



United States
Environmental Protection
Agency

IMPLEMENTING AN ASTHMA HOME VISIT PROGRAM:



**10 Steps To Help
Health Plans
Get Started**

This document shares the experiences of seven health care organizations that offer asthma home visit programs. It is intended to provide health insurance plans with general guidelines—based on the experience of other health care organizations—on what to consider when incorporating a home visit program into an existing asthma management program. The content in this document does not represent official EPA policy or guidance.

The U.S. Environmental Protection Agency (EPA) has launched a nationwide asthma public education and prevention program. The goal of this program is to make the public and the medical community more aware of environmental asthma triggers and simple ways to reduce exposure to these triggers, especially at home.

Along with proper medical treatment, effective management of environmental triggers in the home can reduce the number and severity of an individual's asthma episodes. This reduction may result in fewer emergency room visits and hospitalizations, increasing a person's quality of life and reducing health plans' cost of care.

Home visits are one way to give enrollees the tools they need to address their asthma effectively as part of a comprehensive disease management program incorporating medical and environmental management techniques. EPA developed this guide with input from seven health care organizations that offer asthma home visits as part of their comprehensive asthma management programs. It incorporates their experiences establishing and operating home visit programs, and reflects their belief in the value, both to the enrollees and to the health insurer, of such programs.

HOW TO USE THIS GUIDE

This guide should be used primarily by health plans that have established asthma management programs. It offers step-by-step instructions on how to implement an asthma home visit program with a particular emphasis on environmental risk factor management. The guide is organized around 10 essential steps in the implementation process, from program inception to program evaluation:

1. Learn about the benefits of a home visit program as part of a traditional asthma disease management program.
2. Get your health plan's leadership to buy into the program.
3. Form an implementation team.
4. Develop the structure of the home visit program.
5. Determine which enrollees will be visited at home.
6. Develop outreach strategies.
7. Determine what outcomes and outputs will be measured and how they will be measured.
8. Develop tools and forms and train staff.
9. Form relationships or partnerships with community asthma organizations.
10. Implement the program and track its results.

The guide also provides references to additional resources you may want to consult. These resources provide information on asthma, asthma disease management, and asthma home visit programs.



Contents

Program Overview	1
Prevalence and Costs of Asthma	1
Environmental Risk Factor Management	1
Asthma Home Visits	3
10 Steps to Help Health Plans Get Started	4
Learn about the benefits of a home visit program as part of a traditional asthma disease management program	4
Get your health plan’s leadership to buy into the program	5
Form an implementation team	5
Develop the structure of the home visit program	6
Determine which enrollees will be visited at home	9
Develop outreach strategies	10
Determine what outcomes and outputs will be measured and how they will be measured	11
Develop tools and forms and train staff	12
Form relationships or partnerships with community asthma organizations	13
Implement the program and track its results	14
A Final Note	14
Asthma Resources	15

Program Overview

Prevalence and Costs of Asthma

The Centers for Disease Control and Prevention (CDC) estimate that more than 20 million people in the United States have asthma, including 6.1 million children.¹ Asthma is responsible for nearly 500,000 hospitalizations, 1.9 million emergency department visits, and more than 4,000 deaths annually. In the United States, members of certain racial and ethnic groups are at greater risk of suffering and dying from asthma. Health care costs (\$11.5 billion) and indirect costs (such as lost productivity from missed school and work days) bring the total cost of asthma to \$16.1 billion annually.²

Although the reason for the increasing prevalence of asthma cases is not well understood, the factors that cause asthma episodes—and the means of preventing and controlling episodes—are well defined. To serve their enrollees better, many health plans have developed chronic disease management programs for the treatment of asthma. In fact, according to a 2002 survey by America's Health Insurance Plans (AHIP), 83 percent of health maintenance organizations (HMOs) and point of service (POS) plans report having a disease management program for asthma.³

Health plans continue to adopt asthma disease management programs in an effort to provide comprehensive health services to their enrollees.

Environmental Risk Factor Management

While asthma cannot be cured, it is most effectively controlled with comprehensive care that includes medical and environmental management techniques. The National Institutes of Health (NIH) acknowledges that the indoor environment is an important factor in the growing asthma problem. For successful long-term asthma management, NIH recommends a comprehensive program of assessment

and monitoring, medication, patient education, and control of factors that contribute to the severity of asthma.⁴ These factors can include inhaled allergens and irritants (indoors and outdoors), exercise, certain foods and medicines, and viral respiratory infections.

NIH's National Heart, Lung and Blood Institute (NHLBI) says in its *Guidelines for the Diagnosis and Management of Asthma* that exposure of sensitive patients to inhalant allergens has been shown to increase airway inflammation, airway hyper-responsiveness, asthma symptoms, need for medication, and death due to asthma. Irritants, such as secondhand smoke, are associated with decreased levels of pulmonary function, increased requirements for medication, and more frequent absences from work. Exposure to a mother's secondhand smoke is a risk factor for developing asthma in infancy.⁵

At the request of EPA, the National Academy of Sciences (NAS) assessed the relationship between indoor air exposures and asthma. NAS's goals in examining chemical and biological agents that might affect asthma were to:

- Provide the scientific and technical basis for communications to the public on the health impacts of indoor pollutants related to asthma and on mitigation and prevention strategies to reduce these pollutants.
- Help to determine what research is needed in these areas.

NAS's report, *Clearing the Air*, concluded that:

- Exposure to secondhand smoke, nitrogen dioxide and indoor allergens—dust mites, cockroaches, pet dander, and mold—can make asthma symptoms worse.
- Exposure to dust mites can cause children of any age to develop asthma.
- Exposure to secondhand smoke can cause preschool-aged children to develop asthma.⁶



Given these relationships, an essential part of a comprehensive asthma management program is identifying and reducing exposures to allergens (especially inhaled allergens) and irritants that can increase or exacerbate asthma symptoms (i.e., environmental “triggers”). This strategy of reducing exposures to environmental triggers is consistent with and supports the national guidelines. These environmental triggers are listed below.⁷

DUST MITES

Triggers: Body parts and droppings.

