

Guide to Sustaining Effective

Asthma Home Intervention Programs



Prepared for:

U.S. Department of Housing and Urban Development
Office of Lead Hazard Control and Healthy Homes

June 2018



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About This Guide

The objective of this guide is to describe how effective in-home asthma interventions are coordinated, supported, and funded. The primary audiences are health and housing agencies, asthma coalitions and programs, community-based organizations, health providers, and advocates seeking to expand access to home-based asthma interventions. The ultimate beneficiaries of this guide are children with asthma whose health and quality of life can be improved through in-home education and interventions which address environmental exposures within their homes that may be triggering their asthma. This guide provides information on funding the types of in-home interventions that are most effective and gives examples of community-based asthma programs that have demonstrated effective practices.



The Department of Housing and Urban Development's (HUD) production of this resource underscores their commitment, as seen in the 2014-2018 Strategic Plan, to address housing conditions that negatively impact health and an occupant's quality of life. HUD's mission and current programs have provided a myriad of affordable housing units and services to millions of families in the past five decades. HUD has been formally engaged in promoting the integrated healthy homes approach since 1999 when Congress directed the creation of the Healthy Homes Initiative.

Since then, HUD's Office of Lead Hazard Control and Healthy Homes (OLHCHH) has supported close to 200 research, demonstration, and production projects to identify and mitigate housing-based health hazards in thousands of homes across the United States. OLHCHH funding supported eight demonstrations of asthma reduction interventions in public and tribal housing. The agency is currently supplementing their lead-based paint hazard control grants with additional funds to allow local grantees to address not only environmental conditions in the home that impact the health of the family but that also address the mitigation of lead-based paint hazards.

The focus on instituting and promoting policies and practices for housing interventions to control asthma triggers is a top priority of both HUD and its federal partners. In collaboration with the National Heart Lung and Blood Institute, the Environmental Protection Agency (EPA), and the Centers for Disease Control and Prevention (CDC), HUD is playing a leadership role in implementing the Coordinated Federal Action Plan to Reduce Racial and Ethnic Asthma Disparities.¹

Since 2012, OLHCHH has sponsored eight asthma summits in partnership with the EPA, the CDC and other Department of Health and Human Services (DHHS) agencies, local and state agencies, and community-based organizations (CBOs). The meetings build awareness and promote understanding of the value of home-based interventions for children with poorly

controlled asthma, obtain commitments from stakeholders to form working group(s) to act at the local and state levels, and have the goal of accelerating the creation of sustainable funding streams to support in-home interventions.

The summits started local and statewide conversations about existing asthma programs in various communities, including discussions of their best practices, how they deal with environmental conditions that exacerbate asthma, and how they are funded. This Guide provides information from these summits that addresses the potential sources of funding for current and new asthma programs. The lack of stable funding for programs that implement assessment and control of home environmental asthma triggers is one of the biggest barriers to ensuring the widespread availability of effective in-home asthma services.

1. Asthma's Impact and the Housing Connection

ASTHMA IS A CHRONIC LUNG CONDITION THAT RESTRICTS BREATHING. It leads to chest tightness, wheezing, and coughing. Asthma currently has no cure, but can be managed with proper medication, self-management education, and the elimination or reduction of the asthma triggers from the environment at home and school. Asthma can be life threatening if poorly controlled.²

OVER 6 MILLION CHILDREN IN THE UNITED STATES HAVE BEEN DIAGNOSED WITH ASTHMA. That equates to 8.4% of the population of children in the U.S., based on 2015 data,³ and in certain communities the prevalence rate can be as high as 25%.⁴ Asthma has serious financial and social impacts. According to the CDC, in 2007 the total direct and indirect cost of asthma was approximately \$56 billion: \$50.1 billion in health care costs and \$5.9 billion in indirect costs.⁵ Asthma is one of the leading causes of school absenteeism, with an estimated 10.5 million lost school days for children between the ages of 5 and 17 years old in 2008. There were 14.2 million missed work days and 22.0 million missed days of housework for parents and caregivers.⁶ Asthma negatively impacts parents and caregivers who must take time off from work or other activities, often without pay, to be at home with their children or take them to multiple doctors' visits.

Asthma disproportionately affects minority children living in poverty. Asthma prevalence rates are significantly higher for lower income and for some racial and ethnic minority children. Black children have a higher risk of mortality, and a higher rate of emergency department visits for asthma when compared to white or Hispanic children, as well as a higher prevalence of doctor-diagnosed asthma (13.4%).^{7,8}

Disparities in housing conditions by household income, race, and ethnicity likely contribute to the observed disparities in asthma prevalence. National survey data indicates that the likelihood for unhealthy conditions is greater in low income and in some minority-headed households (e.g., non-Hispanic Black, American Indian).⁹ The National Survey of Lead and Allergens in Housing found that the likelihood of higher levels of cockroach and mouse allergens were also significantly higher in the homes of low income households.^{10,11} There are also significant racial and ethnic disparities in the consequences of uncontrolled asthma. Low income minority children are less likely to be prescribed medications, less likely to take recommended medications to control their asthma, and are less likely to attend outpatient appointments.¹²

The Community Preventive Services Task Force, supported by the Centers for Disease Control and Prevention, echoed the call for "multi-trigger, multi-component interventions with an environmental focus" for children and adolescents with asthma in 2011 based on evidence that the interventions were effective in improving quality of life and productivity.¹³

Over 6 million children in the United States have asthma.

In the studies reviewed by the Task Force, trained community health workers, nurses, respiratory therapists, and/or social workers performed in-home interventions under the auspices of state and local health departments, health care systems, and community organizations in the homes of mostly urban minority children. The cumulative results of the studies are as follows:

- Asthma symptom days: median decrease of 21 days per year
- School days missed: median decrease of 12 days per year
- Acute health care visits: combined median decrease of 0.57 visits per year
- Hospitalizations: median decrease of 0.4 hospitalizations per year

Identifying and removing environmental triggers in the homes of children with asthma is important to improve the child's ability to live a healthy life that includes regular school attendance, decreased restrictions on activities, and general well-being.

THE COORDINATED FEDERAL ACTION PLAN TO REDUCE RACIAL AND ETHNIC ASTHMA DISPARITIES (ADAP) released in 2012 identified systemic factors that must be confronted to reduce the higher rate of asthma for low-income, black, and other minority children. Some of the known or suspected reasons for increased prevalence of uncontrolled asthma among some racial minorities are as follows:¹⁴

- Increased exposures to allergens and pollutants;
- Lack of resources to address, identify, and remediate environmental triggers in homes;
- Higher prevalence of households living in substandard housing with unaddressed conditions that create multiple exposures to environmental triggers such as mold, moisture, and pests;
- Absence of local capacity and coordination to deliver community-based, integrated, comprehensive asthma care;
- Lack of culturally sensitive asthma management and education resources;
- Limited access to sustained and consistent quality health care; and
- Low level of health literacy among caregivers.



These issues and others can be effectively addressed by community asthma programs that serve the most at-risk families, especially in low income, racial, and ethnic minority communities in a culturally sensitive manner. There are a number of communities that have created coalitions between medical and housing providers, educators, and patients to address these barriers and have implemented programs that are comprehensive, sustainable, and equitable. Examples of these and other programs are explained in the Asthma Regional Council's Reports on Payment Options at: <http://asthmaregionalcouncil.org/our-work/publications-reports>.

The National Asthma Education and Prevention Program (NAEPP), an expert panel, convened in 2007 for the National Heart, Lung, and Blood Institute (NHLBI) of the National Institutes of Health, and identified four essential components of successful asthma care:

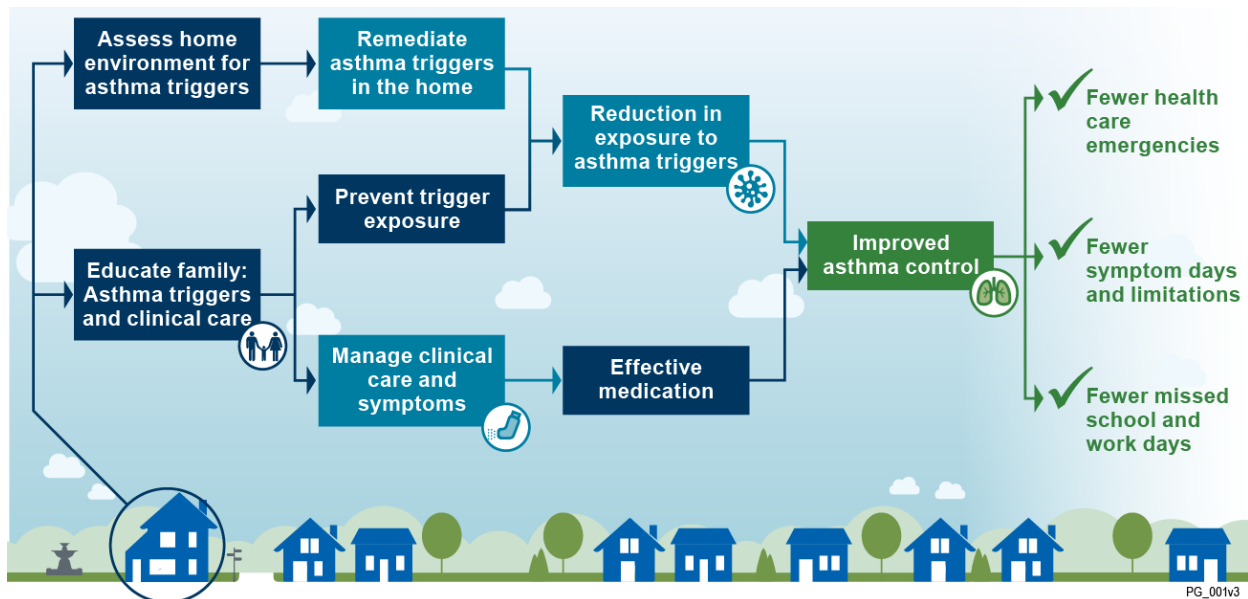
- Assessment and monitoring of the level of asthma control to adjust a patient’s management plan accordingly;
- Education to improve self-management skills of patients and their families;
- Pharmacologic treatment; and
- Reduction of environmental triggers that worsen asthma.¹⁵

These NAEPP guidelines have become an important tool in communities’ responses to asthma, underlying many of the policies and practices that support successful programs that improve asthma control.

AS THE HEALTH OF CHILDREN WITH ASTHMA IMPROVES THROUGH HOME INTERVENTIONS, HEALTH CARE COSTS DECREASE. The Centers for Disease Control and Prevention’s Guide to Community Preventive Services report summary regarding home-based multi-trigger, multi-component interventions states that studies demonstrated that minor to moderate home remediation provides substantial returns for money invested – \$5.30 to \$14.00 for each dollar invested – as well as a cost-effective, symptom-free day with costs ranging from \$12 to \$57 per additional symptom-free day.¹⁶

The graphic below, adapted from The Community Guide’s 2011 framework for recommendations on home-based interventions, illustrates the relationship between environmental interventions and patient education.

Community-based preventive services (including home assessments, asthma trigger remediation and asthma management education) can improve asthma outcomes and reduce health care costs.





1.1 The Important Role of In-home Asthma Interventions

Environmental asthma trigger reduction strategies have been well studied and their implementation has been demonstrated in multiple communities. The Community Preventive Services Task Force and the NAEPP Guidelines both recommend the mitigation of home environmental triggers. Effective interventions will be home-based, multi-component, and multi-trigger, as described below:

- Multi-component: Upon diagnosis of asthma, a certified asthma educator, nurse, or other health worker qualified to address asthma education and management visits the family at home. They conduct asthma education, self-management training, answer questions, refer the family to needed social services, and provide care coordination.
- Home-based: A certified and experienced professional will identify and address the home's environmental asthma triggers.
- Multi-trigger: Remediation within the home is directed at eliminating multiple asthma triggers (allergens and irritants) including mice, cockroaches, dust mites, excess moisture and mold, household pets, and tobacco smoke.

In practice, the specific range of necessary environmental interventions will vary in cost, effort, and materials, depending on factors such as the extent and type of asthma triggers in the home and the structural integrity of the home. Some key interventions can reduce exposure to more than one trigger. For example, sealing a home's cracks and openings will reduce contaminant infiltration from outdoors, prevent pest entry, reduce moisture infiltration, and help maintain the home's indoor air quality. Professional cleaning services, providing families with education and high efficiency particulate air (HEPA) vacuum cleaners and cleaning supplies, can reduce dust (and associated allergens) levels in the home.¹⁷ Interventions for some of the most common asthma triggers in the home are described below:



- Dust mite exposure can be reduced through the combination of humidity reduction, mattress encasement, pillow covers, replacement of carpets with smooth floors, and installation of high-efficiency filters on forced air furnaces and air conditioning units.
- Excessive moisture and mold exposure can be contained directly through mold remediation, improving air flow through whole-house ventilation or installing vents in the kitchen, bathroom, and clothes dryer, and use of dehumidifiers and/or air conditioners. The solution to underlying moisture problems may require repair of roof, plumbing, and windows or landscaping.
- Pest infestation can be addressed through the implementation of integrated pest management (IPM), a systematic strategy that includes: eliminating pests' harborage places, removing or making inaccessible their food and water sources, routine inspection and monitoring, treatment that is scaled to and designed for the infestation, using the least-toxic pesticide for the identified pest, and follow-up monitoring until the infestation is gone. Materials such as glue traps and gel baits are helpful but will not permanently reduce pests without interventions to reduce entry points and cut off excessive moisture and food supply. Families can be taught methods to reduce pests through proper food storage, providing plastic storage containers for food, providing garbage cans with lids, and explaining the importance of disposing of trash outside.
- Tobacco smoke and household pet triggers can only be contained by eliminating the exposure source. Pets can be removed from homes (most effective) or kept out of children's rooms.

During the initial home visit, the asthma educator should review the asthma action plan and include the subject of environmental triggers. The patient, caregiver, and asthma educator can do a quick walk through of the house to identify any environmental triggers. Guidance on asthma self-management (e.g., proper use of medications and adherence to an asthma action plan) should be provided by a qualified individual during a home visit.



Asthma educators can be certified through local colleges and universities or various agencies such as the American Lung Association. Certification and training are available for the nurse, community health worker (CHW), or other professional that visits the home regularly. Assessments for in-home environmental triggers can be completed by a healthy homes specialist who usually comes from the housing or environmental health fields. The most appropriate professional(s) for a given program model depends on the complexity of the home assessment and the intervention strategy. Use of CHWs from the targeted communities is a less costly and culturally sensitive model which can be structured to include other professionals on an as-needed basis.

To successfully eliminate or reduce the environmental asthma triggers often requires more than one type of service provider with certain expertise and experience. A trained community health worker, nurse, healthy homes specialist, or certified asthma educator can conduct a home assessment. Depending on the individual's specific qualifications, they can deliver home-specific environmental education regarding clutter, pest exclusion, dust management, and good cleaning practices; they may also install minor equipment, such as HVAC filters, dehumidifiers, and dust mite covers. Qualified professionals are needed to perform more extensive interventions to address issues such as severe pest infestations and structural repairs.

Over the years that federal, state, and local agencies have invested in reducing asthma trigger exposures, there have been several classifications of interventions and remediation by researchers and public health professionals. The following table enumerates the key asthma services including assessment and education while delineating tiers of minor, moderate, and major interventions in the home environment. The more intensive interventions also incorporate less intensive interventions (e.g., education, dust control).

