failure; HFNT, high-flow nasal therapy; NIV, non-invasive ventilation.

widely recognised by clinicians as a major advancement in respiratory failure management.

The use of LT-HFNT for CRF remains limited, primarily due to cost and reimbursement issues, despite evidence supporting its cost-effectiveness in COPD by reducing exacerbations and hospitalisations.[34] Our data suggest a clinician's preference for prescribing LT-HFNT in ILD and palliative care, emphasising its perceived value in symptom relief and patient comfort, though scientific evidence supporting these indications remains scarce.[24 25 35] In contrast, LT-HFNT is less commonly prescribed in patients with COPD and is primarily used for those with chronic hypoxemia and frequent exacerbations. While the evidence supporting LT-HFNT effectiveness in COPD is growing, its use remains controversial. In a randomised trial, Storgaard *et al*[2] demonstrated that LT-HFNT reduced the number of exacerbations compared with COT in patients with COPD and hypoxic respiratory failure, along with improvements in dyspnoea and quality of life. Conversely, the trial by Nagata *et al*[3] showed that adding LT-HFNT in patients with stable hypercapnic COPD significantly reduced moderate to severe exacerbation rates, but led only to transient improvements in physiological parameters and health-related quality of life, with no effects on exercise capacity or hospital admissions. These findings may also reflect the ongoing debate on the optimal non-invasive domiciliary support strategy for COPD, especially in hypercapnic patients, where home NIV likely remains the treatment of choice.[36] Interestingly, 15.5% of LT-HFNT prescriptions were for bronchiectasis, reflecting its perceived role in secretion management. Moreover, the reported median prescribed FiO_2 of 42% in chronic settings suggests that LT-HFNT is predominantly used for patients with severe hypoxemia. However, concerns about increased oxygen consumption and resource utilisation[37] warrant further research to optimise its cost-effectiveness.

Understanding real-world clinical practice is crucial for optimising HFNT implementation, reducing practice variability and improving guideline adherence. The suboptimal use of predictive tools like the ROX index to monitor patients at risk of clinical deterioration and the frequent transition from HFNT to CPAP/NIV highlights a gap between evidence and practice, underscoring the need for targeted training and education to ensure timely, effective interventions.[38 39] Identifying barriers such as cost constraints and knowledge gaps will help improve access to care and promote consistent, evidence-based HFNT application. Finally, our Hi-FLOW survey provides a more comprehensive picture of HFNT use compared with previous surveys, which were often limited to specific regions or focused solely on acute care settings.[8–12] Our findings confirm the widespread use of HFNT also for clinical situations where supporting evidence is limited or lacking, as reported by Alnajada *et al*.[10] These insights can help inform future trial design and quality improvement initiatives aimed at optimising HFNT use across diverse clinical contexts.

This study's strengths include its large, geographically diverse sample, multidisciplinary cohort of experienced healthcare professionals, and insights into prescribing behaviours and barriers to HFNT adoption. These factors enhance the generalisability of our findings, reflecting a variety of healthcare practices and ensuring that the results are representative of clinicians managing patients with ARF and CRF in the participating countries. However, limitations include self-reported data that may reflect perceptions rather than actual practices, potential selection bias favouring clinicians more familiar or enthusiastic about HFNT, and regional disparities in survey responses, which may affect generalisability. The survey was distributed mainly through ERS communication channels and may therefore over-represent ERS-affiliated or academic clinicians; however, responses from 104 countries, including a substantial proportion from non-European regions (eg, India 7%), support its global representativeness. Despite incomplete data in about 40% of responses, the characteristics of partial and full respondents were comparable, suggesting minimal risk of bias. Additionally, the response rate cannot be determined as the use of a non-unique survey link prevents verification that responses were submitted exclusively by the intended participants.

CONCLUSIONS

This survey highlights significant variability in HFNT use across acute and chronic settings, emphasising discrepancies between clinical practice and evidence-based recommendations. Despite its recognised benefits, HFNT is often underutilised as a first-line therapy for de novo ARF and remains limited in CRF due to cost constraints. Its increasing role in critical care, including recent recommendations favouring HFNT over NIV for severe CAP, underscores the need to standardise its implementation. Targeted education, improved funding policies and further research are essential to optimising HFNT's impact on patient care.

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