Where Found: Highest levels found in mattresses and bedding. Also found in carpeting, curtains and draperies, upholstered furniture, and stuffed toys. Dust mites are too small to be seen with the naked eye and are found in almost every home.

PESTS (SUCH AS COCKROACHES AND RODENTS)

Triggers: Cockroaches – Body parts, secretions, and droppings.
Rodents – Hair, skin flakes, urine, and saliva.

Where Found: Often found in areas with food and water such as kitchens, bathrooms, and basements.

WARM-BLOODED PETS (SUCH AS CATS AND DOGS)

Triggers: Skin flakes, urine, and saliva.

Where Found: Throughout entire house, if allowed inside.

MOLD

Triggers: Mold and mold spores, which may begin growing indoors when they land on damp or wet surfaces.

Where Found: Often found in areas with excess moisture such as kitchens, bathrooms, and basements. There are many types of mold and they can be found in any climate.

SECONDHAND SMOKE

Trigger: Secondhand smoke – Mixture of smoke from the burning end of a cigarette, pipe, or cigar and the smoke exhaled by a smoker.

Where Found: Home or car where smoking is allowed.

NITROGEN DIOXIDE (COMBUSTION BY-PRODUCT)

Trigger: Nitrogen dioxide – An odorless gas that can irritate eyes, nose, and throat and may cause shortness of breath.

Where Found: Associated with gas cooking appliances, fireplaces, woodstoves, and unvented kerosene and gas space heaters.

While developing its asthma education program, EPA recognized that public and private health plans are in a good position to address environmental risk factor management because health plans serve people with asthma, their families, and their primary care providers. In addition, health plans pay a substantial portion of the \$11.5 billion spent annually to treat asthma. Consequently, EPA is reaching out to health plans to encourage them to incorporate environmental risk factor management in their asthma disease management programs. One technique for introducing people with asthma to environmental risk factor management is the home visit. Recent studies continue to support home-based interventions tailored to meet an individual’s sensitivity and exposure to environmental triggers.⁸



Asthma Home Visits

Home visits provide an opportunity to educate people with asthma and to help them effectively manage their disease by participating in asthma management programs developed with their primary care physicians (PCPs). A home visit provides an ideal setting to educate, review medication plans, and help families to identify environmental factors in their homes that may contribute to the severity of asthma.

The primary purpose of a home visit is to identify and mitigate the effects of exposure to environmental triggers in the home. Going to the family's home can be very effective because more information can be learned from, and given to, a person face to face at home than over the telephone or in a doctor's office. At the same time, the asthma management team can use the visit to assess the indoor environment where a person spends much of the day and evaluate firsthand sources of triggers and potential pathways that may lead to asthma flare-ups. Home environmental assessment for asthma triggers has the potential to improve an individual's and the family's understanding and skill development to manage asthma effectively. In addition, PCPs can use the results of the environmental assessment to understand the context of exposure better and tailor treatment accordingly.



10 Steps To Help Health Plans Get Started with Asthma Home Visits

1. Learn about the benefits of a home visit program as part of a traditional asthma disease management program.

The use of home visits to incorporate environmental risk factor management into traditional asthma management programs offers many benefits. Understanding how environmental risk factor management benefits enrollees and the health plan is critical to justifying a home visit program and obtaining the support of health plan executives.

A health plan that already has an asthma management program is probably realizing a return on its investment. By building on the existing infrastructure and investment, and by adding environmental risk factor management through home visits (thus enhancing asthma management), the plan may expect to increase its return further. Environmental risk factor management can provide medical, financial, and economic benefits, as well as public relations or competitive advantages.

- **Medical benefits.** Enrollees may experience overall improvements in their quality of life as well as decreased symptoms, fewer severe episodes requiring an emergency department (ED) visit or hospitalization, and improved preventive care and self-management of their asthma.
- **Financial benefits.** The health plan and payers may save on costs when rates of hospitalizations and ED care decrease. Enrollees benefit financially by missing

fewer work days and may also benefit by spending less on costly emergency care.

- **Economic benefits.** Payers and society benefit from increased productivity from fewer missed work and school days.
- **Public relations or competitive advantages.** Many health plans stress strong disease management to differentiate themselves from the competition. A comprehensive asthma management program that includes environmental risk factor management further demonstrates the health plan’s commitment to quality care. Given the prevalence of asthma in the United States, many prospective enrollees look for asthma management programs, and a comprehensive program that includes home visits can give a health plan a competitive advantage.

A detailed marketing strategy built around environmental risk factor management might include these points:

- Helping enrollees reduce their exposure to indoor triggers may improve overall indoor air quality and benefit others in the household.
- This approach promotes community involvement (from the plan, providers, enrollees, and other organizations) in managing asthma.
- Health care providers will be given the tools necessary to manage asthma comprehensively.

CASE STUDY 1— COST SAVINGS

One Mid-Atlantic health plan saw dramatic cost savings and improved health outcomes within 6 months of enrolling people with asthma in its home visit program. The plan saved \$74.83 per member per month (PMPM) after instituting a home visit program.

Participating enrollees had significantly fewer hospitalizations, fewer emergency department visits, and fewer urgent physician visits. Preventive medication use increased, while the use of “rescue” medications decreased, an indication that the enrollees were managing their disease better.

The chart below shows the per-member-per-month costs and savings across the entire asthma enrollee population (about 8,000 members out of a total membership of about 300,000) that resulted from the home visit program.

PMPM Costs and Savings, Pre- and Post-Home Visit Program

Category of Service	Pre-Home Visit Program	Post-Home Visit Program	Savings PMPM
PCP/specialist costs*	\$12.30	\$9.10	\$3.20
ED visit costs*	\$13.85	\$11.99	\$1.86
Inpatient admission costs*	\$112.07	\$38.77	\$73.30
Home care costs (includes asthma program home visits and non-asthma program home health care)	\$1.00	\$4.53	(\$3.53)
Total	\$139.22	\$64.39	\$74.83

* With primary diagnosis of asthma

2. Get your health plan's leadership to buy into the program.

Raising key executives' awareness of the program is crucial. Determine which executives need to approve and support a home visit program, such as the Chief Executive Officer, Chief Financial Officer, Chief Medical Officer, or Medical Director. Explain the program and the medical, financial, economic, and public relations benefits of incorporating environmental risk factor management and home visits into traditional clinical asthma management programs.