KEY ASTHMA INTERVENTIONS

Conduct an environmental assessment for asthma triggers in the home. Assessment should be done by a practitioner trained in healthy housing principals with specific focus on triggers that exacerbate asthma symptoms such as pets, insect and rodent pests, mold/moisture, dust, and environmental tobacco smoke (ETS).

The Asthma Educator and the Assessor should review the results of the assessment with the patient and caregiver. The AE should spend time explaining the actions that the caregiver can take to maintain a healthier environment. Examples include education on how to vacuum, prevent ETS exposure, reduce exposed food waste, and eliminate clutter.

Second level interventions can be done either by the Asthma Educator or Assessor or another trained professional. These interventions could include installing air conditioners, fitting air filters, assisting in pest control, and repairs of minor surface problems.

Third level interventions need to be completed by home improvement specialists. Examples include weatherization, installation of ventilation systems, structural repairs, carpet removal and installation of smooth floors, and mold removal.



2. Key Actions to Advance In-home Asthma Interventions

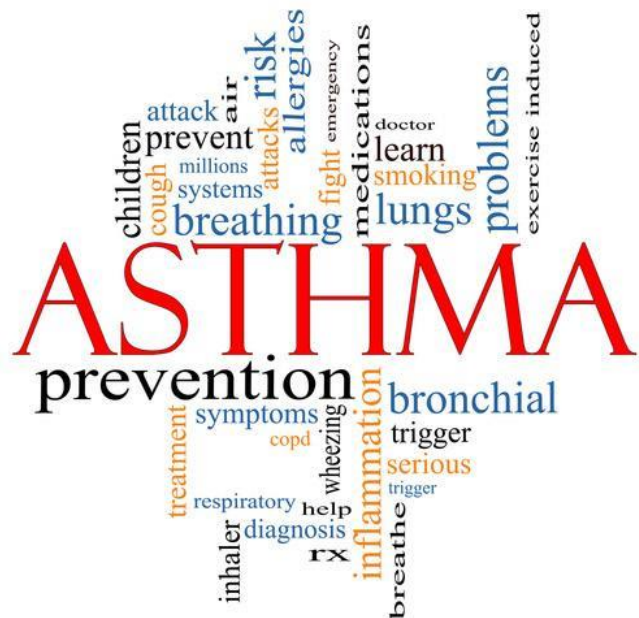
THE MOST EFFECTIVE ASTHMA PROGRAMS CONSIST OF THE FOLLOWING COMPONENTS WORKING TOGETHER:

- The medical professional who diagnoses and prescribes medications;
- The home visiting nurse, CHW, or other qualified individual who provides the education about asthma management and common triggers as well as ascertains any social services needed by the family;
- The healthy homes specialist or other qualified individual (e.g., nurse, CHW) who assesses the home and identifies the asthma triggers and conditions that can exacerbate asthma;
- Appropriate professionals to mitigate the identified triggers and conditions, as needed.

There are many successful asthma programs in communities nationwide that encompass these functions and provide the asthma patient with well-coordinated services that are assessed and delivered effectively. These programs have access to data or to partners to identify high need areas and potential clients.

Successful programs are well known in the communities they serve and deliver program components in a culturally sensitive approach with appropriate materials and outreach methods.

Working closely with the medical community, asthma program administrators can identify children with poorly controlled asthma based on emergency room use, hospitalizations, or other indications of poor asthma control. Medical personnel and clinic administrators can also reach out to the clients they believe would benefit from the asthma programs.



3. Sustainable Funding Options

Funding for necessary services such as home assessment, interventions, repairs, and cost of materials such as cleaning supplies, is often difficult to secure.

Asthma programs need to identify sustainable funding streams to cover the costs of these services. Identifying and securing this funding is often a difficult process involving multiple stakeholders, access to information about potential sources and their requirements, strong community involvement, and a comprehensive coalition of collaborators to help procure each funding source. A combination of passion, dedication, power, knowledge, and a community that will work through the various levels of bureaucratic and political system barriers is key.

Depending on the model, most programs require a combination of funding from the different sources that finance each component of the asthma services outlined above. For example, funding for minor remediation is included in the U.S. Department of Energy's (DOE) weatherization program for low-income households. Funds from the program are generally directed to local community action agencies and can be used for the repair of some conditions (e.g., moisture problems) that contribute to asthma triggers. Another source of home weatherization funds is through the U.S. Department of Health and Human Service's Low-Income Home Energy Assistance Program (LIHEAP), which is provided on a formula basis to all states and U.S. territories. Most of HUD's Lead Hazard Control Program grants also have healthy homes supplemental funding that can be used to address asthma triggers; however, the homes are selected based on the presence of lead-based paint hazards.

The following key synergistic funding sources and community actions outline four areas to consider in the pursuit of sustainable funding of in-home asthma interventions:

- Community collaboration provides the underlying or catalyzing support that can lead to successful strategies for securing funding or other mechanisms for delivering services, as well as the coordination of existing resources to build a case for action.
- Financing by Medicaid and private health insurance for in-home assessments, asthma management education, and low-level interventions allows the medical community to achieve health improvements for their clients while reducing acute care utilization and costs.
- Program funding for housing repairs through federal block grants, private foundations, financial institutions, state and local government, and others, leverages the insurers' investment in children with asthma and delivers lasting benefits to their homes.
- Policy actions can reduce exposure to asthma triggers but may require greater community collaboration. Examples include the adoption of more protective housing codes by local governments and the adoption of smoke-free policies by owners and managers of multifamily housing.

3.1 Community Collaboration

Strategies to finance in-home interventions start with community involvement. By working together across agencies, organizations, and levels of government, established asthma coalitions — as well as loosely formed groups of health and housing service providers — can take steps to secure funding.

In many communities, a typical first step toward delivering in-home asthma interventions is building, strengthening, or diversifying a new or existing coalition of community stakeholders focused on asthma or healthy homes. Stakeholders might include health and housing service providers, state and local officials and policymakers, private insurers, and advocates. Whether these groups are organized into formal coalitions is less important than their ability to collaboratively approach the issue of financing asthma interventions from multiple sectors, agencies, and funding streams.

Once a group has come together, they will define a common agenda and shared vision for the change they seek. In many cases, the public health agency within a community can act as the key coordinating body, however it is often the case that advocates working outside the government have a greater ability to drive change in the way services are delivered and funded. Non-governmental advocates may serve as the issue champions to lead others, move ideas forward, and ensure tasks are assigned and completed.

Together a group uses data to determine what efficiencies and opportunities exist for collaboration, and what priorities are clear based on population data of children at risk. For example, collecting asthma emergency visit and/or hospitalization data may lead to a focus on a particular population, neighborhood, service, or asthma trigger, such as a focus on integrated pest management. Documenting gaps in access to needed home interventions may lead to clarity on which funding streams or services to pursue with the goal to leverage and target funds for remediation in homes of children with uncontrolled asthma.

As appropriate, a group may develop systems for making referrals to organizations that are part of the coalition, and they may develop or use a singular home assessment tool and share data, as in the case of communities employing the One Touch approach. One Touch is an example of a referral program that connects housing, health, and energy home visiting and repair programs so that families can be connected to a multitude of partners and potential funding sources within a seamless network.¹⁸

The Green and Healthy Homes Initiative (GHHI) works within communities nationwide to develop coalitions that focus on delivery of health-based housing interventions in low-income neighborhoods. GHHI in Baltimore has helped organize a coalition of federal, state, local, nonprofit, university, and philanthropic partners who have combined their extensive capabilities to offer families in-home asthma education, a comprehensive health, safety, and energy audit, and environmental hazard reduction and remediation, among other services.¹⁹

COLLABORATION IS NOT THE ONLY ELEMENT NEEDED TO SECURE SUSTAINABLE FUNDING, BUT IT CAN BE THE FOUNDATION OF SUPPORT TO PROMPT ACTION, SUCH AS IN THESE EXAMPLES:

- Service provider's aggregate health and housing data that offers justification to private or public health insurers, who may ultimately reimburse for in-home interventions.
- An existing asthma coalition will work with a local affordable housing coalition to seek CDBG funds for basic home repairs.
- A multi-sector agreement will coordinate existing housing delivery systems in their response to certain highest risk homes.

3.2 Medicaid Reimbursement & Private Payer Coverage

A key component to sustainable financing of in-home asthma interventions is the availability of health care system financing for activities that include home assessments, education, service coordination, and supplies.

The business case for health care systems in the U.S. to reduce asthma's toll on the lives of patients and on the balance sheet is clear—fewer missed school days, less need for crisis care, and a positive return on investment for every dollar invested. Enhanced asthma management for children with poorly controlled asthma will be most effective when quality clinical care is supported by asthma education and the availability of home-based services and supplies needed for mitigating environmental triggers in the home. When public and private insurance reimbursements routinely cover such preventive services, a community can maintain a system of qualified service providers (e.g., a cadre of cost-effective and well-trained community health workers, nurses, and other local in-home visiting program staff) and succeed in managing asthma on a population-wide basis.^{20,21}

The National Center for Healthy Housing (NCHH), a national nonprofit with extensive expertise in creating and funding asthma and other health related programs, has completed a three-year investigation of the status of states' Medicaid reimbursement of in-home asthma services including interventions for housing related repairs.

The survey found that 13 states have Medicaid reimbursement for home-based asthma services, three states anticipated reimbursements within a year, and 19 states were exploring reimbursements or expansion of existing reimbursements.²² All of the states that have in-home services in place covered children, and more than half required a recent hospitalization or emergency department visit as a condition for eligibility for home-based services. While 69% of the programs covered assessment of the home, 54% supported in-home education about triggers, 38% paid for low-cost supplies, and 15% covered structural remediation. The per-visit reimbursements ranged from \$81–\$200. The survey respondents rated the most critical influences on decisions to cover home-based asthma services to be the availability of credible information about potential costs and savings, improvements in health outcomes, and political will/leadership.

PRIVATE PAYER INSURANCE COVERAGE: The Asthma Regional Council of New England (ARC) conducted a survey of private insurers in 2010 and produced a guide for employers seeking to reduce the burden of asthma among employees and dependents, to yield positive returns on investment via direct cost savings, and to reduce rates of both absenteeism and compromised productivity at work. The first priority strategy that ARC recommends is to align employee health benefits with recommended best practices for asthma management, including coverage for children and adolescents of home assessments, services, and supplies to address environmental triggers.

A number of private health insurers in New England developed comprehensive asthma programs in conjunction with community and government partners to address their insured families with asthma, with the focus on children with poorly controlled asthma. More detailed information is provided on their website at: www.asthmaregionalcouncil.org.

More details and a description of the various options for obtaining funding through Medicaid programs can be found on the NCHH website at: <http://www.nchh.org/>.

MEDICAID COVERAGE: As the proven effectiveness of asthma home assessments, education, and remediation activities grows, there is some uncertainty regarding whether and how publicly funded insurance could pay for these services. Early, Periodic, Screening, Diagnosis, and Treatment, or EPSDT, the child health component of Medicaid, requires mandatory periodic assessments with health education and anticipatory guidance to promote healthy lifestyles and prevent disease.

In theory, states can reimburse for asthma management services provided in homes and other non-clinical settings under EPSDT, but EPSDT has not been an effective mechanism for Medicaid reimbursement. In 2010, the U.S. Congress advanced the feasibility of community-based preventive services through the Affordable Care Act (ACA). Congress addressed several sections of Medicaid law, under which states may use federal Medicaid funds to pay for home and community-based services (HCBS). Congress' ruling supports enhanced quality in HCBS programs and adds protections for individuals receiving services. In addition, this Congressional ruling reflects CMS' intent to ensure that individuals receiving services and support through Medicaid's HCBS programs have full access to the benefits of community living and are able to receive services in the most integrated setting.

42 CFR 440.130 (c) "Preventive services" means services recommended by a physician or other licensed practitioner of the healing arts within the scope of his practice under State law to:

- Prevent disease, disability, and other health conditions or their progression,
- Prolong life, and
- Promote physical and mental health and efficiency.

The **KEY REQUIREMENTS FOR STATES** to consider when establishing Medicaid reimbursement for home assessments, education, and remediation activities are the following:

- **STATE PLAN AMENDMENTS (SPA) AND SECTION 1115 WAIVERS** are documents that a state Medicaid office files with CMS to change any of the terms of the statewide Medicaid program. SPAs and waivers can be submitted to add reimbursements for home-based preventive services such as home assessments, education, and remediation activities. A SPA results in a permanent change while a waiver allows for a temporary change in a state's procedures (e.g., for a demonstration project).
- **HEALTH HOMES, also known as PATIENT-CENTERED MEDICAL HOMES**, are teams of providers who serve multiple individuals with a chronic disease such as asthma and are responsible for providing or coordinating all patient care and delivering comprehensive care management; care coordination and health promotion; patient and family support; and referrals to community and social support services. Each state can define what services are to be included, who qualifies as eligible providers, and what treatment settings are allowed in a Medicaid Health Home State Plan Amendment. Some states, including Alabama, Idaho, Maine, Missouri, Rhode Island, and Washington, have health home plans that include asthma as one of the conditions that can be addressed and other states are currently pursuing this option.
- **ACCOUNTABLE CARE ORGANIZATIONS (ACO)** are voluntary networks of doctors, hospitals, and other providers that use a payment and comprehensive health care delivery model that links provider reimbursements to quality metrics and reductions in the total cost of care for an assigned population of patients. ACOs have a financial incentive to keep costs down, and states can use their contracting authority to specify services, eligible

providers, and treatment settings. These providers are encouraged to contract with local community organizations to provide follow-up services to patients seen at the office. Asthma home visits are eligible, but the decision about paying for the remediation is often determined by the state or the actual hospital or clinic.

- **MANAGED CARE ORGANIZATIONS (MCO)** are commonly used to provide health care delivery to Medicaid populations, and are reimbursed per patient instead of on a fee-for-service basis. MCOs have flexibility to cover cost-effective disease management techniques that are not usually available under the traditional fee-for-service Medicaid but are also not always held to outcome measures required of ACOs and PCMHs. States can use their contracting authority to require that MCOs offer community asthma interventions. Among the MCOs that participated in HUD's asthma summits (see section 4.14), the most common approach for the coverage of home interventions was through funds from the organization's administrative budgets (see discussion in summary document in Appendix B).
- **INNOVATION MODELS** are mechanisms for providers, states, and CMS to test service delivery methods such as bundling community-based care with clinical care and covering supplies and services that are not considered medical assistance. These include Medicaid Demonstration and Waiver Authority, and Medicaid Innovation Grants.

State Medicaid offices control much of the potential for making Medicaid work for community-based preventive services through the above mechanisms. One obstacle to state action has been fear of escalating costs for adding new services since most Medicaid services are funded by a mix of state and federal funding. Provider groups and insurers can leverage state-wide policy results with their actions such as modeling service delivery and collecting outcome and cost savings data. Health Homes and Innovation Models need not expand state costs during initial ramp-up periods because by the time such programs are full-scale, cost efficiencies will be realized. The significant return on investment has already convinced multiple states' officials that supporting home-based asthma services is an important policy. NCHH has more details available on their website at www.nchh.org.

Appendix B contains a document, "Pathways to Medicaid Reimbursement for Pediatric Asthma Interventions" which summarizes the various approaches through which home asthma interventions can be supported through state Medicaid programs and the organizations that provide healthcare services to Medicaid beneficiaries.

