

# Recommendations from the Task Force on Community Preventive Services to Decrease Asthma Morbidity Through Home-Based, Multi-Trigger, Multicomponent Interventions

Task Force on Community Preventive Services

## Introduction

Asthma, a common chronic respiratory disease and major source of morbidity in the U.S., affects more than 20 million Americans, can substantially reduce quality of life, and has more than doubled in prevalence since 1980.<sup>1</sup> Asthma is also a major cause of hospital use<sup>1</sup> and results in very high direct and indirect costs (over \$32.7 billion in healthcare costs spent annually when adjusted to 2007 U.S. dollars).<sup>2</sup> In 2001, asthma was ranked the 25th leading cause of disability-adjusted life-years (DALYs) lost worldwide<sup>3</sup> and is a leading cause of school absences for U.S. children.<sup>4</sup>

Asthma is inextricably linked with the home environment and occupant health. Conditions in the home environment must be addressed to treat asthma adequately.<sup>5,6</sup>

The recommendations presented below are based on findings from the accompanying systematic review of home-based, multi-trigger, multicomponent environmental interventions to reduce asthma morbidity, published in this supplement.<sup>7</sup> The findings on economic efficiency are from a systematic review of economic evaluations of such interventions, also in this supplement.<sup>8</sup>

## Guide to Community Preventive Services

The systematic review on which these recommendations are based represents the work of the independent, non-federal Task Force on Community Preventive Services (the Task Force). The Task Force is developing the *Guide to Community Preventive Services (Community Guide)* with the support of the USDHHS in collaboration with public and private partners. The CDC provides staff support to the Task Force for development of the *Community Guide*. Previous topics reviewed, as well as background information on methods and development of the *Com-*

*munity Guide*, have been published elsewhere<sup>9–35</sup> and are available at [www.thecommunityguide.org](http://www.thecommunityguide.org).

## Healthy People 2020 Goals and Objectives

The interventions reviewed here may be useful in reaching objectives in *Healthy People 2020*.<sup>36</sup> Table 1 lists several of these objectives, which are directly related to the goals of home-based environmental interventions to reduce indoor allergen levels and improve asthma morbidity.

## Recommendations from Other Advisory Groups

The National Asthma Education and Prevention Program (NAEPP) Expert Panel Report, “Guidelines for the Diagnosis and Management of Asthma,”<sup>6</sup> has a section reviewing control of environmental factors that affect asthma. This report clearly states that patients who have asthma at any level of severity should reduce, if possible, exposure to allergens to which the patient is sensitized and exposed, and that effective allergen avoidance requires a multifaceted, comprehensive approach; individual steps alone are generally ineffective.<sup>6</sup>

Another joint expert panel report, the “Asthma Health Outcomes Project” (AHOP), conducted by the U.S. Environmental Protection Agency, presents quantitative and qualitative data on 223 asthma programs throughout the world that include at least one environmental component.<sup>37</sup> The report found that interventions that included assessment of trigger exposure, tailored interventions, and those that collaborated with community-based organizations were more likely to report a positive impact on health outcomes.<sup>37</sup>

Recent international asthma guidelines also emphasize a comprehensive approach to asthma trigger avoidance. The Global Initiative for Asthma, an international group of healthcare professionals and public health officials, published asthma guidelines that state “. . . among inner-city children with atopic asthma, an individualized,

Names and affiliations of the Task Force members can be found at the front of this supplement and at [www.thecommunityguide.org/about/task-force-members.html](http://www.thecommunityguide.org/about/task-force-members.html).