Be prepared to present the home visit program's operational details as they are developed (from Steps 4 to 9), its estimated costs, and its potential savings. Determine necessary resources (in addition to current expenditures if an asthma management program is already in place), prepare a budget, and obtain the necessary commitments from upper management. Budgets should include:

- Staff time to develop the program.
- Development of educational materials and a case management protocol.
- Staffing for the program or outsourcing costs.
- Ongoing operational costs including resources for data gathering and analysis.

It may also be helpful to estimate program costs in accordance with the health plan's underwriting practices. For example, many health plans evaluate the cost of their programs on a per-member-per-month basis.

A pilot program may be a good way to demonstrate positive health outcomes and financial savings before executives make a long-term commitment. The same health plan highlighted in Case Study 1 on page 4 decided to offer a home visit program to all of its enrollees with asthma after conducting a pilot with 50 severe pediatric asthmatics. Nurses were sent to the homes of these 50 enrollees to educate the families about

the disease and proper self-care. Within 6 months of the home visit, the plan saw a dramatic improvement in utilization. Participating enrollees had significantly fewer hospitalizations, fewer emergency department visits, and fewer urgent physician visits. Preventive medication use increased, while the use of "rescue" medications decreased, an indication that the enrollees were managing their disease better. Although a pilot need not involve a large number of enrollees, it should be able to measure changes in clinical outcomes, such as claims utilization and quality of life assessments, to show program benefits.

3. Form an implementation team.

A health plan that has an asthma management program that does not yet include home visits may already have in place a team that could implement a home visit program. This team may consist of the individuals who developed or run the current asthma management program.

If a health plan must form a new team, it likely will include the Medical Director, Health Services Director, Director of Utilization Management, Director of Quality, asthma case manager (if an asthma program already exists), one or two network physicians with a significant asthma patient load, a data programmer or analyst, and a person with asthma or their caregiver. The person with asthma or the caregiver may be able, based on their own experience, to suggest ways to overcome implementation barriers, such as resistance to or unavailability for home visits.

The implementation team should initially meet at least monthly to start developing the program's details, including its goals, components, and implementation plan (e.g., whether to outsource, number of home visits provided) and its participant eligibility criteria. Steps 4 to 9 provide additional information on specific development activities. The team should also develop a realistic implementation schedule.



4. Develop the structure of the home visit program.

A. Determine program goals

The first step in structuring a home visit program is to determine the program's goals. Goals may relate to the number and characteristics of enrollees the program will serve, or the health outcomes and cost savings desired. Goals can also express less tangible outcomes such as strengthening ties with community organizations or increasing PCPs' knowledge of environmental risk factor management. The implementation team may want to begin collecting baseline data that will provide a point of comparison for the outcomes and outputs selected for tracking (see step 7).

B. Define major components of the home visit program

Once the program's goals are defined, several factors should be considered when designing the program components. These factors include the number of enrollees estimated to be eligible for the program (see Step 5), individual patient needs, and available resources (monetary and staff). Above all, the program should be tailored to the needs of the organization and its members. If the proposed program would involve a change in the benefit structure, sample benefit language should be drafted. It should be presented to key executives along with the proposed program structure. The major components of a home visit program that should be considered include:

ENCOURAGING THE USE OF ASTHMA ACTION PLANS

Some plans provide monetary incentives to providers for quality performance, including completion of asthma action plans. One Midwest plan experienced a 162 percent increase in the number of action plans between 2000, when the program was implemented, and 2002.

- **Individual Asthma Action Plan.** Most plans that have asthma management programs stress the need for individual action plans if self-management of asthma is to succeed. During the home visit, the home visit provider can introduce the concept of self-management and provide instruction in how to develop, with the help of a physician, a personal plan that includes controlling environmental triggers.
- **General Asthma Education.** Some plans use the home visits to educate enrollees on asthma issues broader than environmental risk factor management. Topics may include general disease comprehension;

appropriate medication use; use of equipment such as peak flow meters, spacers, and nebulizers as necessary for self-management; and guidelines for appropriate care utilization. Some health plans use tests (before and after the home visit) to assess the effectiveness of their educational efforts, measuring such factors as acquisition of appropriate skills.

- **Environmental Assessment.** An assessment survey form or checklist may be helpful in searching for and identifying potential indoor triggers. Home visit providers should look for indicators of the presence of common triggers (e.g., dust mites, pests, pets, mold, secondhand smoke, and nitrogen dioxide) throughout the home. The home visit provider should give special attention to the sleeping area. The checklist may also address other issues, such as housing defects that contribute to the presence of triggers or the impact of outdoor air pollution on asthma. See Step 8.A for a description of EPA's Asthma Home Environment Checklist.
 - **Environmental Trigger Education and Mitigation.** If sensitivities to particular indoor triggers are known, the home visit assessment should begin by focusing on exposures relevant to these sensitivities. If a trigger is found, the home visit provider should explain how the trigger affects the person's condition and provide advice on how to reduce exposure to the trigger. Recommendations should be viable for the enrollee's means and conditions (e.g., keeping pets out of the bedroom, smoking outside the home and car, frequently washing bed linens and stuffed toys in hot water). Depending on the plan's benefits, providers could refer enrollees to smoking cessation programs, offer trigger-reducing items such as dust-proof (allergen impermeable) bed and pillow covers, or provide hands-on assistance in educating enrollees about mitigation techniques. Health plans need to communicate clearly the extent of the services they will provide to the enrollee.
- Health plans that serve a low-income population should carefully consider the effort that will be required to make their home visit programs successful. They should realistically evaluate whether their benefit structure and operating budget will allow for the services that a low-income population would need. Making social service referrals, providing products at no cost, and providing hands-on assistance and instruction with product usage and other mitigation techniques are essential for a low-income population.
- **Resource Referral.** Information about community resources—including those that focus on asthma and those that address related social needs—may be given to the enrollee when appropriate and available. For example, a renter who cannot easily address his or her

building's mold problems may benefit from a referral to a tenant advocacy organization or the local housing authority. Local asthma-focused organizations may be able to help enrollees obtain allergen-reducing items. See Step 9 and Case Study 5 for more information on using community resources.

