

2ND EUROPEAN NTM & BRONCHIECTASIS WORKSHOP

Medication delivery of bronchiectasis drugs via a breath actuated nebulizer (BAN): Review of delivery performance versus a breath enhanced nebulizer (BEN) commonly used with such medications



NTM
Bronchiectasis

VIRTUAL EDITION
30TH JUNE - 3RD JULY 2021

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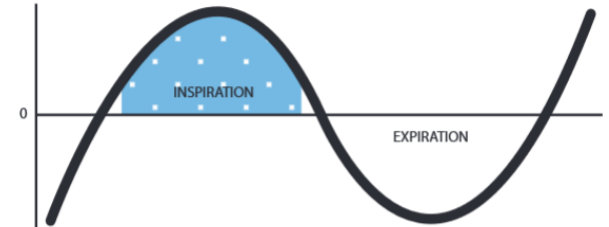
INTRODUCTION

- Medications to manage care of bronchiectasis patients are often delivered via a nebulizer, as such treatment is generally easy to use and enables delivery of the typical doses needed.
- A breath actuated device will reduce fugitive emissions and provide dose assurance (because dosing is not dependent on breathing pattern).
However, there are sometimes questions around the dose delivered to the patient when changing between continuous and breath actuated delivery modes.
- This study compares the two delivery modes for bronchiectasis medications commonly used in the home.

METHODS

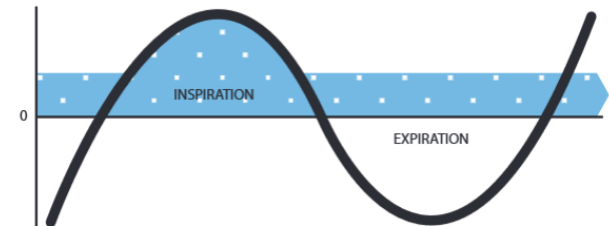
- Three different medications were evaluated:
 - a) 7% Hypertonic Saline
 - b) Tobramycin
 - c) Colistimethate Sodium
- Delivery was compared for each with a breath actuated device (**AEROECLIPSE* XL BAN*** Nebulizer paired with **Ombra*** Table Top Compressor, Trudell Medical International) and a continuous breath enhanced nebulizer (LC PLUS[†] BEN paired with PARI BOY[†] SX Compressor, PARI).
- Medication delivery was compared for each, from existing laboratory studies, in terms of the performance measures in each study.

BREATH ACTUATED DELIVERY



Breath actuated delivery only produces aerosol during the inspiratory cycle. No medication is lost between breaths or during breaks in treatment.

BREATH ENHANCED DELIVERY



An increase in medication is delivered through the inspiratory cycle, and reduced during exhalation, although still generated.

RESULTS

a) Hypertonic Saline:

The **BAN*** Nebulizer exhibited an 81.6% fine droplet fraction compared to 71.2% with the BEN, indicative of slightly smaller droplets, more likely to be delivered to the lungs.¹

Device Configuration	Fine Droplet Fraction _{<4.7μm} (%)
<i>AEROECLIPSE</i> * <i>XL BAN</i> * Nebulizer with <i>Aerobika</i> * OPEP Device / <i>Ombra</i> * Table Top Compressor	81.6 \pm 0.5
LC PLUS [†] BEN / PARI BOY [†] SX Compressor	71.2 \pm 1.1

4-mL fill of hypertonic saline (7% w/v NaCl aq.); n = 5 devices/group.

1. Coppola D, et al. Pediatric Pulmonology 2016;S45(51):S194-S485.
OPEP = oscillating positive expiratory pressure

RESULTS

b) Tobramycin:

The **BAN*** Nebulizer exhibited a slightly higher fine particle fraction than the BEN (72% versus 64%) and delivered a total mass of 141 mg compared to 83 mg for the BEN.¹

Device Configuration	Fine Particle Fraction _{<5.4µm} (%)	Total Mass (mg)
<i>AEROECLIPSE</i> * <i>XL BAN</i> * Nebulizer / <i>Ombra</i> * Table Top Compressor	72.1 ± 1.9	140.9 ± 6.2
LC PLUS [†] BEN / PARI BOY [†] SX Compressor	63.7 ± 2.0	83.4 ± 6.9

