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


**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

**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†

Presentation to the emergency room  
Treatment with albuterol 2.5 mg/3 mL titrated up if clinically indicated

N=1594

*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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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.

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.