

Addressing Asthma Triggers in the Home: A Business Case for the Health and Housing Sectors May 2009

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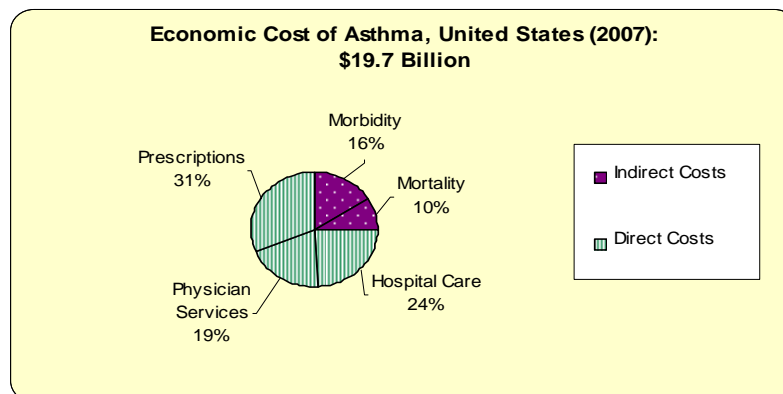
Home Interventions for Asthma Can Curb Soaring Health Care Costs and Improve Health Outcomes

A number of studies demonstrate widespread improvements in asthma patients' health when a team of providers supplement primary and specialist health care with home assessments and reduction of home-based triggers. In-home education and environmental interventions can markedly improve patients' quality of life, and often decrease medical encounters. The literature on the financial implications of these interventions is beginning to also make a compelling business case for the health sector to invest in home-based environmental interventions and education, targeted to patients whose asthma is not well-controlled.

The Problem: Asthma is Widespread and Costly

Asthma is a chronic lung disease which strikes nearly 11 percent of Americans at some point during their lives.ⁱ The burden is most severe among populations with lower socio-economic status, those living in low-income neighborhoods, and certain racial/ethnic minority groups.^{ii,iii,iv} In addition, there is a growing body of evidence concerning the connection between housing conditions and asthma.^v In 2006, 22.9 million Americans had asthma, and an estimated 12.4 million of them – or 54 percent – suffered an asthma attack.^{vi} Emerging data suggests that asthma is poorly controlled in most adults and children. Asthma symptoms, when uncontrolled, result in preventable hospital visits, missed days of school and work, and other costly disruptions to many sectors of society.

Controlling and managing asthma is extremely costly. In 2007, the U.S. bore \$14.7 billion in direct health care costs attributed to asthma, and another \$5 billion in indirect costs (lost productivity), bringing the total cost of asthma in America up to **\$19.7 billion** in 2007 alone (see Figure 1).^{vii} This cost data is of particular consequence for the health care sector, for which asthma represents a significant drain on time and resources (see Table 1).



Source: American Lung Association. Trends in Asthma Morbidity and Mortality. Table 20: Economic Cost of Asthma, United States, 2007. November 2007.

Table 1: Average Costs for Health Care Utilization for Allergic Asthma^{viii}

Health Care Service	Cost
An ED visit for allergic asthma that did not result in admission to the hospital (adult and children)	\$691
A hospital stay for allergic asthma (adult)	\$9,261
A hospital stay for allergic asthma (children)	\$7,987

Asthma and the Home Environment

There are a number of environmental triggers in the home that may contribute to asthma symptoms. Asthma triggers are those conditions or substances that can cause airways to constrict or become inflamed, resulting in respiratory problems. These environmental triggers fall into two categories: allergens and irritants (see Table 2).

Table 2: Common Environmental Asthma Triggers

Common Allergens	Common Irritants
Mice	Cleaning chemicals
Dust Mites	Environmental Tobacco Smoke (ETS)
Molds/Mildew	Sprays/Scents
Cockroaches	Indoor/Outdoor Fumes (gas/wood burning stoves, diesel engines)
Rats	
Household Pets	
Outdoor Allergens	

The current challenges to ensuring patients’ access to environmental remediation programs are numerous, but not insurmountable. The most significant barriers are lack of payment for services and service delivery capacity. Currently, most home-based environmental intervention programs are paid for by federal and private grants. Thus, they tend to come and go. Further, in instances where insurance reimbursements are available, the infrastructure may not exist to accommodate referrals to environmental assessment and remediation programs (lack of capacity). Additionally, many insurance payers will not reimburse for providers other than physicians and nurses. For example, the culturally competent and less expensive services provided by Community Health Workers (CHWs), and other unlicensed professionals, are rarely reimbursed. Yet by using CHWs who may share cultural or ethnic backgrounds, and may live nearby, another barrier can be overcome: the hesitation of some people in allowing professional providers—sometimes perceived as outsiders-- to enter their homes.

The Health Care Sector Can Transform Asthma Disease Management

Traditionally, the health care sector has delivered, and paid for, the management of chronic diseases using a medical model of care. For asthma, that has meant measuring lung function and using medications for symptom control. Rarely has the health sector been called upon to deliver, or reimburse for, environmental strategies as part of a disease management regimen.

In 2007, the widely respected National Asthma Education and Prevention Program’s (NAEPP) Expert Panel produced updated *Guidelines for the Diagnosis and Management of Asthma*. These guidelines are considered to be the “gold standard” for the clinical practice of asthma. As part of developing the guidelines, the NAEPP evaluated the scientific literature on environmental strategies designed to reduce asthma triggers in the homes of asthma patients. The Centers for

Disease Control and Prevention’s Task Force on Community Preventive Services and the National Center for Healthy Housing recently completed similar reviews. All three bodies of experts agree: multi-faceted environmental control measures, when tailored to the patient’s allergen and irritant sensitivities, are a vital component of effective asthma management.

