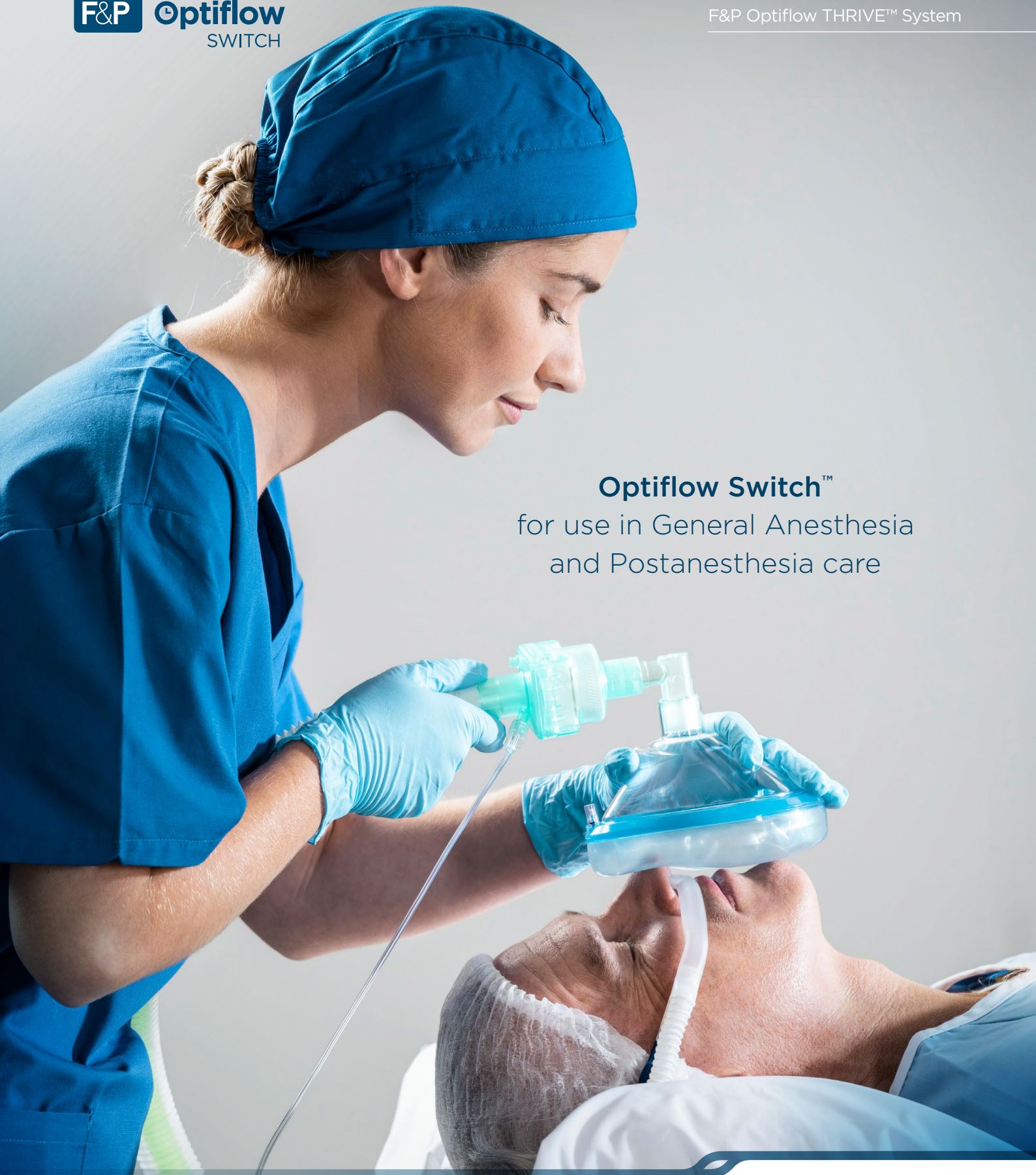


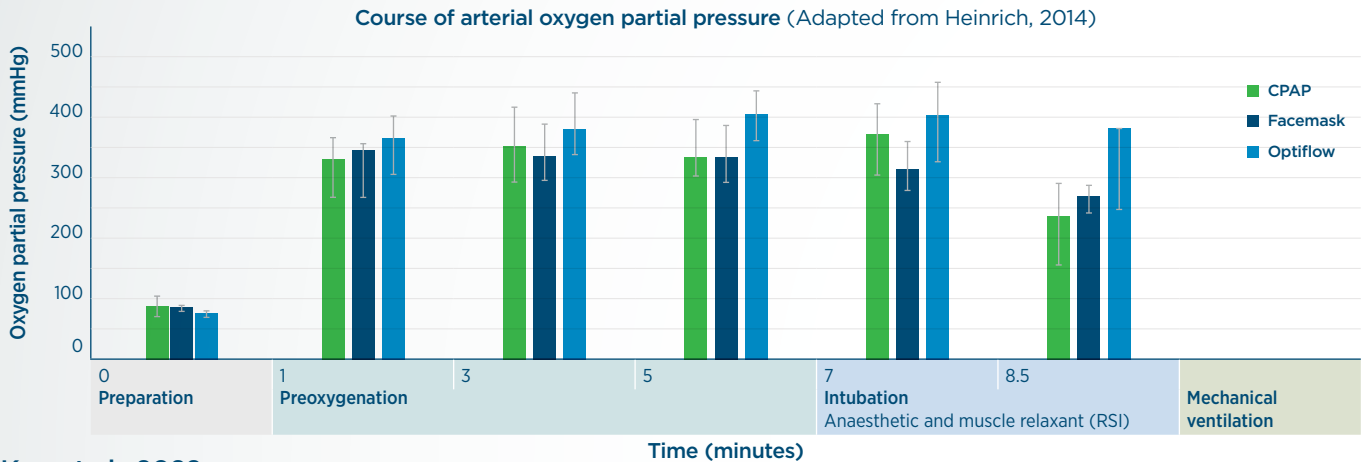
Optiflow Switch™
for use in General Anesthesia
and Postanesthesia care



THRIVE™ has been shown to provide effective preoxygenation.¹⁻³

