

Effect of Bronchodilator Delivery Using the Aerogen® Ultra Versus a Jet Nebulizer on Clinical Outcomes in an Acute Care Setting

Original article: Dunne RB, Shortt S. Comparison of bronchodilator administration with vibrating mesh nebulizer and standard jet nebulizer in the emergency department. Am J Emerg Med. 2018;36(4):641-646.

Background



Aerosolized bronchodilators are frequently used in patients presenting to the emergency department with acute respiratory distress related to reversible bronchoconstriction; however, there is a lack of data on the potential impact of different delivery devices in this setting

Objective



The aim of this study was to compare clinical outcomes during use of the Aerogen Ultra versus a jet nebulizer in patients treated with aerosolized albuterol in the emergency room

Materials and Methods

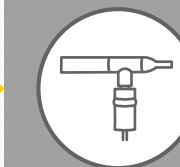
Design: Review of electronic medical records from a prospectively defined dataset

Adult and pediatric patients treated with inhaled bronchodilator therapy in the emergency room



Presentation to the emergency room

Treatment with albuterol 2.5 mg/3 mL titrated up if clinically indicated



Period 1 (30 days): n=879
Jet nebulizer with mouthpiece or aerosol mask*
Oxygen flow rate 8 L/min



Period 2 (30 days): n=715
Aerogen Ultra with mouthpiece (preferred) or valved mask*
No/minimal oxygen flow†

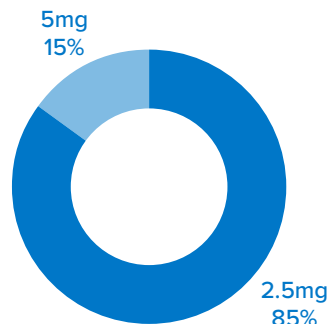
*The choice of interface was based on a patient's age and/or ability to correctly co-ordinate use of a mouthpiece; †Patients using the mouthpiece interface had no added oxygen flow, while those using the valved mask interface had minimal added flow (1–2 L/min in pediatrics, 2–6 L/min in adults).

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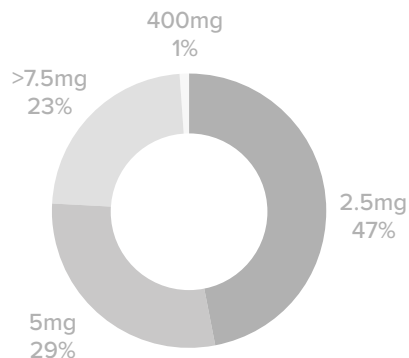
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85% of patients achieved symptom control with one 2.5mg albuterol dose
The Aerogen Ultra group used less total drug ($p < 0.001$)

Aerogen Ultra



Jet nebulizer



The total amount of albuterol used was significantly lower with Aerogen Ultra versus jet nebulizer ($P < 0.001$)

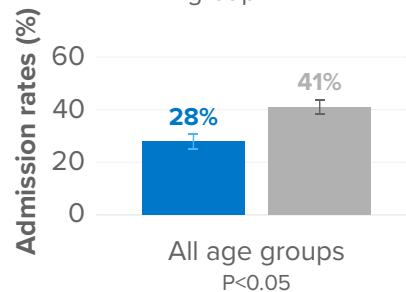
No patients in the Aerogen Ultra group required albuterol >5 mg

■ Aerogen Ultra (n=641) ■ Jet nebulizer (n=869)

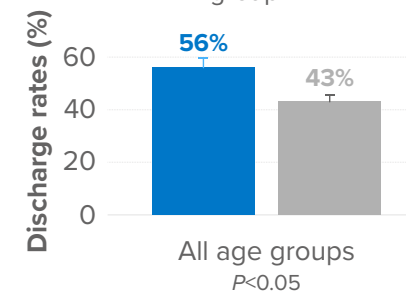
37min median reduction in ED length of stay per patient with Aerogen Ultra vs jet nebulizer



32% reduction in admission rates with Aerogen Ultra when compared to the jet nebulizer group



30% higher discharge rates with Aerogen Ultra when compared to the jet nebulizer group



Use of Aerogen Ultra versus a jet nebulizer for bronchodilator delivery resulted in a reduced dose of albuterol, a shorter stay in the emergency room, and reduced admission rates

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