Multi-faceted home-based environmental interventions usually include a home assessment, basic asthma education and trigger avoidance education, and provision of materials/supplies that help manage pests (closed containers, traps for rodents etc.), protect against dust-mites (mattress/pillow encasements), and reduce exposure to contaminants in the air (HEPA filters for vacuums), among others.

A Business Case for the Health Sector Investing in Home-based Environmental Interventions

Although the health care sector cannot be held financially accountable for building and sustaining healthy green housing, they certainly can and should influence public policy in this regard, as housing conditions are an important determinant and predictor of health status. Rigorously designed research studies and program evaluations conclude that environmental education, as well as home assessments, services and supplies can reduce asthma symptoms at a reasonable cost when targeted appropriately. The costs of these interventions and the resulting health benefits, as compared to traditional clinical care, justify these investments. Further, public and private payers can structure reimbursement mechanisms for the range of culturally competent providers of asthma education and environmental services.

In the health care sector, a business case for a particular service exists if there are documented cost savings realized by investing in the intervention (return on investment), or if a program is considered “reasonable” relative to the costs of standard services, given the health benefits realized by the intervention (cost effective).^{ix}

A number of studies have evaluated cost effectiveness of in-home environmental interventions for asthma.^{x,xi} These studies demonstrate that the costs of providing multi-faceted environmental interventions as part of an asthma management treatment plan are reasonable and “cost effective” because their cost of producing a given improvement in health is comparable to the cost of other standard interventions, such as medications.

In 1997, the NAEPP working group evaluating the cost-effectiveness of asthma care programs recommended the use of a *symptom-free day* as the principle outcome measure for cost-effectiveness analysis. A symptom-free day is defined as a night and day with no asthma symptoms and no night-time awakenings. Two recent studies estimate that each symptom-free day gained as a result of standard medications cost \$7.50 in adult patients with mild to moderate asthma (inhaled corticosteroids)^{xii} and \$11.30 in patients 5-66 years old with mild persistent asthma (budesonide)^{xiii}. Medications such as Xolair (omalizumab), which is prescribed to patients with moderate-severe, uncontrolled allergic asthma, cost \$523 per symptom-free day gained.^{xiv} When looking across the spectrum of standard asthma management treatments, in home environmental interventions—which cost \$2-\$28 per symptom-free day gained during approximately the same time period—are clearly within the range of what payer organizations have deemed “reasonable” to improve similar asthma outcomes, and may produce net cost savings if the more costly treatment options are avoided. Research suggests that patients classified as high risk (diagnosed as having moderate or severe persistent asthma, and/or who have had recent unscheduled urgent care visits), and those who have been sensitized to certain

allergens through allergy testing, will benefit most from more intensive and tailored interventions.^{xv} (The authors are not suggesting supplanting environmental services for medications, they are suggesting that they be pursued should symptoms remain uncontrolled, and/or if specific allergies are confirmed.)

Delivering Home-Based Environmental Interventions

Effective home-based programs have used a variety of staffing models including nurses, community health workers/environmental counselors, respiratory therapists, and social workers. The literature suggests that these non-physician providers can effectively provide asthma education and environmental interventions, often at a lower cost, given appropriate supervision and training and depending on the mix of services needed by a given patient^{xvi, xvii}.

A variety of organizations and agencies can appropriately deliver environmental intervention services for high-risk asthma patients, provided that they are properly reimbursed and trained. A number of local health departments, for instance, have delivered effective programs in states across the country including Connecticut, Oregon, Washington and Massachusetts (both Cambridge and Boston). A number of large hospitals and health care systems are also providing excellent programs with very promising results. (e.g., Children's Hospitals of Boston and Philadelphia, and MaineHealth). Non profit organizations and coalitions are also providing high quality home visiting programs in West Michigan and in Boston. Moreover, several health plans serving primarily low income populations are delivering or paying for such services including in Virginia Beach, Virginia; Medford and Boston, Massachusetts; and Rochester, New York. Community health centers are a promising source of service delivery as well. Thus, a number of models can increase capacity, provided that their services are financially sustainable through reimbursements by public and private health payers.

Our Challenge: Agreeing on Policy Change We Might Pursue Collaboratively

Here are several federal policy options for summit attendees to consider and discuss:

1. Housing Sector- Given the important role that environmental tobacco smoke, pests, mold, and dust mites play in triggering asthma attacks, the housing sector should prioritize the following steps:

- Adopt policies and practices that limit exposures to environmental tobacco smoke and pests through adoption of smokefree housing policies and integrated pest management practices.
- Green and Healthy building standards should be adopted to help *prevent* asthma triggers from developing. At the time of unit turnover and scheduled maintenance of housing units, implement asthma-friendly housing maintenance protocols which include remedying moisture and pest intrusion, addressing mold, removing carpeting in bedrooms and bathrooms, maximizing cleanable surfaces, using non-toxic cleaners, and providing garbage receptacles and containers for food.

2. Health Sector- In light of the robust evidence demonstrating the effectiveness of home-based services, providers, health systems, payers and public agencies all have important roles to play in ensuring that people with asthma have access to trigger reduction services.

- The Health Sector should facilitate the delivery and financing of integrated home-based education and environmental services for patients whose asthma is not well-controlled. This should include payment and reimbursement for: a) a range of staffing approaches that have been shown to be cost effective in the literature (e.g. community health workers); b) a home environmental assessment; c) supplies needed for

environmental trigger reduction; d) more intensive environmental services based on a patient's allergy profile and/or whether conditions warrant the service (e.g. professional pest control services). The latter two might be reimbursable for those particularly in financial need.

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