HOUSING PROGRAMS - FUNDING SOURCES FOR ASTHMA INTERVENTIONS. Beyond health care system financing, an array of private and locally controlled public funding sources can be approached to pay for asthma trigger mitigation, including structural remediation. Note that few funding sources will be asthma-specific, but instead focus on needs such as increasing the supply of affordable housing or improving low income housing through rehab. There are heavy demands on the few programs that cover housing and community development, given the short supply of affordable housing in relation to need; but communities do have several options to consider. There is no entitlement to decent affordable housing, but rather a patchwork of limited resources. A good place to start in identifying the existing possibilities within a community is to contact the city housing or community development director. Another choice would be to contact the state housing department and to reach out to any housing coalitions or agencies established within the community that are already using these funds for their activities.

COMMUNITY DEVELOPMENT BLOCK GRANTS: Authorized under Title I of the Housing and Community Development Act of 1974, the Community Development Block Grant (CDBG) is an annual grant to localities and states to assist in the development of viable communities by providing decent housing, a suitable living environment, and expanded economic opportunities for persons of low- and moderate-income. CDBG funds are awarded by HUD annually via a formula to entitlement cities and counties plus states. Their use is publicly planned during a Consolidated Plan process every three to five years.

Housing rehabilitation is one of several allowed uses of CDBG funds and represented 19% (\$627 million) of local entitlement area expenditures in FY16.²³ Assistance can be provided to low-income homeowners and to rental property owners who agree to rent the units at reduced rents to low-income households. Not all the work assisted with CDBG is full-scale housing rehab. A CDBG recipient can operate a home repair program focused on things such as emergencies, basic systems like plumbing, heating, electrical and roofing, and healthy housing. Housing rehab is an eligible expense under CDBG's sister program at HUD, the HOME Investment Partnership Program, but HOME is not generally used for minor or specialty repairs since HOME units must be rehabilitated through spending a minimum of \$1,000 per unit and must comply with a minimum property standard after the work is completed. By contrast, under CDBG just the most critical items can be repaired, and thus more units can be improved. Community asthma coalitions and healthy housing and public health advocates seeking CDBG funds for asthma trigger mitigation should consider approaching the local housing agency, perhaps in collaboration with the health commissioner or other public health official, to request that these needs be addressed. If there is an existing housing rehab-repair program, the agency staff may be able to fit the asthma-related home remediation into activities. Although it is within the authority of the housing agency to propose new activities for its next plan, the agency may suggest that a formal request be made through the Consolidated Plan process.

Asthma leaders should be aware that these funds are highly sought after and that the city usually has long standing programs that will continue to receive the bulk of the funding. It is more likely that partnering with an existing grantee that is interested in expanding into healthy housing through paired funding would be a first step in a shorter process to secure funds.

More information is available on HUD's website:

- CDBG contacts can be located at <https://www.hudexchange.info/grantees>
- Consolidated Plans are posted at <https://www.hudexchange.info/programs/consolidated-plan/con-plans-aaps-capers/>
- HUD Office of Lead Hazard Control and Healthy Homes: www.hud.gov/healthyhomes

CONSOLIDATED PLAN: Communities use this tool to determine how they will spend HUD-provided housing and community development block grant dollars, following a single process for the planning and application requirements for the Community Development Block Grant (CDBG) and HOME Investment Partnership Programs. The consolidated planning process serves as the framework for a community-wide dialogue to identify housing and community development priorities that align and focus HUD formula block grant programs. States, cities, and counties that receive these annual grants must have a HUD-approved Consolidated Plan, as well as interim Annual Action Plans (which summarize the actions, activities, and the specific federal and non- federal resources to be used each year to address the Consolidated Plan's framework

of needs and goals). The consolidated plan is the mechanism for securing the CDBG dollars and other funds and does not represent a separate source of funding.



Those that want to prioritize asthma or other housing-based health interventions into any of the federal housing funding granted to the city should be active in the process to make sure that asthma interventions are specifically listed in the appropriate place as a high priority for any federal housing funds. The city staff that is coordinating the process should be contacted months before the new or revised plan is going to be presented so that they can do their own research and have conversations with stakeholders to get feedback on the likelihood of success or opponents to your request to include asthma as a priority. It is best to not wait until the hearing itself or the opportunity to have your issue included in the final plan might be drowned out by stronger advocates for different priorities.

The Consolidated Plan process is structured to receive public input and deliver transparent decision-making, with reasonable and timely access to all information and records, through measures such as:

- **Public Hearings** to gather the public's ideas about housing and community development needs must be held before a proposed Consolidated Plan is published. Following the proposal, the public must have at least 30 days to review and comment on the proposed plan and there must be at least one public hearing during a local plan's review. Sometimes this hearing occurs as a city council meeting.
- **Final Plan:** The jurisdiction must consider the public's comments and include in the final plan a summary of comments received with explanation of why any suggestions were not used. A copy of the final plan must be available to the public.
- **A Citizen Participation Plan** is developed to provide and encourage public involvement in the creation of the Consolidated Plan, including involvement by people with low incomes especially in low income neighborhoods and areas where CDBG money might be spent; minorities, people with limited English proficiency, people with disabilities, and residents of public and assisted housing.

WEATHERIZATION ASSISTANCE PROGRAM (WAP): The purpose of the U.S. Department of Energy's (DOE) Weatherization Assistance Program is to improve the energy efficiency of single- and multi-family residences occupied by families with incomes below 120 percent of poverty. Since 1976, the program has assisted seven million families by installing energy efficiency measures free of charge.

WAP is administered by the Office of Energy Efficiency and Renewable Energy, which makes awards to states annually on a formula basis and provides technical guidance. The states administer their own programs, set rules for issues such as eligibility, and distribute the federal funds to local Community Action Agencies and other non-profit organizations with demonstrated capacity to deliver energy efficiency services in their communities.

While separate WAP grants are not available for asthma-related remediation, WAP reduces energy costs for more than 30,000 low-income families each year, reduces outdoor air pollutant infiltration into the home, and can also reduce exposure to other potential asthma triggers. A small portion of funds, where resources allow, may be used to remediate health and safety hazards in homes receiving weatherization, including allergens related to mold and pest infestation. A 2014 evaluation of WAP found that respondents with asthma reported fewer emergency room visits and fewer missed days of work than in the previous 12 months (a decrease from 8.5 days missed to 6.8) after weatherization. The homes experienced reductions in cockroach infestation, rodent infestations, standing water, mold, and mildew/musty smells. More information about specific findings can be found in the Weatherization Works - Summary of Findings from the Retrospective Evaluation of the U.S. Department of Energy's Weatherization Assistance Program, 2014.



<https://energy.gov/sites/prod/files/2015/09/f26/weatherization-works-retrospective-evaluation.pdf>

FOUNDATION GRANTS: Private foundation programs focusing on housing, environment, and health face many demands for support, the cost of which far exceeds budgets for these programs.

Very few foundations pay for housing-related activities, which were long regarded as governmental responsibilities if considered at all. Some private and community foundations have demonstrated interest in reducing health hazards in housing. For example, the Kresge Foundation developed and funded the Advancing Safe and Healthy Housing Initiative to support multi-year healthy homes work in six foundation-identified cities beginning in 2010. This national effort leveraged other funders' support and has prompted a cross-city evaluation of the impact of healthy homes interventions to reduce asthma care costs and improve health outcomes. The Advancing Safe and Healthy Homes Initiative is described in detail on the Kresge Foundation's website at www.kresge.org.²⁴ More information is included in Appendix A detailing where to search for foundation funding.

The national Green and Healthy Homes Initiative (GHHI) is partnering with the Council of Foundations to fund their local programs to implement the GHHI model program within local communities. If you are considering a national funder, check the GHHI website to see if they are already partnered in your locality. If they have not partnered with someone in your area, talk with them about becoming a member community of GHHI. Their program provides resources, a model, training, and access to several different funding sources as well as facilitation of cross sector coalitions.

HOSPITAL COMMUNITY BENEFITS. Nonprofit hospital organizations are required by federal tax law to spend some of their surplus on “community benefits,” which are goods and services that address a community need. They must report this spending to the Internal Revenue Service (IRS) each year in order to stay exempt from paying federal tax on their income. Community building, an allowable purpose of community benefits investments, includes physical improvements to housing, environmental improvements, and workforce development. Each hospital organization must use a transparent decision-making process every three years (or more frequently) in determining how to spend community benefits funds. The publicly accessible and accountable planning process consists of a Community Health Needs Assessment (CHNA) and an implementation plan.

NCHH has an excellent fact sheet on their website about this source of funding. For more information, visit: <http://www.nchh.org/resources/financing-and-funding>.

FINANCIAL INSTITUTIONS: Locally owned banks, credit unions, and branches of larger financial institutions are potential resources, particularly for place-based services. Congress enacted the Community Reinvestment Act (CRA) in 1977 to challenge widespread discrimination in mortgage lending and encourage banks to help meet the credit needs of all segments of their communities. To fulfill their CRA requirements, financial institutions may provide community development loans, grants, technical assistance or services to support community development activities that serve low and moderate-income communities, including “abatement or remediation, or other actions to correct, environmental hazards” in affordable housing. One example of similar funding is the use of CRA investments to address lead remediation.²⁵

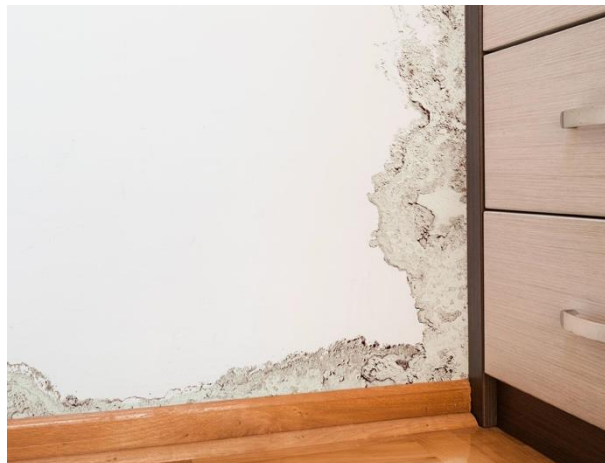
Local asthma providers who wish to access CRA funds should talk with the staff person assigned to the administration of those funds to determine if their priorities and historical funding includes health or housing issues. If not, ask the staff if there is a chance of your request being heard and if so, how to best make your case.

Wells Fargo partnered with Rebuilding Together and the National Center for Healthy Housing to conduct a pilot project that trained RT staff to become healthy home experts, and then to conduct repairs on their clients’ homes, improving the health and safety of the home’s occupants. Wells Fargo had a backlog of houses from the foreclosure crisis that were not moving off their balance sheets and into the market and were tying up the bank’s assets, which fueled this initiative.

LOCAL AND STATE GOVERNMENT

FINANCING: Non-federal public funds get allocated for relevant programs that become prioritized based on multiple factors. Some states grant funds for local agencies to assess and mitigate asthma triggers and other hazards. State housing finance agencies may award bond revenues to housing-related services.

One common local and state level mechanism for the production and preservation of affordable housing is the housing trust fund.



Housing trust funds have been initiated in response to campaigns waged by faith-based organizations, coalitions of nonprofit developers, state-wide housing advocacy groups and other types of coalitions engaging the full spectrum of the housing industry. There are over 770 housing trust funds at the city, county, and state level in 47 states, which generate more than \$1.2 billion per year.²⁶ The revenue sources include general funds, fees for private development of new properties and conversion of rental housing to another use, tax increment financing, bond fees and revenues, sales tax, use tax, building permit fees, and document recording fees. Housing trust funds typically have the capacity to support innovative projects that address needs not being served by other programs.

Advocates for asthma interventions can go directly to their state legislature to request funds for their programs through the legislative process. Local advocates would need to have a well thought out and sufficiently resourced team to secure the political support to pass this type of funding. If there is a strong legislative advocate and the governor's office concurs, this funding can become part of a state line item that renews each year or bi-annually depending on the individual state's funding cycle. In Minnesota, advocates for lead poisoning education and remediation successfully secured state funds for several years as a pilot project and once the program proved to be successful, the funding was included in the Minnesota Health Department's biennial request for funds to the legislature. The advocate had to monitor any potential threats but no longer had to do extensive lobbying and testifying to secure the funds. The state health department is a good place to start a conversation about whether they would support a request for state funding that would be administered by their office and overseen by their staff. The appeal to the department is additional funds for staff to administer and monitor the program that could also do additional duties for the program and additional funds to fulfill their requirements and mission of protecting the vulnerable children in their jurisdiction. Advocates interested in this source of funding can contact CLEAR Corps USA at www.clearcorps.org.



3.3 Protective Housing Policies & Management Practices

Best practice policies such as model housing codes, smoke-free housing, and integrated pest management (IPM) are vehicles to engage community members and drive action on asthma trigger reduction and securing funding for asthma interventions. The National Center for Healthy Housing has model codes for local and state governments that address asthma and lead and other safety issues within the home. If local community leaders are interested in pursuing code

changes to enforce more prescriptive actions by homeowners and landlords, they should review the information on the NCHH website and ask for assistance in evaluating their current city codes to see where improvements or additions can be made. Examples of other city codes that have been passed can be accessed through different asthma coalitions and your local government staff. Boston Public Health Commission effectively leverages codes to get things fixed in the home, visit <http://www.asthmacommunitynetwork.org/node/3567> for more information.

HOUSING CODES: Asthma triggers in rental housing, such as excessive moisture and pest infestation, often represent violations of one or more applicable state or local codes, such as a property maintenance code, housing code, or health regulation. The International Property Maintenance Code, used by many cities and some states, requires property owners to resolve pest infestation in multifamily housing, maintain plumbing free of leaks, and prohibits interior dampness from faulty roofs and non-weathertight conditions. California enacted a law in October 2015 to specify that mold, except minor mold found on surfaces that normally accumulate moisture, such as showers or sinks, is a substandard housing condition. In many states, a civil court processing a landlord-tenant case will require that a rental home be habitable. A community health worker who educates a landlord about asthma triggers that are present may be able to prompt repairs to avoid enforcement action and fines. Such repairs will reduce demand for public or private sector financing sources for in-home asthma interventions (except where both the tenant's income and the property's economics merit a subsidy under the funder's policies).

PEST MANAGEMENT: Integrated pest management (IPM) is a proven strategy for managing pests that consists of prevention, exclusion, monitoring, and suppression of pests, and can limit occupant exposure to pesticides. IPM's methods involve both repairs to the property (for example, to eliminate holes and leaks that permit pest harborage and pest entry) and occupant behavior (for example, to keep food inaccessible to pests). In multifamily housing, the success of IPM depends on full participation by tenants, property maintenance staff, and pest management professionals. Rental property owners can protect tenants from exposure to pest infestation and widespread application of pesticide products by adopting IPM. HUD encourages federally assisted housing managers to use IPM.

SMOKE-FREE HOUSING: Asthma can be triggered by the smoke from the burning end of a cigarette, pipe, or cigar and the smoke exhaled by the smoker. This is referred to as environmental tobacco smoke or secondhand smoke. Rental property owners can protect tenants from exposure to secondhand smoke by designating their multifamily rental properties, or units, smoke-free. HUD has strongly encouraged public housing authorities and owners and management agents in HUD's multifamily housing rental assistance programs to adopt smoke-free housing policies, visit <https://www.hud.gov/sites/documents/SMOKEFREEACTIONGUIDE.PDF>.