Heinrich et al., 2014

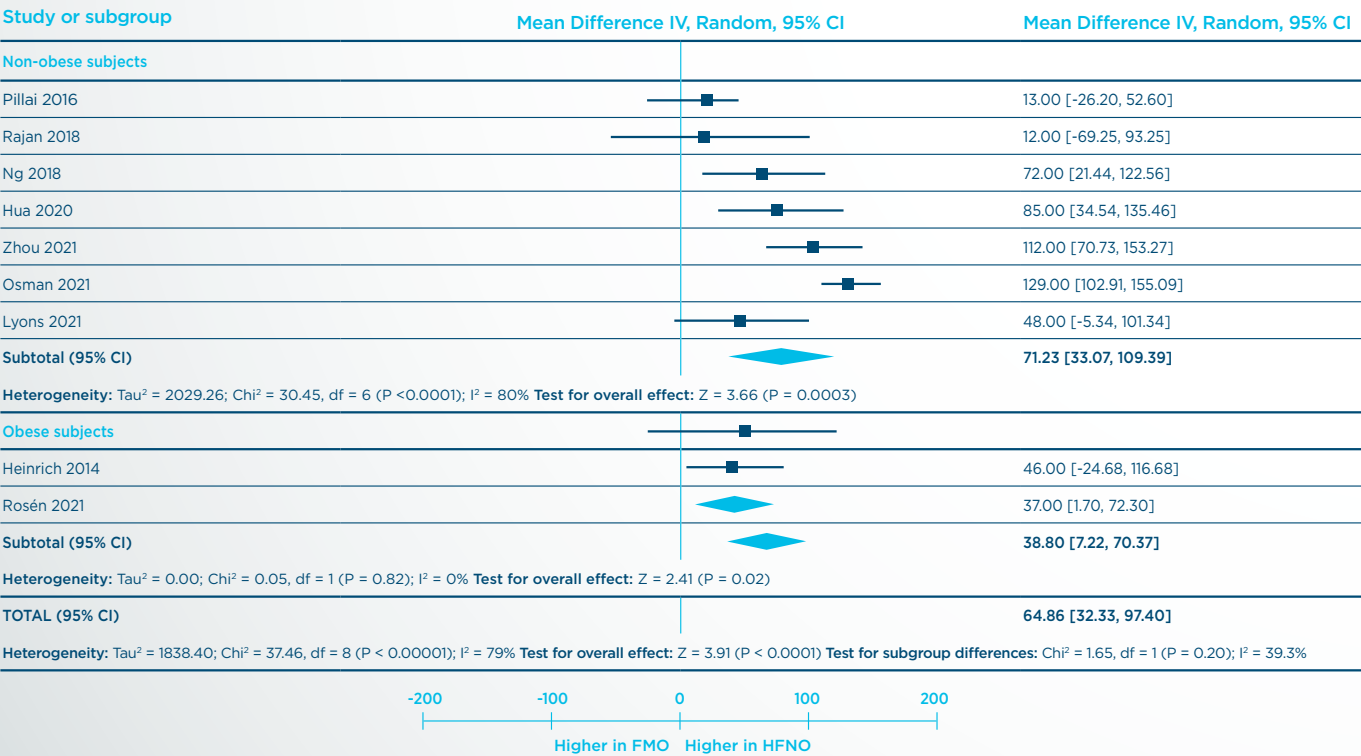
RCT by Heinrich et al. showed that THRIVE resulted in significantly higher PaO₂ at 5 and 7 minutes compared to face mask oxygenation. THRIVE provided comparable PaO₂ to CPAP.²



