

## SAFETY AND EFFICACY OF FIVE-MINUTE TIMED AEROSOL ADMINISTRATION WITH THE AEROECLIPSE BREATH ACTUATED NEBULIZER: COMPARISON OF LEVALBUTEROL WITH RACEMIC ALBUTEROL.

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**Purpose:** Beta<sub>2</sub>-agonist Racemic Albuterol has been used extensively in the performance of pre & post bronchodilator studies in the pulmonary function laboratory. This study evaluated the safety and efficacy of timed nebulization of the two dosages of Levalbuterol (Sepracor Inc., Marlborough, MA) as compared to Racemic Albuterol (Dey, Napa, CA) with the use of the AeroEclipse Breath Actuated Nebulizer (BAN) (Monaghan Medical Corp. Plattsburgh, N.Y.).

**Methods:** A consecutive, non-randomized, mostly COPD population (n = 93) receiving pre & post bronchodilator testing in our Pulmonary Function Lab were studied. Two different Levalbuterol medication dosages were administered: 0.63mg Levalbuterol UD or 1.25mg UD Levalbuterol. The Racemic Albuterol dosage was 2.5mg UD. All 5 minute timed aerosol treatments were administered using the BAN with an oxygen flow rate of 8L/min. The Sensormedics Vmax 22 Pulmonary Function System was utilized to measure both FEV1 and PEFR. A standardized subjective questionnaire to determine side effects was completed.

**Results:** The table shows the Levalbuterol and Racemic Albuterol dosages, mean % change of FEV1 and PEFR from pre-treatment to 10-minute post treatment, administration time, tremulousness and increase in heart rate. There was no significant difference in % change in FEV1 or PEFR. There was a significant increase in heart rate with the 1.25mg Levalbuterol UD group (7.2 vs. 3.4, p<.05\*; 7.2 vs. 2.2, p<.01 \*\*). There was no difference in respiratory rate, tremulousness, or nausea.

Nebulizer (n)	Dose	% Change FEV1	% Change PEFR	Time (min)	Trem.	HR (Inc.)
Levalbuterol (38)	0.63mg UD	7.8	6.2	5	4	3.4*
Levalbuterol (29)	1.25mg UD	7.7	16.6	5	2	7.2*
Racemic Albuterol (29)	2.25mg UD	12.2	10.5	5	0	2.2**

**Conclusion:** Five minute timed administration of Levalbuterol and Racemic Albuterol using the BAN was equally efficacious and had similar safety profiles. The change in FEV1 and PEFR are consistent with our mostly COPD population. The increase in heart rate was greatest with the Levalbuterol 1.25 mg dosage.

**Clinical Implications:** Five minute timed administration of Levalbuterol and Racemic Albuterol using the BAN is a safe and efficient alternative to the use of small volume nebulizers. Additional caution should be taken when administering Levalbuterol at the 1.25 mg dosage utilizing the BAN in cardiac patients. The efficiency of timed aerosol administration could have significant impact on resource utilization while maintaining the quality of aerosol delivery. This may be one of several strategies to address the problems of Respiratory Care staff shortages or high seasonal effect in the acute care facility.