- **Recordkeeping and Reporting.** An important component of a home visit program is recordkeeping and reporting. Health plans will want to record and track information to:
 - See how individual enrollees are affected.
 - Assess improvements in the home visit program participants' symptoms.
 - Calculate cost savings or other benefits to the health plan. When designing a home visit program, a health plan will need to determine how data will be collected, aggregated, monitored, tracked, and reported. Steps 7 and 8 discuss more fully the information health plans may consider tracking.

COMPLIANCE WITH THE HEALTH INSURANCE PORTABILITY AND ACCOUNTABILITY ACT (HIPAA)

HIPAA requires certain notifications and disclosures to people using health care services to protect the privacy of their medical records. Information collected under a home visit program must be handled according to HIPAA regulations, consistent with a plan's compliance policies and practices.

- **Follow-up.** The home visit program may include some form of follow-up with the enrollee, either by telephone or an additional home visit, to assess compliance with recommendations, track overall progress, and support continued self-management.

- **When to follow up.** When the follow-up is conducted will depend on the health plan and its outreach capabilities; many plans report following up one week to one month after the initial visit.
- **How to follow up.** The frequency and intensity of follow-up could depend on the enrollee's self-care ability. This could be determined by demonstration of new skills or changes in behavior, as well as an ongoing review of the enrollee's asthma symptoms, episodes, and use of urgent care. Many plans do not make follow-up home visits if the telephone follow-up and utilization data clearly show that an enrollee is managing his or her disease effectively.

C. Determine number of home visits to be provided

The decision on the number of home visits to provide should consider several factors, including:

- Who will receive home visits.
- The information to be collected.
- The extent of the home visit provider's responsibility for education and mitigation.
- The specific goals and health outcomes the visits are meant to accomplish.
- Budgetary constraints.
- Enrollee follow-up required to achieve desired outcomes.
- Cultural and language issues, including the need to establish trust before conducting an assessment.

While many plans have succeeded with only one or two visits per enrollee, some provide as many as six visits. One option is to develop a flexible program that provides enough home visits for an enrollee to achieve the desired health outcomes. That number may be determined by several techniques, including:



- Pre- and post-visit asthma management program knowledge tests to determine how many home visits the enrollee needs.
- A telephone follow-up after the initial visit. The case manager may identify issues that indicate additional home visits are necessary. These issues include a lack of progress, worsening symptoms, or continued demonstration of limited knowledge of the disease.

D. Determine who will conduct the home visits

This step has two components: deciding what sort of professional should conduct the home visits, and deciding whether the visits should be performed by health plan staff or by a third party vendor.

A variety of professionals can conduct home visits: respiratory therapists, nurses, social workers, asthma management program case managers, home health care workers, and community outreach workers. The skills appropriate for a home visit program will depend on its goals, the type of education or mitigation to be provided, the budget, and the availability of personnel. Each group of professionals has potential advantages. For example, respiratory therapists will be very familiar with asthma and its treatment. Nurses and social workers may be able to take a broader view and pay more attention to possible psychosocial issues. Asthma management program case managers (who may be medical or non-medical personnel) may also take a broad view of the enrollee and his or her family.

Home health care and community outreach workers may be more attuned to local cultural or language issues. If the home visit program will address both medical and environmental issues, the home visit provider must be capable of addressing both competently.

Besides deciding what sort of professional should conduct home visits, a decision must be made on whether to use a third party vendor or health plan staff. Each option has strengths and weaknesses, as shown below in Exhibit 1. The goals of the program and the characteristics of a plan’s enrollees (e.g., population demographics, size, asthma severity) can offer guidance.

Case Study 2 on page 9 shows how both in-house staffing and outsourcing can be effective.

The staffing decision may also be influenced by funding or payment options. As described in Case Study 2, several health plans have obtained grants to pay for additional in-house staff for home visit programs. In addition, one Midwest plan received a grant from the Department of Housing and Urban Development’s Healthy Homes program that allowed it to pay for thorough home environmental assessments by an environmental specialist.

Health plans may also be able to develop alternatives that address potential staffing issues. For example, while outsourcing may seem to be the best way of addressing a culturally diverse population, a health plan may have multilingual staff who are appropriate and available for this activity.

Exhibit 1. Characteristics of Program Staffing Options

Consideration or Goal	Health Plan Staff	Third Party Vendor
Coverage of all members with asthma		May be more efficient as it may not require additional in-house staff to serve large population
Monitoring and tracking outcomes	Communication and tracking are generally easier because staff members are often linked to the same telephone and computer system	
Culturally diverse enrollee population		May specialize in communicating with culturally diverse populations
Quality control and accountability	May be more accountable because they share the same organizational goals	
Expertise in asthma care		May have specialists, such as respiratory therapists, who are knowledgeable about asthma and familiar with equipment and techniques used for self-management

CASE STUDY 2 - THIRD PARTY VENDOR VERSUS HEALTH PLAN STAFF

Many plans base their staffing decision on factors such as service area, community needs, and funding. For example, plans serving large geographic regions or large populations tend to outsource visits to third party vendors, while smaller plans serving local areas can use health plan staff effectively to conduct home visits. The cases below describe the decisions and rationale of four plans.