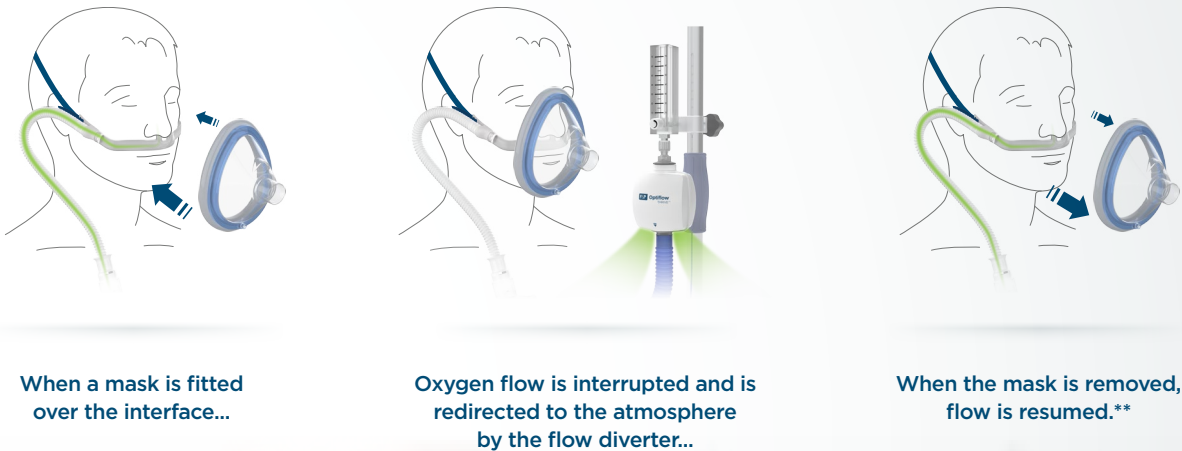
Kuo et al., 2022

Meta-analysis by Kuo et al. showed that high flow nasal oxygenation better enhanced PaO₂ and extended safe apnea time and is not inferior to facemask oxygenation in preventing desaturation during tracheal intubation.¹

Forest plot of arterial pressure of oxygen (mmHg) after pre-oxygenation between HFNO and FMO groups (Adapted from Kuo, 2022)



The Optiflow Switch interface allows Clinicians to bag mask ventilate while the interface remains fitted on a patient's face.



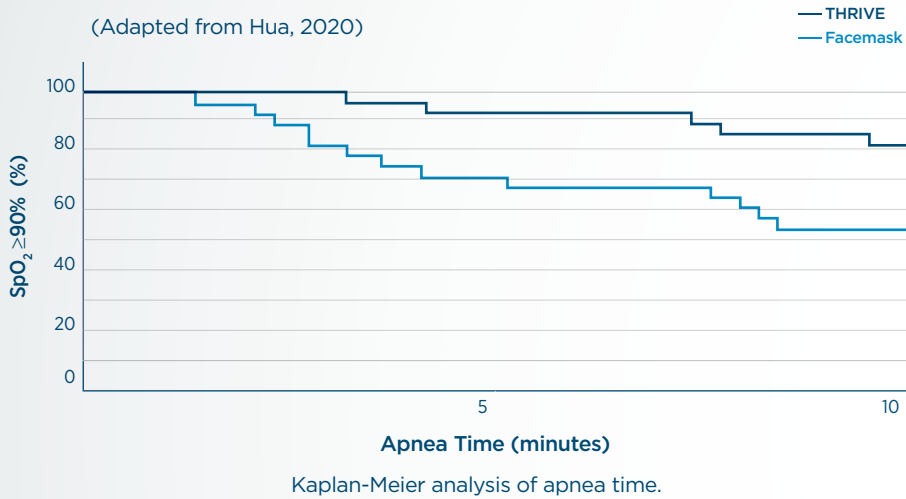
*THRIVE is Fisher & Paykel Healthcare's trademark statement for transnasal humidified rapid insufflation ventilatory exchange.

