F&P Optiflow

Nasal High Flow

Improve patient safety
with Optiflow nasal high flow

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Improve patient safety[1] during monitored anesthesia care

Nasal high flow (NHF) for airway management during monitored anesthesia care (MAC)

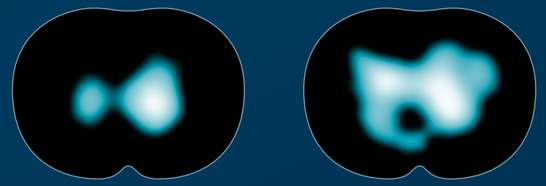
The aim of airway management during sedation is to maintain oxygenation. Drugs used for sedation and analgesia can cause respiratory depression and potential inadvertent periods of apnea.

Nasal high flow has been shown to:

- **Reduce the risk of desaturation**[1-4]
- **Reduce the incidence of airway related interventions**[1, 2, 5]
- **Reduce the risk of procedural interruptions**[1]

Positive airway pressure increases end expiratory lung volume [6-10]

Nasal high flow significantly increased end-expiratory lung volume by 26% compared to low flow oxygen.[6]



Low flow vs Nasal high flow
Adapted from Corley et al., 2011

Patients at risk of desaturation

- Elderly
- Obstructive sleep apnea (diagnosed and undiagnosed)
- High Mallampati score
- Lung disease
- ASA Class ≥ 2
- High BMI

NHF facilitates CO_2 clearance[11-13]

Cross-section of the upper airway immediately prior to inspiration compares CO_2 concentrations between natural breathing and Optiflow™ nasal high flow.**

Normal breathing | **Optiflow NHF** (60 L/min)

** Computational Fluid Dynamic modeling. Fisher & Paykel Healthcare. Data on file.

Improve patient safety[14] during airway management

Nasal high flow for airway management during induction of general anesthesia

The principle objective of airway management during anesthesia is to maintain adequate oxygenation.

Nasal high flow has been shown to:

- **Provide effective preoxygenation**[14-16]
- **Provide short-term supplemental oxygenation***[14,17–19]
- **Improve patient safety**[14]

* For preoxygenation and short-term oxygen during intubation (for up to 10 minutes)

Patients at risk of desaturation or may be challenging to facemask ventilate

- High BMI
- Elderly
- Difficult airways
- Mask phobia
- Facial hair, e.g., beards
- Edentulous

ASA difficult airway recommendation[20]

Optimizing oxygenation is recommended during:

- Preparation for difficult airway management
- Unanticipated and emergency difficult airway management
- Extubation of the difficult airway

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F&P Optiflow

The optimal solution for airway management

Heated humidification

Up to 70 L/min

Up to 100% O_2

Optiflow Filtered Nasal Interface with CO_2 Sampling

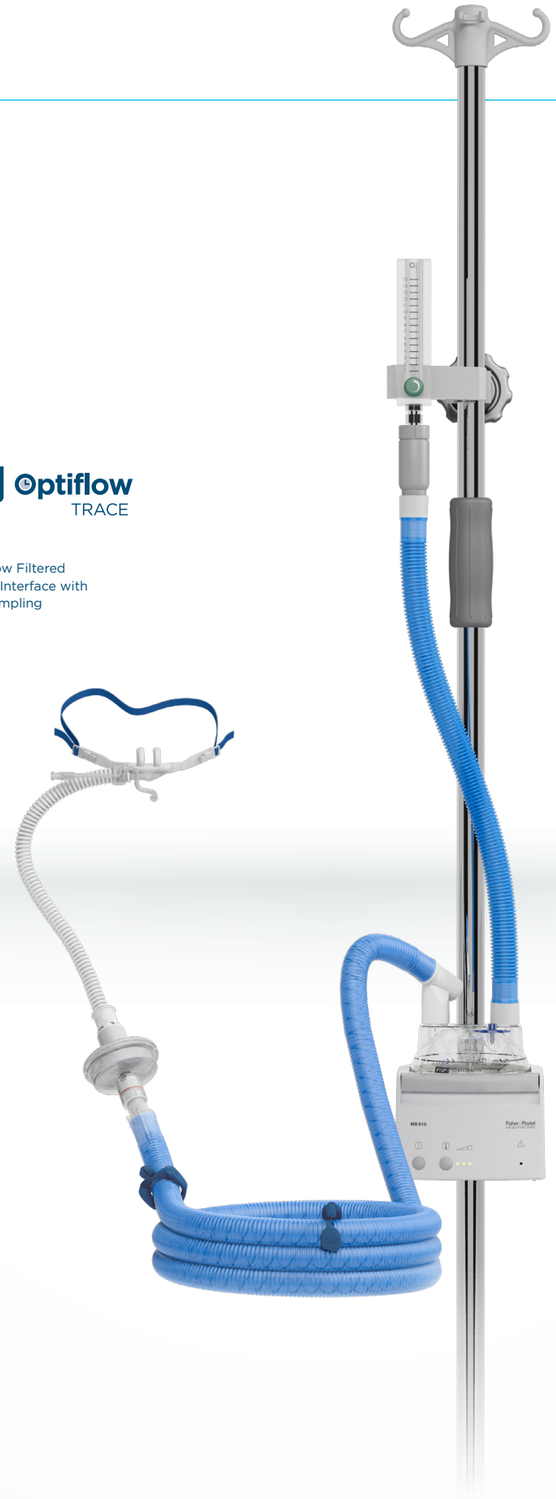
- Flexible sampling tube to detect exhaled CO_2 from either mouth or nose*

