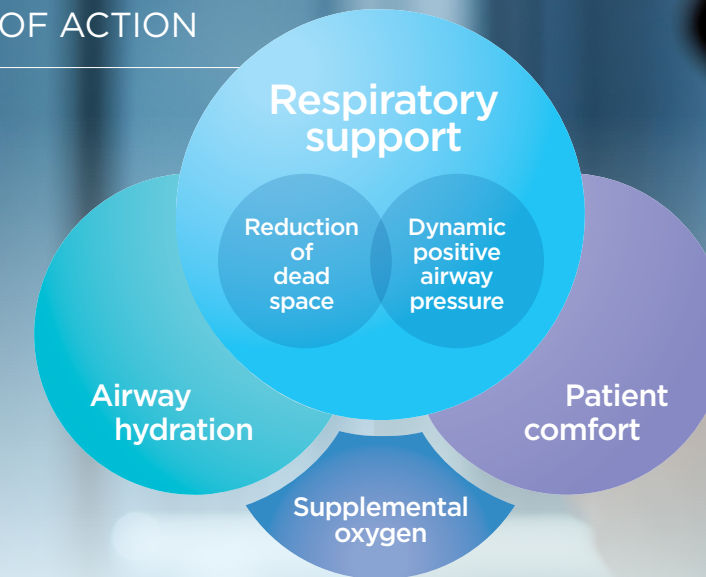




Optiflow™ Nasal High Flow (NHF) therapy delivers respiratory support to your spontaneously breathing patients. It provides heated, humidified air and/or oxygen at flow rates up to 60 L/min through the unique Optiflow patient interfaces.

MECHANISMS OF ACTION



With Optiflow NHF, you can independently titrate flow and oxygen concentration (FiO₂ 21 – 100%) according to your patient's needs.

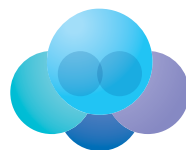
The mechanisms of action differ from those of conventional therapies, as do the resulting physiological effects and clinical outcomes.

PHYSIOLOGICAL EFFECTS

- ↑ **IMPROVES** ventilation and gas exchange
- ↓ **REDUCES** respiratory rate¹⁻⁷
- ↓ **REDUCES** carbon dioxide⁸⁻¹⁰
- ↑ **INCREASES** end-expiratory lung volume¹
- ↑ **IMPROVES** mucus clearance¹¹
- ↑ **IMPROVES** oxygenation^{1,2,4,7,12-16}

CLINICAL OUTCOMES

- ↓ **REDUCES** escalation of care when used:
 - as a first-line respiratory support¹⁴
 - post-extubation^{13,17-20}
- ↓ **REDUCES** mortality rate¹⁴
- ↑ **IMPROVES** symptomatic relief^{2,3,14}
- ↑ **IMPROVES** comfort and patient compliance^{2,3,13,17,20}



MECHANISMS OF ACTION

RESPIRATORY SUPPORT

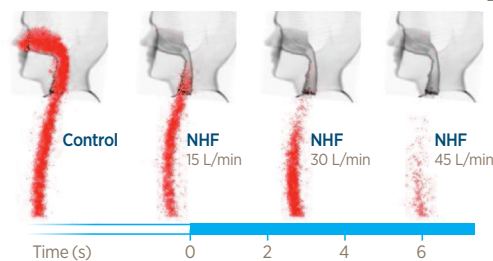
Reduction of dead space

Clearance of expired air in the upper airways⁸

Reduces rebreathing of gas with high CO₂ and depleted O₂⁸

Increases alveolar ventilation⁸

The effects of flow rate on clearance of rebreathing CO₂



Dynamic positive airway pressure

Breath- and flow-dependent airway pressure^{9,21}

Promotes slow and deep breathing⁹

Increases alveolar ventilation^{1,8}

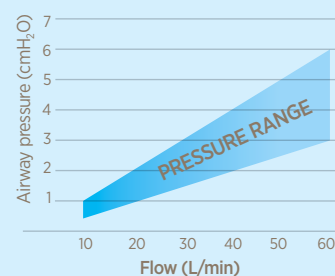
The effects of NHF on airway pressure, end-expiratory lung volume and tidal volume



Low flow oxygen Optiflow

Adapted from Corley et al.¹

Mean airway pressure
(For illustrative purposes only)



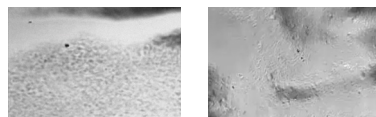
Airway hydration

Optimal Humidity

Prevents desiccation of the airway epithelium²²

Improves mucus clearance^{11,22}

The effects of high flows of warm, humidified air on mucociliary transport



Optimal humidity
(100% Humidity)