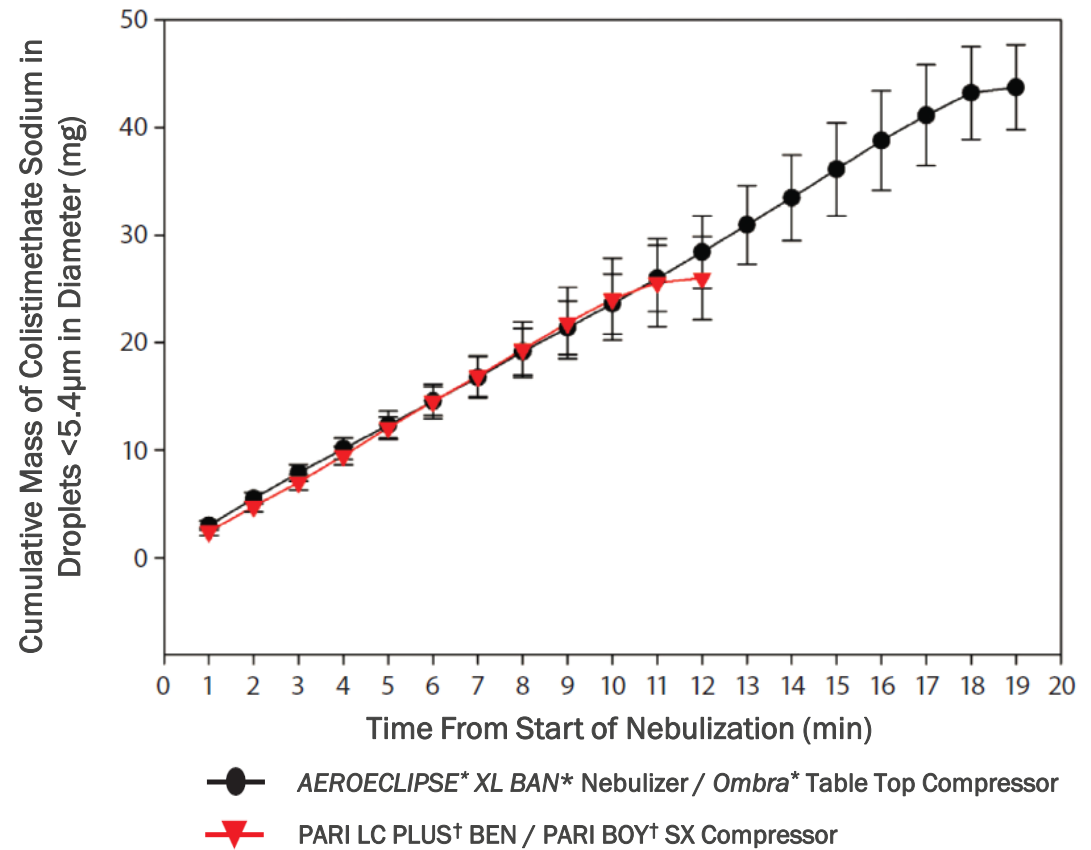
5-mL fill of tobramycin (TOBI[†]); n = 5 devices/group.

1. Suggett J, et al. American Journal of Respiratory and Critical Care Medicine 2014;189:A2847.

RESULTS

c) Colistimethate Sodium:

Fine droplet mass for the **BAN*** Nebulizer was similar to the BEN for the first 12 minutes of delivery, with the **BAN*** Nebulizer continuing to deliver medication for an additional 7 minutes.¹



4-mL fill of colistimethate sodium (Colomycin[†]); n = 5 devices/group.

1. Suggett J, et al. Respiratory Drug Delivery 2014;3:581-584.

CONCLUSIONS

- Although the medication delivery in the various lab studies was reported using differing metrics, a common trend was that **AEROECLIPSE* XL BAN*** Nebulizer delivered at least as much or more medication than the BEN.
- Reviewing the safety data for the drugs themselves shows that the higher delivery with the **BAN*** Nebulizer was well within acceptable dosing ranges.
- Clinicians could recommend the **BAN*** Nebulizer for delivery of bronchiectasis medications on the basis of these studies.





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