S M L

* For flow range applicable for this product, refer to the user instructions.

F&P Optiflow TRACE

Optiflow Filtered Nasal Interface with CO_2 sampling



Daily use Optiflow Oxygen Kit

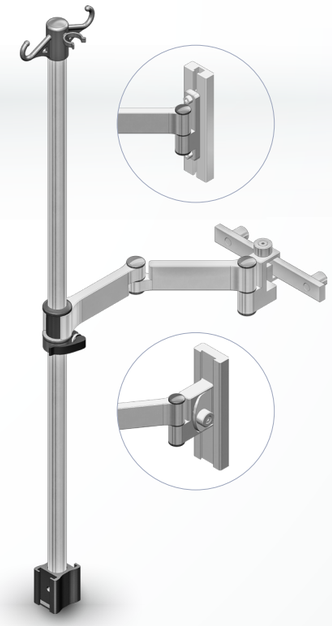
Set up once at the start of the day and continue to use throughout

Can be used on up to 30 patients within a 24-hour period when combined with a filtered nasal interface

High-efficiency hydrophobic HEPA filter:

Minimum bacterial efficiency of at least 99.999%

Minimum viral efficiency of at least 99.996%



Anesthesia workstation mounting

Multiple mounting options available, based on the anesthesia workstation model for readily available access

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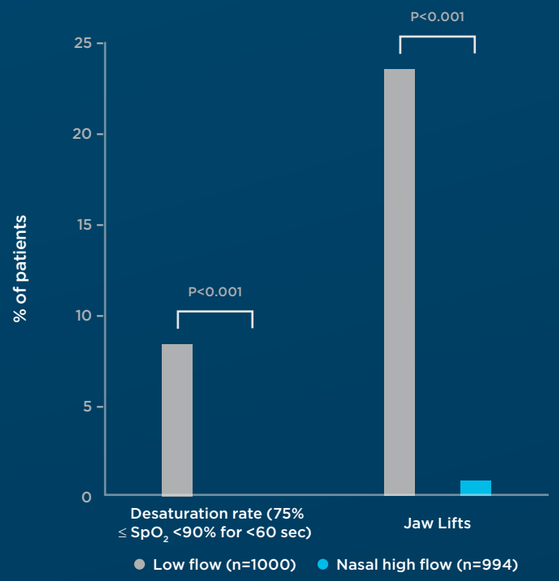
In MAC, nasal high flow has been shown to provide effective oxygenation[21-23] and reduce the risk of desaturation[1-4] and airway related interventions[1,2,5]



Adapted from Lin et al., 2019.