Dry epithelium after exposure to
room air for 1 hour

Patient comfort

Optimal
Humidity

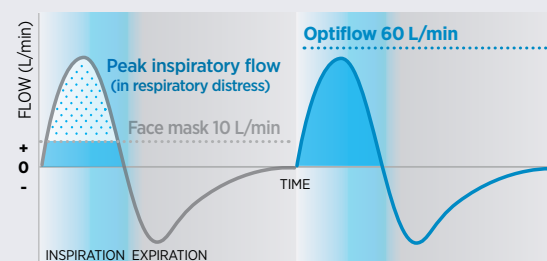
Open system
No seal required

Comfortable^{2,13}
and easy to use

**Patient
tolerance^{2,14}**

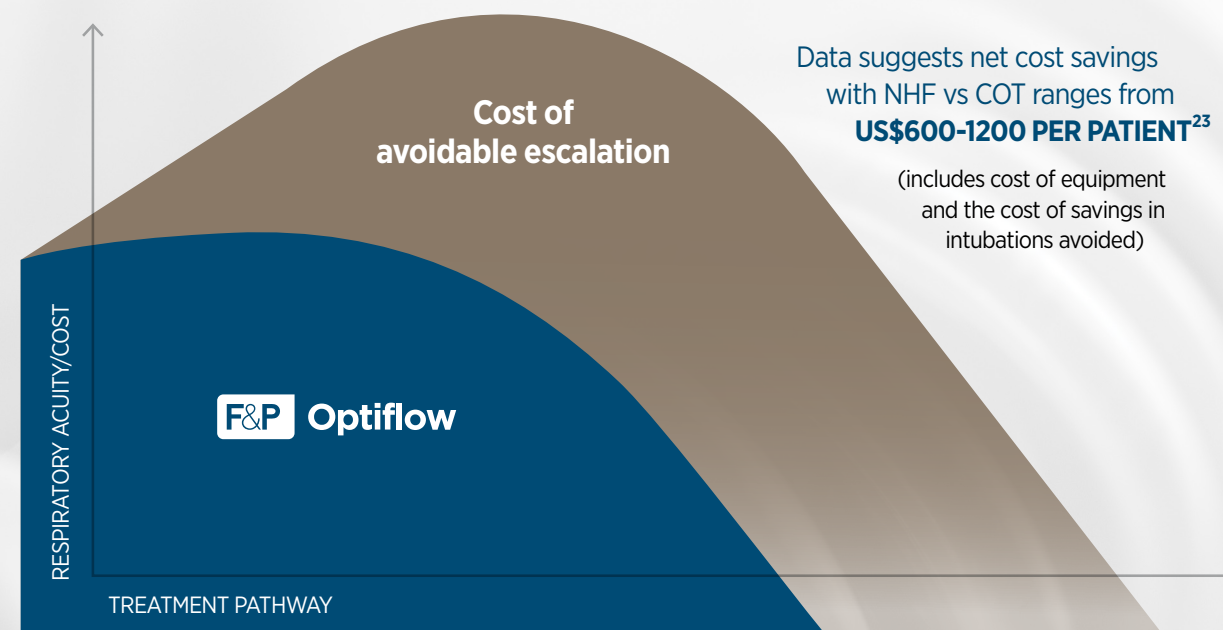
Supplemental oxygen when required

Confidence in the delivery of mixed, humidified oxygen^{31,2}, from 21% to 100%



Cost benefits

Use Optiflow NHF to reduce escalation^{14,18} thereby avoiding associated costs.



Using Optiflow NHF as a first-line therapy (both pre-intubation and post-extubation) may reduce a patient's escalation 'up the acuity curve', resulting in better patient outcomes and reduced costs of care.



Summary of applications for NHF therapy

Medical society Clinical practice guideline publication	 MEDICAL SURGICAL Primary support	 Pre-escalation support	 De-escalation support	 Complementary support	 Prophylactic support
ESICM. Rochweg et al. 2020 ²³	●	● A	●		
ERS. Oczkowski et al. 2021 ²⁴	●		●	●	
SSC. Evans et al. 2021 ²⁵	● B				
AARC. Piraino et al. 2021 ²⁶	● C		● D		●
ACP. Gaseem et al. 2021 ²⁷	●		● E		
TSANZ. Barnett et al. 2022 ²⁸	●				●
WHO. WHO Guideline Development Group. 2022 ²⁹	● F			●	
JSICM/JRS/JSRCM. Tasaka et al. 2022 ³⁰	● G				

ESICM: European Society of Intensive Care Medicine. ERS: European Respiratory Society. SSC: Surviving Sepsis Campaign. AARC: American Association for Respiratory Care. ACP: American College of Physicians. WHO: World Health Organisation. TSANZ: Thoracic Society of Australia and New Zealand. JSICM: Japanese Society of Intensive Care Medicine. JRS: Japanese Respiratory Society. JSRCM: Japanese Society of Respiratory Care Medicine

A. Continue to use NHF if already receiving therapy during intubation. B. Sepsis-induced hypoxemic respiratory failure. C. Hypoxemia and immuno-compromised patients with ARF. D. Immediately post-extubation to avoid re-intubation. E. For post-extubation acute hypoxemic respiratory failure. F. Acute Hypoxemic patients with severe to critical COVID-19. G. Acute respiratory distress syndrome (ARDS) patients.

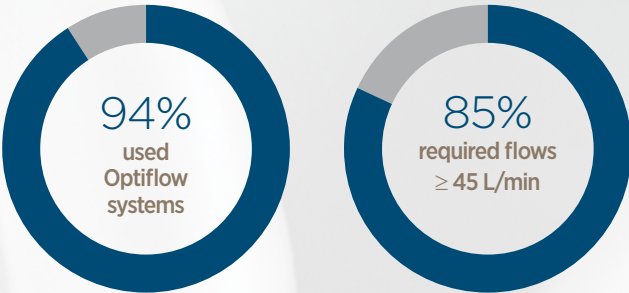


Usage

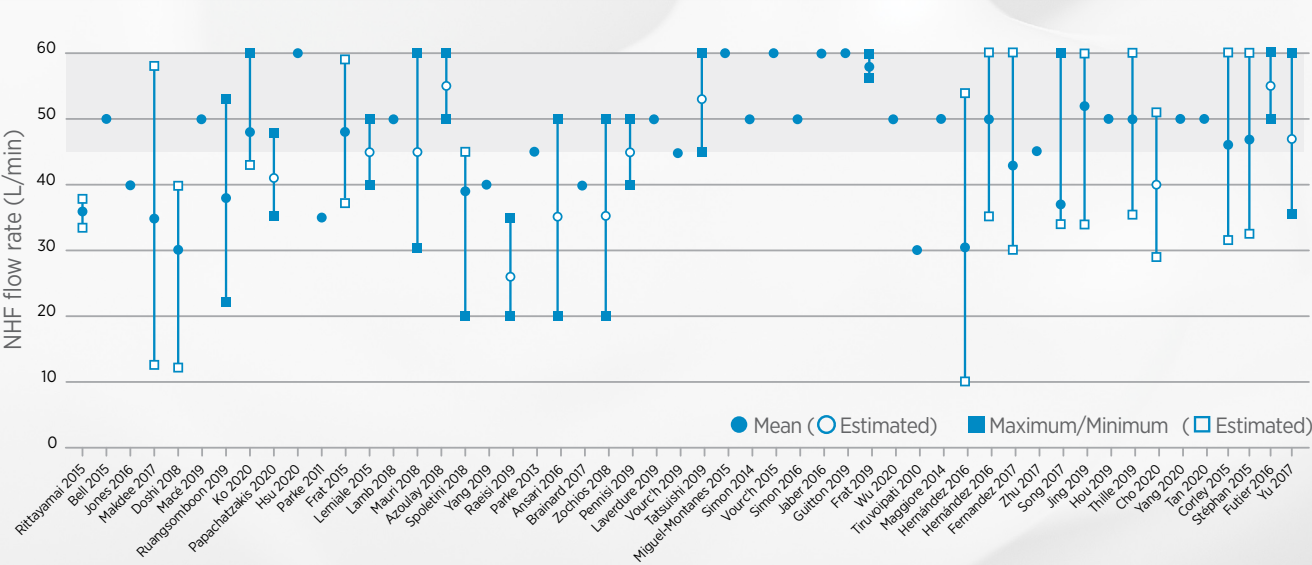
Guidelines for the use of NHF for acute respiratory support in adults are supported by peer-reviewed and published evidence.

What flow rates and ranges are used?

Systematic search of PubMed database for acute Adult NHF controlled studies with subjects n > 39.



Flow rates used in the 52 controlled studies on acute adult NHF (with subjects n >39)*



*Systematic search of the PubMed database: Conducted on 17 September 2020 using pre-defined search terms. Filtered using an Excel database and checked by an internal clinical team.

Clinical practice guidelines



ESICM CLINICAL PRACTICE GUIDELINES

Rochwerg B, et al. Intensive Care Medicine. 2020.²³



Primary support – Medical
NHF is preferred to COT for patients with hypoxemic respiratory failure.

STRONG RECOMMENDATION



Primary support – Surgical
NHF is preferred to COT in high risk and/or obese patients undergoing cardiac or thoracic surgery to prevent respiratory failure in the immediate postoperative period.

Prophylactic NHF to prevent respiratory failure in other postoperative patients is not recommended.

