

## THE DELIVERY TIME, EFFICACY, AND SAFETY OF BETA AGONIST BRONCHODILATOR ADMINISTRATION WITH THE *AEROECLIPSE*<sup>®</sup> BREATH - ACTUATED NEBULIZER VERSE A CONVENTIONAL T-TYPE SMALL VOLUME NEBULIZER.

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**Purpose:** Aerosol delivery consumes the highest level of Respiratory Care resources. This study evaluated the delivery time, efficacy, and safety of rapidly nebulized albuterol with the use of a novel breath actuated nebulizer compared to a standard small volume nebulizer.

**Methods:** A consecutive, non-randomized, mostly COPD population receiving pre & post bronchodilator testing in our Pulmonary Function Lab were studied. 0.5 ml albuterol (2.5 mg) with 0.5 ml Normal Saline (NS) was administered with the *AeroEclipse*<sup>®</sup> Breath Actuated Nebulizer ("BAN") (Monaghan Medical Corp. Plattsburgh, N.Y.) using an oxygen flow rate of 8 L/min. Treatments with the AirLife™ brand Misty-Neb™ small volume nebulizer (SVN) (Allegiance Healthcare Corporation) consisted of nebulizing 2.5 mg of albuterol diluted with 3 ml of Normal Saline Unit Dose (UD) using an oxygen flow rate of 8 L/min. The SensorMedics Vmax 22 Pulmonary Function System was utilized to measure FEV1. A standardized subjective questionnaire to determine side effects was completed.

**Results:** The table shows the albuterol dosages, mean % change of FEV1 from pre-treatment and 10 minute post treatment, mean administration time and tremulousness. The mean treatment time with all BAN patients was 2.67 minutes as compared to 8.33 minutes with the SVN (p<.001)\*. The changes in FEV1 were not significant. There was no difference in heart rate, respiratory rate or nausea.

**Conclusion:** The rapid administration of albuterol in the 0.5 ml + 0.5 ml NS dose using the BAN was equally efficacious as the SVN UD. Delivering 0.5 ml Albuterol (2.5 mg) with 0.5 ml Normal Saline using the BAN offered the best delivery time, efficacy and safety profile between the two devices.

**Clinical Implications:** In a health care facility that delivers large volumes of aerosol treatments, the decrease in delivery time achieved with the BAN could have a significant impact on resource utilization. The results supported changes in the Respiratory Care practice throughout Crouse Hospital. Further studies evaluating additional medication dosing regimens measuring safety, efficacy and resource utilization are needed.

<b>Nebulizer (n)</b>	<b>Dose</b>	<b>% Change FEV1</b>	<b>Time (min)</b>	<b>Tremulousness</b>
<b><i>AeroEclipse</i><sup>®</sup> <i>BAN</i> (12)</b>	2.5mg (0.5 ml albuterol +0.5 ml NS)	8.2%	2.67*	0
<b>Misty-Neb™ (52)</b>	2.5mg (3 ml unit dose)	9.1%	8.33	2

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