Lin et al., 2019 | Low risk patients

The use of nasal high flow reduced the incidence of hypoxia in patients undergoing elective gastroscopy with propofol sedation, compared to standard oxygen therapy.[2]

↓97%
Decrease in jaw lifts

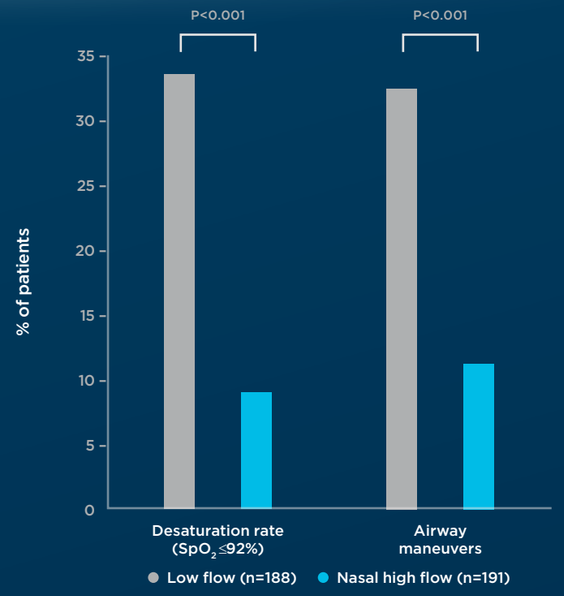
↓100%
Decrease in desaturation events from 8.4% to 0%

Nay et al., 2021 | Moderate to high risk patients

The use of nasal high flow reduced the incidence of desaturation in patients undergoing GI endoscopy under deep sedation, compared to standard oxygen therapy.[5]

↓66%
Decrease in airway maneuvers

↓72%
Decrease in desaturation events



Adapted from Nay et al., 2021.

↓83%
Decrease in risk of procedural interruptions

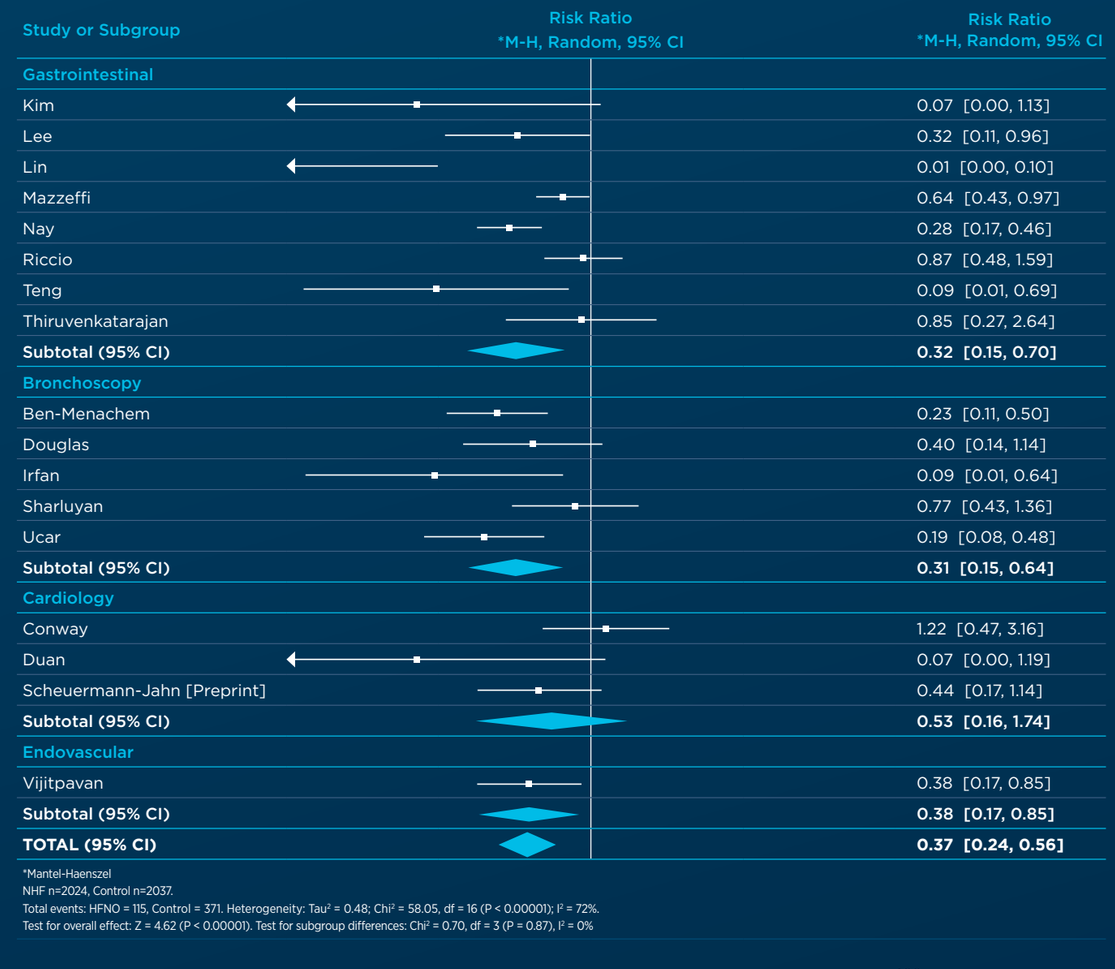
↓74%
Decrease in risk of airway maneuvers

↓63%
Decrease in risk of hypoxemia

Thiruvenkatarajan et al., 2023.

