

Respiratory Irritants Go Beyond Dogs, Cats

BY PATRICE WENDLING
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CHICAGO — Household cleaning sprays are meant to improve the indoor environment, but new research suggests they may actually contribute to new-onset adult asthma.

Aerosol cleaning sprays were associated with an increased risk for new asthma symptoms or medication use (relative risk 1.49) and for wheezing (RR 1.39) among 3,503 asthma-free adults, aged 20-44 years, surveyed in 10 European countries. If four or more sprays were used per week, the risk for new physician-diagnosed asthma increased (RR 2.11). No risk was detected from cleaning products not sprayed (Am. J. Respir. Crit. Care Med. 2007;176:735-41).

"I can't say if it pertains to children, but it seems logical to me," Dr. Dennis R. Ownby said of the findings during a meeting sponsored by the American Academy of Pediatrics.

He highlighted the study to illustrate the importance of indoor air quality and respiratory health, particularly now that many Americans spend the majority of their time indoors. Pets and pests are known allergens, but it's important also to consider other common indoor air pollutants such as air fresheners, candles, sprays, stoves, and fireplaces. Cigarettes, fumes from dry cleaned clothes, and house paint also are sources of volatile organic compounds (VOCs) that can irritate lungs.

In a study comparing VOC exposure among 88 children with asthma and 104 age-matched controls (aged 6 months to 3 years), cases were exposed to significantly higher VOC levels than controls. For every 10-unit increase in the concentration of toluene and benzene (mcg/m³) the risk of asthma increased by almost two to three times, respectively (Thorax 2004;59:746-30).

Dr. Ownby, chief of the allergy-immunology section and professor of pediatrics and medicine at the Medical College of Georgia, Augusta, also ran through some of the most common questions patients ask regarding efforts to reduce indoor irritants. Those questions include the following:

► **Will steam cleaning carpets reduce allergens?** No benefit was identified in the only controlled study to evaluate this issue. Moreover, it's the wrong way to go, Dr. Ownby said. To remove dust mites and pet allergens, it's best to remove carpeting from the home, particularly if it's laid on concrete floors, in which case the coolness of the floor

and indoor humidity work to create a huge reservoir of allergens.

► **Will washing a cat make it nonallergenic?** Washing the cat or removing it from the home for short periods of time does little to improve air quality because it takes 12-16 weeks to reduce cat allergen levels down to the level of a house without a cat.

If removing the pet from the home is not an option, Dr. Ownby suggested keeping it out of the bedroom, keeping the bedroom door closed, and removing upholstered furniture and carpets from the home.

► **Will a humidifier help control allergens?** A study of 3,535 school children in southern California identified 256 (7%) new cases of asthma when the children were followed for 5 years or until graduation. The biggest risk factor for the development of asthma was the presence of a humidifier in the home (RR 1.7)—beating out the presence of any pet (RR 1.6) or the family dog (RR 1.4) (Epidemiology 2002;13:288-95).

Dr. Ownby suggested reducing the indoor humidity to below 60%, with the optimal setting being 30%-50%.

► **Can I keep pets if I use a HEPA air cleaner?** Dr. Ownby does not recommend air filters for patients with pet allergens. He cited a study in which 35 cat-allergic patients (aged 18-65 years) with asthma or rhinitis who had one or more cats in the home were randomized to use air cleaners with or without HEPA filters. Despite applying an impermeable mattress cover, removing cats from the bedroom, and running the cleaners 90% of the time, after 6 months there was no significant difference between the two groups in nasal or chest symptoms, peak flow rates, sleep disturbance, medication use, or settled dust levels (Am. J. Respir. Crit. Care Med. 1998;158:115-20).

Dr. Ownby suggests that families who are interested in reducing irritants in their homes should minimize exposure to smoke from cigarettes or incense, sprayed products, products with strong odors including air fresheners, and unvented combustion sources. Allergen control should include eliminating the source or blocking exposure, reducing humidity and allergen reservoirs, and improving ventilation.

"We just don't ventilate our homes nearly as well as we should," he said.

Dr. Ownby reported receiving research support from the National Institutes of Health and serving as a consultant to CarboNix, LLC. ■

CLINICAL GUIDELINES FOR FAMILY PHYSICIANS

Managing Asthma in Pregnancy

BY NEIL S. SKOLNIK, M.D., AND ROSS ALBERT, M.D., PH.D.