CONDITIONAL RECOMMENDATION



Pre-escalation support
No recommendation is made regarding use of NHF in the peri-intubation period.

NHF during intubation should be continued for patients who are already receiving NHF.

CONTINUE NHF



De-escalation support
NHF is preferred to COT following extubation in patients with any high-risk feature who were intubated for > 24 hours.

NIPPV is preferred to NHF in patients who would normally be extubated to NIPPV.

CONDITIONAL RECOMMENDATION

ERS CLINICAL PRACTICE GUIDELINES

Oczkowski S, et al. European Respiratory Journal. 2021.²⁴



Primary support – Medical
NHF is preferred to COT or NIV in patients with acute hypoxemic respiratory failure.

CONDITIONAL RECOMMENDATION



Primary support – Medical
Trialling NIV prior to use of NHF in patients with COPD or acute hypercapnic respiratory failure.

CONDITIONAL RECOMMENDATION



De-escalation support
NHF is preferred to COT in low-risk non-surgical patients.

NIV is preferred to NHF in non-surgical patients at high risk of extubation failure, unless NIV is contraindicated.

CONDITIONAL RECOMMENDATION



Primary support – Surgical
Either NHF or COT can be used in post-operative patients at low risk of respiratory complications.

Either NHF or NIV can be used in post-operative patients at high risk of respiratory complications.

CONDITIONAL RECOMMENDATION



Complementary support
NHF is preferred to COT during breaks from NIV in patients with acute hypoxemic respiratory failure.

CONDITIONAL RECOMMENDATION

SSC INTERNATIONAL GUIDELINES

Evans L, et al. Critical Care Medicine. 2021.²⁵



Primary support - Medical
NHF is preferred to NIV in patients with sepsis-induced hypoxemic respiratory failure.

WEAK RECOMMENDATION

ENDORSED BY:

- *Society of Critical Care Medicine*
- *American Association of Critical Care Nurses*
- *American College of Chest Physicians*
- *American College of Emergency Physicians*
- *American Thoracic Society*

AARC CLINICAL PRACTICE GUIDELINES

Piraino T, et al. Respiratory Care. 2021.²⁶



Primary support – Medical
General recommendations for the delivery of supplemental oxygen for patients who require oxygen
Aim for SpO₂ range of 94–98% for most of hospitalized patients (included critically ill patients).
Aim for 88–92% for patients with COPD.
Aim for 88–95% for patients with ARDS.
Consider early initiation of NHF.

LEVEL C



De-escalation support
NHF is preferred to COT immediately post-extubation to avoid re-intubation in patients who require supplemental oxygen.

LEVEL B



Prophylactic support
NHF is preferred to COT as it may avoid escalation to NIV or invasive ventilation in patients who require supplemental oxygen.

LEVEL B



Immuno-compromised
Either NHF or COT may be used in patients who require supplemental oxygen.

LEVEL B

AARC grades of recommendation
A. Convincing scientific evidence based on randomized controlled trials of sufficient rigor;
B. Weaker scientific evidence based on lower levels of evidence such as cohort studies, retrospective studies, case-control studies, and cross-sectional studies;
C. Based on the collective experience of the committee.

Clinical practice guidelines

ACP CLINICAL GUIDELINES

Gaseem A, et al. Annals of Internal Medicine. 2021. ²⁷



Primary support – Medical

NHF is preferred to NIV for the initial management of patients with AHRF.

CONDITIONAL
RECOMMENDATION



De-escalation support

NHF is preferred to COT in patients with post-extubation AHRF.

CONDITIONAL
RECOMMENDATION

TSANZ POSITION STATEMENT

Barnett A, et al. Respiriology. 2022. ²⁸



Primary support – Medical

NHF should be considered in selected patients with severe hypoxaemic respiratory failure (P/F < 300)

Recommended SpO₂ targets

88 – 92%

Chronic respiratory disease or potential for hypercapnia

92 – 96%

For other clinical situations

GRADE B



Primary support – Medical and Prophylactic support

Early Warning Score (EWS) should be used to detect deterioration and combine use of FiO₂ and SpO₂ as risk markers

FiO₂ ≥ 40% or O₂ flow ≥ 6 L/min to maintain target SpO₂ should receive senior clinician review*

FiO₂ ≥ 50% or O₂ flow ≥ 8 L/min to maintain target SpO₂ should receive ICU review**

GRADE C

GRADE D

GRADE D

* and may require transfer to a facility such as HDU

** and most will require a higher level of monitoring and supportive care which an ICU/HDU environment can provide.



WHO GUIDELINE DEVELOPMENT GROUP

Clinical management of COVID-19: living guideline. 2022. ²⁹



Primary support – Medical

In hospitalized patients with severe or critical COVID-19 and acute hypoxaemic respiratory failure (AHRF) not needing emergent intubation, we suggest NHF rather than COT.

CONDITIONAL
RECOMMENDATION



Complementary support

We suggest awake prone positioning of severely ill patients hospitalized with COVID-19 requiring supplemental oxygen (includes NHF or NIV).

CONDITIONAL
RECOMMENDATION

JSICM/JRS/JSRCM CLINICAL PRACTICE GUIDELINES

Tasaka S, et al. Journal of Intensive Care. 2022. ³⁰



Primary support – Medical

NHF is preferred to COT as an initial respiratory management for patients with acute respiratory failure suspected of having ARDS.*

NHF is preferred over tracheal intubation for patients with ARDS.

GRADE 2B

* if there are no contra-indications for noninvasive respiratory support or if organ failure other than respiratory failure is absent.



Rochwerg et al. 2019³¹

Intensive Care Medicine

High flow nasal cannula compared with conventional oxygen therapy for acute hypoxemic respiratory failure: A SYSTEMATIC REVIEW AND META-ANALYSIS.

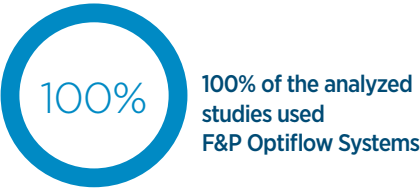
Study

Systematic review and meta-analysis to summarize the safety and efficacy of NHF in patients with AHRE.

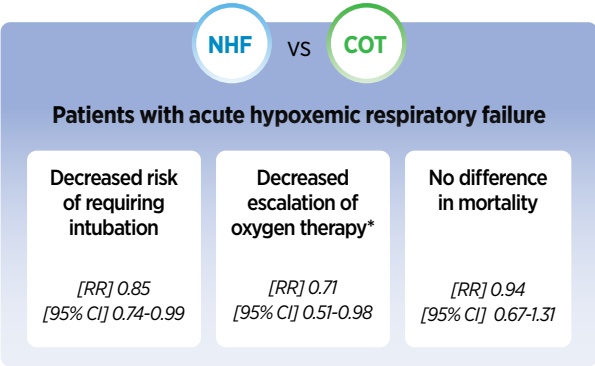
Method

Systematic review conducted using the search terms ‘high flow nasal cannul*’ etc AND (adult OR mature OR grown) with filters of publication date from 1 Jan 2007 to 25 Oct 2018; Humans; English; Spanish.