Over 650 local public housing agencies and five state-wide agencies have established smoke-free mandates in public or federally assisted multifamily housing. More than 30 municipalities have restricted smoking in privately owned multifamily rental properties. On December 5, 2016, HUD published a rule requiring that all public housing authorities (PHAs) prohibit the smoking of tobacco products in indoor areas and adjacent to buildings. PHAs will be required to implement policies by July 30, 2018. HUD's website describes the public housing program https://portal.hud.gov/hudportal/HUD?src=/topics/rental_assistance/phprog

To Learn More, Visit:

- Northeastern IPM Center's Success stories: <http://www.stoppests.org/success-stories/>
- U.S. laws and policies restricting or prohibiting smoking in multi-family housing: <http://www.no-smoke.org/pdf/smokefreemuh.pdf>
- HUD Smoke-Free Action Guide: <https://www.hud.gov/sites/documents/SMOKEFREEACTIONGUIDE.PDF>

4. Examples of Action on In-home Asthma Interventions

The following summaries of programs and communities illustrate the four key actions: community collaboration, Medicaid and private insurer funding, housing program financing, and policy actions. Also highlighted are best practices and key drivers that have made each of the approaches successful.

PROGRAM MODELS AND FUNDING	
Asthma Network of W. Michigan	<ul style="list-style-type: none"> o Managed care organization reimbursement o Grant funding from local hospitals and foundations
Boston, MA	<ul style="list-style-type: none"> o Medicaid reimbursement through Section 1115 waiver o CMS Innovation Award includes partnerships with private insurers
State of Connecticut	<ul style="list-style-type: none"> o Federal funding from CDC, HUD, and EPA
Detroit/Wayne County, MI	<ul style="list-style-type: none"> o Federal, state, and private foundation grant funding
Kansas City, MO	<ul style="list-style-type: none"> o Legislative authority for Medicaid reimbursement of in-home services
Lawrence County, PA	<ul style="list-style-type: none"> o State and federal housing program funding, including HUD lead hazard control, HOME, CDBG, weatherization, and LIHEAP
Multnomah County, OR	<ul style="list-style-type: none"> o HUD healthy homes grants o Medicaid reimbursement through SPA
State of New York	<ul style="list-style-type: none"> o State funding through general fund
Children’s Hospital of Philadelphia	<ul style="list-style-type: none"> o Managed care organization reimbursement for community health workers o Private grant funding
One Touch	<ul style="list-style-type: none"> o Service delivery coordination (no new funding) o Community collaboration
GHHI	<ul style="list-style-type: none"> o Service delivery coordination o Federal, state, local, and private foundation funding o Community collaboration

The 11 programs highlighted here demonstrate aspects of the four key actions described throughout this guide.

4.1 Asthma Network of West Michigan

In 1999, the Asthma Network of West Michigan (ANWM) based in Grand Rapids, MI, became one of the first grassroots community coalitions in the nation to contract with a health plan to pay for home visits by an asthma educator. One-third of the ANWM's budget for providing services comes from payer reimbursement. Grant funding from local hospitals, foundations, United Way, and support services to patients without insurance covers the remainder of its budget.



Through its MATCH program (Managing Asthma Through Case management in Homes), ANWM sends a certified asthma educator – a registered nurse or registered respiratory therapist – into the homes of patients for up to a year to perform environmental assessments and to teach self-management techniques for asthma. Most of the 300-400 families served by ANWM each year are Medicaid eligible, with children as the primary patients.

A pilot program with 34 school-age children began in 1996 with funding from local foundations and health care institutions. After two years, the pilot program showed significant reductions in hospital admissions and length of stay. Based on this success, ANWM leaders invited Priority Health, the largest payer in West Michigan, to refer its most at-risk patients to ANWM for a case-management trial for one year. Continued success caused Priority Health to contract with ANWM in 1999, agreeing to reimburse ANWM at the standard Medicaid rate for a skilled nursing visit (revenue code 551). ANWM subsequently obtained contracts from four additional health plans at the same standard rate and revenue code, including one commercial payer.

Note: In 2017, the Asthma Network of West Michigan merged with health care system, Mercy Health, a member of Trinity Health, and is now the Mercy Health Asthma Network.

To Learn More, Visit:

- Asthma Network of West Michigan: www.asthmanetworkwm.org
- Asthma Network of West Michigan: A Model of Home-based Case Management for Asthma:
http://www.academia.edu/7703997/AsthmaNetwork_of_West_Michigan_A_Model_of_Home-Based_Case_Management_for_Asthma
- Michigan MATCH (Managing Asthma Through Case-management in Homes) program:
<http://getastmahelp.org/managing-asthma-match.aspx>

4.2 Boston, Massachusetts

Boston, Massachusetts has a multidimensional array of initiatives and programs that address asthma interventions in the home. Through well-established collaborations between the city health commission, housing authority, hospitals, universities, community organizations, and

insurers, the Boston community has been able to leverage private and public funding into programs sustained in part by Medicaid coverage of nontraditional home interventions.

The Boston Public Health Commission (BPHC) began its Asthma Prevention and Control Program in 1998. The BPHC connects Boston residents with two home-based asthma programs:

HEALTHY HOMES ASTHMA HOME VISITING PROGRAM is a free asthma home visiting program for Boston residents with asthma. Boston residents with asthma may be eligible to receive a free home visit when referred by a health care provider. The asthma home visitor assesses for environmental asthma triggers and provides environmental education and assistance, including low cost supplies, and assists with accessing other resources.

BREATHE EASY AT HOME PROGRAM provides home inspections through the Boston Department of Inspectional Services, Housing Inspection Division. Health care providers can refer families of children with asthma to the program. City-funded inspectors conduct healthy homes assessments and enforce housing code violations, working with property owners to eliminate poor housing conditions. Boston Medical Center (BMC) developed a web-based system to streamline referrals to Breathe Easy and improve communication between agencies.

BMC HealthNet, a Medicaid-managed care plan, covers home environmental visits by visiting nurses for asthma patients.

COMMUNITY ASTHMA INITIATIVE (CAI)

The CAI began in 2005 as a pilot in two Boston neighborhoods with high rates of asthma. CAI serves children ages 2-18 who have either been seen in Boston Children's Hospital's emergency department or hospitalized for asthma. CAI partners with a community-based asthma education agency that conducts asthma education and environmental assessments in the home. When pest infestations, mold, or structural issues pose a problem, home visitors advocate with landlords or housing authorities for improvements and refer families to the Breathe Easy at Home program.



In a study of the CAI program published in 2012, researchers found that 68% of participants in the program had a decrease in emergency department visits, and 84.8% had a decrease in hospitalizations. The use of community health workers instead of nurses and the lower number of hospitalizations resulted in a cost savings of \$3,827 per child. NEW ENGLAND ASTHMA INNOVATION COLLABORATIVE (NEAIC) is a multi-state, multi-sector partnership with health care providers, payers, and policymakers funded through a Center for Medicare and Medicaid Innovation (CMMI) Health Care Innovation Award to the Asthma Regional Council of New England. The goal of NEAIC is to improve asthma outcomes and health care costs of primarily Medicaid and CHIP-enrolled children by promoting sustainable payment systems across New England. In Massachusetts, providers include Boston Children's Hospital, Boston Medical Center, and Bay State Children's Hospital. Payers include Neighborhood Health Plan, BMC Health Net, and Healthy New England. An evaluation of the efficacy of the interventions conducted by the NEAIC partners was expected to be completed in 2016.

To Learn More, Visit:

- Asthma Regional Council of New England Investing in Best Practices for Asthma: A Business Case for Education and Environmental Interventions: http://asthmaregionalcouncil.org/wp-content/uploads/2014/02/2010_Investing-in-Best-Practices-for-Asthma-A-Business-Case.pdf
- New England Asthma Innovations Collaborative (NEAIC): <http://asthmaregionalcouncil.org/our-work/neaic/>
- Boston Public Health Commission Asthma Prevention and Control Program: <http://www.bphc.org/whatwedo/healthy-homes-environment/asthma/Pages/Asthma.aspx>
- Breathe Easy at Home Program: <http://www.cityofboston.gov/isd/housing/bmc.asp>
- Boston Children’s Hospital Community Asthma Initiative Program Replication Manual: <http://www.childrenshospital.org/~media/centers-and-services/programs/ae/community-asthma-initiative/replicationmanual2cfinal2c92413.ashx?la=en>
- National Center for Healthy Housing case study: <http://nchh.org/tools-and-data/financing-and-funding/demystifying-healthcare-financing/case-studies-in-healthcare-financing/>
- Boston Public Health Commission Healthy Homes Program: <http://www.bphc.org/whatwedo/healthy-homes-environment/healthy-homes/Pages/Healthy-Homes.aspx>

4.3 State of Connecticut

Connecticut has two vehicles to address indoor environmental triggers of asthma: Putting on **AIRS** and the **Easy Breathing Program** for children and adults.



PUTTING ON AIRS The Connecticut Department of Public Health (CDPH) was one of the first state health departments to develop a statewide home visiting asthma program. Its “Putting on AIRS” (Asthma Indoor Risk Strategies) program provides home-based education, identification, and mitigation of environmental triggers. Through state contracts using CDC National Asthma Control Program funds, most Connecticut communities now have access to in-home services.

The New London County Asthma Action Partnership piloted the program in collaboration with the CDPH, Connecticut Department of Social Services, Ledge Light Health District, and Lawrence Memorial Hospital. Grant funding from the EPA and CDC’s National Asthma Control Program enabled CDPH to expand the program statewide. Putting on AIRS works directly with one designated local health department in each region, which is responsible for expanding delivery to other health departments and forming partnerships within the region.

EASY BREATHING The Easy Breathing program, which began as an initiative of the Connecticut Children’s Medical Center in Hartford, addresses asthma prevention by providing tools for clinicians to diagnose asthma, determine asthma severity, prescribe therapy appropriate for the asthma severity, develop a written Asthma Treatment Plan that is understood by the family, and assess asthma control. The program uses a database to track its outcomes, including environmental exposures, interventions, and feedback for clinicians. An essential element of the program is the Easy Breathing Survey, administered by physicians, that helps parents identify environmental exposures in the home that are potentially problematic for a child with asthma. In 2002, with funding from the State of Connecticut Tobacco Settlement

Fund, the program expanded to five communities in Connecticut, and in 2007 the program went statewide.

To Learn More, Visit:

- o Connecticut's statewide asthma plan, A Collaborative Approach for Addressing Asthma in Connecticut 2013-2018: <http://www.portal.ct.gov/-/media/Departments-and-Agencies/DPH/dph/hems/asthma/pdf/StateAsthmaPlan8152013pdf.pdf?la=en>
- o The Connecticut Department of Public Health's asthma initiatives: <http://www.portal.ct.gov/DPH/Health-Education-Management--Surveillance/Asthma/Asthma-Program>
- o Quality of Life and Cost Benefit Analysis of a Home Environmental Assessment Program in Connecticut: <http://www.portal.ct.gov/-/media/Departments-and-Agencies/DPH/dph/hems/asthma/pdf/KimsfinalpublishedAIRSinCTpdf.pdf?la=en>
- o Connecticut Children's Medical Center Easy Breathing Program: <https://www.connecticutchildrens.org/community-child-health/community-child-health-programs/asthma-center/easy-breathing/>

4.4 Detroit/Wayne County, Michigan

CLEARCorps/Detroit (CCD) works to prevent lead poisoning and create healthy homes for children and families through programs, education and outreach, and policy work in collaboration with the Southwestern Michigan Health Association. CCD has been a recipient of grants from HUD's OLHCHH, the Michigan Department of Community Health, and numerous local organizations and national foundations including the Kresge Foundation, a leading supporter of healthy homes activities.

Its Healthy Homes and Asthma Program addresses lead hazards, asthma and allergy triggers, and home safety for Detroit families who have children five years old or younger with diagnosed asthma. The asthma prevalence rate for children in Detroit is approximately 30%, three times the national average; and asthma is the leading chronic condition causing school absenteeism and preventable hospitalization for children under 18 (<http://getastmahelp.org/detroit-alliance-for-asthma-awareness.aspx>). CCD is committed to reduction of these rates through healthier homes.

The Healthy Homes and Asthma Program begins with an assessment by a case manager to identify hazards and provide education about a range of home health concerns. In phase two, clients receive a customized Family Action Plan, assessment results, and products to ensure home safety and reduce allergy and asthma triggers, such as smoke alarms, fire extinguishers, and allergen mattress and pillow covers. In the last phase, CCD refers families to partner agencies that would further benefit them.

A key partner is the Wayne Children's Healthcare Access Program (WCHAP), which provides intensive asthma education and asthma trigger-reducing products and referrals. One of the major funders of the program is the Jewish Foundation, which supports complete assessment and referrals for 40 homes of families (either homeowners or renters) with low- or-moderate income and a resident child 17 or younger with diagnosed asthma. A second new program under discussion with Molina Health Care would support in-home services for 40 more Detroit families per year.

To Learn More, Visit:

- Detroit Alliance for Asthma Awareness <http://getastmahelp.org/detroit-alliance-for-asthma-awareness.aspx>
- CLEARCorps/Detroit's Healthy Homes + Asthma Program: <http://clearcorpsdetroit.org/our-programs/healthy-homes-detroit/>
- Program Summary of Wayne Children's Healthcare Access Program: <http://www.asthmacommunitynetwork.org/node/10603>

4.5 Kansas City, Missouri

The Asthma-Friendly Homes Program (AFHP) in Kansas City is a comprehensive pediatric asthma case management system centered at Children's Mercy Hospital (CMH) with many community stakeholders. Local community housing partners collaborate on home assessments and interventions for environmental management and remediation.

The hospital's Center for Environmental Health began as an environmental health program in 2001, conducting home visits with funding from the EPA, and evolved into a center in 2010 after receiving additional funding from a HUD Healthy Homes Demonstration Grant, and grants from the Health Care Foundation of Greater Kansas City. In addition to home assessments, the Center conducts research, assessments in schools and childcare facilities, and offers provider education and training, serving as a regional training center for the National Healthy Housing Training Network.

Two state Medicaid offices – Missouri and Kansas – cover the Kansas City metropolitan area and each approaches Medicaid reimbursement for asthma services in its own way. CMH's efforts to secure Medicaid reimbursement began with raising community awareness through outreach, health fairs, and educational opportunities for health care providers. CMH worked to identify partners with similar goals and messages, and built a strong coalition to engage both state Medicaid offices. Some of these partners included the Allergy and Asthma Foundation of America (AAFA), the CMH Pediatric Care Network, the Greater Kansas City Asthma and COPD Coalition, the Kansas City Health Department, The Northland Neighborhood Initiative, and the Teaming Up for Asthma Control (TUAC) program. Advocacy was instrumental in the 2015 enactment of Missouri's Medicaid reimbursement bill that led to Medicaid reimbursement of Missouri health care providers for home assessments and asthma education to high-risk children with severe asthma. Atypical of Medicaid benefits, reimbursement for these services is capped at \$500,000 because they are funded by a finite line item in the state's budget.

To Learn More, Visit:

- Children's Mercy Hospital Healthy Home Program: <https://www.childrensmercy.org/CEH/>
- Case Study: Children's Mercy Hospital and Clinics, 2005 Winner of the EPA's National Environmental Leadership Award in Asthma Management: <https://nepis.epa.gov/Exe/ZyPDF.cgi/P100B2YL.PDF?Dockey=P100B2YL.PDF>

4.6 Lawrence County, Pennsylvania

Lawrence County Community Action Partnership (LCCAP) in Pennsylvania has developed innovative leveraging of funds that stems from its OLVCHH model. The LCCAP has pioneered building agency and municipality capacity in Pennsylvania by blending lead hazard control funds with federal, state, local, and even private landlord funds to improve housing conditions for low-

to moderate-income families. The agency is beginning to apply such collaboration to in-home asthma interventions. LCCAP has been awarded funds from Pennsylvania Department of Health and Human Services Maternal and Child Health Block Grant's focus on primary prevention. The grant will allow Community Health Workers to conduct outreach and education to families with children under the age of seven to address health issues such as asthma, allergies, and other related conditions.

