Nebulizers Best for Delivering Inhaled Steroids

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BOSTON — Nebulizers are better than nonnebulized devices for delivering inhaled corticosteroids to children with asthma, results of a study have shown.

Although nebulizers are not necessarily more effective than nonnebulized devices such as a metered-dose inhaler and holding chamber, "the improved outcomes may be a function of better compliance and a higher likelihood of correct use," Carlos A. Camargo, M.D., reported at the annual meeting of the American College of Allergy, Asthma, and Immunology.

Dr. Camargo, assistant professor of medicine at Harvard Medical School in Boston, and his colleagues used a managed care organization database to compare the health outcomes achieved by children with asthma who received inhaled corticosteroids by nebulizer with those of children who received the treatment via a nonnebulized device.

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The investigators identified 1,552 children aged 8 years and younger with an asthma diagnosis and an asthma-related hospitalization or emergency department visit between July 2000 and June 2002. All of the patients had prescription claims for an inhaled corticosteroid within 30 days of discharge.

The primary outcome measure was the relative risk of rehospitalization or recurrent emergency department visits between days 31 and 180 after the baseline visit. The patient population was divided in two age groups: 0-4 years and 5-8 years. Regression analyses controlled for sex, age, current and prior asthma medications, prior oral corticosteroid and short-acting β_2 adrenergic agonist use, and the initial type of index event.

Of the 1,552 patients with claims for inhaled corticosteroids, 729 were in the nebulizer group, of whom 480 were younger than 4 years. Among the 823 patients in the nonnebulized group, 292 were younger than 4 years.

The overall postindex rehospitalization/emergency visit rate was 12.4%. "After model risk adjustment, patients using nebulized steroids had a 53% risk reduction for hospitalization or emergency department recurrence compared with those not using nebulized therapy," said Dr. Camargo.

The comparative risk reductions by age group were 62% in the 0-4 years nebulizer group and 52% in the 5-8 year range.

The differences held relatively steady after adjustment for age differences between the groups. With respect to asthma severity at baseline for this study, "if anything, the nebulized group was sicker to start with than the nonnebulized group," Dr. Camargo commented.

Improved compliance with nebulizers compared with other devices in the real-world setting is one possible explanation for the results, said Dr. Camargo, noting that the adherence issue might not be apparent in clinical trials. "In the real world, it could be that kids treated with nebulizers are more likely to actually get their medications than kids treated with metered-dose inhalers—possibly because of the mask used with the nebulizer or because of greater parent involvement," he commented.

Previous studies investigating the proper use of inhalation devices and techniques also suggest another explanation. These studies have shown that nebulizers are used correctly more often than metered-dose inhalers, and young age is highly associated with improper use using a metered-dose inhaler and holding chamber, which could explain the higher risk reduction in the 0-4 years group with the nebulizer delivery, said Dr. Camargo.

The findings of this study suggest that prescribing inhaled corticosteroids with nebulizer delivery for children who present to emergency departments with asthma exacerbation might reduce the high number of children requiring emergency asthma care annually, Dr. Camargo concluded. ■