Asthma affects 4%-8% of all pregnant women. Well-controlled asthma has been associated with favorable outcomes in pregnancy, but poorly controlled asthma has been associated with increased rates of preterm delivery, preeclampsia, growth restriction, the need for cesarean delivery, and maternal morbidity and mortality. The American College of Obstetrics and Gynecology recently released guidelines for the management of asthma in pregnancy (Obstet. Gynecol. 2008;111:457-64).

The guidelines recommend objective measures of asthma control in pregnancy. Spirometry and peak flow measurements are recommended, although the latter are somewhat favored because of lower cost, portability, and ease of daily assessment.

Forced expiratory volume in 1 second (FEV₁) is not affected by pregnancy, so it can be used for asthma monitoring. An FEV₁ of less than 80% of predicted value has been associated with poorer outcomes in pregnancy. Peak flow measurements correlate with FEV₁ and can be taken daily in patients with moderate to severe asthma to detect significant changes in control.

Another recommendation for monitoring relates to assessment of fetal growth and activity. Women with moderate to severe asthma should be considered for serial ultrasound examinations. The guidelines recommend that ultrasounds be performed early in pregnancy to establish accurate dating, regularly after 32 weeks' gestation, and after a severe asthma exacerbation.

Asthma symptoms can be improved and the need for medical therapy reduced by avoiding or controlling specific triggers. Limiting exposure to common allergens, cigarette smoke, and medications such as aspirin and β -blockers may improve overall asthma control. Intranasal corticosteroids and second-generation antihistamines are recommended therapies for allergic rhinitis, with oral decongestants noted as second-line therapy. Allergy immunotherapy may be continued during pregnancy, but the initiation of therapy is not recommended because of an increased risk of anaphylaxis.

The guidelines state that it is "safer for pregnant women with asthma to be treated with asthma medications than it is for them to have asthma symptoms and exacerbations." A stepwise approach recommended by these guidelines is in accordance with National Asthma Education and Prevention Program (NAEPP) recommendations from the National Heart, Lung, and Blood Institute (www.nhlbi.nih.gov/health/prof/lung/asthma/astpreg.txt). This strategy involves increasing the number of medications and frequency of dosage for more severe disease. Preferred and alternative regimens are suggested for each level of asthma severity.

Patients with mild intermittent asthma do not need daily therapy; short-acting β -agonists may be used as needed. In both a comprehensive review of the literature by NAEPP and a large prospective study, there is no evi-

dence of any adverse outcome on pregnancy with the use of β_2 -agonists.

For mild persistent asthma, the preferred treatment is daily low-dose inhaled corticosteroids. Moderate persistent asthma can be treated daily with either low-dose inhaled corticosteroid plus long-acting β -agonist (LABA), medium-dose inhaled corticosteroid alone, or medium-dose inhaled corticosteroid combined

Guidelines are most useful when they are available at the point of care. A concise yet complete handheld computer version of this guideline is available for download, with the compliments of FAMILY PRACTICE NEWS, at www.redi-reference.com.

with LABA if needed. Patients with severe persistent asthma may be treated with daily high-dose inhaled corticosteroid plus LABA, or with oral corticosteroids if needed. Alternative recommendations include regimens with monotherapy or combinations of inhaled corticosteroids, cromolyn, leukotriene receptor antagonists,

and theophylline (at serum levels of 5-12 mcg/mL).

Asthma exacerbations should be aggressively managed. Patients should have a well-defined asthma action plan to prevent progression of exacerbations and fetal hypoxia. Careful monitoring of peak flow measurements should be used to help quantify the severity of attacks. Patients may require continuous monitoring and hospitalization if response to initial therapy is incomplete.

Maintenance medications may be continued during labor and delivery. Specific situations noted in the guidelines include the possible need for stress-dose steroids during labor if systemic corticosteroids were used in the previous 4 weeks, and the possibility of bronchospasm from analgesic medications. Breastfeeding should not be discouraged in mothers who take asthma medications because only small amounts of the medicines enter the breast milk. However, theophylline, which is not commonly used, can negatively affect susceptible newborns.

The Bottom Line

The ACOG guidelines for the treatment of asthma during pregnancy stress careful assessment and monitoring, possibly with daily peak flow measurements; avoidance and control of triggers; the importance of stepwise maintenance therapy over symptomatic therapy; and aggressive treatment of exacerbations. Improved asthma control has been associated with better outcomes for mothers and newborns.



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