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**Table 1.** Selected *Healthy People 2020* goals and objectives relevant to home interventions with an environmental focus to reduce asthma morbidity

Objective	
EH-13	Reduce indoor allergen levels
RD-1	Reduce asthma deaths
RD-2	Reduce hospitalizations for asthma
RD-3	Reduce hospital emergency department visits for asthma
RD-4	Reduce activity limitations among persons with current asthma
RD-5	Reduce the proportion of persons with asthma who miss school or work days
RD-6	Increase the proportion of persons with current asthma who receive formal patient education
RD-7	Increase the proportion of persons with current asthma who receive appropriate asthma care according to National Asthma Education and Prevention Program (NAEPP) guidelines

Sources: [www.healthypeople.gov/2020/topicsobjectives2020/objectiveslist.aspx?topicid=12](http://www.healthypeople.gov/2020/topicsobjectives2020/objectiveslist.aspx?topicid=12)  
[www.healthypeople.gov/2020/topicsobjectives2020/objectiveslist.aspx?topicid=36](http://www.healthypeople.gov/2020/topicsobjectives2020/objectiveslist.aspx?topicid=36)  
 EH, environmental health; RD, respiratory diseases

home-based, comprehensive environmental intervention decreased exposure to indoor allergens and resulted in reduced asthma-associated morbidity.”<sup>38</sup>

Finally, the National Center for Healthy Housing recently published a report called “Housing Interventions and Health: a Review of the Evidence,”<sup>39</sup> which describes the conclusions of an expert panel convened by the National Center for Healthy Housing and the CDC in December 2007 to weigh the strength of a variety of housing interventions. Home-based environmental interventions to reduce asthma triggers were among the interventions discussed. After reviewing the evidence, the panel found that interventions such as multifaceted, tailored, home-based environmental interventions and integrated pest management for asthma were effective and appropriate for implementation.

### Intervention Recommendations

These interventions involved trained personnel making home visits to conduct activities (components) in the home. The activities were focused on reducing exposures to multiple asthma triggers (allergens or irritants) through environmental assessment and remediation, and client education. Most programs included in the systematic review included additional components such as self-management training, social support, and coordinated

care in conjunction with efforts to reduce asthma triggers in the home.

### Children and Adolescents with Asthma

The Task Force recommends the use of home-based, multi-trigger, multicomponent interventions with an environmental focus for children and adolescents with asthma, on the basis of strong evidence of effectiveness in reducing symptom-days, improving quality of life scores or symptom scores, and reducing the number of school days missed. The evidence was considered strong on the basis of findings from 23 studies in the effectiveness review. Details of the findings are presented in the accompanying article in this supplement,<sup>7</sup> and a summary is available at [www.thecommunityguide.org/asthma/rchildren.html](http://www.thecommunityguide.org/asthma/rchildren.html).

### Adults with Asthma

The Task Force finds insufficient evidence to determine the effectiveness of home-based, multi-trigger, multicomponent interventions with an environmental focus for adults with asthma, because only a small number of studies were found, and they had inconsistent results. This finding is based on the limited number of studies providing measurements in adults with asthma (three studies). Details of the findings are presented in the accompanying article,<sup>7</sup> and a summary is available at [www.thecommunityguide.org/asthma/radults.html](http://www.thecommunityguide.org/asthma/radults.html).

### Economic Efficiency

For children with asthma, the Task Force finds that the combination of minor to moderate environmental remediation<sup>8</sup> with an educational component provides good value for the money invested, based on improvement in symptom-free days and savings from averted costs of asthma care. Full details of the evaluation of economic efficiency of home-based, multi-trigger, multicomponent interventions for adults, children, and adolescents with asthma are provided in the accompanying article,<sup>8</sup> and a summary of findings for children and adolescents is available at [www.thecommunityguide.org/asthma/rchildren.html](http://www.thecommunityguide.org/asthma/rchildren.html).

### Interpreting and Using the Recommendations

Although more intervention research is needed on the use and impact of home-based multi-trigger, multicomponent environmental interventions, certain factors are relevant now for groups considering implementation of these asthma reduction interventions.

The content and components of the interventions varied considerably among the studies reviewed. Most conducted an environmental assessment and also included environmental remediation activities. Most also included some form of education, ranging from primarily environmental education to primarily asthma self-management education, including monitoring asthma symptoms and the use of asthma management plans. Most programs focused equally on both environmental and self-management education. Most studies were tailored based on exposure to asthma triggers in the home; some also included testing for specific allergen sensitivities in tailoring the intervention.

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