This search identified 446 studies and the meta analysis was performed on 9 RCTs.



Results



*Escalation to NHF if on COT or NIV
RR = Relative risk; CI = Confidence interval

Frat et al. 2015¹⁴

The New England Journal of Medicine

High-flow oxygen through nasal cannula in acute hypoxemic respiratory failure.

Design

23 center RCT

Patients

n = 310, pre-intubation patients in acute hypoxemic respiratory failure (PaO₂:FiO₂ < 300 mmHg)

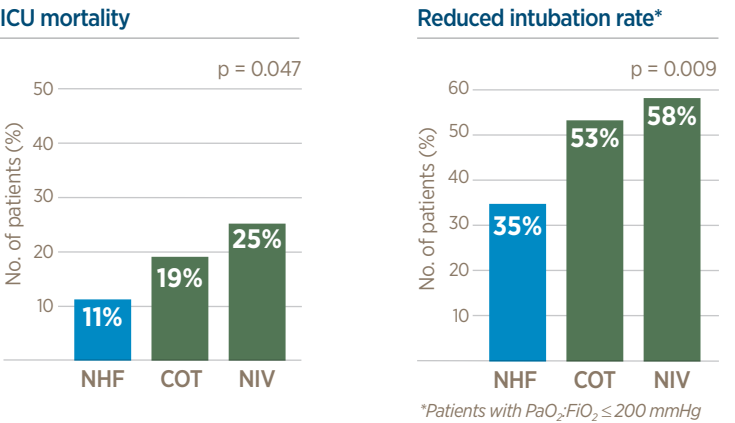
Intervention	Control
NHF	COT or NIV

Outcome

Primary: number of patients intubated at day 28

Results

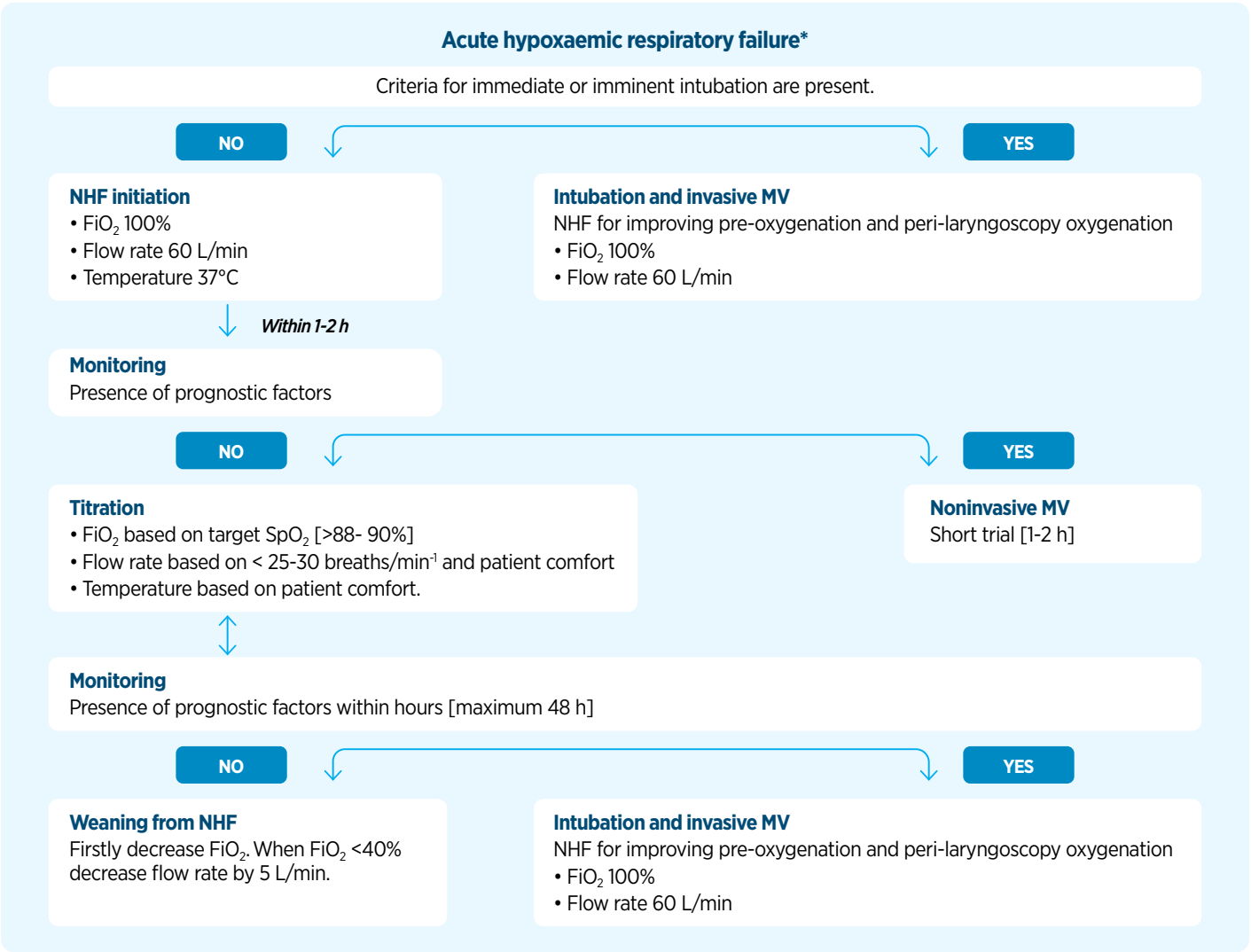
- **NHF significantly reduced ICU** (p = 0.047) **and 90-day mortality** (p = 0.02)
- The primary outcome was not met for all patients (p = 0.18), however, **NHF significantly reduced the need for intubation in more acute patients** (PaO₂:FiO₂ ≤ 200 mmHg) (p = 0.009)
- Significant increase in ventilator-free days on NHF (p = 0.02)
- NHF significantly reduced intensity of respiratory discomfort (p < 0.01) and dyspnea (p < 0.001)



Ischaki et al. 2017³²

European Respiratory Review

Nasal high flow therapy: a novel treatment rather than a more expensive oxygen device.



*Adapted from original paper²³; used under Creative Commons licence 4.0.
MV = mechanical ventilation; SOT = standard oxygen treatment.
Please note that this material is intended exclusively for healthcare practitioners and the information conveyed constitutes neither medical advice nor instructions for use. This material should not be used for training purposes or to replace individual hospital policies or practices. Before any product use, consult the appropriate user instructions.





Cortegiani et al. 2020³³

Critical Care

High flow nasal therapy versus noninvasive ventilation as initial ventilatory strategy in COPD exacerbation: a multicenter non-inferiority randomized trial.