THIRD PARTY: LARGE SERVICE AREA AND COMMUNITY NEEDS

- A Northeast metropolitan health plan, Plan A, relies on respiratory therapist (RT) vendors to conduct home visits for its large, urban population. The plan believes these providers are more familiar with asthma and the equipment used in its treatment than the home health care nurses they formerly employed. Plan A pays the vendors \$75 per visit, plus the cost of certain necessary medical equipment provided by the vendor.
- Plan B, another Northeast health plan, contracts with RTs and home health care nurses to conduct the visits. It prefers to outsource rather than to maintain the large staff that would be needed to cover the service area (the entire state). Plan B also knows that the vendors are very familiar with their local communities. Plan B pays \$80-\$125 per visit, depending on the particular contract.

HEALTH PLAN STAFF: ACCOUNTABILITY AND QUALITY CONTROL

- A large Mid-Atlantic health plan, Plan C, contracts with home health agencies that are part of the same health system as the health plan. This plan thinks that there is better accountability and quality control when working with an in-plan provider. Plan C pays its home health vendor a case rate of \$425 to provide as many visits as needed.
- A West Coast county-based plan, Plan D, started its program as a Health Plan Employer Data Information Set (HEDIS) demonstration project. The health plan employs one nurse who is solely responsible for asthma disease management. She designs and leads community education programs and makes about 40 home visits per month. Because she works only with the health plan's membership, she has been able to recognize enrollees' needs and adapt the program to serve that population better. She believes that there is "more control" when the visits are kept in-house. Recently, Plan D received a Health Resources and Services Administration (HRSA) grant to add an additional nurse and outreach worker in order to expand the program and provide more home visits. Operational costs include the salaries and equipment used by the nurses and outreach worker.

E. If using an outside vendor, develop and negotiate contracts and payment terms

If home visits are outsourced, they could be paid for on a per visit or per case basis. This decision depends on how many home visits are expected and on their specific goals. A case rate may be more effective when several visits per enrollee are anticipated. Case Study 2 provides additional information on how some plans pay for vendor services.

Third party contractors should be clear about program goals and the plan's expectations for the visits. Adequate reporting is essential, both to assure quality and to determine subsequent outcomes.

Some health plans have successfully partnered with non-profit organizations, rather than contracting with

commercial vendors, who conduct home visits at no or low cost to the health plan. This option should always be explored. (See discussion in Step 9 for further information.)

5. Determine which enrollees will be visited at home.

Depending on their available resources and the size of their asthma enrollee population, some plans offer home visits to all enrollees with asthma while others visit only those enrollees with the most severe asthma. Many plans believe that telephonic care management and regular patient-physician interaction are sufficient for the enrollees with mild cases of asthma—and often for enrollees with moderate cases as well. These enrollees often improve from simple instructions on how to use their medications appropriately. Telephonic care management should also cover environmental triggers to help enrollees assess their homes. Those with the most severe asthma, however, have the greatest potential to benefit from home visits. They may not be knowledgeable about environmental triggers, may be unaware that they have regular contact with triggers in their homes, and, in some cases, may have other complicating issues. Whether a home visit program will be offered to some or all of a plan's enrollees with asthma, there must be

STRATIFYING ASTHMA SEVERITY

Standard classifications identified by NHLBI's Practical Guide for the Diagnosis and Management of Asthma:

- Mild intermittent
- Mild persistent
- Moderate persistent
- Severe persistent

CASE STUDY 3 - ENROLLEE GROUPING

Most plans use some combination of disease assessment and utilization data analysis to group their members according to the severity of their disease. One Mid-Atlantic plan uses a detailed questionnaire about symptoms to rank new members who are identified as having asthma. The plan applies specific utilization criteria to established members' claims information to determine the severity of their disease. Members are considered low, moderate, or high risk based on the following definitions:

Low:	Minimal office visits, no ED visits or hospitalizations for asthma, low pharmacy use.
Moderate:	One ED visit for asthma in 6 months, and/or inhaled beta-agonist to anti-inflammatory ratio of 3:1 or greater.
High:	Two or more ED visits for asthma in 6 months, and/or one or more hospitalizations for asthma, and/or inhaled beta-agonist to anti-inflammatory ratio of 5:1 or greater.

a mechanism to identify them. Health plans that have asthma management programs identify enrollees with asthma through various means that include:

- Welcome calls.
- New member health assessment surveys.
- Asthma utilization reports (e.g., office visit claims data, ED and hospitalization claims, inpatient claims, pharmacy claims).
- Physician referrals.
- Case manager identification (e.g., at time of ED or hospital admission or discharge).
- Computerized disease registries.

After enrollees with asthma have been identified, data from one or more of the sources listed above can be used to gauge the severity of their asthma. Stratification of enrollees by zip code may allow plans to focus resources on areas with disproportionately higher rates of asthma. (Most plans use at least the asthma utilization reports.) Case Study 3 describes how one plan ranks its enrollees with asthma by disease severity.

Plans with multiple payers with different benefits will need to ensure that enrollee referrals are consistent with the benefits provided by their payer. In some cases the asthma case manager or other individual who is familiar with the benefit structures may need to make referrals for home visits, rather than the primary care physician.

CASE STUDY 4 - OUTREACH STRATEGIES

Many health plans, particularly those serving the Medicaid population, find that there are barriers, such as out-of-date contact information, to overcome when contacting enrollees to schedule home visits.

- One Northeast plan contacts PCPs to get the most current telephone numbers and contact information.
- The same plan often gets enrollees' most current contact information from pharmacies, when that information is not available from PCPs. Plan representatives determine where the enrollee last filled a prescription, and then contact the pharmacy to check for an updated telephone number.
- Another Mid-Atlantic plan works with a local group called Allies Against Asthma, which has a "community ambassador" program. Community members help to locate hard-to-track enrollees so they can be asked to participate in the asthma home visit program.

6 ■ Develop outreach strategies.

An active, creative outreach program enables a plan to contact enrollees with asthma—particularly those in the Medicaid population—in order to schedule and complete home visits. Outreach to primary care physicians and other health care providers is also important. An effective outreach strategy must consider the following questions.

