the asthma care unit were treated in a standardized manner, with continued administration of the drugs assigned in the emergency department. The primary outcome parameter was hospitalization rate.

Results. The hospitalization rate was significantly lower for the levalbuterol group (36%) than for the racemic albuterol group (45%, P = .02). The adjusted relative risk of admission for the racemic albuterol group, compared with the levalbuterol group, was 1.25 (95% confidence interval: 1.01–1.57). There was no difference in the lengths of hospital stays, and there were no significant adverse events in either group.

Conclusion. Substituting levalbuterol for racemic albuterol in the emergency department treatment of acute asthma significantly reduced the number of hospitalizations.

Reviewer’s Comments. Additional prospective trials, including pulmonary function studies and economic analyses, will be necessary to justify the use of levalbuterol, rather than albuterol, as standard practice.

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COMPARATIVE EFFICACY OF TERBUTALINE SULFATE DELIVERED BY TURBUHALER DRY POWDER INHALER OR PRESSURIZED METERED-DOSE INHALER WITH NEBUHALER SPACER IN CHILDREN DURING AN ACUTE ASTHMATIC EPISODE


Purpose of the Study. Several previous studies demonstrated that the bronchodilator effect of a metered-dose inhaler (MDI) with spacer was just as good as that of a nebulizer for treatment of acute asthma exacerbations among children. What about a MDI with spacer versus a dry powder inhaler (DPI)?

Study Population. A total of 112 children with asthma, 6 to 16 years of age, who presented to an emergency department with asthma exacerbations were studied. Baseline forced expiratory volume in 1 second (FEV1) values were 25 to 60% of predicted values.

Methods. Patients were randomized to receive terbutaline through either a MDI with spacer or a DPI (Turbuhaler, AstraZeneca, Lund, Sweden). Doses were administered at 0 and 30 minutes, and FEV1 values were measured at 0, 30, and 60 minutes.

Results. No differences in increases in FEV1 were seen at 30 minutes (MDI with spacer: 35%; DPI: 33%) or 60 minutes (MDI with spacer: 50%; DPI: 49%). There were also no differences in oxygen saturation or heart rates.

Conclusion. For treatment of acute asthma exacerbations among children ≥6 years of age, delivery of a bronchodilator with a DPI works just as well as delivery with a MDI with spacer.

Reviewer’s Comments. The Environmental Protection Agency and the Food and Drug Administration are mandating that current MDIs be phased out, because of the adverse environmental effects of chlorofluorocarbon propellants. Inhaler manufacturers have complied either by using more environmentally friendly propellants (such as hydrofluoroalkanes) or by eliminating the propellant entirely in DPIs. It is reassuring to know that, even in acute asthma exacerbations, children ≥6 years of age can effectively use a DPI for delivery of bronchodilator.

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RANDOMIZED, DOUBLE-BLIND, PLACEBO-CONTROLLED TRIAL OF ORAL ALBUTEROL IN INFANTS WITH MILD-TO-MODERATE ACUTE VIRAL BRONCHIOLITIS


Purpose of the Study. To determine whether oral albuterol therapy is effective in reducing symptoms of mild/moderate acute viral bronchiolitis.

Study Population. A total of 129 previously healthy infants (≤12 months of age) discharged directly home from the emergency department (ED), with a clinical diagnosis of acute viral bronchiolitis, were studied.

Methods. At discharge from the ED, patients were randomly assigned to receive either oral albuterol therapy (0.1 mg/kg per dose) or oral placebo treatment. Infants were treated 3 times daily for a maximum of 7 days or until complete resolution of bronchiolitis symptoms, whichever happened first. Overall health, medication compliance, feeding and sleeping patterns, follow-up visits, parental life disruptions, and adverse events were discussed in daily telephone interviews until the resolution of symptoms or for 14 days. The primary outcome of interest was the time from study enrollment until the resolution of illness, as determined by the primary caregiver. Secondary outcomes of interest included duration of cough, coryza, and noisy breathing, time to normal feeding, and time to normal sleeping.

Results. During the study, 1039 infants were discharged from the hospital ED with acute viral bronchiolitis. Of those, 231 were eligible and 129 were randomized into the study. The mean ages were 5.4 months for the albuterol group and 5.1 months for the placebo group. Respiratory syncytial virus was the pathogen found most frequently (albuterol: 81%; placebo: 79%) in nasopharyngeal aspirates collected from 61 infants in the 2 groups. The median number of days of illness before ED presentation for both groups was 4.0 days. The mean times to the resolution of illness were similar for the 2 groups (albuterol: 8.9 days; placebo: 8.4 days). There were no significant differences in secondary outcomes between the groups. Hospitalization for treatment of respiratory distress was eventually required for 4 infants in the albuterol group and 5 in the placebo group. There were similar median numbers of health care revisits for the 2 groups (albuterol: 1; placebo: 0). There were also similar median numbers of days in which trembling and vomiting were observed (albuterol: 0 and 1; placebo: 0 and 1, respectively).

Conclusions. There was no significant difference in symptom resolution for newly diagnosed bronchiolitis treated with orally administered albuterol versus placebo. The authors did not recommend the use of orally administered albuterol for this patient population.

Reviewers’ Comments. Although previous studies found similar results, most outcomes in this study were based solely on subjective evaluations by the primary caregiver at home. The authors present compelling evidence that orally administered albuterol, at the dose used in this study, has little role in the treatment of bronchiolitis among infants. However, the dose of albuterol was at the low end of the recommended dose range of 0.1 to 0.2 mg/kg per dose, administered 3 times daily.

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Michael S. Kaplan, MD
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### RANDOMIZED, DOUBLE-BLIND, PLACEBO-CONTROLLED TRIAL OF ORAL ALBUTEROL IN INFANTS WITH MILD-TO-MODERATE ACUTE VIRAL BRONCHIOLITIS

Joseph Shapiro and Michael S. Kaplan

*Pediatrics* 2004;114;542

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