Design

9 center RCT

Patients

n = 79, mild-to-moderate AECOPD
(pH 7.25–7.35, PaCO₂ ≥ 55 mmHg before ventilator support)

Intervention Control

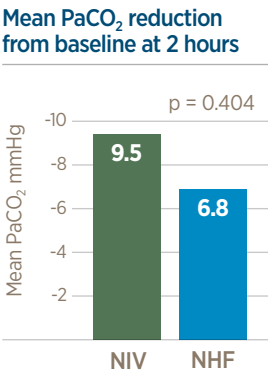
NHF NIV

Outcome

Primary: PaCO₂ from baseline to 2 h
(non-inferiority margin 10 mmHg)
Secondary: non-inferiority of NHF to NIV in reducing PaCO₂ at 6 h rate of treatment changes, dyspnea, discomfort, RR, ABG, hospital LoS, mortality

Results

- NHF was non-inferior to NIV in reduction of PaCO₂
- Both treatments had a significant effect on PaCO₂ reductions over time, and trends were similar between groups.



Pantazopoulos et al. 2020³⁴

COPD: Journal of Chronic Obstructive Pulmonary Disease

Nasal high flow use in COPD patients with hypercapnic respiratory failure: treatment algorithm & review of the literature.

Study

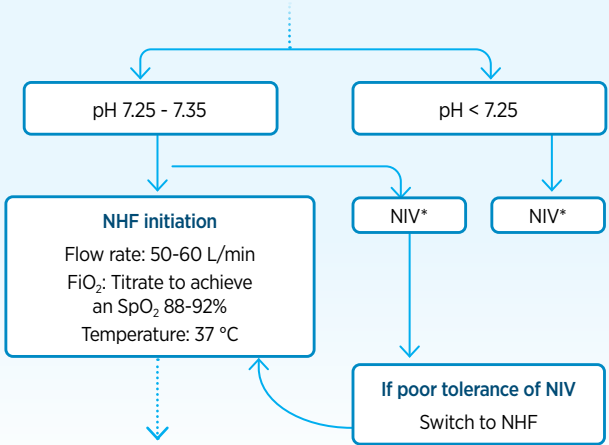
Literature review of NHF use in COPD patients with hypercapnic respiratory failure and development of a treatment algorithm.

Results

NHF recommended for patients with:

- pH: 7.25 - 7.35
- escalate to NIV if pH < 7.25

Algorithm for NHF use in acute hypercapnic exacerbation of COPD



Conclusions

It may well also be used in place of NIV in the least tolerant and compliant patients, or in association with NIV to reduce mask-related side effects.

NHF seems to be effective in improving clinical and gas exchange parameters in patients with moderate hypercapnic respiratory failure, with an acceptable rate of non-responders who required additional ventilatory support.



Chaudhuri et al. 2020³⁵

Chest

High-flow nasal cannula in the immediate postoperative period: a systematic review and meta-analysis.

Study

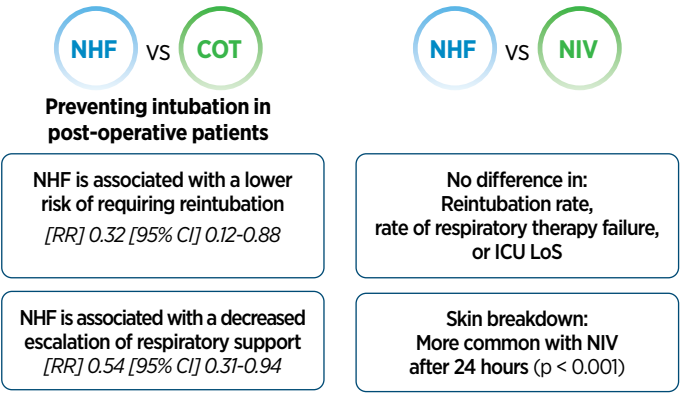
Systematic review and meta analysis to assess if routine NHF use is superior to continuous oxygen therapy (COT) or noninvasive ventilation (NIV) in preventing intubation in post-operative patients.

Method

Systematic review conducted using the search terms ‘high flow nasal cannul’ AND (adult OR mature OR grown) with filters of publication date from 1 Jan 2007 to 6 Nov 2019; Humans; English; Spanish.

This search identified 650 studies and the meta analysis was performed on 11 RCTs including a total of 2201 patients.

Results



Conclusion

Prophylactic NHF reduces reintubation and escalation of respiratory support compared with COT in the immediate postoperative period after cardiothoracic surgery.

- This effect is likely driven by patients who are at high risk and/or obese.
- These findings support postoperative prophylactic NHF use in the patients who are at high risk and/or obsess undergoing cardiothoracic surgery.

Stephan et al. 2015²⁰

Journal of the American Medical Association

High-flow nasal oxygen vs noninvasive positive airway pressure in hypoxemic patients after cardiothoracic surgery: a randomized clinical trial.

Study

6 center RCT

Patients

n = 830, patients who have undergone cardiothoracic surgery

Intervention Control

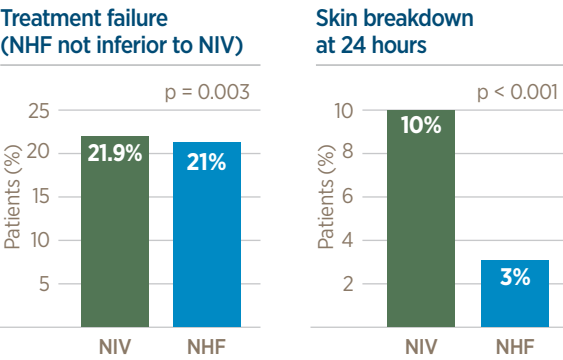
NHF NIV

Outcome

Primary: Treatment failure defined as reintubation, switch to the other study treatment, or premature treatment discontinuation.

Secondary: Early changes in respiratory variables, comfort and respiratory and extrapulmonary complications

Results





Yu et al. 2017 ³⁶

Canadian Respiratory Journal

Effect of high-flow nasal cannula versus conventional oxygen therapy for patients with thoracoscopic lobectomy after extubation.

Study

3 center RCT

Patients

n = 110, patients who have undergone planned thoracoscopic lobectomy

Intervention Control

NHF COT

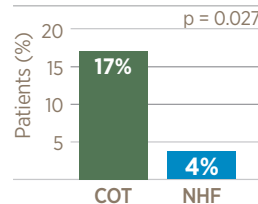
Outcome

Occurrence of hypoxemia and post-operative pulmonary complications (PPC) at 72 hours

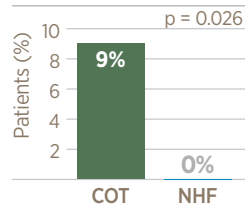
Results

- The rate of hypoxemia with COT was more than two times greater than with NHF (29.6% vs 12.5%, $p < 0.05$).
- PaO_2 , PaO_2/FiO_2 , and SpO_2/FiO_2 were significantly improved with NHF ($p < 0.05$) in the first 72 hours.