From 2010 to 2014, LCCAP coordinated blended projects in 26 jurisdictions, using \$550,000 provided by the Weatherization Assistance Program (WAP); HUD's Lead Hazard Control Program, Community Development Block Grants (CDBG), HOME funds, and Keystone Accessibility Funds. In addition, LCCAP has received support from local housing trust funds authorized by Pennsylvania's Local ACT 137, which permits counties, excluding Philadelphia, to raise additional revenues for affordable housing needs by increasing fees for recording mortgages and deeds and accepting private landlord contributions. Using an additional \$500,000 in funding from WAP and the Low-income Home Energy Assistance Program (LIHEAP), LCCAP was able to offer Weatherization plus Health services in 13 new counties, as authorized by the state to do so. In addition to the standard weatherization interventions, programs may undertake additional Lead and Healthy Homes (LHHP) health and safety interventions, to resolve problems with excessive moisture, poor ventilation, and the pest infestation. In 2014, about 34% of all units (26 of 77) served by LCCAP received assistance with health and safety measures.

To Learn More, Visit:

- o Lawrence County Community Action Partnership: <http://lccap.org/>

4.7 Multnomah County, Oregon

Multnomah County (OR) Health Department's Environmental Health Services has two successful asthma prevention programs that began as HUD-funded Healthy Homes demonstration projects. To create sustainable funding for its Healthy Homes interventions, Multnomah County succeeded in convincing state officials to amend the state health plan through an amendment (SPA) to reimburse health departments for targeted case management for Healthy Homes, including encounters with nurses and community health workers, as well as environmental health specialist interventions. A critical part of the county's advocacy process was building a business case for targeted environmental interventions for children with poorly controlled asthma. The HUD-funded Healthy Homes demonstration projects enabled the creation of a rich data set demonstrating the effectiveness of the interventions and the return on investment. The county also passed an ordinance allowing the county health department to respond to environmental health complaints in rental housing in unincorporated areas.



HEALTHY HOMES PROGRAM: With funding of \$998,874 from a 2005 HUD Healthy Homes demonstration grant, Multnomah County developed a six-month, targeted nursing case management program serving low-income children with asthma. In this program, a nurse serves as the case manager and a community health worker (CHW) provides environmental interventions. Both make referrals and provide families with links to community services.

COMMUNITY ASTHMA REFERRAL PROGRAM (CAIR): A 2010 HUD Healthy Homes Grant of \$874,898 provided funding for CAIR to address asthma and other health issues with expanded interventions to improve air quality and home safety and reduce health hazards. The six-month multidisciplinary team approach involves a nurse, CHW, environmental health specialist, and other partners to provide home repairs. Multnomah County Environmental Health Services works with landlords to locate grants and loans to fund repairs.

MEDICAID REIMBURSEMENT: Multnomah County advocated for Oregon to receive approval from the Center for Medicare and Medicaid Services (CMS) to provide Medicaid reimbursement for targeted case management. Oregon submitted a State Plan Amendment (SPA) which requested a waiver of certain federal requirements to enable reimbursement for community health workers. The waiver has been granted.

To Learn More, Visit:

- The Multnomah County Environmental Health Policy Toolkit offers advice for county governments and others seeking to secure Medicaid reimbursement and changes in housing code: <https://multco.us/file/28498/download>
- The State Plan Amendment is available at: <https://www.medicaid.gov/state-resource-center/medicaid-state-plan-amendments/index.html>
- Multnomah County Environmental Health: <http://web.multco.us/health/healthy-housing>

4.8 State of New York Healthy Neighborhoods Program

The New York State Department of Health, Center for Environmental Health launched the Healthy Neighborhoods Program (HNP) in 1985. It has been funded through the New York State General Fund since 2008. The HNP provides free in-home assessments and interventions for asthma, tobacco cessation, indoor air quality, lead and fire safety and other environmental health hazards. During a visit, the home is assessed for environmental health and safety issues. For problems or potential hazards identified during the visit, outreach workers provide education, referrals, and products to help residents correct or reduce housing hazards, including environmental asthma triggers such as tobacco smoke, poor indoor air quality and ventilation, cleaning and clutter, pests, and mold and moisture.

HNP services are delivered through grants to local health departments that are selected through a competitive application process. Currently ten counties in the state are funded to provide services through this program. The state provides a standard program design that includes certain core elements such as guidelines on which housing conditions are assessed and how they are mitigated, evaluation metrics, and sharing of best practices statewide. At the local level health departments can tailor the program to meet local needs, work with community-based partners, and partner with clinical care providers, managed care plans, and regional asthma coalitions. The goal of these partnerships is to increase access to environmental services for people with poorly controlled asthma, particularly those in at-risk populations; and to make home environmental management an integral part of usual medical care for asthma.

A program evaluation found that the HNP could reduce the overall number of hazards per home and demonstrate statistically significant improvements in a variety of environmental health hazards. While there were improvements in nearly all of the 42 conditions assessed, the following asthma-related issues showed improvement: infestations by rats, mice and cockroaches, plumbing leaks, furnace filters, mold/mildew, and roofing/structural leaks. For

residents with asthma, there were significant improvements in key self-management measures and a significant reduction in the number of days with worsening asthma or asthma attacks.²⁷

To Learn More, Visit:

- State of New York Healthy Neighborhoods Program Website: https://www.health.ny.gov/environmental/indoors/healthy_neighborhoods/
- Asthma Community Network program summary: <http://www.asthmacommunitynetwork.org/node/6168>

4.9 Children's Hospital of Philadelphia, PA

The Children's Hospital of Philadelphia (CHOP) Community Asthma Prevention Program (CAPP) has been working in Philadelphia since 1997 through community-based interventions, free asthma education, and in-home services. Central to the program's success are free classes for children with asthma and their parents, community health workers, and rigorous data collection. The program demonstrates improved health outcomes and health care cost savings, including reductions in urgent care and ED visits and hospitalizations, and has developed partnerships with several local health plans, including Aetna Better Health, Keystone First, and Health Partners Plans. In a recent evaluation, cost savings over one year were \$10,694 per patient due to reductions in urgent visits to the doctor, ED, and hospitalizations.



Led by Dr. Tyra Bryant-Stephens, CAPP's community-based interventions include individual home asthma self-management education and home environmental remediation in West, Southwest, and North Philadelphia. The Asthma Care Navigator (ACN) program, conducted with Keystone First health plan, uses community health workers as part of a clinical and social worker care team. The Navigators conduct three home visits to each family enrolled in the program to educate the patient's family about asthma, assess the home, and remove asthma triggers. They also coordinate care by helping to schedule medical appointments, communicating with school nurses, and linking families with social services. The partnerships with other health plans focus on case management, proper use of asthma medicines, and utilizing community health workers to lower per-patient costs.

Some of the home environmental intervention methods include an assessment of child's bedroom and general living areas in addition to providing general asthma education. The parents are taught how to make simple environmental interventions in a child's bedroom and general living area. Supplies are given to facilitate interventions and an inspection of rooms at follow-up visits is conducted.

CAPP's free asthma education classes use curriculum based on You Can Control Asthma, developed at Georgetown University. CAPP uses parent educators to deliver education to the community in schools, churches, child care centers, and other community-based locations throughout Philadelphia.

To Learn More, Visit:

- Community Asthma Prevention Program: <http://www.chop.edu/centers-programs/community-asthma-prevention-program-capp>

4.10 ONE Touch

One Touch, an innovative approach to connect health, housing, and energy programs through referrals, first began in New Hampshire and then expanded to Omaha, NE, Greensboro, NC, Fitchburg, MA, the state of Vermont, and Burlington, VT. It does not represent new funding for communities, but helps communities working collaboratively connect the funding they already have to better align asthma interventions and other services into an efficient and cost-effective system.

One Touch works by building upon existing but separate home visiting programs to increase access to health, housing, and energy services for families. Within a community, partners employ a common home “Check Up” tool to identify conditions in a home that will trigger referrals and/or changes to services being delivered. It is a low-cost model for communities to follow for improving health outcomes, address housing hazards, and reduce home energy use. Many communities who use One Touch are focused on breaking down silos so that public, nonprofit, and private sector programs across a city or region can be better linked. Each site creates its own Referral Resource Guide that lists all the programs participating in the referral network, and provides clear information to families they visit about what opportunities exist. Programs using One Touch also reduce individual administrative costs.

In many cases home visitors focused on only one particular issue will find problems outside their scope that need to be addressed, such as a risk assessor looking for lead hazards finding moisture problems that could lead to asthma. With an effective community collaboration model in place, these home visitors can not only make the referrals for additional services but can do it as part of their scope of work. Collaborating with other local nonprofit and city or county agencies creates an effective network of service providers focused on the same goals.

A common home visiting checkup worksheet collects basic demographics and assesses existing health problems and housing conditions including moisture, pests, lead paint, sanitation, energy use, heating concerns, and more. Home visitors may have the option to refer families to: asthma educational program, WIC for child nutrition and health, children’s services for parenting concerns and/or developmental delays, Head Start, code enforcement, injury prevention, lead hazard repairs and education, smoking cessation and smoke free housing, healthy housing repairs, weatherization, energy efficiency upgrades through gas and electric companies, health insurance navigator, and others.

Similar to other examples of community collaboration, One Touch requires: a key champion to push for changes in service delivery, motivated local partners including health departments, social services departments, public and private housing organizations, and energy programs willing to make organizational commitments, a shared vision and objectives about what can be accomplished, and a data sharing mechanism to collect and share data and referrals. It also requires an initial investment of funding for a standard software package.

NEW HAMPSHIRE: The first One Touch site, New Hampshire, now serves more than 2,000 families each year. Led by the weatherization and lead programs, the Maternal and Child Health

home visitors, and New Hampshire Housing, New Hampshire continues to create referrals among program partners, track housing and health conditions in homes visited, and ensure families get added services.

OMAHA: One Touch in Omaha is led by Omaha Healthy Kids Alliance and a coalition of government and nonprofit organizations providing lead, asthma, health, housing rehab, energy upgrade, and other social services to families in need. Nearly 50% of the families visited through One Touch were connected with services previously not available to them. The coalition has been very successful in securing more than \$1 million in additional funding to support the work, including funds from private foundations.

VERMONT: The One Touch coalition in Vermont came together through the state weatherization program, which had a goal to provide health and social services to low income families receiving energy upgrades. Currently, all weatherization auditors use the One Touch tool to connect families to additional resources for asthma, lead, safety, health insurance, and other social services. Additionally, all lead risk assessors and inspectors use One Touch to link families with energy efficiency, social and housing rehab services.

To Learn More, Visit:

- o One Touch <http://onetouchhousing.com>

4.11 GHHI Baltimore Healthy Homes Asthma Programs

GHHI provides technical assistance and facilitation to bring community agencies together to address healthy housing in a coordinated approach.

The Green and Healthy Homes Initiative (GHHI) uses an integrated, whole-house intervention to produce sustainable, healthy, safe, and energy efficient homes in communities around the country. GHHI's site in Baltimore, MD has served more than 1,500 childhood asthma patients who reside in low income communities in Baltimore City. Baltimore City has the highest rates of asthma in the state and significant racial disparities.



Homes in the target neighborhoods are most often in poor repair, with high levels of dust, roach and rodent antigens, and mold.

As part of the GHHI protocol, Baltimore's Healthy Homes Asthma Program uses a comprehensive home environmental assessment and resident education team to educate

families on the individual asthma action plan, on proper medication usage and behavioral changes that can reduce triggers, as well as conduct a comprehensive health, safety, and energy audit of the home. Like One Touch, GHHI uses one data platform to store information on interventions, costs, and health and links to Medicaid data through the system.

GHHI has in-house hazard reduction crews that provide direct remediation of asthma-associated environmental hazards such as pests, mold, carpet allergens, dust mites, and poor weatherization and indoor air quality.

Interventions through GHHI may include: integrated pest management, mattress and pillow cover installation, air filtering installation in child's bedroom, HEPA vacuum and indoor allergen kit distribution, venting of kitchen, bathroom and dryer, removal or steam cleaning of carpets, mold remediation, air conditioner/dehumidifier installation, or furnace filter replacement.

GHHI Baltimore blends a number of funding sources to conduct healthy homes interventions that reduce asthma triggers and home-based environmental health hazards, including: HUD Healthy Homes Demonstration and Production Grants, Baltimore City DHCD Community Development Block Grants, Baltimore City Community Service Block Grants, Maryland DHCD, Department of Energy WAP, Maryland Energy Administration, and multiple philanthropic partner funds.

GHHI's approach has a proven impact on asthma outcomes and medical costs in Baltimore, including: 66% reduction in asthma-related hospitalizations, 28% reduction in asthma-related ED visits, 62% increase in asthma-related perfect school attendance, and 85% increase in parents' work attendance due to not missing work for asthma-related doctor visits.

To Learn More, Visit:

- o Green and Healthy Homes Initiative: <http://www.greenandhealthyhomes.org>

4.12 HUD Asthma Summits

OLHCHH has sponsored eight asthma summits over the past three years in partnership with EPA, CDC, HHS, and local and state agencies and community-based organizations. The meetings are designed to build awareness and promote the value of home-based interventions for children with poorly controlled asthma, to accelerate the creation of reimbursement mechanisms by local/regional health insurance providers, and to obtain commitments from stakeholders to form working group(s) ready to take action at the local and state levels. Each summit brings together diverse stakeholders from all sectors, including local, state, and national policy specialists, state program administrators, private insurers, community health workers, and leaders of community-based asthma and healthy homes programs, to understand and utilize all available levers for financing in-home asthma interventions—from healthcare reimbursement to housing rehabilitation funds. Many of these communities are pursuing avenues to reimbursement from Medicaid and private insurers.

Below are descriptions of actions taken in each community that were motivated or influenced by the summits. Presentations from each summit site are posted on the Asthma Community Network site: <http://www.asthmacommunitynetwork.org/resources/conferences>.

KANSAS CITY, MO (June 5, 2013). In Kansas City, officials from both Kansas and Missouri offices of Medicaid, health, and housing organizations came together to pursue reimbursement

for asthma home visits. While public commitments were made in Kansas, the more successful approach has occurred in Missouri due to the recent passing of state legislation to reimburse for asthma services. Missouri officials describe the collaboration that began at the summit as well as the research, ROI, and business case presented, as the impetus for all action that followed; however, passing state legislation and securing \$1.5 million in federal and state funding required not only champions in the state legislature but also outside entities such as the Asthma and Allergy Foundation of America, children's hospital, the state hospital association, managed care organizations, a local group called Asthma Ready Communities, and others to advocate for the bill. The legislation covers emergency department visits, hospitalizations, acute care visits, and other related costs. Under the bill, doctors can refer for two home visits with an asthma educator and two home assessments each calendar year. Moving forward, Missouri is working to create partnerships with housing and weatherization programs for home assessments and additional cost sharing.



BALTIMORE, MD (January 17, 2014). Following the HUD asthma summit, Baltimore benefitted from eager state Medicaid office staff interested in pursuing reimbursement. The office is working on a state plan amendment (SPA) to establish reimbursement through Medicaid for asthma services. Baltimore officials cite the summit as a critical event to spur action among key stakeholders, however this group does state that their lack of understanding of cost considerations is a barrier. They are unaware of the limitations of the federal/state funding split and how much it will cost the state, so it's possible that they can get to the very last stage and then determine if the state can afford it. This process takes as much as a year or more to complete. If the amendment is approved, more state and local issues will be addressed before it can be fully implemented.

While this process is in motion, local community organizations will need the appropriate technical equipment and knowledge to report and request reimbursement from the state Medicaid office. Some community groups will find this difficult. A coalition of community groups could create one central billing program or find some other form of cost sharing and technical assistance on an ongoing basis.