**This illustration does not replace the user instructions, refer to the user instructions before use.

THRIVE has been shown to extend safe apnea time.^{1,4-6}

Hua et al., 2020

Multi-centre RCT by Hua et al. showed that THRIVE reduced O₂ desaturation below 90% and significantly increased safe apnea time compared to the face mask group in elderly patients undergoing anesthesia.⁵



Wong et al., 2019

RCT by Wong et al. showed that THRIVE provided a higher minimum SpO₂ and increased safe apnea time by 40% compared to the face mask in high BMI patients undergoing general anesthesia.⁶

(Adapted from Wong, 2019. Mean values.)

	Safe apnea time (sec)	Minimum SpO ₂ (%)	Time to recover baseline SpO ₂ (sec)
Facemask group (n=20)	185.5	87.9	49.6
THRIVE group (n=20)	261.4	90.9	37.3
p Value	0.001	0.026	0.016



THRIVE has been shown to provide effective oxygenation.^{3,4,6,7}

The F&P Optiflow THRIVE system enables users to deliver:



up to 70 L/min flow



heated humidification



up to 100% O₂



Nasal high flow has been shown to provide positive airway pressure and reduce the rate of postoperative pulmonary complications.⁸⁻¹³

Corley et al., 2011

Nasal high flow significantly increased end-expiratory lung volume by 26% compared to low-flow cannula.⁸

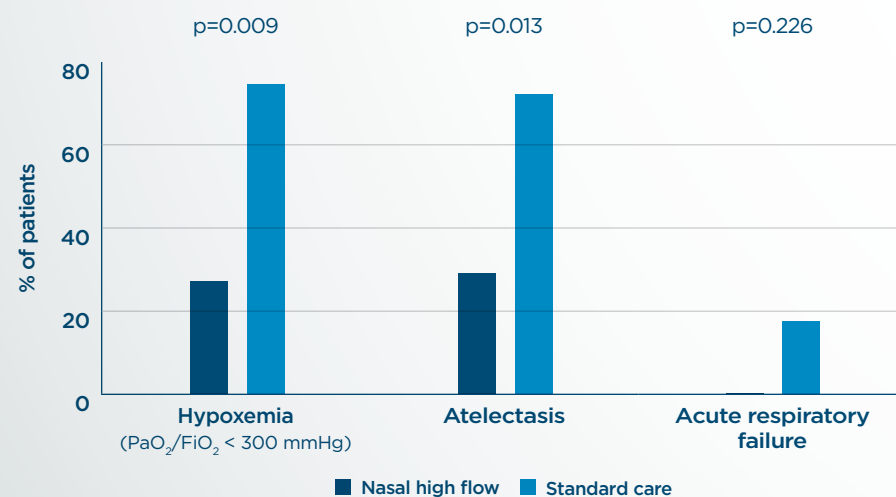
Low flow vs Nasal high flow (Adapted from Corley, 2011)



Ferrando et al., 2019

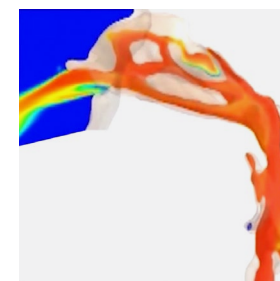
RCT by Ferrando et al. showed that nasal high flow reduced the incidence of postoperative pulmonary complications (PPCs) compared to standard care (Venturi mask) in postoperative bariatric surgery patients.¹¹

(Adapted from Ferrando, 2019)

