

Braiding and Layering Funding to Address Housing: Environmental Health and Safety

Introduction

Access to safe housing constitutes one of the most basic and powerful social determinants of health. Environmental factors, such as exposure to lead, radon, pests, tobacco smoke, asbestos, and substandard housing conditions like water and electricity shutoffs, are associated with poor health outcomes as diverse as asthma and developmental delays. The toxic effects of lead poisoning, especially among young children, are well documented and remain a significant threat to families, particularly low-income families with infants and young children. The U.S. Department of Housing and Urban Development (HUD) estimates that 35% of all housing units in the U.S. have lead-based paint somewhere in the home.¹ Despite the prevalence of lead poisoning, current lead laws and programs fail to effectuate a strategy for prevention; instead, they focus on reducing and abating lead *after* a child has been poisoned. It is critical that primary prevention strategies, such as removing sources of lead exposure before a child is poisoned, are implemented by health agencies, because the long-term consequences of lead poisoning cannot be corrected.²

Environmental health disparities are strongly tied to family income levels, and race is also correlated with environmental health, largely because racism and poverty are inextricably linked in American society.³ Numerous studies have shown the effects of racism, which include disproportionately high levels of lead exposures in communities of color; increased prevalence of the underlying health conditions that make people more sensitive to those exposures; and reduced access to quality healthcare, compounding the problems of exposure and sensitivity.^{4 5} State and territorial health agencies (S/THAs) have an opportunity here to address root causes of common environmental health conditions through their health, environmental, and housing policies.

Asthma is very common among U.S. children, affecting 8.3% of children in 2016.⁶ While most asthma can be well-controlled with medication, severe asthma attacks can lead to hospitalizations or even death. Health departments must address asthma not only as a medical issue, but as a housing issue, as the condition can be triggered by allergens in the home, including pests (especially cockroaches), mold, fungi, dust mites, and pets.⁷ Like lead, asthma is more prevalent in children of color; hospitalization and emergency department visit rates are two to three times higher for non-Hispanic African-American children than for non-Hispanic white children.⁸

State, territorial, and local public health departments, health advocates, and housing partners can work together to protect children and families from these environmental hazards by implementing primary prevention programs using the innovative funding strategies discussed in this document. State officials have leveraged a variety of funding sources, including federal health, environmental, and housing funds; state health funds; state energy funds; nonprofit funds; and private capital to support healthy housing initiatives. For example, the Green and Healthy Homes Initiative maintains a comprehensive toolkit of funding programs available for lead abatement and prevention.⁹

The challenge for S/THAs is that only a subset of these funds typically falls directly under their jurisdiction, requiring health officials and their teams to build relationships across state agencies to braid and layer funds toward a common goal. This white paper highlights opportunities to support

environmental health goals by braiding and layering multiple funding streams and, at times, multiple environmental health goals.

This document is organized into three sections for the most widespread hazards with longest-term and most serious health effects: (1) lead programs, (2) asthma prevention programs, and (3) multi-hazard programs. The document explores several strategies for each section, and each strategy includes an overview of the approach, a related case study, and strategic implementation tips.

Braided and Layered Funding: Lead Prevention and Abatement

In the United States, more than 4 million families with children live in homes with high levels of lead.¹⁰ Even low lead exposures can result in serious developmental delays, brain damage, learning delays, and lower IQ, particularly for young children.¹¹ Children of color and children who live in households at or below the federal poverty level are much more likely to be at risk of lead exposure.¹² In one study, Black children had 2.2 times more lead exposure in utero than non-Black children, and this trend continued in the first year of life.¹³

The federal agencies and programs listed below are some of the many that fund states, local governments, and private entities to prevent and remediate lead in homes:

- **HHS:** Childhood Lead Poisoning Prevention and Surveillance of Blood Lead Levels in Children; Maternal Child Health Block Grant; Community Services Block Grant; along with Medicaid and the Children’s Health Insurance Program (CHIP), both through the Centers for Medicare & Medicaid Services (CMS)
- **U.S. Department of Housing and Urban Development (HUD):** Healthy Homes, Community Development Block Grants, and HOME Investment Partnerships
- **EPA:** Drinking Water State Revolving Loan Funds and Water Infrastructure Finance and Innovation Act funding
- **U.S. Department of Energy:** Weatherization Plus Health
- **State funds for healthy homes** (for example, Illinois’ CLEAR-WIN funding)

Each of the examples below uses different funding mechanisms, with some braiding and layering federal funding streams and others using a combination of public and private sources.

