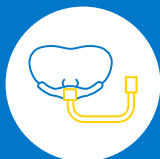


Dose–Response Data For Albuterol Delivered Using a High-Flow Nasal Cannula with In-line Aerogen® Solo in Patients with Obstructive Airways Diseases

Original article: Li J, Zhao M, Hadeer M, et al. Dose response to transnasal pulmonary administration of bronchodilator aerosols via nasal high-flow therapy in adults with stable chronic obstructive pulmonary disease and asthma. *Respiration*. 2019;98(5):401-409.

Background



Although delivery of aerosolized bronchodilator therapy via HFNC in patients with obstructive airways diseases is of interest to clinicians, there is a lack of dose–response data in this setting

Objective



This study examined dose–response results for aerosolized albuterol delivered using a HFNC with in-line Aerogen Solo®, as compared with an MDI with valved holding chamber, in adult patients with stable mild-to-moderate COPD and asthma

Materials and Methods

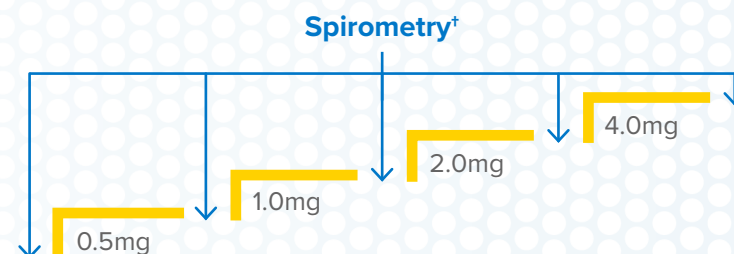
Design: Doubling dose-escalation study

Patients with a positive bronchodilator response* to 400µg of albuterol via MDI plus valved holding chamber



Inhalation of albuterol administered via HFNC with in-line Aerogen Solo

Aerosol delivery and outcome assessment



Escalating doses of albuterol (total volume 2mL)
Delivered at 37°C at a flow rate of 15–20L/minute

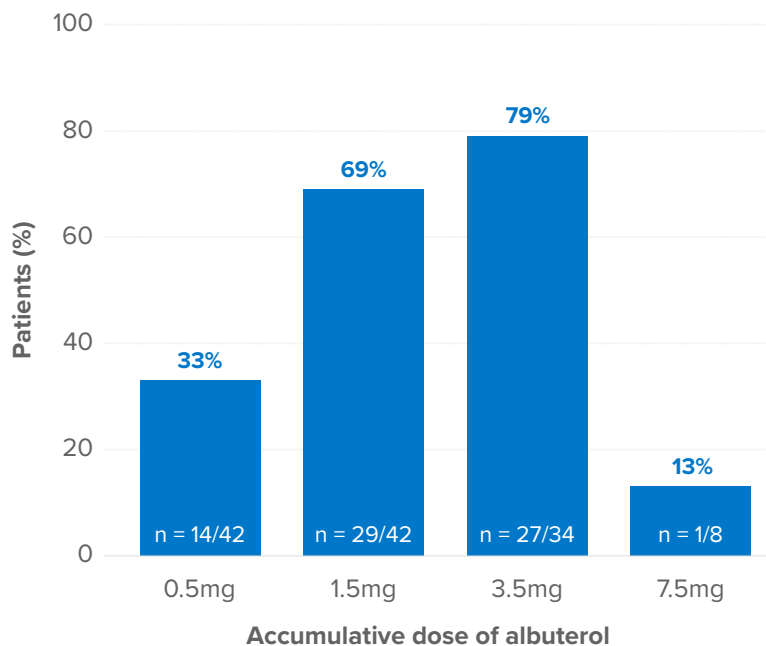
- Aerogen Solo positioned at the dry side of the humidifier
- Escalating doses were administered for ~5 minutes at 15- to 20-minute intervals
- The dose was escalated until an improvement of <5% in FEV1 versus the previous dose or the occurrence of adverse effects (eg tachycardia, arrhythmia, tremor)

*Defined as an absolute change of ≥200 mL and a ≥12% increase from baseline in FEV1 per 2005 American Thoracic Society/European Respiratory Society criteria; †Spirometry was performed before the initial dose and 5–6 minutes after the HFNC was disconnected. COPD, chronic obstructive pulmonary disease; FEV1, forced expiratory volume in 1 second; HFNC, high-flow nasal cannula; MDI, metered-dose inhaler.

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Achievement of a positive bronchodilator response* (% patients)



Aerosolized albuterol via HFNC with in-line Aerogen Solo resulted in a positive bronchodilator response in COPD and asthma patients*

FEV₁ increment from baseline (mean ± standard deviation)

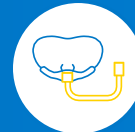
Albuterol 400µg via MDI with valved holding chamber



Albuterol 1.5mg via HFNC with Aerogen Solo

0.34L
(±0.12)

0.34L
(±0.18)



FEV₁ response with 1.5mg of aerosolized albuterol via HFNC was similar to 400µg of albuterol via MDI with valved holding chamber