Meta-analysis by Thiruvenkatarajan et al. demonstrated the efficacy of Nasal High Flow (NHF) for reducing the risk of hypoxemia and requirement for airway maneuvers and procedural interruptions.

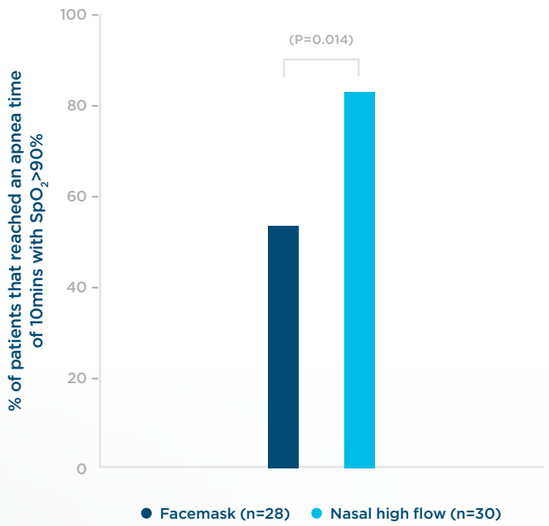
Forest plot comparing risk of hypoxemia between the NHF and control groups



*Mantel-Haenszel
NHF n=2024, Control n=2037.
Total events: HFNO = 115, Control = 371. Heterogeneity: Tau² = 0.48; Chi² = 58.05, df = 16 (P < 0.00001); I² = 72%.
Test for overall effect: Z = 4.62 (P < 0.00001). Test for subgroup differences: Chi² = 0.70, df = 3 (P = 0.87), I² = 0%

Adapted from Thiruvenkatarajan et al., 2023.

In general anesthesia, nasal high flow has been shown to improve patient safety[14] by providing effective preoxygenation[14-16] and extending safe apnea time [14, 17-19]



Adapted from Hua et al., 2020

↑55%

Increase in no. of patients that reached an apnea time of 10 minutes

Hua et al., 2020 | Elderly patients

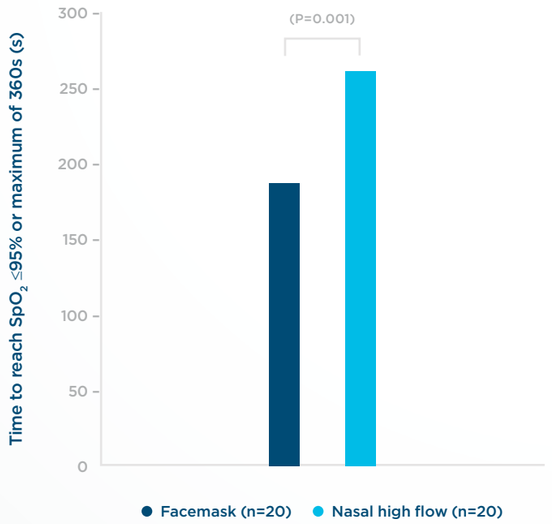
The use of nasal high flow significantly increased the proportion of elderly patients that reached an apnea time of 10 minutes, compared to standard oxygen therapy.[18]

↑41%

Increase in safe apnea time

Wong et al., 2019 | High BMI patients

The use of nasal high flow provided a longer safe apnea time and higher minimum SpO_2 in morbidly obese patients during anesthesia induction, compared to standard oxygen therapy.[19]



Adapted from Wong et al., 2019

Kuo et al., 2022.