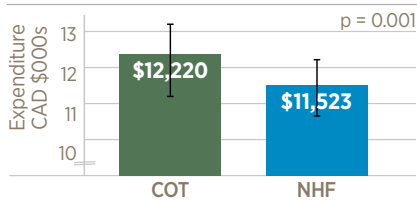
Reduced need for NIV



Reintubation rate



Comparison of hospitalization expenditures



Granton et al. 2020 ³⁷

Critical Care Medicine

High-flow nasal cannula compared with conventional oxygen therapy or noninvasive ventilation immediately postextubation: a systematic review and meta-analysis.

Study

Systematic review and meta-analysis to determine the safety and efficacy of NHF compared to COT or NIV in critically ill adult patients only immediately post-extubation.

Method

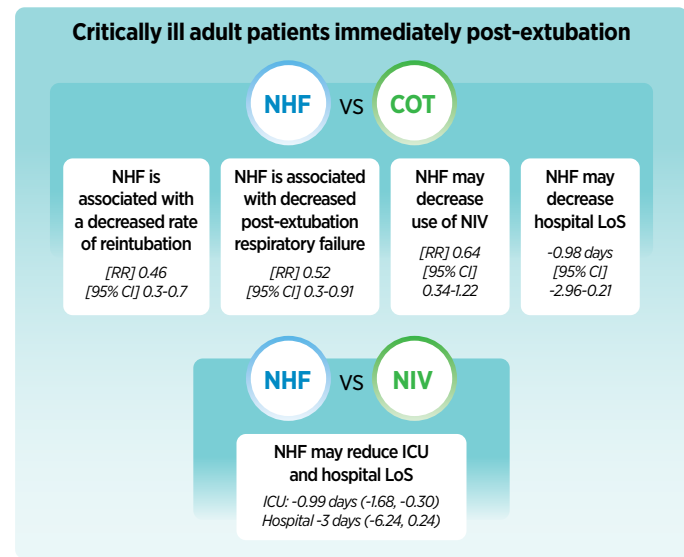
Systematic review conducted using the search terms 'high flow nasal cannul*' etc AND (adult OR mature OR grown) with filters of publication date from 1 Jan 2007 to 09 Oct 2019; Humans; English; Spanish.

This search identified 492 studies and the meta-analysis was performed on 8 RCTs.

100% of the analyzed studies used F&P Optiflow Systems.

Results

- There were no delays in escalating therapy.
- No significant difference in secondary outcomes.



Hernández et al. (Oct) 2016 ¹⁹

Journal of the American Medical Association

Effect of post-extubation high-flow nasal cannula vs noninvasive ventilation on reintubation and post-extubation respiratory failure in high-risk patients: A randomized clinical trial.

Design

3 center RCT

Patients

n = 604, patients at high risk for reintubation

Intervention Control

NHF NIV

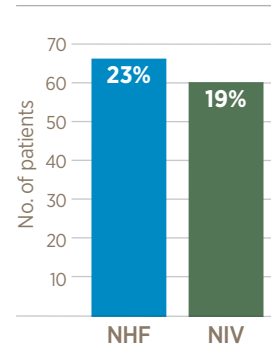
Outcome

Reintubation and post-extubation respiratory failure within 72 hours

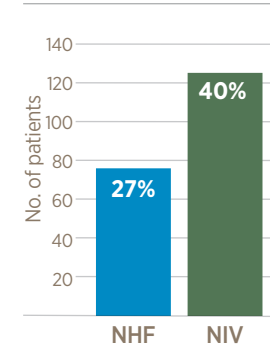
Results

- NHF was non-inferior to NIV for preventing reintubation and post-extubation respiratory failure.
- No patients in the NHF group suffered adverse effects requiring withdrawal of the therapy, compared to 42.9% of patients in the NIV group.

Reintubation



Post-extubation respiratory failure



Hernández et al. (Apr) 2016 ¹⁸

Journal of the American Medical Association

Effect of post-extubation high-flow nasal cannula vs conventional oxygen therapy on reintubation in low-risk patients.

Design

7 center RCT

Patients

n = 527, patients at low risk for reintubation

Intervention

NHF for 24 hrs post extubation

Control

COT for 24 hrs post extubation

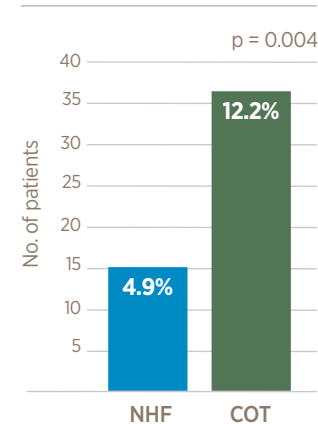
Outcome

Primary: reintubation within 72 hours

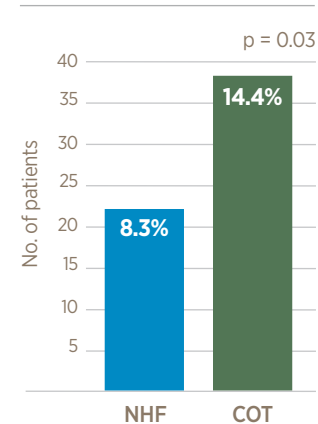
Secondary: post-extubation respiratory failure, adverse events, and time to reintubation, ICU and hospital LoS

Results

Reduced reintubation



Reduced respiratory failure





Thille et al. 2019³⁸

Journal of the American Medical Association

Effect of post-extubation high-flow nasal oxygen with noninvasive ventilation vs high-flow nasal oxygen alone on reintubation among patients at high risk of extubation failure: a randomized clinical trial.

Design

30 centered RCT

Patients

n = 641, patients at high risk of extubation failure in the ICU

Intervention Control

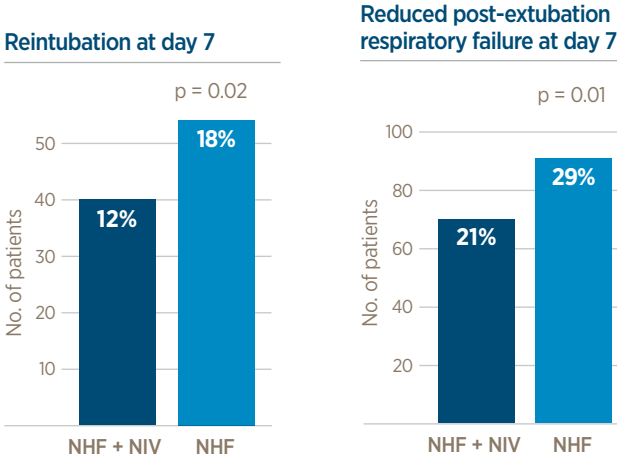
NHF with NIV (≥ 48hrs) NHF alone (≥ 48hrs)

Outcome

Primary: reintubated at day 7
Secondary: post-extubation respiratory failure at day 7, reintubation rates up until ICU discharge, and ICU mortality

Results

Primary: reintubated at day 7



Spoletini et al. 2018³⁹

Journal of Critical Care

High-flow nasal therapy vs standard oxygen during breaks off noninvasive ventilation for acute respiratory failure.