DENVER, CO (August 28, 2014). The Colorado Healthy Housing Coalition has been instrumental in securing a variety of state reimbursements. They are supporting pilot projects with the Children's Hospital and an MCO, Denver Health, in addition to a legislative approach seeking to gain approval to file a state amendment to Medicaid for reimbursement for asthma services in the home, including environmental triggers assessment and remediation. For Coloradans, the asthma summit was critical to bringing public and private stakeholders together, some of them for the first time, to determine what information is needed to make the case for reimbursement of in-home interventions for asthma.

PHILADELPHIA, PA (June 26, 2015). Prior to the summit, the Community Asthma Prevention Program at the Children's Hospital of Philadelphia had already successfully negotiated two contracts with Medicaid MCOs (as noted in Section 5.9 above). Their challenge is systemizing

the programs statewide. Workforce issues are a top priority in Pennsylvania, as many health and housing officials consider community health worker certification and the implications of reimbursement. Officials cite the summit as an important collaboration opportunity that brought together diverse stakeholders, including the chief medical officer for the Pennsylvania Medicaid program and a panel of regional health plan representatives. Work continues toward statewide reimbursement.

LOS ANGELES (September 10, 2015). The summit, or “forum” as it was called in Los Angeles, was centered in Los Angeles County and South Los Angeles addressing policy opportunities at the state level. As a result of in-depth small group discussion that occurred at the event, two work groups were formed; the California Asthma Financing State Policy Work Group and the Local Programs Work Group, to continue bringing diverse stakeholders together in pursuit of reimbursement. At the state level, members of the work group are pursuing important changes to programs including the Whole Person Care Pilots, Health Homes Program, Preventive Services Rule, Section 1115 waiver, and others. At the local level, the work group has undertaken an inventory of local asthma programs to better understand the role of community health workers, reimbursement, and in-home services throughout the state.

ATLANTA, GA (May 17, 2015). The Summit brought together local leaders from Region IV of HUD, the U.S. Department of Health and Human Services, the U.S. EPA, the CDC and the Georgia Department of Public Health. Presenters and panel members included experts from Florida Department of Health, National Center for Healthy Housing (NCHH), Le Bonheur Children’s Hospital, Kansas City Children’s Mercy Hospitals and Clinics and Blue Cross Blue Shield Tennessee. The panel provided the audience with an opportunity to understand various strategies for identification of high risk asthma populations and effective referral to home-based services. In addition, speakers highlighted the process of identifying community partners to assist in reaching target populations and delivering services. The panel also detailed how to anticipate and address challenges related to achieving successful referrals. A CDC health scientist discussed financial sustainability and CDC’s 6/18 initiative. She described the efforts taking place under 6/18 and shared examples of funded in-home interventions in other states that have yielded positive short-term returns on investment. A speaker also discussed the important of building the business case for home interventions for funders and other partners and encouraged attendees to reach out to the National Center for Healthy Housing for training and technical assistance.

CHAPEL HILL, NC (September 13, 2016). The North Carolina Forum brought together a wide variety of participants from across North Carolina and neighboring states. Attendees learned from in-state asthma home intervention demonstrations, as well as from programs in Tennessee and Illinois. They also participated in a series of group discussions designed to further advance the dialogue on coordinated asthma care and reimbursement for in-home asthma services, as well as develop strategies to engage critical local stakeholders in North Carolina. The group identified further actions to be taken including disciplines that need to be engaged such as pediatricians, physicians, nurse practitioners, pharmacists, local health department directors and environmental health staff, school administrators and nurses, landlords (including federally assisted multifamily housing managers and owners), housing code enforcers and state/local faith-based organizations. Participants expressed an interest in continuing the work needed to expand in-home asthma services in North Carolina.

To Learn More, Visit:

- HUD Regional Summits on Pediatric Home Asthma Interventions: https://www.hud.gov/program_offices/healthy_homes/HousingHealthAsthma
- Asthma Community Network: <http://www.asthmacommunitynetwork.org>

Concluding Suggestions

This guide provides an overview of different aspects of securing sustainable funding for community-based home asthma intervention programs. There are excellent resources available for organizations that are interested in creating a new program or expanding an existing program that conducts residential asthma assessments and interventions to reduce exposure to environmental asthma triggers and provide asthma self-management education. Invaluable information can be obtained by consulting with experienced programs, such as those summarized in Chapter 4 of this document. Other organizations have developed guidance on accessing potential sources of program funding (e.g., see the National Center for Healthy Housing and the Green and Healthy Homes Initiative in Appendix A). A valuable source of information on many aspects of community-based asthma programs is the Asthma Community Network, which is supported by the U.S. Environmental Protection Agency (see: <http://www.asthmacommunitynetwork.org>). An EPA-sponsored study of community asthma programs by the University of Michigan (Allies Against Asthma) identified the following themes across successful programs: 1) close ties with the community; 2) strong collaboration across organizations within programs; 3) connections with clinical care providers; and 4) shaping programs to address participants' needs.²⁸

Most community-based asthma programs braid funds from a variety sources, requiring programs to be sufficiently flexible to be able to adhere to the requirements of the various funders. For example, a program might obtain funding from a managed care organization to conduct home asthma trigger assessments and in-home asthma management education, with additional funding sources needed for trigger control supplies and structural interventions. It takes time and patience to form successful partnerships even when they seem like obvious allies. The programs highlighted in this document are excellent sources of information on potential funding streams and successful partnering models.

Government-supported programs that are potential partners include HUD's Lead Hazard Control Program grantees (generally a local or state housing and community development agency or a health department). The local agencies that conduct weatherization interventions in low income housing that is funded through the Department of Energy's Weatherization Assistance Program is also a potential partner. This is a partnership that is emphasized under the GHHI program model. Another approach is the One Touch model, in which a structure for improved coordination and collaboration is created among local programs that serve low income households.

Creating a national infrastructure of programs that provide in-home asthma intervention services is important for reducing the overall burden of childhood asthma in the U.S. and for reducing racial and ethnic asthma disparities. In-home interventions for children with poorly controlled asthma have the potential for reducing healthcare costs and improving the quality of life for the children and their caregivers.

Endnotes

- ¹ President's Task Force on Environmental Health Risks and Safety Risks to Children. 2012. Coordinated Federal Action Plan to Reduce Racial and Ethnic Asthma Disparities. https://www.epa.gov/sites/production/files/2014-08/documents/federal_asthma_disparities_action_plan.pdf
- ² https://www.cdc.gov/asthma/impacts_nation/asthmafactsheet.pdf Accessed March 2017.
- ³ Centers for Disease Control and Prevention. 2015. Most Recent Asthma Data. National Current Asthma Prevalence. https://www.cdc.gov/asthma/most_recent_data.htm. Accessed March 3, 2017.
- ⁴ Matsui EC, Abramson SL and Sandel MT. 2016. AAP SECTION ON ALLERGY AND IMMUNOLOGY AAP COUNCIL ON ENVIRONMENTAL HEALTH. Indoor Environmental Control Practices and Asthma Management. *Pediatrics*. 138(5): e20162589.
- ⁵ Centers for Disease Control and Prevention. 2013. CDC's National Asthma Control Program; An Investment in America's Health. Available at: https://www.cdc.gov/asthma/pdfs/investment_americas_health.pdf
- ⁶ Centers for Disease Control and Prevention. Asthma's Impact on the Nation, Center for Disease Control's Asthma Action Program. https://www.cdc.gov/asthma/impacts_nation/asthmafactsheet.pdf. Accessed March 2017.
- ⁷ Ashley PJ, Freemer M, Garbe P and Rowson D. 2017. Coordinated Federal Actions Are Needed to Reduce Racial and Ethnic Disparities in Childhood Asthma. *J Public Health Manag Pract*. 2017;23(2), 207-9
- ⁸ Kearney GD and Kuranga AO. 2017 Moving Upstream on Childhood Asthma and Housing. *J Public Health Manag Pract* 2017; 23(2), 187-191.
- ⁹ Raymond J, Wheeler W and Brown MJ. 2011. Center for Disease Control and prevention. Inadequate and Unhealthy Housing, 2007 and 2009. *MMWR Suppl*. 2011;60(1):21-7.
- ¹⁰ <https://www.epa.gov/ace/national-survey-lead-and-allergens-housing-nslah> Accessed March 2017.
- ¹¹ Cohn RD, Arbes Jr. SJ, Yin M, Jaramillo R and Zeldin DC. 2004. National Prevalence and Exposure Risk for Mouse Allergen in US Households *J ALLERGY CLIN IMMUNOL* 113(6).
- ¹² President's Task Force on Environmental Health Risks and Safety Risks to Children. 2012.
- ¹³ Task Force on Community Preventive Services. 2011. Recommendations from the Task Force on Community Preventive Services to Decrease Asthma Morbidity Through Home-Based, Multi-Trigger, Multicomponent Interventions. *Am J Prev Med*. 2011;41(2S1): S1-S4. DOI: <http://dx.doi.org/10.1016/j.amepre.2011.04.011>
- ¹⁴ President's Task Force on Environmental Health Risks and Safety Risks to Children. 2012
- ¹⁵ National Heart, Lung, and Blood Institute. 2007. National Asthma Education and prevention Program. Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma.

- U.S Department of Health and Human Services; 2007.
<https://www.nhlbi.nih.gov/files/docs/guidelines/asthqdln.pdf>
- ¹⁶ <http://www.thecommunityguide.org/asthma/index.html> Accessed March 2017
- ¹⁷ Matsui EC et. al. 2016.
- ¹⁸ <http://onetouchhousing.com/> Accessed March 2017.
- ¹⁹ <http://www.greenandhealthyhomes.org/get-help/national-resources>. Accessed March 2017.
- ²⁰ Kearney GD and Kuranga AO. 2017.
- ²¹ Reddy AL, Gomez M and Dixon SL. 2017 An Evaluation of a State-Funded Healthy Homes Intervention on Asthma Outcomes in Adults and Children. *J Public Health Manag Pract.* 2017; 23(2), 229-238.
- ²² National Center for Healthy Housing. 2014. Healthcare Financing of Healthy Homes Services: Findings from a 2014 Survey of State Reimbursement Policies. http://nchh.org/resource-library/Reimbursement%20Landscape_MAIN%20REPORT_FINAL%20%2818%20November%202014%29.pdf. Accessed March 2017.
- ²³ <https://www.hudexchange.info/programs/cdbg/cdbg-expenditure-reports/> Accessed March 2017.
- ²⁴ <http://kresge.org/news/advancing-safe-and-healthy-homes-initiative-aims-eliminate-hazards-hundreds-homes>. Accessed March 2017.
- ²⁵ <https://www.ncbi.nlm.nih.gov/pubmed/15856664> Accessed March 2017.
- ²⁶ <http://housingtrustfundproject.org/housing-trust-funds/> Accessed March 2017.
- ²⁷ Reddy AL et. al., 2017.
- ²⁸ <http://asthma.umich.edu/> Accessed March 2017.

Appendix A. Resources for Communities

This guide was designed to provide the basic information for community leaders who wish to create or implement comprehensive in-home asthma services that include education, medical management, and addressing in-home environmental asthma triggers. The guide provides research summaries that relate to different aspects of creating, implementing and funding asthma programs. Summaries of some programs that have proven to be successful in achieving these goals are included.



Whether you are wishing to improve or find sustainable funding for an existing program or to create a new asthma initiative in your community, we have chosen these key publications for you to consult that may help you to determine your course of action. In addition to resources listed here, federal agency websites, including HUD, EPA, CDC, serve as clearinghouses for new research and programs across the country.

FEDERAL AGENCIES

AGENCY FOR HEALTHCARE RESEARCH AND QUALITY (AHRQ)

Asthma ROI calculator -- states can use this resource to help determine what financial returns can be realized from asthma interventions.

<https://www.ahrq.gov/cpi/centers/ockt/kt/tools/astroisumm.html>

CENTERS FOR DISEASE CONTROL AND PREVENTION

National asthma statistics; information on asthma control; CDC's National Asthma Control Program. <https://www.cdc.gov/asthma/>

COMMUNITY GUIDE TO PREVENTIVE SERVICES: Asthma Control

Home-Based Multi-Trigger, Multi-component Environmental Interventions, developed by the Community Prevention Services Task Force (2011): <http://www.thecommunityguide.org/asthma/>

NATIONAL HEART LUNG AND BLOOD INSTITUTE

Expert Panel Report 3, Guidelines for the Diagnosis and Management of Asthma, commissioned by the National Asthma Education and Prevention Program (NAEPP) and coordinated by the National Heart, Lung, and Blood Institute (NHLBI) of the National Institutes of Health (2007). <http://www.nhlbi.nih.gov/health-pro/guidelines/current/asthma-guidelines>

U.S. DEPARTMENT OF ENERGY (WEATHERIZATION RESOURCES)

Weatherization Works – Summary of Findings from the Retrospective Evaluation of the U.S. Department of Energy's Weatherization Assistance Program:

https://weatherization.ornl.gov/Retrospectivepdfs/ORNL_TM-2014_338.pdf

U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT (HUD)

Office of Lead Hazard Control and Healthy Homes (OLHCHH) home page:
http://portal.hud.gov/hudportal/HUD?src=/program_offices/healthy_homes

HUD Secretary's Award for Healthy Homes:

https://portal.hud.gov/hudportal/HUD?src=/program_offices/healthy_homes/SecretarysAward

U.S. ENVIRONMENTAL PROTECTION AGENCY

Asthma home page: <http://www2.epa.gov/asthma>

EPA's value proposition toolkit:

<http://www.asthmacommunitynetwork.org/resources/valueproposition>

EPA Award winners: <http://www.asthmaawards.info/>

Coordinated Federal Action Plan to Reduce Racial and Ethnic Asthma Disparities, developed by the Asthma Disparities Working Group of the President's Task Force on Environmental Health Risks and Safety Risks to Children (2012): https://www.epa.gov/sites/production/files/2014-08/documents/federal_asthma_disparities_action_plan.pdf

Asthma Community Network: www.asthmacommunitynetwork.org

HUD Summit Presentations: <http://www.asthmacommunitynetwork.org/resources/conferences>

Medicaid Billing Codes: <http://www.asthmacommunitynetwork.org/node/14769>

Financing In-Home Asthma Care microsite – focuses on delivering and paying for in-home asthma care to improve outcomes for children with out of control asthma, including such topics as: the value of asthma home visits; options for financing in-home asthma care; strategies to secure Medicaid coverage; tools to articulate the value of in-home asthma services; and considerations for building a workforce of community health workers.

<http://www.asthmacommunitynetwork.org/Financing>

NON-GOVERNMENTAL ORGANIZATIONS

AMERICAN LUNG ASSOCIATION

Resources on asthma and related lung disorders: www.lung.org

ASTHMA AND ALLERGY FOUNDATION OF AMERICA

Certified products for people with allergies and asthma; information on disease management; advocacy and research.

