



Editorial

Adherence to environmental control measures

Although a very robust literature set exists regarding patient adherence to asthma medications and, to a lesser degree, anti-allergy medications, little is known about adherence to environmental control measures. As detailed in the National Heart Lung Blood Institute guidelines, environmental control of allergen exposure is an integral part of our intervention for uncontrolled allergic asthma and rhinitis.¹ Adherence to physician recommendations regarding asthma care is very poor, and better adherence leads to improved clinical outcomes.^{2,3} As such, learning what interventions aid in improving adherence is crucial. In this month's *Annals*, Drs. Schatz and Zeiger explores the efficacy of a telephone-based intervention, using tailored environmental control recommendations to improve adherence to these measures.⁴ Also in this month's edition, Drs. Eakin and Rand shares a perspective on adherence and interventions to improve them in the care of patients with asthma.⁵

Environmental control is a strategy to reduce a patient's exposure to known allergens; this approach involves the identification of allergic triggers and the implementation of steps to remove or reduce the allergic stimulus from the home. As outlined by Drs. Schatz and Zeiger, in the case of dander allergy this would include eliminating pets from the home, keeping pets out of the bedroom, washing pets weekly, and obtaining a room air purifier. Although some of these changes may seem intuitive and even simple, adherence to these suggestions are generally poor. Clinicians must have an understanding of adherence rates and barriers to implementing change to tailor effective interventions if necessary. In the article "Telephone-Based Environmental Control Interventions in Asthmatic Patients: What are Patients Willing to Do?," the authors examine patient willingness to implement environmental changes, barriers to doing so, and the effectiveness of a telephone-based intervention with environmental control measures tailored to the patient.

In stage 1 of Schatz and Zeiger's study, 60 subjects were asked by phone to rate their willingness to institute proposed allergen-specific recommendations. Home ownership (versus renting) emerged as an important factor in adherence. Subjects in this study were included in a prior study, and this may have been a confounding factor. Answers from stage 1 were used to formulate a practical set of recommendations (that subjects seemed most willing to accept), which were used in the 36 patients examined in stage 2 of the study. Researchers found that a higher percentage (80.6%) of stage 2 subjects self-reported that they had complied with at least 1 of the recommendations made in the study. With these findings, the authors conclude that the mite, mold, and dander recommendations made in their study are practical and effective for many patients, particularly if they own their home.

Drs. Schatz and Zeiger's paper reflects on an important topic, one that allergists spend a lot of time counseling patients on but

that seems relatively underexplored in the medical literature. It first raises the question: Does implementation of environmental control measures improve asthma or rhinitis control? Although allergen avoidance seems logical, considerable uncertainty exists about the practicality, feasibility, efficacy, and cost-effectiveness of such interventions. A 2010 Cochrane Review reviewing house dust mite avoidance measures for perennial allergic rhinitis found that trials to date suggest that chemical treatments and bedroom-based environmental control programs may be of some benefit in reducing rhinitis symptoms; however, most of these studies were small and of poor methodological quality.⁶ Despite the lack of convincing data regarding specific environmental controls, evidence exists showing a causal relationship between allergen exposure and asthma (from bronchoprovocation experiments and from studies showing clinical improvement in bronchial hyperactivity after moving allergic patients into low-allergen residential settings).^{7,8} This provides a powerful rationale for recommending allergen avoidance, although more investigation is warranted examining the usefulness of specific recommendations.

The second question raised is: Do strategies aimed at improving adherence really work?

The Expert Panel Report 3 Guidelines recommend that physicians use adherence management strategies to improve adherence to asthma treatment. However, the evidence supporting specific time- and resource-intensive interventions is poor, and in fact many studies have found no change in adherence rates in intervention groups.⁹ Lack of benefit may be attributed to study design and lack of objective adherence monitoring tools. Another challenge is maintaining adherence over a sustained period, which is often necessary to improve outcomes. Large-scale, well-designed and controlled studies are needed so that time, money, and resources can be most effectively used to improve asthma outcomes.

Drs. Schatz and Zeiger's paper is timely and appropriate and sheds light on a very important aspect of asthma care. He has implemented a practical strategy for improving environmental allergen avoidance and has shown improved rates of adherence. Although findings from this article are encouraging, further studies are needed to determine the efficacy and long-term impact of wide-scale implementation of such telephone-based strategies. The major limitation of intervention studies showing this kind of benefit is reliance on patient self-report of adherence (which is subject to exaggeration) and short-term follow-up. Future studies should be performed using objective measures of adherence. Additionally, studying the efficacy of primary care-based strategies versus face-to-face counseling about allergen avoidance performed by an allergist or asthma specialist would be very salient.

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