A. Who contacts the enrollees, and how is contact made?

In some plans, the person who will conduct the home visit does the scheduling. Other plans have outreach coordinators, and still others hire or form partnerships with outside organizations to find the enrollees. (See Case Study 4, below.) Eligible enrollees generally are called before the home visit, but some enrollees may not have telephones. In those cases, a nurse or other outreach professional may try to find individual enrollees in person.

Most plans will make more than one attempt to reach an eligible enrollee with asthma. Plans report that, once contact is made, most enrollees are very receptive to the concept of a visit "to help with your (or your child's) asthma."

B. What are the features of a successful outreach strategy?

Flexibility and attention to the specific characteristics of the enrollee population are hallmarks of successful outreach strategies. For example:

- Multi-lingual staff or translation services are often necessary for scheduling and completing visits.
- Flexible scheduling (e.g., lunch hours, nights, weekends) greatly increases a plan's chances of visiting all eligible enrollees.
- Providing an incentive for enrollees to schedule and complete a specified number of visits can help an outreach strategy succeed. Examples of incentives are:
 - Dust-proof (allergen impermeable) mattress, pillow case covers, or other environmental mitigation equipment or supplies.
 - School supplies.
 - Telephone cards.
 - Gift certificates (especially to stores selling trigger-reducing items).

C. How will health care providers find out about the home visit program?

Whether PCPs and other health care providers refer patients or recommend that they participate in a home visit program can also affect the participation rate. The health plan should consider an outreach effort to notify its providers about the home visit program, explain enrollee eligibility, describe the referral and enrollment process, and discuss the benefits of the program.

7. Determine what outcomes and outputs will be measured and how they will be measured.

Plans measure the effectiveness of their asthma management programs in different ways. The measures used to determine success should relate to the goals set in Step 4. In the early months of a program, outputs (e.g., number of enrollees with asthma participating in the home visit program and number of visits completed) are the easiest measures to collect. A health plan should be able to

retrieve this information from the system it uses to track the scheduling and completion of home visits (discussed further in Step 8.C). Output information is useful in determining the reach of the program. It also provides information on the level of effort (e.g, number of visits, number of staff hours necessary to achieve program goals).

Over the longer term, information should be collected that shows the program's impact on outcomes, such as reduced asthma ED visits and hospitalizations. After reviewing several months' worth of outcomes data, targets (e.g., a 30-percent reduction in ED visits) can be set. The most common health outcomes measured for enrollees in asthma management programs are:

- Asthma ED visits (either ED visits/1,000 or as a percentage of enrollees in the asthma management program).
- Asthma hospitalizations (either hospital visits/1,000 or as a percentage of enrollees in the asthma management program).
- Percentage of enrollees with asthma with high bronchodilator use.
- Anti-inflammatory/inhaled beta-agonist ratio (3:1 or greater is cause for concern).
- Missed days of school or work.
- Written asthma action plans (percentage of enrollees with asthma).
- Appropriate changes in behavior through acquisition of self-management skills. For example, if the home visit program includes education about dust mites, laundry procedures may be assessed (enrollees in the program are washing bedding at the recommended frequency and water temperature 2 months after the initial home visit).
- Increased knowledge; for example, understanding medication usage, knowing what can trigger asthma, and understanding how to mitigate or control those factors.





Health plans that offer PCPs information and resources on environmental risk factor management also may want to track the percentage of physicians using this information and determine whether they demonstrate more knowledge about these topics after exposure to the information.

Most plans pick at least two of the outcome measures listed above, depending on their reporting capabilities. (Much of this information comes from claims data.) ED visits and hospitalizations are generally the easiest to measure and can clearly demonstrate the medical and financial impact of an asthma management program, especially if a home visit component has been added to an existing program. Whether or not a plan already has an asthma management program, baseline data on health outcomes should be recorded before the home visit program, or as early as possible after it begins, so its impact can be determined. Keep in mind that improvements might not be instantaneous; plans report that it takes at least 6 months to a year for the actions to produce significant results in the data, although improvement in the day-to-day lives of each enrollee visited can usually be seen much sooner.

8. Develop tools and forms and train staff.

Health plans that have home visit programs use most, if not all, of the tools and forms described below. One or more members of the implementation team (discussed in Step 3) should take responsibility for gathering and developing the necessary tools and forms and for training and educating the rest of the asthma management program team about home visits. Everyone needs to be aware of the ways in which the existing asthma management program will be different as a result of the new home visit component. At some plans, many of the tools and forms described below are already in place (e.g., asthma action plans and enrollee tracking and reporting

systems) and only minor adjustments are necessary. Others will need to devote more resources to developing the necessary infrastructure. References have been given where applicable to help locate examples.

When developing a training program, keep in mind that it is also important to train physicians and other health care providers. At a minimum, they will need to know about the program, who is eligible, when and how to make referrals, and asthma management program components to be tracked.

A. Asthma Home Visit Checklist

The checklist provides a comprehensive list of questions related to environmental asthma triggers commonly found in and around the home.

EPA developed a checklist of questions and action steps designed to help identify and mitigate environmental asthma triggers commonly found in and around the home. The checklist has 13 categories⁹ to help the home visit provider focus on the activities or items in the house that might produce or harbor environmental triggers. The EPA Asthma Home Environment Checklist is provided in an appendix to this Guide. It can also be downloaded in pdf format from EPA's Web site at www.epa.gov/asthma/pdfs/home_environment_checklist.pdf.

EXAMPLES OF ASTHMA ACTION PLANS

Pediatric/Adult Asthma Coalition of New Jersey (<http://www.pacnj.org/>)

Regional Asthma Management & Prevention Initiative (<http://rampasthma.org/AAP%20page.htm>)

B. Individual Asthma Action Plan

A written asthma action plan is developed by the enrollee and his or her physician or case manager to help in the management of asthma episodes. This customized plan encourages the enrollee to self-manage his or her asthma. Asthma action plans are sometimes called asthma self-management instructions or written guidelines for asthma.

Asthma action plans can be organized in any number of ways, but the important thing is that the individual action plans give enrollees and their families information that can help them manage their asthma. Plans may include a list of the person's triggers and how to avoid them, instructions for taking asthma medicine, information on what to do if a child has an asthma episode, instructions on when to call a doctor, and emergency telephone numbers.