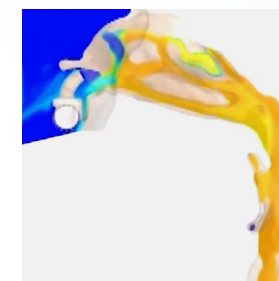


Nasal high flow has been shown to facilitate the clearance of carbon dioxide.* 14-16

Cross-section of the upper airway immediately prior to inspiration compares CO₂ concentrations between natural breathing and Optiflow™ nasal high flow.**



Unassisted breathing



Optiflow NHF (40 L/min)

** Computational fluid dynamic modelling, data on file Fisher & Paykel Healthcare Ltd.



The F&P Airvo™ 2 system enables users to deliver:



up to 50 L/min flow***



heated humidification



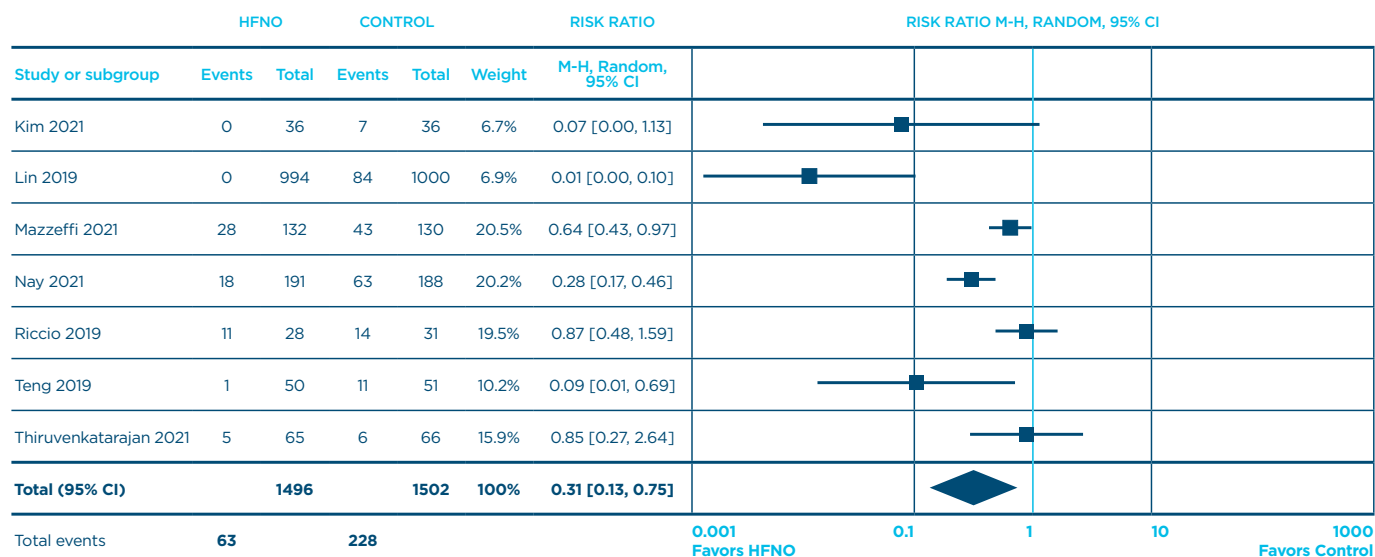
up to 95% O₂

Consider the use of Optiflow Switch in procedural sedation.

Hung et al., 2022

Meta-analysis by Hung et al. demonstrated the efficacy of HFNO for reducing the risk of hypoxemia in patients receiving elective GI endoscopic procedures under sedation.¹⁷

Forest plot comparing the risk of hypoxemia between HFNO and control groups (Adapted from Hung, 2022)



Heterogeneity: $\tau^2 = 0.95$; $\chi^2 = 42.30$, $df = 6$ ($P < 0.00001$); $I^2 = 86\%$ Test for overall effect: $Z = 2.61$ ($P = 0.009$)

