Albuterol in Bronchiolitis: Are Certain Patient Characteristics Associated with Improved Clinical Outcomes?

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INTRODUCTION/ OBJECTIVE

- Bronchiolitis commonly affects children ages 0-24 months, accounting for ~18% of all hospitalizations in this group. RSV is the most common cause, although many viruses present similarly.
- The AAP guidelines recommend against the use of albuterol in patients with bronchiolitis. However, many pediatricians in clinics, inpatient floors, and ICUs still utilize albuterol at times for bronchiolitis.
- Our aim is to investigate if certain patient-specific characteristics are associated with clinical improvement after albuterol administration in some patients with bronchiolitis.

METHODS

- This study is a retrospective chart review of patients ages 0-24 that were admitted to Oklahoma Children's Hospital between June and December 2022 with primary diagnosis of bronchiolitis. We collected data from the electronic medical records, including
  - –Patient's age and demographics
  - –Medical and family history
  - –Viral testing
  - –If albuterol was utilized
    - If yes, were there subjective or objective signs of improvement?
- Patients with congenital heart disease, Trisomy 21, Cystic Fibrosis, or baseline oxygen requirement were excluded.
- Chi-square tests were utilized to compare groups.
- 1040 charts were included in this data.

RESULTS

Over 1,500 charts have been included in data. Of these, 17.7% (186) received at least one dose of albuterol, and 25.8% (272) received it more than once. 58.6% (268/457) had documented clinical improvement, and 24.6% (112/456) had documented improvement in vital signs.

Graph 1: Clinical response to albuterol compared in age groups

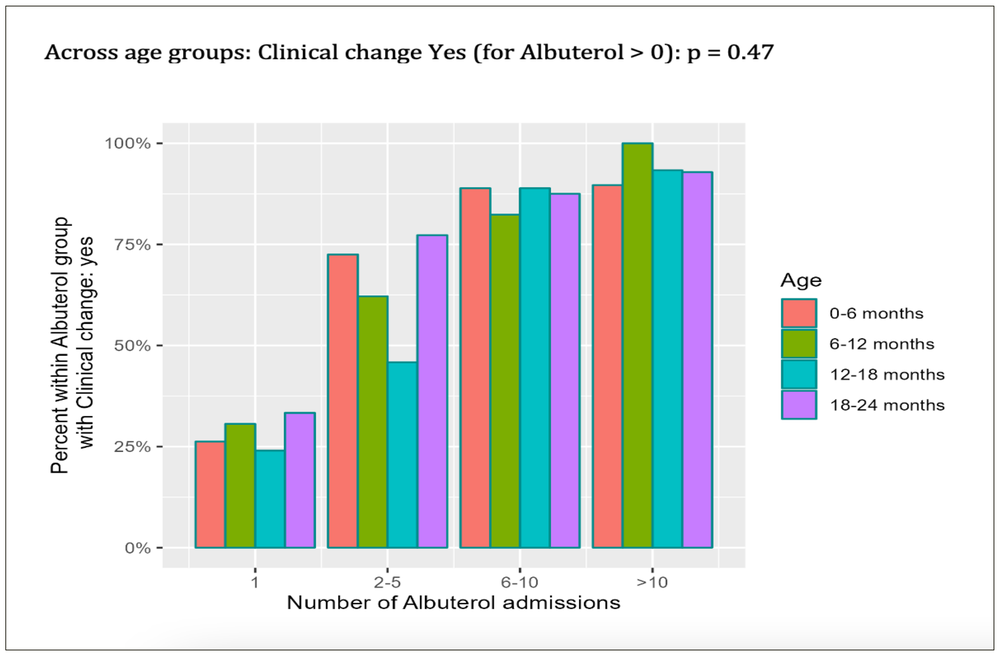

Table 1: Comparisons of clinical response to albuterol in patient groups

Positive clinical response to albuterol	Female	Male	
	58.8%	58.4%	P=1.00
	<1 year	**>1 year**	
	58.3%	58.9%	P=0.96
	FH Asthma	**No FH Asthma**	
	64.4%	55.0%	P=0.060
	MH Asthma/RAD*	**No MH Asthma/RAD**	
	81.8%	55.4%	P=0.0003
	MH Eczema*	**No MH Eczema**	
	72.0%	57.8%	P=0.23
	MH Allergies*	**No MH Allergies**	
	66.7%	58.2%	P=0.59
	FHx Eczema	**No FHx Eczema**	
	91.7%	57.8%	P=0.018
	MHx previous response	**No MHx previous response**	
	76.3%	57.0%	P=0.025

DISCUSSION

- Statistically significant differences were seen in the "medical history of asthma or reactive airway disease group", "family history of eczema group" and the "medical history of response to albuterol group".
- This is most likely due to the known bronchodilatory effects of albuterol on the lungs, which is beneficial in inflammatory diseases such as asthma and reactive airway disease and the hereditary component of such diagnoses.
- Albuterol treatment did not impact length of stay of patients, but did show a subjective clinical improvement in many patients, (>25% of patients in almost all categories)
- In future studies, objective data may be more reliable, specifically vital signs before and after albuterol administration; however, this is not well-documented in our previous EMR which was used to collect data.
- Potentially confounding factors include: when patient's oxygen is increased as albuterol is also trialed and the small sample size of many of the patient groups reviewed.
- A prospective review to better evaluate objective response to albuterol, excluding confounding factors would be a beneficial next study.

CONCLUSIONS

At this time, our data only supports a higher chance of improvement with albuterol in patients with bronchiolitis who have been previously diagnosed with asthma or reactive airway disease. However, clinical improvement was seen in many of the other patients who received albuterol (>25% of patients).

References

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