Aerosol Therapy by Pressured Metered-Dose Inhaler-Spacer in Sleeping Young Children: To Do or Not to Do?


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**PURPOSE OF THE STUDY.** To determine the feasibility of aerosol administration with a metered-dose inhaler (MDI) spacer in sleeping young children.

**STUDY POPULATION.** Thirty children (18 boys) from the Netherlands between 6 and 23 months of age were treated with inhalation therapy twice per day for recurrent wheezing in the previous month.

**METHODS.** Parents were trained to use a metal chamber (NebuChamber) with a face mask to administer 200 μg of budesonide aerosol. A filter was placed between the spacer and face mask to trap and then measure the aerosol inhaled from the spacer. The study included 1 run-in week and 2 test weeks. The families were visited at home 4 times in the 3 weeks. At the 1-week run-in, the parents practiced the procedure with a placebo MDI while the child was awake. In weeks 2 and 3, they administered 1 puff while the child was awake (awake administration), 1 puff before bedtime, and 1 puff while the child was asleep (sleep administration). Parents then were asked to score the child’s asthma symptoms and degree of cooperation and the feasibility of administration. Filters were washed, and budesonide amounts were measured by high-performance liquid chromatography and spectrophotometry.

**RESULTS.** Twenty-one children fully completed the study, and a total of 350 awake-administration filters and 331 sleep-administration filters were collected. The mean filter dose was significantly higher for awake administration (47% ± 26%) than that for sleep administration (16% ± 13%). The median variability dose for awake administration was 50%, whereas it was 110% for sleep administration. Poor cooperation was noted for 29% of the awake administrations. In 69% of the sleep administrations, the child woke up, and in 75% of these cases, the child was distressed. Twenty-two percent of parents reported mask-positioning problems while the child was sleeping. Mean symptoms scores were 1.4 ± 2.2 (0 = no symptoms, 4 = severe symptoms; maximum score = 12 for sum of cough, wheeze, and shortness of breath).

**CONCLUSIONS.** Administering aerosol therapy during sleep has been suggested as a way to overcome cooperation problems in young children, but this study suggests that this is not the answer.

**REVIEWER COMMENTS.** The study included 30 children, and only 21 completed the study; a larger study would need to be performed with design modifications. One significant concern about the study design is that the children did not receive active drug during the study because the design required capturing the drug in a filter to determine drug delivery (which may explain the high dropout rate). Furthermore, the design of the study did not allow for a means to determine clinical efficacy or lung deposition of the drug. In the interim, pediatricians may...
Improving the delivery of preventive asthma care among children with persistent asthma: A randomized trial of clinician prompting in pediatric offices


Purpose of the Study: To determine if clinician prompting regarding asthma severity and guideline recommendations at the time of an office visit improves the delivery of preventive asthma care.

Study Population: Children aged 2 to 12 years (N = 226) with persistent asthma from 2 inner-city pediatric practices in Rochester, New York. Children were at the clinic for a well-child check, asthma care, or non–asthma-related illness care and were randomly assigned to 1 of 2 groups: clinician-prompting group (CPG) or standard-care group (SCG).

Methods: A baseline survey was conducted to obtain information regarding household demographics, medication use, and environmental tobacco-smoke exposure. Parents of the children who were randomly assigned to the CPG were instructed to give a prompt sheet to their clinician along with a blank asthma action plan form. Parents of the children who were assigned to the SCG also completed baseline assessment interviews but were not given a prompt sheet, and no information regarding the interview was shared with the clinician. Follow-up information was collected within 60 days through telephone interviews.

Results: The children in the CPG were more likely to have any preventive action related to asthma taken at the visit compared with children in the SCG (86.6% vs 69.3%). Children in the CPG were also more likely to have received an asthma action plan (50.0% vs 23.7%), recommendation for a specific asthma follow-up visit (53.6% vs 36.8%), discussion regarding asthma (75.0% vs 63.2%), and smoke-reduction counseling (57.5% vs 35.4%) compared with those in the SCG. There were no statistical differences in referrals for specialty care, treatment of comorbid conditions, or changes in preventive medications between the 2 groups.

Conclusions: Clinician prompting regarding asthma severity and care guidelines at the time of an office visit increased the likelihood of delivering preventive asthma care.

Reviewer Comments: Several studies have demonstrated that health care providers often underestimate asthma severity and have demonstrated poor adherence to National Asthma Education and Prevention Program guidelines. Successful management of asthma requires both accurate determination of asthma severity and proper treatment. This study demonstrates a method that may increase the likelihood of delivering preventive asthma care at non–asthma-related office visits by prompting clinicians. However, as the authors pointed out, although prompting improved the delivery of preventive asthma care, a large percentage of patients in the CPG did not have follow-up–visit recommendations (46.4%), received no asthma action plan (50%), and received no discussion related to asthma (25%). This study demonstrates that a better system needs to be implemented to increase the rate of delivering appropriate preventive care for patients with asthma.

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Improved asthma outcomes in a high-morbidity pediatric population: Results of an emergency department–based randomized clinical trial


Purpose of the Study: To determine if an emergency department–based asthma follow-up clinic could improve outcomes within a high-morbidity pediatric population.

Study Population: Four hundred eighty-eight patients (aged 12 months to 17 years) from an emergency department at an urban tertiary care pediatric hospital with previous physician-diagnosed asthma and ≥1 unscheduled visit in the last 6 months and/or ≥1 hospitalization in the last 12 months.

Methods: The subjects were recruited while they were still in the emergency department for their acute care visits. The subjects were randomly assigned to either a single visit to an asthma clinic located in the emergency department, where they met with an asthma educator and a physician, or the control group, which received printed information about asthma. Follow-up telephone interviews were conducted at 1, 3, and 6 months after enrollment.

Results: One hundred seventy-two (70.5%) of the subjects who were randomly assigned to the intervention attended the clinic, and 167 of these subjects were prescribed inhaled corticosteroids. Compared with children in the control group, those in the intervention group had significantly fewer unscheduled visits for asthma care (mean: 1.39 vs 2.34; relative risk: 0.60); at 6 months, reported significantly more use of inhaled corticosteroids (49.3% vs 26.5%; relative risk: 2.03); reported “no limitation in daytime quality of life” significantly more often...
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