Design

Pilot 5 center RCT

Patients

n = 47, NIV patients on NIV due to ARF or respiratory acidosis

Intervention Control

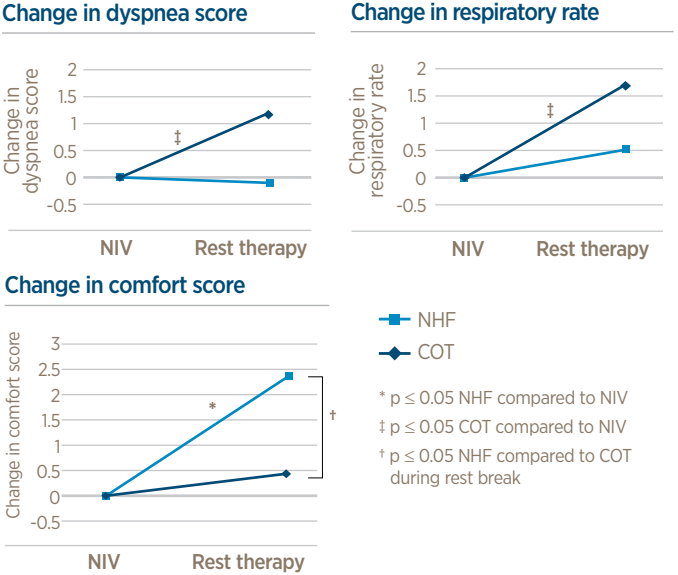
NHF COT

Outcome

Duration of NIV therapy, duration of rest break.

Results

- No significant difference in duration of NIV therapy or duration of rest break between NHF and COT.
- Dyspnea, RR and SpO₂ increased during COT breaks but not during NHF breaks.



Pirret et al. 2017⁴⁰

Intensive & Critical Care Nursing

Nasal high flow oxygen therapy in the ward setting: A prospective observational study.

Design

Prospective observational study

Patients

n = 67, patients in the ward with respiratory failure (despite receiving COT) or at risk of respiratory deterioration.

Outcome

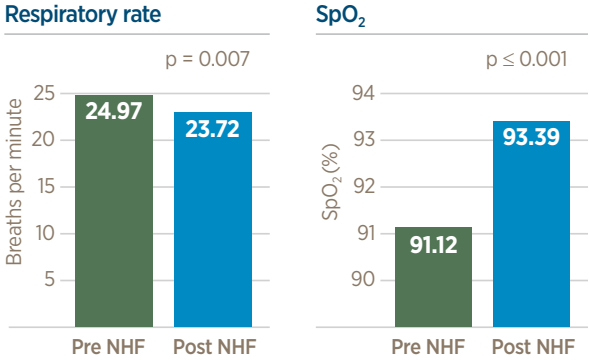
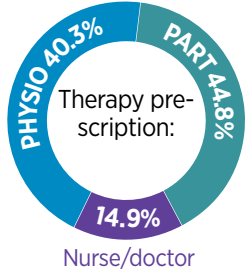
Primary outcome: RR, HR, SpO₂
Secondary outcome: dyspnoea and sputum retention

Intervention

NHF with the involvement from The Patient at Risk Team (PART) and physiotherapist

Results

- There were no delays in escalating therapy.
- No significant difference in secondary outcomes.





Usage

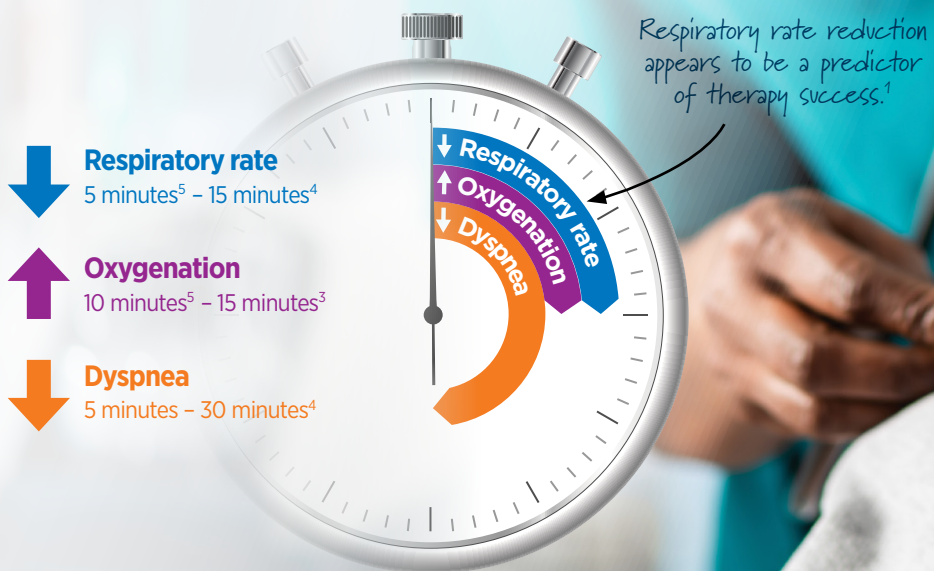
There is an ever-increasing body of clinical literature which may provide guidance on the day-to-day application of Optiflow NHF therapy.

When are the effects of Optiflow NHF seen?

Sztrymf⁴ demonstrated Optiflow NHF therapy was associated with sustained beneficial effects on oxygenation and physiological parameters for patients with acute respiratory failure.

Similarly Rittayamai⁵ showed significant improvement in post-extubation patients.

These studies may provide guidance on patient responses to the therapy.



Is there a way to predict the outcome of NHF?

The validated ROX index⁴¹ predicts failure in adults with AHRF receiving NHF, at 4 time intervals: 2, 6, 12 and > 12 hours. It's an easy-to-use dynamic bedside tool.

ROX index: Predicting NHF success and failure

$\frac{\text{SpO}_2 \div \text{FiO}_2}{\text{Respiratory rate}} = \text{ROX index}$	
'Healthy' example $\frac{95 \div 0.21}{15} = 30.2$	'Patient' example $\frac{95 \div 0.85}{37} = 3.0$

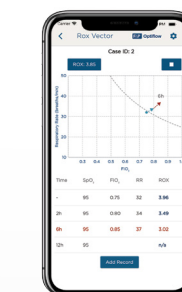
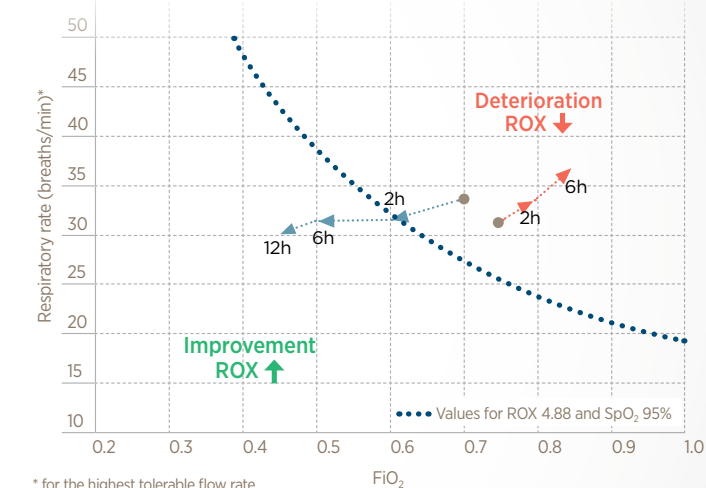
ROX index trend over time is more important than a single measurement.