Action plans should be created and reviewed with the enrollee's physician or case manager and updated at least once a year.

C. Intake form, form letters, and reports for communicating with physicians and enrollees with asthma

Intake forms can be used to record basic information on an enrollee newly referred to or identified for the home visit program (e.g., symptoms, asthma history, physician, medications). Information on this form can be entered into a computer system, as discussed in 8.D below. Plans that have home visit programs use form letters such as these:

- A letter to the physician when a enrollee has been identified for the home visit program (either from utilization data or from a hospitalization).
- An outreach letter to members to schedule visits (when telephone attempts fail).
- A reminder letter to members about recommended action steps or follow-up visits.
- A letter or report to the physician describing home visits, findings, and recommendations.

D. Educational materials

Many health plans develop educational and informational materials as part of their home visit programs. Materials for enrollees can educate them about the home visit program and how it will help them to address environmental asthma triggers commonly found in the home. Health plans may also want to provide similar materials to physicians as part of their health care provider outreach effort (see Step 6.C). Plans may also want to distribute to their providers copies of the National Heart, Lung, and Blood Institute's Practical Guide for the Diagnosis and Management of Asthma.¹⁰ This document includes a variety of implementation aids, including reproducible patient handouts.

E. Enrollee tracking system and reporting

It is imperative to track, and to be able to generate reports of, the following items as enrollees are deemed eligible for the home visit program:

- Outreach attempts and status.
- Other correspondence (e.g., letters) with members and physicians.
- Dates and times of home visits.
- Summaries of visits: topics covered, findings, recommendations.
- Personal knowledge of disease self-management (from pre- and post-home visit tests) and acquisition of self-management skills.
- Follow-up needed.

If these items are tracked properly, the forms, letters, and reports described in Step 8.C can easily be generated to facilitate communication with members and physicians. It is especially important to be able to report to the enrollee's PCP so that he or she can follow up with the individual. The PCP will also be able to reinforce during office visits the concepts that were taught during home visits.

9 ■ Form relationships or partnerships with community asthma organizations.

Whether home visits are outsourced or made by health plan staff, it is important for the health plan to be familiar with community groups and organizations that focus on asthma. Formal and informal relationships with such groups promote the sharing of valuable information and the dissemination of best practices. There may be opportunities for formal referral relationships or collaboration that will enhance the home visit program while reducing or offsetting some of the program costs. Health plans should begin to explore forming relationships with other organizations during goal-setting (Step 4).

For example, community groups such as the Regional Asthma Management & Prevention Initiative (RAMP) in California provide educational materials in various languages and other types of support. As highlighted in Case Study 5, Allies Against Asthma coalitions sponsor "community ambassador" programs in which designated community members can assist in locating and communicating with individuals who have asthma. Other community groups may provide thorough environmental assessments or trigger-reducing items free of charge to health plan members in need of such interventions. Public housing authorities and tenant advocacy groups can help enrollees in situations where poor housing conditions aggravate symptoms.



In addition to community asthma groups, health plans may find that schools and employers can also be helpful partners who can work with them to build or strengthen community resources.

10. Implement the program and track its results.

Use the tools and forms described in Step 8 and remember to follow up with the enrollees' PCPs. Coordination with patients' physicians (e.g., PCPs and specialists) is key to the success of the home visit program. After determining what outcomes to measure (Step 7) and how to measure them, use the trended results after 6 months to determine:

- The overall efficacy of the in-home visit program.
- Areas that could be refined (e.g., education on mitigations, guidelines for determining number of visits).
- Whether the program should be expanded (especially if it was a pilot program).

Tracking program outcomes and using the results to improve the home visit program will improve the plan's overall performance, demonstrate the value of the program, and build provider and consumer support.

Consider publishing, or at least disseminating, the results of the program analysis. Promoting program results will demonstrate the value of home visit programs to health care purchasers. It will also improve the medical community's overall understanding of the benefits afforded by asthma home visit programs.

A Final Note

The steps outlined above are meant to serve as a general guide for health plans considering whether to begin an asthma home visit program. The recommendations are based on current disease management principles and the experiences of health plans that are providing home visits to enrollees with asthma. To achieve the best outcomes, however, it is important to tailor a program to the needs of your organization and its members. Regardless of program complexity or structure, the keys to success are:

- Careful planning.
- Strong outreach.
- Community partnerships.
- Ongoing data collection and comparison to baseline data.
- Program review.

CASE STUDY 5 – LEVERAGING ASTHMA RESOURCES IN THE COMMUNITY

The State of Washington's Medicaid program sponsors an asthma management program for fee-for-service Medicaid clients. The asthma management program is operated by a third party vendor. The home visit program is for enrollees with severe asthma or who have given an indication that they could benefit from face-to-face, rather than telephonic, care management. Such indicators may include language barriers, significant complex co-morbidities, home safety issues, mental health barriers, difficult socio-economic issues, and environmental issues. The program includes home visits by field nurses who conduct comprehensive clinical assessments. If a nurse identifies potential environmental triggers in the home, he or she may refer the enrollee to the local American Lung Association of Washington, which conducts free home environmental assessments and provides free mattress and pillow case covers as needed. Any health plan can also take advantage of this important referral source, so it is important to become knowledgeable about asthma resources in the community early in the program development process.

Asthma Resources

Many available resources provide education on asthma, asthma disease management, home visits, and related topics. A few of them are discussed below.