Meta-analysis by Kuo et al. showed that Nasal High Flow (NHF) better enhanced arterial partial pressure of oxygen (PaO_2) and extended safe apnea time and is not inferior to facemask oxygenation in reducing the risk of desaturation during tracheal intubation.[14]

Forest plot of PaO_2 (mmHg) after pre-oxygenation between NHF and face mask oxygen (FMO) groups

Study or subgroup	Mean Difference IV, Random, 95% CI	Mean Difference IV, Random, 95% CI
Non-obese subjects		
Pillai 2016		13.00 [-26.60, 52.60]
Rajan 2018		12.00 [-69.25, 93.25]
Ng 2018		72.00 [21.44, 122.56]
Hua 2020		85.00 [34.54, 135.46]
Zhou 2021		112.00 [70.73, 153.27]
Osman 2021		129.00 [102.91, 155.09]
Lyons 2021		48.00 [-5.34, 101.34]
Subtotal (95% CI)		**71.23 [33.07, 109.39]**
Heterogeneity: $Tau^2 = 2029.26$; $Chi^2 = 30.45$, df = 6 (P <0.0001); $I^2 = 80\%$		
Test for overall effect: Z = 3.66 (P = 0.0003)		
Obese subjects		
Heinrich 2014		46.00 [-24.68, 116.68]
Rosén 2021		37.00 [1.70, 72.30]
Subtotal (95% CI)		**38.80 [7.22, 70.37]**
Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 0.05$, df = 1 (P = 0.82); $I^2 = 0\%$		
Test for overall effect: Z = 2.41 (P = 0.02)		
TOTAL (95% CI)		**64.86 [32.33, 97.40]**
NHF n=192, **FMO** n=187		
Heterogeneity: $Tau^2 = 1838.40$; $Chi^2 = 37.46$, df = 8 (P < 0.00001); $I^2 = 79\%$		
Test for overall effect: Z = 3.91 (P < 0.0001)		
Test for subgroup differences: $Chi^2 = 1.65$, df = 1 (P = 0.20); $I^2 = 39.3\%$		

Adapted from Kuo et al., 2022

-200 -100 0 100 200

Higher in FMO Higher in NHF

F&P Optiflow

Product Codes

Heaterbase:

MR810JHU
Heaterbase
1 each

Mounting:

AA501
DIN Rail Mounting Humidifier Pole
1 each

AA502
Dovetail Rail Mounting
Humidifier Pole
1 each

AA503
Vertical Clamp Mounting
Humidifier Pole
1 each

Oxygen Kits:

AA403
Optiflow Oxygen Kit - daily-use
(for use with filtered nasal interface)
10/box

AA401SU
Optiflow Oxygen Kit - single use
10/box

Interfaces:

AA031J S / M / L
Optiflow Filtered Nasal
Interface with CO_2 Sampling
10/box

AA030J S / M / L
Optiflow Nasal Interface with CO_2
Sampling
10/box

S M L

Transport:

AA020
Low Flow Oxygen Tubing
10/box

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Support & Education

The F&P sales specialists provide a variety of education and support options for new and existing customers.

Scan to get in touch with our F&P sales representative

Optiflow Connect

Optiflow Connect allows new and existing users to access essential knowledge to apply Nasal High Flow (NHF) in their anesthesia practice.

Content includes:

- What NHF is and where it could be used.
- What patients could benefit from NHF.
- Clinical evidence for use during sedation, preoxygenation and during intubation.
- How to set up the equipment.

Clinician Website (secured access)

Clinician specific website is available by invite. It contains product and therapy information, along with additional clinical evidence and key opinion leader presentations.

Access to this site can be provided on request.

Education

Interactive educational sessions to provide opportunity for anesthesia and support staff to learn more about the use of NHF and discuss experiences.

Ongoing On-site Training

On-site training with F&P sales specialist, to provide education and product support onsite for new and existing users.

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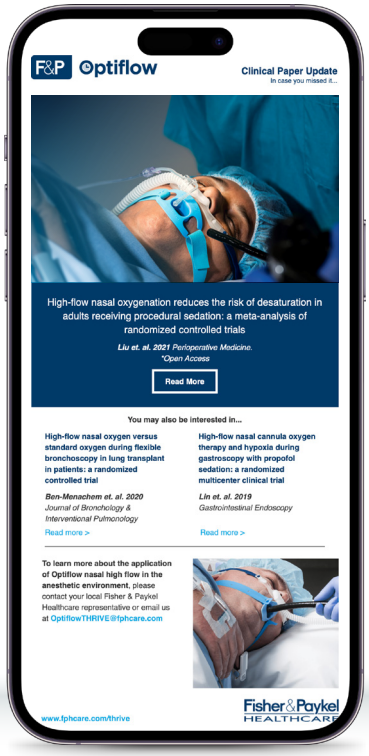

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