Medicaid and Children’s Health Insurance Program Health Services Initiatives

Overview and Funding

Medicaid funding traditionally covers medical, rehabilitative, and similar services for low-income individuals who meet certain eligibility (e.g., young children, older adults, or persons with disabilities). However, states and territories can depart from the standard Medicaid rules with Medicaid waivers, which allow states to forgo certain provisions of the Medicaid rules (with permission from the CMS) to cover optional populations or services and to try new methods of care delivery or payment structures.¹⁴

CHIP provides coverage to children (and sometimes pregnant women) with incomes slightly higher than those for Medicaid.¹⁵ States and territories administer this program according to federal requirements.¹⁶ The CHIP Health Services Initiative (HSI) program allows states to use CHIP administrative dollars to improve the health of children who qualify for Medicaid and CHIP through direct or indirect means, such as addressing social determinants of health.¹⁷ After CMS approves a state plan amendment, the federal

share of the HSI project cost is funded at the state's regular CHIP match rate.¹⁸ CHIP requires that policy-makers identify a source of state matching funds for each HSI.

Medicaid has traditionally covered lead screenings and treatment as part of its Early and Periodic Screening, Diagnostic, and Treatment program, but few states or territories have managed to have lead abatement approved under a Medicaid 1115 waiver. Rhode Island is a notable exception: the state's approved waiver allows it to pay to replace leaded windows, pairing enhanced coverage under a Medicaid waiver with a CHIP Health Services Initiative under a promising alternative strategy.^{19, 1}

Overall Strategy

Medicaid funding can be used to cover the cost of treatment for low-income families who have been exposed to lead and can cover case management to ensure that those families receive the necessary medical and supportive services that they need to thrive, including nutrition services, early education services, and transportation to medical appointments.²⁰ CHIP HSI funding can help to fill a further gap by paying for the actual lead abatement, keeping the health problems from worsening. The state of Michigan has braided funding from both Medicaid and a CHIP HSI to cover treatment and abatement in affected families' homes.

Case Study: Lead Contamination in Flint, Michigan

In 2015 and 2016, investigators revealed that the drinking water in Flint, Michigan had been dangerously contaminated with lead, resulting in high blood lead levels for thousands of Flint's children.²¹ In response, state officials almost immediately applied to CMS for a Medicaid 1115 waiver to extend Medicaid coverage to children and pregnant women served by the Flint water system who were living up to 400% of the federal poverty level, waived cost-sharing for those families, and provided targeted case management to coordinate necessary services for affected families.²² These services also included a one-time investigation to determine the source of the lead in the household (i.e., from drinking water or from lead-based paint). This expansion made an additional 15,000 people eligible to enroll in Medicaid.²³

Strategic Implementation Tip

Through coordination, Medicaid and CHIP funds may cover not only screenings and treatment from lead exposure in the home, but also abatement of the lead itself.

While Michigan also requested lead abatement funding under the waiver, Medicaid denied that request.²⁴ However, Michigan health officials did submit an amendment to Michigan's CHIP State Plan to include lead abatement services under a CHIP HSI project, which CMS approved for approximately \$24 million per year for five years.²⁵ Michigan's activities under the HSI covered multiple types of lead abatement, including exposure from water, lead paint, and other sources.

Key Takeaways

In the wake of Michigan's lead HSI approval, CMS issued an FAQ stating that lead abatement is now an approved activity for an HSI.²⁶ Five states now have lead abatement as an official activity in their HSIs, although not all of them braid that funding with enhanced Medicaid services in the way that Michigan has.^{27, 2}

¹ Rhode Island is a notable exception, having its Medicaid waiver request approved to pay for the replacement of leaded windows.

² Those states are Indiana, Maryland, Michigan, Missouri, and Ohio.

States and territories can pair lead abatement activities with expanded screenings and treatment from traditional Medicaid funding to comprehensively address affected families' needs. However, S/THAs that want to reproduce this model should keep in mind that CHIP administrative funds, from which HSI funds stem, cannot exceed ten percent of total CHIP funding, and officials must designate the source of the state share of that funding because CHIP is a jointly-funding program of the federal government and the state.

