



CME Review

Environmental control measures for the management of atopy

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INSTRUCTIONS

Credit can now be obtained, free for a limited time, by reading the review article and completing all activity components. Please note the instructions listed below:

- Review the target audience, learning objectives and all disclosures.
- Complete the pre-test.
- Read the article and reflect on all content as to how it may be applicable to your practice.
- Complete the post-test/evaluation and claim credit earned. At this time, physicians will have earned up to 1.0 *AMA PRA Category 1 Credit*[™]. Minimum passing score on the post-test is 70%.

Overall Purpose

Participants will be able to demonstrate increased knowledge of the clinical treatment of allergy/asthma/immunology and how new information can be applied to their own practices.

Learning Objectives

At the conclusion of this activity, participants should be able to:

- Define major in-home allergens associated with allergic sensitization
- Describe methods of allergen abatement in the home environment specific to each allergen

Release Date: February 1, 2017**Expiration Date:** January 31, 2019**Target Audience**

Physicians involved in providing patient care in the field of allergy/asthma/immunology

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Introduction

With the increasing prevalence of allergic airway disease in recent years, efforts have focused on the importance of environmental control measures to decrease morbidity and improve quality of life in the allergic population. Once allergy and asthma have been established, allergen abatement is an important aspect of managing the atopic population. We review current evidence of the role of environmental control and abatement measures for common allergens including furry animals, rodents, cockroach, dust mite, and mold.

The reader should be aware that comprehensive practice parameters for management of allergy to furry animals,¹ rodents,² cockroaches,³ and dust mites⁴ have been published from 2012 to 2014. In accordance with these parameters, important terms used throughout this review are *reservoir* and *facilitating factor*. For this purpose review, a *reservoir* is a confined area where allergen can concentrate, and a *facilitating factor* is a factor that promotes allergen production.^{1–4} This review does not discuss the role of primary prevention in the development of atopy and wheeze. This review focuses on evidence-based methods of allergen abatement strategies aimed at decreasing morbidity in sensitive individuals.

Furry Animals

Sensitization to furry animals has increased in recent years, especially to household pets. Environmental control measures aim to decrease dander in the environment. Pet removal is an effective way to decrease exposure to allergen. In a study of pet owners with asthma sensitized to furry animals, one group opted to remove their pet from the home and the other group opted to keep their pet. Those in the pet removal group had decreased airway hyper-responsiveness and decreased use of asthma controller medication after 1 year.⁵ Although pet removal from the home is an effective way to decrease exposure, most pet owners will not remove pets because of emotional attachment. Even after pet removal, residual allergen can persist. Further, dog and cat allergens are found in homes without pets.⁶

Cat

Fel d 1 is the major cat allergen; it is found primarily on skin and fur and is produced in sebaceous, anal, and salivary glands. Highly concentrated areas of cat allergen include upholstery, bedding, and carpet.¹ After removal of cats from the home,⁶ the decrease of Fel d 1 levels can be slow over time. Therefore, although removal of cat from the environment is important, other methods of allergen elimination are necessary.

Cat immersion washing has been shown to significantly decrease Fel d 1 levels but only for a short time.⁷ Washing must be repeated regularly to maintain effectiveness. Further, there is no proved clinical benefit from washing of cats alone. Cat and dog allergens are present on walls, and efficient removal of allergen from walls has been demonstrated through direct washing of walls or through the use of dust cloths.^{1,6} Use of high-efficiency particulate arrestance (HEPA) filters in addition to removal of cat from living room and bedroom areas can decrease the level of airborne Fel d 1 allergen, but the clinical benefits of this intervention vary.⁸ Because cat allergen is found on settled dust, aggressive interventions including carpet removal also can decrease the level of cat allergen.⁹ Therefore, techniques for decreasing dust, discussed later, can contribute to less cat allergen exposure.

Regular use of high-efficiency and standard vacuums can decrease the level of cat and dog allergens in settled dust and improve lung function, although health effects are variable.⁹ Mattress encasings can prevent passage of dust and cat allergen; encasings that are woven and have small pores might be more effective than nonwoven encasings.¹⁰ In sum, a combination of minimizing exposure to cat allergen (removing reservoirs, cat removal) combined with HEPA filters and frequent cleaning of the cat can decrease allergen exposure.

Dog

Can f 1 is the major dog allergen. Sebaceous glands secrete dog allergen, and Can f 1 is found in canine saliva, fur, and dander, and reservoirs for dog allergen include bedding, furniture, and carpeting.¹ Many patients allergic to dog report better tolerance of certain breeds over others, leading to various breeds being referred

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