ASTHMA REGIONAL COUNCIL OF NEW ENGLAND

Investing in Best Practices for Asthma: A Business Case: http://astmaregionalcouncil.org/wp-content/uploads/2014/02/2010_Investing-in-Best-Practices-for-Asthma-A-Business-Case.pdf

Asthma: A Business Case for Employers and Health Care Purchasers:

http://asthmaregionalcouncil.org/wp-content/uploads/2014/02/2010_Business_Case_Employers_Health_Care_Purchasers.pdf

COMMUNITY ASTHMA LEADERSHIP COALITION

Toolkits, policy papers, news articles: <http://www.childhoodasthma.org/>

Using Medicaid to Advance Community-Based Childhood Asthma Interventions: A Review of Innovative Medicaid Programs in Massachusetts and Opportunities for Expansion under Medicaid Nationwide: <http://www.childhoodasthma.org/resources/2015/10/28/calc-white-paper-february-2013>

FOUNDATION CENTER

Funding Information Center: a network of libraries and other agencies that provide free access to the Foundation Center's subscription based directory of grants and foundations, regional funding resources, and other assistance: <http://foundationcenter.org/ask-us/funding-information-network>

GREEN AND HEALTHY HOMES INITIATIVE

Provides Overview of Asthma Interventions and Specific Funding Sources:

<http://www.greenandhealthyhomes.org>

NATIONAL CENTER FOR HEALTHY HOUSING (NCHH)

Pathways to Reimbursement: Understanding and Expanding Medicaid Services in Your State:

http://nchh.org/resource-library/HCF_APHA_techbrief1_pathways%20to%20reimbursement_FINAL.pdf

Reimbursement for Healthy Homes Services: A case study of leveraging existing Medicaid authority in Texas: http://nchh.org/resource-library/HCF_APHA_techbrief3_TxCLPPP_FINAL.pdf

Health Care Financing of Healthy Homes: Recommendations for Increasing the Number of States with Medicaid Coverage of Lead Follow-up and Home-based Asthma Services:

<http://nchh.org/resource/healthcare-financing-of-healthy-homes-recommendations-for-increasing-the-number-of-states-with-medicaid-coverage-of-lead-follow-up-and-home-based-asthma-services/>

NCHH resource library – made possible through APHA and CDC:

<http://www.nchh.org/Resources.aspx>

Hospital Community Benefits: <http://nchh.org/tools-and-data/financing-and-funding/healthcare-financing/hospital-community-benefits/>

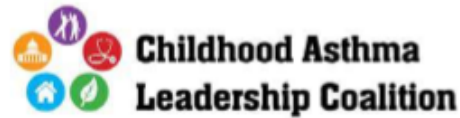
NATIONAL GOVERNORS ASSOCIATION

Health Investments That Pay Off: Strategies for Addressing Asthma in Children:

<https://www.nga.org/files/live/sites/NGA/files/pdf/2015/1504HealthInvestmentsThatPayOff.pdf>

Appendix B. Pathways to Medicaid Reimbursement

PATHWAYS TO MEDICAID REIMBURSEMENT FOR PEDIATRIC ASTHMA SERVICES

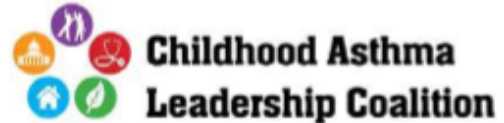


Treating, managing and reducing the burden of childhood asthma requires coordinated interventions that integrate community-based approaches into patient care and take the management of asthma beyond the doctor’s office. Evidence-based, community-focused interventions, which help children and their families to proactively manage their condition and mitigate asthma triggers, are fundamental to successful asthma control and show a significant return on investment.^{1,2,3,4}

Medicaid offers several strategies for expanding effective community-based asthma programs for low-income and medically-underserved populations. This chart describes these various strategies available to states as they seek ways of supporting community asthma management.

<p>Asthma Interventions in Non-Clinical Settings: Early, Periodic, Screening, Diagnosis and Treatment (EPSDT)</p>	<p>EPSDT benefits offer comprehensive health care financing for children and adolescents under age 21 and cover a broad range of preventive, acute care, and diagnostic and treatment services. Under EPSDT regulations, each state must cover periodic and “as needed” assessments, which must include anticipatory guidance to help parents and caregivers learn how to promote healthy lifestyles and disease prevention.⁵ Educating children and their families about asthma self-management, medication adherence and home trigger reduction strategies can and should be a central component of EPSDT anticipatory guidance.</p> <p>Medicaid permits states to cover EPSDT benefits in both clinical and home and community settings. By recognizing home-based health education by trained health educators, states can use Medicaid flexibility to promote community prevention strategies for children with asthma in <i>non-clinical</i> settings, such as patient homes and childhood educational settings. In addition, guidance published by the Centers for Medicare and Medicaid Services (CMS) emphasizes that states have broad discretion to recognize a range of health professionals as well as individuals trained and certified as health educators to furnish services to beneficiaries.⁶ CMS guidance also urges Medicaid agencies to coordinate with a broad range of social service programs as part of EPSDT’s care management component.⁷ States should actively follow CMS’ guidance and expand EPSDT services to the community setting.</p>
<p>Asthma Interventions Furnished by Non-Traditional Providers: New Flexibility to Allow Community Health Workers to Provide Preventive Services</p>	<p>Another opportunity to expand Medicaid coverage of community-based asthma programs lies in a recent Medicaid rule change: as of January 2014, Medicaid will reimburse for preventive services administered by a health professional when these services have been initially <i>recommended by</i> a physician or other licensed healthcare professional.⁸</p> <p>Previously, Medicaid regulations limited the scope of allowable coverage of preventive services to those that were actually <i>provided by</i> a physician or other licensed practitioner. As a result, most state Medicaid programs have limited coverage of preventive services to those furnished by licensed providers in a clinical setting, limiting access to evidence-based services in homes and other community settings.</p> <p>This shift in Medicaid policy means that state Medicaid agencies have the option to pay for preventive services provided by those professionals that may fall outside of a state’s clinical licensure system – such as certified asthma educators, healthy homes specialists and other community health workers (CHWs) – as long as the services have been initially</p>

PATHWAYS TO MEDICAID REIMBURSEMENT FOR PEDIATRIC ASTHMA SERVICES



recommended by a physician or licensed practitioner. This rule change adds greater flexibility to federal Medicaid law which, under EPSDT, already gives states discretion over the settings in which care is furnished. Taken together, the flexibility Medicaid law gives to states to define provider qualifications and settings would allow Medicaid to reimburse for numerous asthma interventions using non-traditional providers in non-clinical settings.

To adopt this new flexibility, each state has to submit a **State Plan Amendment (SPA)** to CMS. The state plan sets out groups of individuals to be covered, services to be provided, methodologies for providers to be reimbursed and the administrative activities that are underway in the state. The Association of State and Territorial Health Officials (ASTHO) has been tracking state progress toward submitting SPAs for CMS review and approval: <http://www.astho.org/community-health-workers/>. ASTHO and others are also tracking how states are defining the training and qualifications required of CHW-type providers and the scope of services these providers can offer to Medicaid beneficiaries.

Asthma Interventions in Schools: Free Care Rule Clarification

Medicaid's former "free care" rule stated that Medicaid will not pay for services that are offered to the general public free of charge.⁹ The rule stood as a significant barrier for schools to receive Medicaid reimbursement for health services provided to students enrolled in Medicaid.

For example, suppose a school implemented a comprehensive asthma management program for their students, including elements such as maintaining an asthma action plan for students, providing asthma education to help with self-management skills, and referral to other community-based interventions (such as an in-home asthma assessment). Under the free care rule restriction, however, schools were discouraged from developing school health services. The free care rule effectively acted as a deterrent against making Medicaid-financed health care available in school settings, even though medically necessary services (medical assistance to students experiencing asthma symptoms) and health education and anticipatory guidance (asthma self-management education and referral) are covered and payable as part of the EPSDT benefit. Unwilling to set up elaborate third party billing systems, particularly for children who lacked private health insurance, many schools in disadvantaged communities may have failed to develop school-based health services.

In December 2014, CMS issued a letter to State Medicaid Directors notifying them of its decision to withdraw the free care rule.¹⁰ This shift in Medicaid policy has cleared the way for Medicaid agencies to pay for services furnished in schools and other community settings. But the change is not automatic and it is not mandatory for states to pay for Medicaid-covered services furnished in school settings. Many states have integrated the free care rule into state regulations and these will need to be changed; some states may also have to update their Medicaid state plan through a SPA. In addition, the education sector needs resources and investments to develop the staffing and technology infrastructure necessary to bill Medicaid for health services rendered. However, if state Medicaid agencies move forward in adopting this new Medicaid flexibility, they can couple school-based care with community health worker reimbursement flexibility, described above, to enable non-traditional health providers (asthma educators, etc.) to administer asthma programs in school settings, as appropriate.

**PATHWAYS TO MEDICAID REIMBURSEMENT FOR
PEDIATRIC ASTHMA SERVICES**



**Community-
Based
Asthma
Interventions
under
Medicaid
Health
Homes**

The Affordable Care Act (ACA) created a new state Medicaid option to permit individuals with one or more chronic conditions – specifically including asthma – to seek care through a “health home.”¹¹ Under the law, a health home is responsible for providing or coordinating all patient care, as well as a specific set of “health home” services, including: (i) comprehensive care management; (ii) care coordination and health promotion; (iii) comprehensive transitional care, including appropriate follow-up, from inpatient to other settings; (iv) patient and family support; (v) referral to community and social support services; and (vi) use of health information technology to link services, as feasible and appropriate.¹² Health homes can target any Medicaid-eligible population, including children.

To date, nine states (Alabama, Idaho, Iowa, Maine, Michigan, Missouri, North Carolina, Rhode Island, and Washington) have established Medicaid health homes that specifically include persons with asthma within the targeted population.¹³

Whether a Medicaid health home targeted toward persons with asthma will include community-based asthma services depends on how participating states define eligible health home providers and settings. For example, in Maine, clinical practices participating in the health home must contract with a “community care team” (CCT) – a locally-based, multidisciplinary team of nurses, social workers, community health workers, and health coaches – that works in partnership with the health homes to identify high-cost, high-risk patients and provide wrap-around services and supports. As defined by the SPA, the CCT actively seeks to engage patients in health promotion activities through community outreach, and CCT care managers must “visit patients in their homes to perform medication reconciliation and assessments.”¹⁴ Maine’s inclusion of CCT providers and services within their health home would enable a broad range of providers to deliver asthma services in homes and community settings.

The health home model is not the only mechanism under Medicaid to provide community-based asthma interventions; as described above, current Medicaid law gives states enough flexibility to provide coverage and reimbursement for numerous asthma interventions using non-traditional health care providers in non-clinical settings. But this ACA option may be a desirable way for states to test community asthma interventions, as the federal government will pay an enhanced federal Medicaid match rate of 90% during the first 8 quarters of state participation.¹⁵

CHIP

Children receive health coverage through Medicaid and the state Children’s Health Insurance Program (CHIP). In fiscal year (FY) 2013, 8.1 million children received CHIP-funded coverage.¹⁶ Although states design their own CHIP programs and determine the scope of “child health assistance” available to children enrolled in CHIP (within broad federal guidelines), the types of flexibility outlined under Medicaid apply equally to CHIP. States can and should incorporate preventive, community-based asthma interventions into CHIP programs that utilize non-traditional providers in non-clinical settings.

PATHWAYS TO MEDICAID REIMBURSEMENT FOR PEDIATRIC ASTHMA SERVICES



Medicaid Waivers: Expanding State Authority to Provide Services or Supplies not Otherwise Covered by Medicaid

While current federal regulations give states considerable flexibility to expand coverage and payment to incorporate community-based services without any special authority from Medicaid, demonstration authority is still important for enabling state Medicaid programs to cover services and supplies not otherwise considered “medical assistance.” In the case of asthma, services like pest management or supplies like air filters may be essential for a patient to manage asthma triggers in their home, but these supplies/services are not typically reimbursable by Medicaid.

However, state Medicaid offices can seek a waiver of Medicaid rules to test new ways to deliver and pay for health care services in Medicaid and CHIP. This is typically done via a Section 1115 Waiver, which gives states additional flexibility to design and improve their Medicaid/CHIP programs by using innovative delivery and payment systems or by providing services not typically covered.¹⁷ Examples of states that have recently sought Medicaid waiver authority to innovate around asthma services include:

- **Massachusetts:** In 2015, Massachusetts received CMS approval to pilot the *Children’s High-risk Asthma Bundled Payment Demonstration Program* (CHABP) through its 1115 Medicaid demonstration waiver.¹⁸ The pilot tests a per member/per month bundled payment to participating providers for delivery of community-prevention services not traditionally covered by MassHealth, including home visits, care coordination by community health workers, supplies to reduce environmental triggers (vacuums, air filters, bedding, pillows, etc.), and pest management supplies and services.
- **New York:** An 1115 Medicaid waiver approved in 2014 has allowed New York to implement the *Delivery System Reform Incentive Payment* (DSRIP) Program.¹⁹ The purpose of DSRIP is to fundamentally restructure the health care delivery system in New York by promoting community-level collaborations. The state has approved 25 “Performing Provider Systems” (PPSs) (groups of providers required to collaborate to implement innovative projects focusing on system transformation, clinical improvement and population health improvement) to implement DSRIP projects in every county in the state. Among other eligible projects, PPSs can elect to design a DSRIP project focused on asthma home-based self-management; PPSs that select this project area must partner with home care or other community-based organizations to develop a comprehensive home-based asthma management program which includes self-management education, home assessment, and remediation of asthma triggers.
- **Oregon:** In 2012, Oregon received an 1115 Medicaid waiver to develop Coordinated Care Organizations (CCOs) to support and coordinate health resources and develop community partnerships.²⁰ A CCO is a network of health care providers who have agreed to work together in their local communities to improve care delivery for Medicaid populations. Each CCO is provided with a fixed global budget from the state, giving the CCO flexibility to innovate, and incentive to help patients manage chronic conditions. Through this federal waiver, Oregon has been able to expand the use of non-traditional services and non-traditional health workers, such as CHWs, to provide enhanced asthma case management.

**PATHWAYS TO MEDICAID REIMBURSEMENT FOR
PEDIATRIC ASTHMA SERVICES**



***Managed
Care
Contracts
that Promote
Community-
Based
Asthma
Interventions***

Most states contract with managed care organizations (MCOs) to administer health benefits and services to Medicaid beneficiaries, including a large proportion of Medicaid- and CHIP-enrolled children with asthma. In 2014, 77 percent of Medicaid and CHIP enrollees received care through a managed care arrangement.²¹

In general, MCOs are responsible for the most, if not all, of the benefits and services covered under fee-for-service (FFS) Medicaid (including EPSDT and other services outlined above). Through their contracts with MCOs, states can also offer additional services not covered as a traditional state plan benefit, such as community-based asthma interventions to plan enrollees. This special flexibility to offer services “in lieu of” traditional state plan services opens additional avenues for states and MCOs to partner on efforts to address serious and chronic health conditions such as asthma through disease management interventions.

Some Medicaid MCOs have designed disease management programs for their members that include community-based asthma interventions, even if services are typically not reimbursable by Medicaid. For example, through a contract with a community-based organization, MCOs in the District of Columbia provide children with high-risk asthma access to home assessment services, asthma counselling and education, low-cost supplies for asthma management, pest management services, and tobacco cessation services.

At present, services like these are covered by MCOs (in DC and elsewhere) out of the plan’s administrative budget. Federal regulations have, until recently, limited a MCO’s ability to finance certain quality improvement activities by requiring that these services be counted as an “administrative expense.”²² Administrative expenses comprise non-medical activities important for MCO operations (e.g., enrollment, advertising, billing and profit) and, until recently, quality improvement activities, which typically includes home-based asthma interventions. If counted as an administrative expense, services are not included in the per capita payment rate an MCO receives from a state Medicaid agency; therefore offering such a service means investing what would otherwise be profit back into patient care. Some MCOs, such as those in DC, have been willing to expend administrative dollars on home-based asthma services because doing so saves the MCO significant dollars elsewhere, such as by reducing urgent care costs.