References

1. Kuo HC, Liu WC, Li CC, Cherng YG, Chen JT, Wu HL, et al. A comparison of high-flow nasal cannula and standard facemask as pre-oxygenation technique for general anesthesia: A PRISMA-compliant systematic review and meta-analysis. *Medicine*. 2022;101(10):e28903.
2. Heinrich S, Horbach T, Stubner B, Prottengeier J, Irouschek A, Schmidt J. Benefits of heated and humidified high flow nasal oxygen for preoxygenation in morbidly obese patients undergoing bariatric surgery: a randomized controlled study. *J Obes Bariatrics*. 2014;1(1):7.
3. Zhou S, Zhou Y, Cao X, Ni X, Du W, Xu Z, et al. The efficacy of high flow nasal oxygenation for maintaining maternal oxygenation during rapid sequence induction in pregnancy: A prospective randomised clinical trial. *Eur J Anaesthesiol*. 2021;38(10):1052-8.
4. Osman YM, Abd El-Raof R. High flow nasal cannula oxygen preventing desaturation during induction of general anaesthesia in caesarean section: A randomized controlled trial. *Trends Anaesth Crit Care*. 2021;40:23-7.
5. Hua Z, Liu Z, Li Y, Zhang H, Yang M, Zuo M. Transnasal humidified rapid insufflation ventilatory exchange vs. facemask oxygenation in elderly patients undergoing general anaesthesia: a randomized controlled trial. *Sci Rep*. 2020;10(1):5745.
6. Wong DT, Dallaire A, Singh KP, Madhusudan P, Jackson T, Singh M, et al. High-Flow Nasal Oxygen Improves Safe Apnea Time in Morbidly Obese Patients Undergoing General Anesthesia: A Randomized Controlled Trial. *Anesth Analg*. 2019;129(4):1130-6.
7. Wu YM, Li CC, Huang SY, Su YH, Wang CW, Chen JT, et al. A Comparison of Oxygenation Efficacy between High-Flow Nasal Cannulas and Standard Facemasks during Elective Tracheal Intubation for Patients with Obesity: A Randomized Controlled Trial. *J Clin Med*. 2022;11(6):1700.
8. Corley A, Caruana LR, Barnett AG, Tronstad O, Fraser JF. Oxygen delivery through high-flow nasal cannulae increase end-expiratory lung volume and reduce respiratory rate in post-cardiac surgical patients. *Br J Anaesth*. 2011;107(6):998-1004.
9. Parke RL, Bloch A, McGuinness SP. Effect of Very-High-Flow Nasal Therapy on Airway Pressure and End-Expiratory Lung Impedance in Healthy Volunteers. *Respir Care*. 2015;60(10):1397-403.
10. Parke RL, Eccleston ML, McGuinness SP. The effects of flow on airway pressure during nasal high-flow oxygen therapy. *Respir Care*. 2011;56(8):1151-5.
11. Ferrando C, Puig J, Serralta F, Carrizo J, Pozo N, Arocas B, et al. High-flow nasal cannula oxygenation reduces postoperative hypoxemia in morbidly obese patients: a randomized controlled trial. *Minerva Anesthesiol*. 2019;85(10):1062-70.
12. Shih CC, Liang PC, Chuang YH, Huang YJ, Lin PJ, Wu CY. Effects of high-flow nasal oxygen during prolonged deep sedation on postprocedural atelectasis: A randomised controlled trial. *Eur J Anaesthesiol*. 2020;37(11):1025-31.
13. Xu L, Wei N, Shan M, Wang Z, Ye T, Liang S, et al. [High-flow nasal cannula oxygen therapy can reduce occurrence of hypoxia in elderly patients during anesthesia recovery]. *Nan Fang Yi Ke Da Xue Xue Bao*. 2021;41(8):1265-9.
14. Möller W, Feng S, Domanski U, Franke KJ, Celik G, Bartenstein P, et al. Nasal high flow reduces dead space. *J Appl Physiol*. 2017;122(1):191-7.
15. Pinkham M, Burgess R, Mündel T, Tatkov S. Nasal high flow reduces minute ventilation during sleep through a decrease of carbon dioxide rebreathing. *J Appl Physiol*. 2019;126(4):863-9.
16. Onodera Y, Akimoto R, Suzuki H, Nakane M, Kawamae K. A high-flow nasal cannula system set at relatively low flow effectively washes out CO₂ from the anatomical dead space of a respiratory-system model. *Korean J Anesthesiol*. 2017;70(1):105-6.
17. Hung KC, Chang YJ, Chen IW, Soong TC, Ho CN, Hsing CH, et al. Efficacy of high flow nasal oxygenation against hypoxemia in sedated patients receiving gastrointestinal endoscopic procedures: A systematic review and meta-analysis. *J Clin Anesth*. 2022;77:110651.