

Best Practices in Administration of Aerosolized Medication Via High-flow Nasal Cannula

Original article: Li J, Fink JB. Narrative review of practical aspects of aerosol delivery via high-flow nasal cannula. *Ann Transl Med.* 2021;9(7):590.



Clinicians have become increasingly interested in the delivery of aerosolized medicines via HFNC



To address common questions and identify best practices in this setting, researchers conducted a review of the literature



The review was based on the outcomes of peer-reviewed, English language studies identified via PubMed, Medline, and Scopus*

- ✓ *In vitro*/benchtop studies
- ✓ Scintigraphy studies (animals or healthy volunteers)
- ✓ Prospective and retrospective clinical trials
- ✓ Randomized controlled trials
- ✓ Surveys

Key benefits of delivering aerosolized medicines in-line with HFNC



Ideal for infants and small children

- HFNC aligns with the physiological make up of pediatric patients (who are predominantly nose breathers)
- Delivers medicine in combination with warmed and humidified gas, **improving patient comfort**
- Better tolerated than mask interfaces that deliver cool aerosol



Ideal for patients requiring extended aerosol administration

- HFNC can remain *in situ* for multiple days
- **Allows for prolonged administration of inhaled medication** without affecting a patient's ability to speak, eat or drink



Avoids interruption to oxygen administration in unwell patients

- HFNC can be used with in-line aerosol drug delivery systems in acute and critical care settings
- No need to remove HFNC to administer aerosols via a mask or mouthpiece, **avoiding interruption to oxygenation** and positive airway pressure

Key points for delivering trans-nasal pulmonary aerosol therapy



Avoid delivering aerosolized medicine using a jet nebulizer or metered-dose inhaler with a mask/mouthpiece over the HFNC



A **vibrating mesh nebulizer is preferred** to a jet nebulizer, particularly in children



To optimize the inhaled dose:

- The nebulizer should be placed at the inlet of the humidifier
- The authors suggest that gas flow should be set to below patient inspiratory flow (if tolerated) during aerosol delivery



Placing a surgical mask over the HFNC may reduce aerosol dispersion, minimizing the risk of transmission of infected bioaerosols

Inhaled dose delivered during HFNC is **2- to 3-fold higher** with in-line vibrating mesh nebulization *versus* concurrent jet nebulization

Aerosol deposition (flow rate 50 L/min)

0.7% ↔ **7%**

Jet nebulizer with mouthpiece concurrent to HFNC

HFNC with an in-line vibrating mesh nebulizer*

*The Aerogen Solo is a vibrating mesh nebulizer

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