The trend of FiO₂ required to maintain target SpO₂ (i.e. 95%) and patient respiratory rate directly effect ROX trend.

NHF success	NHF failure
$\frac{\text{SpO}_2 \div \text{FiO}_2 \downarrow}{\text{Respiratory rate} \downarrow} = \text{ROX index} \uparrow$	$\frac{\text{SpO}_2 \div \text{FiO}_2 \uparrow}{\text{Respiratory rate} \uparrow} = \text{ROX index} \downarrow$

XY plot between respiratory rate and FiO₂

The blue arrows in a vector form demonstrate a change towards NHF success and the red arrows demonstrate the change towards NHF failure. The dotted line shows the values for ROX at 4.88 and the SpO₂ of 95%.



EDUCATIONAL APP



F&P ROX Vector App

The ROX Vector App proposes a model for considering the trend in ROX values over time.





Optiflow in practice: IOWA METHODIST MEDICAL CENTER, DES MOINES, IOWA

Jackson et al. 2020 ⁴²
Respiratory Care

Implementation of high-flow nasal cannula therapy outside the intensive care setting.

Design

Single center cohort observational study
(pre and post NHF implementation)

Patients

n = 346

Intervention

18-month after implementing NHF therapy

Control

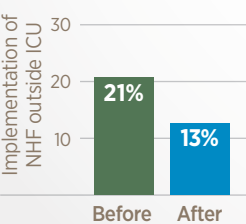
Prior to NHF implementation

Outcome

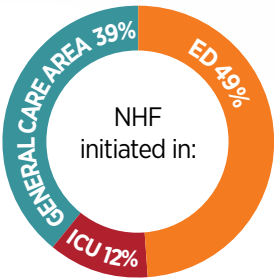
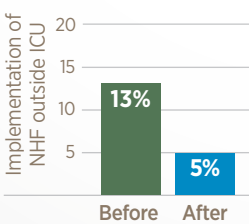
Share education and implementation process.
Report patient outcomes.

Results

Mortality



Escalation to MV



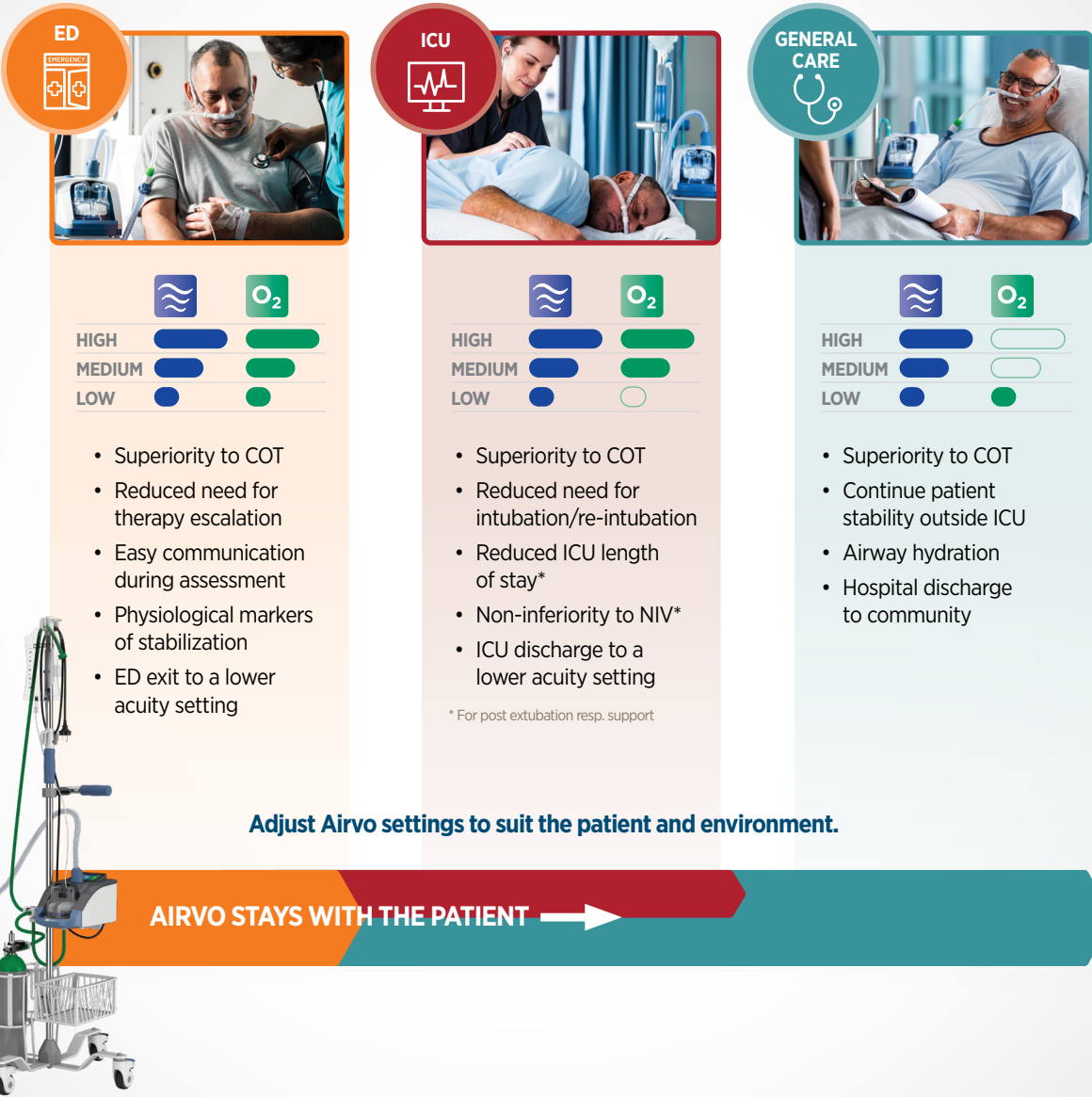
After implementation:
• **53% (n = 184) of NHF patients avoided the ICU completely**
• **486 ICU days were avoided**

Implementation strategy

1. Protocol of NHF written (for undifferentiated respiratory compromise and increased oxygen requirement).
2. Education of hospital staff: Key groups included respiratory therapists; internal medicine and surgery residents; internal medicine, pulmonology, trauma, cardiology, and emergency medicine physicians; and nurses on all patient floors and in the ED.
3. At least 4 hourly assessment by respiratory therapist.
4. Study team regular review of patient safety and adverse events.

NHF education topics by audience	Physicians and residents	Nurses	Respiratory therapists
Theory and physiology of NHF therapy	●	●	●
NHF protocol	●	●	●
NHF device setup and electronic medical record documentation			●
NHF device maintenance		●	●
De-escalation and weaning	●	●	●

Apply Airvo early for stabilization and benefit the patient throughout their stay





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