- Allergy & Asthma Network Mothers of Asthmatics (www.aanma.org): AANMA is a donation-based nonprofit organization dedicated to helping people affected by allergies and asthma through education, advocacy, community outreach, and research. AANMA provides services to patients and physicians including education materials for all ages, monthly award-winning publications, a toll-free help line, Hispanic outreach, and a Web site (www.breatherville.org/breatherville.htm) featuring Breatherville, USA™, an online town where learning about allergies and asthma is a positive experience.
- Allies Against Asthma: AAA is a national demonstration project funded by The Robert Wood Johnson Foundation. The Allies Against Asthma Web site (www.asthma.umich.edu) is a free resource center for individuals and organizations interested in community-based programs to address pediatric asthma, particularly in poor, urban, and minority communities. The Web site includes a “Resource Bank,” which contains materials, survey instruments, and other tools for use in controlling and managing asthma.
- American Academy of Allergy, Asthma, and Immunology (www.aaaai.org): AAAAI is the largest professional medical specialty organization representing allergists, clinical immunologists, allied health professionals, and other physicians with a special interest in allergies. AAAAI’s Web site includes informational resources, public education materials, and a “Just for Kids” section that contains games, puzzles, and other activities to help children learn about and manage their asthma.
- American Lung Association (www.lungusa.org): ALA is the oldest voluntary health organization in the United States. Its focus is fighting lung disease in all its forms, and it particularly emphasizes asthma, tobacco control, and environmental health. ALA’s Web site contains a great deal of general asthma information as well as links to local ALA offices throughout the country.
- America’s Health Insurance Plans (<http://www.ahip.org>): AHIP is the national association representing nearly 1,300 member companies providing health insurance coverage to more than 200 million Americans. *Taking on Asthma* is a joint initiative of AHIP and the American Academy of Allergy, Asthma, and Immunology (see above). *Taking on Asthma* offers a resource guide (<http://www.takingonasthma.org/resources.htm>) that outlines the evidence-based guidelines for asthma care and features case studies of effective health plan programs, including the control of environmental risk factors.
- Asthma and Allergy Foundation of America (www.aafa.org): AAFA is a patient organization dedicated to “improving the quality of life for people with asthma and allergies and their caregivers, through education, advocacy and research.” AAFA has developed numerous educational materials that are described and can be ordered on-line from its Resource Catalog.
- The Center for Health Care Strategies: CHCS has a guidance document called *Achieving Better Care for Asthma Toolkit* (www.chcs.org/usr_doc/AchievingBetterCareForAsthmaToolkit.pdf). This guidance offers a structured approach for addressing quality improvement and a collection of “lessons learned” by a diverse group of health plans serving Medicaid members. It is comprehensive and covers many topics in addition to home visits. It offers practical, realistic approaches that can help Medicaid plans develop new asthma management programs or improve existing programs.
- The Centers for Disease Control and Prevention: CDC’s National Asthma Control Program (<http://www.cdc.gov/asthma/NACP.htm>) conducts epidemiological studies and provides statistics on the prevalence and costs of asthma. It also provides information on effective interventions for asthma control, including methodology for identification of the interventions, results, lessons learned, information on the interventions themselves, a bibliography of reviewed literature, and case studies of several interventions. Other resources, such as a speaker’s kit for health care professionals and links to other asthma-related CDC sites and organizations, are available.
- The National Asthma Education and Prevention Program: NAEPP was initiated in March 1989 to address the growing problem of asthma in the U.S. (<http://www.nhlbi.nih.gov/about/naepp/index.htm>). NAEPP is administered and coordinated by the National Heart, Lung, and Blood Institute of the National Institutes of Health. NAEPP has state-of-the-art clinical practice guidelines for diagnosing and managing asthma (<http://www.nhlbi.nih.gov/guidelines/asthma/asthgdln.htm>). It provides information on treating asthma at all severity levels and stresses both clinical and self-management strategies.
- Other materials can also be used to enhance the effectiveness of a home program. For example, some pharmaceutical companies make asthma education kits that can be sent to children and their families; many are very child-friendly and include tools such as puppets, CD-ROMs, and other educational materials that help children and their families better understand the disease while reinforcing good disease management behaviors.



For more information on EPA’s national asthma program, visit <http://www.epa.gov/asthma>.

EPA encourages the use of its materials when promoting environmental risk factor management.

To access EPA’s materials, visit <http://www.epa.gov/asthma/publications.html>.

To order these materials at no cost, call EPA’s Indoor Air Quality Information Line at 1-800-438-4318.

¹ Centers for Disease Control and Prevention.

(<http://www.cdc.gov/nchs/products/pubs/pubd/bestats/asthma/asthma.htm>)

² National Heart, Lung and Blood Institute. *Morbidity & Mortality: 2004 Chartbook on Cardiovascular, Lung and Blood Diseases*. (www.nhlbi.nih.gov/resources/docs/04_chtbk.pdf)

³ America’s Health Insurance Plans. *2002 Annual Industry Survey of Health Insurance Plans and Chartbook Findings*. (<http://www.ahip.org/content/default.aspx?docid=2244>)

⁴ National Heart, Lung and Blood Institute, National Asthma Education and Prevention Program. *Expert Panel Report 2: Guidelines for the Diagnosis and Management of Asthma*. NIH publication number 97-4051. (www.nhlbi.nih.gov/guidelines/asthma/asthgdln.pdf)

⁵ See footnote 4.

⁶ National Academy of Sciences, *Clearing the Air: Asthma and Indoor Air Exposures*. (www.nap.edu/books/0309064961/html)

⁷ To learn more about actions to manage environmental triggers, consult EPA’s Asthma Home Environment Checklist at http://www.epa.gov/asthma/pdfs/home_environment_checklist.pdf.

⁸ Morgan W.J., Crain E.F., et al. *Results of a Home-Based Environmental Intervention among Urban Children with Asthma*. *New England Journal of Medicine* 2004; 351:1068-1080, Sept. 9, 2004.

⁹ Building information, secondhand smoke, pets, consumer products, heating and cooling systems, bedding and sleeping arrangements, flooring, upholstered furniture and stuffed toys, window treatments, cooking appliances, moisture control, pest control, and outdoor air pollution.

¹⁰ National Heart, Lung and Blood Institute, National Asthma Education and Prevention Program. *Practical Guide for the Diagnosis and Management of Asthma*. NIH publication number 97-4053. (www.nhlbi.nih.gov/health/prof/lung/asthma/practgde/practgde.pdf)

Notes

Notes

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