

CASE STUDY: Children's Hospital of Philadelphia (CHOP)

As an organization committed to safeguarding human health and the environment—and in response to the growing asthma epidemic—the U.S. Environmental Protection Agency (EPA) launched a national, multi-faceted asthma education and outreach program. As one part of this program, EPA supports performance-based asthma in-home intervention pilot programs through Community Based In-Home Asthma Environmental Education and Management Grants. EPA is committed to highlighting program successes through a series of case studies. This case study—the first in the series—is intended to offer providers, health insurers, public health departments, community-based organizations, and others with an overview of an asthma in-home intervention program.

Community Asthma Prevention Program (CAPP)

CAPP services primarily low-income, urban communities by providing community-based education, training, and environmental interventions. The goal of CAPP is to decrease asthma-related hospitalizations and emergency room visits by educating children and their families about asthma and about methods of identifying and mitigating environmental asthma triggers in the home. The asthma in-home intervention program, described below, is a component of CAPP's study program which evaluates environmental triggers of asthma and methods of mitigation in the home.

What Are the Components of CAPP's Home Visitor Program?

- In-home asthma education
- Home visits for 12 months
- Educational materials
- Mitigation of environmental triggers
- Symptoms diary
- Patient monitoring
- Follow-up referrals

How are Patients and their Families Recruited?

CAPP identified approximately 100 patients between the ages of 2-16 years through CHOP's primary care center patient database. Patients were identified for CAPP recruitment if one hospitalization or two ER visits were reported one year prior to the inception of the program.

Who Conducts the Home Visits?

Lay health workers who are trained by the hospital as home visitors conduct the visits.

What Happens During a Home Visit?

Home visits are comprised of two main categories: asthma education and environmental interventions.

During the 12-month period, each family is asked to keep a diary or journal tracking a child's asthma symptoms and medications.

Home visits are conducted weekly for 5 weeks with 1-2 follow-up visits per month for up to a year.

Education

Home visitors teach families in-depth about asthma, as well as how to:

- control a child's asthma,
- identify asthma symptoms (e.g., wheezing, shortness of breath)
- identify environmental asthma triggers (e.g. environmental tobacco smoke (ETS), pet dander, mold, cockroaches, and dust mites), and
- use asthma medication and devices.

Environmental Intervention

Home visitors show families how to reduce common indoor asthma triggers in the child's bedroom and other places in the home as needed. The home visitors recommend relatively low-cost and low-technology interventions that each family may easily incorporate into their lifestyles in order to reduce exposure to asthma triggers. This may involve incorporating trigger-reducing products such as mattress and pillow covers and shades, as well as, removing stuffed toys, clearing clutter and removing open bookshelves.

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The following table outlines the education and intervention visit schedule.

TABLE 1. HOME INTERVENTION AND EDUCATION

Visit	Education	Intervention
First visit	<ul style="list-style-type: none"> • Pre-tests completed to establish a baseline on family's basic asthma knowledge 	<ul style="list-style-type: none"> • Consent form signed agreeing to participate in the program • Home assessment completed
Second visit	<ul style="list-style-type: none"> • Asthma as a disease • Signs and symptoms of an asthma attack • Review of medication 	<ul style="list-style-type: none"> • Roach and mice bait given with instructions on proper use • Other methods of pest control discussed
Third visit	<ul style="list-style-type: none"> • Common indoor asthma triggers (cockroaches, dust mites, mold, pet dander, and ETS) • Avoidance techniques 	<ul style="list-style-type: none"> • Dusters, mattress and pillow covers given with instructions on proper use • Other methods of pest control discussed • Carpet removal or vacuum bags given
Fourth visit	<ul style="list-style-type: none"> • In-depth review of asthma medications and devices 	<ul style="list-style-type: none"> • Cockroach and pet dander avoidance techniques • Sponge and buckets provided along with demonstration of proper method to wash baseboards
Fifth visit	<ul style="list-style-type: none"> • Medicine Action Plan 	<ul style="list-style-type: none"> • Trash bags, shades and shade brackets given (to reduce dust from blinds)
Last visit	<ul style="list-style-type: none"> • Review of medication and devices • Question and answer session 	

How Much Does it Cost to Enroll in the Program?

CAPP provides supplies to conduct the initial intervention and follow-up and spends approximately \$120 per family enrolled in the program. This includes education materials, home assessments, and a portion of materials necessary to implement the recommended interventions. For example, to support recommended interventions, CAPP may contribute \$30 toward the purchase of a vacuum cleaner. CAPP does not, however, fund installation costs.

How Are the Home Visits Evaluated and Monitored?

CAPP uses several criteria to evaluate and monitor the home visits. For example, CAPP tracks the child's:

- asthma symptoms
- hospital and/or emergency room admissions
- medicine use, and
- maintenance of environmental intervention.

In addition, CAPP tests pre- and post-intervention asthma knowledge.

In addition to teaching families about asthma and supervising asthma trigger removal in the homes, home visitors are also required to document each visit in a paper chart. CAPP has implemented a system to monitor and review patient records to look for common problems, at which time the problem can be addressed before data are entered into the database. CAPP also provides individualized follow-up, such as referrals to social services or contacting the primary care provider, based on findings during the home visits.

How Are Outcomes Measured?

Hospitalizations, emergency room visits, and other quality of life indicators are being tracked to demonstrate outcomes resulting from implementation of in-home interventions.

For more information on EPA's asthma program, please visit: <http://www.epa.gov/iaq/asthma>