New regulations on the Medicaid “Medical Loss Ratio,” which will become applicable in 2017, allow MCOs to count certain “quality improvement activities” as a medical expense, meaning that the MCO no longer has to use their administrative budget for such purposes.²³ This change in cost allocation should encourage more MCOs to consider offering quality improvement activities for members, including many in-home asthma services.

***Innovation
Center: New
Payment &
Service
Delivery***

Congress established the Center for Medicare & Medicaid Innovation (Innovation Center) in the ACA primarily to test new payment and delivery models. The law charges the Innovation Center with identifying, developing, assessing, supporting, and spreading new models that might reduce expenditures under Medicare, Medicaid, or CHIP while improving or

PATHWAYS TO MEDICAID REIMBURSEMENT FOR PEDIATRIC ASTHMA SERVICES



Models that Enhance Asthma Care for Medicaid Beneficiaries

maintaining care quality. There are two Innovation Center mechanisms that have been used to test and advance asthma care:

Health Care Innovation Awards fund innovative projects that test and implement compelling new models of service delivery or payment improvements that promise to deliver better health outcomes, improved health care quality and lower costs for Medicare, Medicaid, and CHIP enrollees. A few of these funded projects have targeted high-risk asthma populations. For example:

- The *New England Asthma Innovations Collaborative* (NEAIC),²⁴ was a multi-state project from 2012 to 2015 directed by the Asthma Regional Council (ARC) of New England. The NEAIC combined health care providers, payers, and policy makers in an effort to provide high quality, cost effective care for children with severe asthma who were enrolled in Medicaid or CHIP.²⁵ The collaborative program consisted of four main components: 1) an asthma clinic to provide diagnostic and treatment services, 2) one-on-one educational counseling by a Certified Asthma Educator in a clinical setting, though home and school visits could occur if necessary, 3) promotion of a universal Asthma Action Plan for all individuals with asthma, and 4) efforts to increase community awareness about asthma and asthma management.²⁶ While Innovation Center funding for the NEAIC ended in the spring of 2015, an economic evaluation is underway.
- In 2012, *Nemours/Alfred I. duPont Hospital for Children* received a Healthcare Innovation Award to “enhance family-centered medical homes by adding services for children with asthma and developing a population health initiative in the neighborhoods surrounding targeted primary care practices.”²⁷ The goal of this intervention was to reduce asthma-related emergency room and hospital visits among Medicaid-eligible children by 50% by 2015.²⁸ The intervention emphasized creating healthcare linkages to the community and home. This included integration of community support services and local government programs with healthcare to encourage healthier environments for children with asthma in schools, child care facilities, and homes. It also sought to utilize community health workers (CHWs) to “serve as patient navigators and provide case management services to families with high needs.” Nemours’ innovation award ended on June 30, 2015, but the health system is continuing to evaluate their program.

State Innovation Models (SIM): This initiative provides financial and technical support to states for the development and testing of state-led, multi-payer health care payment and service delivery models.²⁹ The theory behind SIM funding is that states may be uniquely positioned to lead multi-payer efforts because they may be able to use their convening authority to bring payers and other stakeholders together to advance change. Nearly \$1 billion in SIM grants have been distributed to states, including a number of states that have focused part of their SIM funding on asthma projects. For example:

- The Innovation Center awarded Delaware a SIM design grant in February 2013 to develop its State Health Care Innovation Plan, called *Choose Health Delaware*.³⁰ In December 2014, Delaware received an additional \$35 million in SIM funding to support the implementation and testing of this plan.³¹ Choose Health Delaware is, itself, multi-faceted in its approach to and goals surrounding health, but includes several key areas relevant to home-based asthma services including: (i) support for community-based

PATHWAYS TO MEDICAID REIMBURSEMENT FOR PEDIATRIC ASTHMA SERVICES



population health programs; (ii) development of new payment systems including “pay-for-value” and “total-cost-of-care” models; and (iii) assisting integrated, team-based healthcare providers in transitioning to value-based payment systems. Additionally, the SIM model has used Nemours’ Innovation Center-funded home-based asthma services work (described above) to inform new payment models and services for asthma.³²

Social Impact Financing: Engaging Private Investors in Medicaid Innovation

Social impact financing models (including Social Impact Bonds and Pay for Success contracts) are an emerging mechanism to fund home-based asthma services.³³ In its most basic form, private investors participating in these initiatives pay the upfront costs for providing social services (such as home visits and remediation to address asthma) and have the opportunity to share in any savings generated to the health sector (typically an insurer or a hospital system) as a result of decreased healthcare expenditures. Social impact financing models have been used in a few states to support home-based asthma interventions. For example:

- Alameda County, CA. The Alameda County Public Health Department’s “Asthma Start” and Alameda County Healthy Homes Department have launched a pay-for-success initiative to improve asthma outcomes for children. The program will provide asthma in-home case management and housing interventions to improve home environments for children with asthma living in Alameda County. The program will include 200-250 households with children under 18 who have been hospitalized at least once in the last 3 months. The anticipated intervention period will be 90 days and includes case management, home assessments, and home remediation.
- Fresno, CA. In 2013, the California Endowment provided grant funding for a demonstration project to measure the health and financial outcomes of a home-based asthma program for children in Fresno, California, and to assess the feasibility of scaling the program through social-impact financing. The program is providing 200 children with uncontrolled asthma with a year of asthma home visits including community health workers, education, and support in reducing environmental triggers.³⁴
- Baltimore, MD. The Green & Healthy Homes Initiative (GHHI) is a national nonprofit that provides direct services in Maryland and technical assistance throughout the country. The work of GHHI addresses underlying housing conditions that impact health outcomes including the root cause remediation of environmental health hazards responsible for preventable asthma episodes. GHHI is working with a private investment organization and healthcare entity in Maryland to set up a Pay for Success structure, in which GHHI will provide services to 1800 asthma patients who have been in the emergency room or hospitalized for asthma. The healthcare organization has been engaged to act as the saver/payor and pay back a portion of the savings to the investor from the avoided medical costs following the intervention. While government agencies such as Medicaid will not be part of the structure, applicable metrics will be tracked throughout the project to pave the way for potential changes in state Medicaid practices and additional private payor or government-related Pay for Success transactions.

While Medicaid has not yet participated in these initiatives, as evidence surfaces as to their impact and effectiveness, state Medicaid offices may be interested in pursuing social financing model opportunities.

PATHWAYS TO MEDICAID REIMBURSEMENT FOR PEDIATRIC ASTHMA SERVICES

The following chart summarizes the key Medicaid reimbursement pathways and the services, settings and providers applicable under each.

	<i>Broad range of preventive, and diagnostic and treatment services, including health education and anticipatory guidance</i>	<i>Community settings (home, schools, etc.)</i>	<i>Non-traditional providers (asthma educators, healthy homes specialists, CHWs)</i>	<i>Care management, care coordination, linkages to community and social support services</i>	<i>Services and supplies not otherwise considered "medical assistance," such as pest management, household supplies, or home remediation</i>	<i>Innovative service and payment models</i>
EPSDT	X	X				
PREVENTIVE SERVICES RULE			X			
FREE CARE RULE		X				
MEDICAID HEALTH HOMES	X	X	X	X		X
CHIP	X	X				X
MEDICAID WAIVERS					X	X
MANAGED CARE	X	X	X	X	X	X
INNOVATION CENTER FUNDING	X	X	X	X		X
SOCIAL IMPACT FINANCING	X	X	X	X	X	X

PATHWAYS TO MEDICAID REIMBURSEMENT FOR PEDIATRIC ASTHMA SERVICES



About the Childhood Asthma Leadership Coalition. The Childhood Asthma Leadership Coalition is a multi-sector coalition of organizations working to advance asthma policy. Coalition members are leading advocates and experts in childhood asthma, public health, environmental health, poverty, housing, health care, and health care economics. By working together, the Coalition aims to accelerate prevention and improve the diagnosis, treatment, and long-term management of childhood asthma through targeted state and federal efforts. The Coalition also works to address barriers that prevent children from accessing the health care services they need to control and manage asthma. More information can be found at: <http://www.childhoodasthma.org/>

¹ U.S. Department of Health and Human Services, National Heart, Lung and Blood Institute, National Asthma Education and Prevention Program. Expert Panel Report 3: *Guidelines for the Diagnosis and Management of Asthma*. 2007.

² Coffman JM, Cabana MD, Halpin HA, Yelin EH.(2008) Effects of Asthma Education on Children's Use of Acute Care Services: A Meta-Analysis. *Pediatrics*. 121:575-596.; Ducharme FM, Bhogal SK.(2008) The Role of Written Action Plans in Childhood Asthma. *Curr Opin Allergy Clin Immunol*. 8:177-188.; Purmort J, Coady MH, Bucciarelli A, Bonner S.(2008) Asthma Education in a Subsidized Preschool Setting. *J Health Care Poor Underserved*. 19:1241-1247.; Wood P, Tumiel-Berhalter L, Owen S, Taylor K, Kattan M. (2006) Implementation of an Asthma Intervention In the Inner City. *Ann Allergy Asthma Immunol*.97(suppl 1):S20-S24.

³ Williams D, Portnoy JM, Meyerson K. 2010. Strategies for improving asthma outcomes: a case-based review of successes and pitfalls. *J. Manag. Care Pharm*. 16(1 Suppl. C):S3-14.

⁴ Nurmagambetov, et al, "The Economic Value of Home-Based, Multi-Trigger, Multi-Component Interventions with an Environmental Focus for Reducing Asthma Morbidity – A Community Guide Systematic Review," *American Journal of Preventive Medicine*, 2011; 41(2S1): S33-S42.

⁵ 42 USC § 1396d(r).

⁶ CMS Publication #45 State Medicaid Manual § 5220: Utilization of Providers and Coordination With Related Programs. Centers for Medicare and Medicaid Services.

⁷ CMS Publication #45 State Medicaid Manual § 5230: Coordination with Related Agencies and Programs. Centers for Medicare and Medicaid Services.

⁸ Medicaid and Children's Health Insurance Programs: Essential Health Benefits in Alternative Benefit Plans, Eligibility Notices, Fair Hearing and Appeal Processes, and Premiums and Cost Sharing; Exchanges: Eligibility and Enrollment; Final Rule. Centers for Medicare & Medicaid Services. 78 Fed. Reg. 42160, 42306 (July 15, 2013) (to be codified at 42 C.F.R. § 440.130).

⁹ Health Care Financing Administration (HCFA) (currently known as the Centers for Medicare and Medicaid Services). Medicaid and School Health: A Technical Assistance Guide. August 1997. Available at: http://www.medicaid.gov/Medicaid-CHIP-Program-Information/By-Topics/Financing-and-Reimbursement/Downloads/School_Based_User_Guide.pdf.

¹⁰ SMD# 14-006: Medicaid Payment for Services Provided without Charge (Free Care). Centers for Medicare and Medicaid Services. December 15, 2014.

¹¹ Social Security Act § 1945, added by the Patient Protection and Affordable Care Act, Public Law No. 111-148, §2703, 124 Stat. 855, (March 2010).

¹² Social Security Act § 1945, added by the Affordable Care Act § 2703.

¹³ State-by-State Health Home State Plan Amendment Matrix. Centers for Medicare and Medicaid Services. April 2016. Available at: <https://www.medicaid.gov/state-resource-center/medicaid-state-technical-assistance/health-homes-technical-assistance/downloads/state-hh-spa-at-a-glance-matrix-apr-2016.pdf>.

¹⁴ Maine Medicaid Health Home SPA. ME-12-004. Available at: <https://www.medicaid.gov/State-resource-center/Medicaid-State-Plan-Amendments/Downloads/ME/ME-12-004-Att.pdf>.

¹⁵ Social Security Act § 1945, added by the Affordable Care Act § 2703.

¹⁶ CHIP. MACPAC. Available at: <https://www.macpac.gov/topics/CHIP/>.

¹⁷ Section 1115 Demonstrations. Centers for Medicare and Medicaid Services. Available at: <https://www.medicaid.gov/medicaid-chip-program-information/by-topics/waivers/1115/section-1115-demonstrations.html>.

¹⁸ MassHealth Medicaid Section 1115 Demonstration. Centers for Medicare and Medicaid Services. Jan 20, 2015. Available at: <https://www.medicaid.gov/Medicaid-CHIP-Program-Information/By-Topics/Waivers/1115/downloads/ma/ma-masshealth-ca.pdf>.

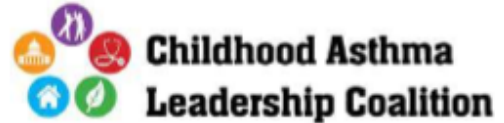
¹⁹ New York State Department of Health. DSRIP Frequently Asked Questions. August 2015. Available at: http://www.health.ny.gov/health_care/medicaid/redesign/docs/dsrip_faq.pdf.

²⁰ Coordinated Care Organizations. Oregon Health Authority. Available at: <https://cco.health.oregon.gov/Pages/Home.aspx>.

²¹ Total Medicaid Managed Care Enrollment. Kaiser Family Foundation. 2014. Available at: <http://kff.org/medicaid/state-indicator/total-medicicaid-mc-enrollment/>.

²² To cover services beyond what is included in the state plan, the costs must be considered "actuarial sound," which functionally limits what services can be financed. 42 CFR 439.6 (c), (e).

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PEDIATRIC ASTHMA SERVICES**



²³ Medicaid and Children's Health Insurance Program (CHIP) Programs; Medicaid Managed Care, CHIP Delivered in Managed Care, Medicaid and CHIP Comprehensive Quality Strategies, and Revisions Related to Third Party Liability. *Fed Regist.* 2016;54:27497-27901. Codified at 42 CFR §438.

²⁴ CMS, Health Care Innovation Awards: Vermont. <https://innovation.cms.gov/initiatives/Health-Care-Innovation-Awards/Vermont.html>.

²⁵ Health Care Innovation Awards: Vermont, Centers for Medicare & Medicaid Services. <https://innovation.cms.gov/initiatives/Health-Care-Innovation-Awards/Vermont.html>.

²⁶ *Asthma Education*, North Country Hospital. <https://www.northcountryhospital.org/service/asthma-education/>.

²⁷ <http://innovation.cms.gov/initiatives/participant/Health-Care-Innovation-Awards/Nemours-Alfred-I-Dupont-Hospital-For-Children.html>

²⁸ http://www.nemours.org/content/dam/nemours/wwwv2/filebox/about/01195_naidhcimplan.pdf

²⁹ CMS. *State Innovation Models Initiative: General Information*. Last visited May 1, 2016. Available at: <https://goo.gl/kbrxxv>.

³⁰ Delaware Department of Health and Social Services. Available at: <http://dhss.delaware.gov/dhcc/sim.html>.

³¹ CMS. State Innovation Models Initiative: Model Test Awards Round Two. Available at: <http://innovation.cms.gov/initiatives/state-innovations-model-testing-round-two/>.

³² Delaware State Innovation Models: Funding for Model Design. Available at:

<http://dhss.delaware.gov/dhcc/files/stateinnovationgrantprojectpdf.pdf>

³³ Childhood Asthma Leadership Coalition. Issue Brief: Using Social Impact Financing to Improve Asthma Outcomes. Available at:

<http://www.childhoodasthma.org/wp-content/uploads/2014/10/Social-Impact-Financing-Asthma.pdf>.

³⁴ Clay, R.F., Health Impact Bonds: Will Investors Pay for Intervention? *Environmental Health Perspectives*. 2013.

121(2): p. 45-46. Available from: http://ehp.niehs.nih.gov/pdf-files/2013/Feb/ehp.121-a45_508.pdf.



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