Pay for Success

Overview and Funding

Pay for Success (PFS) is a funding model that uses private capital to finance prevention programs, like healthy housing programs, to help a government reduce public expenditures.²⁸ Under this strategy, funders like philanthropists and private investors provide the upfront resources to deliver services, and the end payer only pays if the target outcomes are met.²⁹ This model shifts the focus for government and other payers to the outcomes, rather than being distracted by focusing on the actual funding of these services.³⁰ In addition to the upfront private funders, PFS agreements often involve a government agency as the back-end payer, an independent evaluator to measure the health outcomes, an intermediary organization to develop the transaction, and at least one service provider to implement the intervention.³¹

The pool of investors in PFS projects has been small and includes commercial banks; private, corporate, and family foundations; philanthropic intermediaries (often United Ways); community development financial institutions (CDFIs); and high net-worth individuals. These funds can later be leveraged with community development funds, Medicaid funding, and other public funding streams.

Overall Strategy

PFS projects typically leverage other public resources, such as housing subsidies and vouchers and Medicaid-funded health services. Accordingly, the budget for achieving the health outcomes is often actually larger than the funding directly raised through the PFS financing mechanism.

Case Study: The Massachusetts Alliance for Supportive Housing

The Massachusetts Alliance for Supportive Housing (MASH) is the first PFS initiative in the United States to address chronic homelessness. It focuses on providing low-threshold, permanent supportive housing to those who would otherwise rely on costly emergency resources.³² The initiative aims to provide at least 500 units of permanent supportive housing for up to 800 individuals over six years. MASH is a wholly owned subsidiary of the Massachusetts Housing & Shelter Alliance, which manages MASH alongside United Way of Massachusetts Bay and Merrimack Valley and the Corporation for Supportive Housing.

To help MASH providers identify high-cost utilizers of the healthcare system, a triage form was created that ties the potential of future high costs to specific diagnoses. This tool gave MASH program coordinators a tremendous amount of data about a very vulnerable population and allowed organizers to prioritize people with serious chronic conditions. As of October 2020, MASH has housed 1,010 tenants, 808 of whom were enrolled in the Community Support Program for People Experiencing Chronic Homelessness, a PFS program from MassHealth, Massachusetts' combined Medicaid and CHIP agency. In the six months prior to entering housing, PFS participants accumulated 73,742 nights in a shelter, 4,556 days in the hospital, 1,814 emergency room visits, 1,390 nights in detox, and 849

ambulance calls.³³ Preliminary data from the program suggested that enrollees are using emergency care at a much lower rate once they are housed.³⁴

MASH leveraged a mix of philanthropic funding and private investor capital from United Way, Santander Bank, and the Corporation for Supportive Housing to provide the upfront funding.³⁵ Additionally, MASH leverages public resources, including Massachusetts Rental Voucher Program subsidies from the Department of Housing and Community Development.

Strategic Implementation Tip

States and territories can support Pay for Success efforts by partnering with state/territorial housing agencies to share best practices among local health and housing departments and helping to coordinate state/territorial health funding such as Medicaid as leverage for the private funds.

Key Takeaways

PFS allowed providers to use other sources of funds in creative ways, such as providing housing support service resources through the state's Medicaid expansion. This leveraged model can also be sustainable long-term, as even when the PFS is completed, enrollees retain their housing.³⁶

While lead exposure can be challenging to address through PFS initiatives, it still may be worth considering for addressing environmental hazards such as lead. With other PFS projects, savings can be clearly linked and calculated through outcomes like reduced days in foster care or in a shelter. With lead exposure, however, the value is spread across many possible stakeholders including landlords, hospitals, and clinics, making an appeal to any one group more difficult.³⁷ Philanthropy, such as subordinated investments, grants or guarantees, therefore plays a critical role in PFS projects as a form of credit enhancement to senior investors.

Lead Prevention and Abatement Strategic Implementation Considerations

Employing diverse funding programs from different agencies can be challenging when S/THAs' roles differ depending on the programs that fall under their jurisdictions. To help make it easier to braid and layer lead program funding:

- S/THAs with authority over Medicaid and CHIP programs have many opportunities to seek waivers or HSI funding to pursue both medical treatment for affected families and abatement of lead in homes. The case studies cited above are models for states to consider following.
- S/THAs who do not have authority over Medicaid and CHIP can develop relationships with their state Medicaid program officers to investigate what their state's current waivers are. If your Medicaid agency has already established flexibilities in its current waiver programs, Medicaid officials may be willing to have a conversation about incorporating lead treatment or abatement.
- In many cases, S/THAs can develop relationships with other state agencies, such as the state housing or community development agencies, and collaborate with local partners who may want to implement a pilot program to try an idea first. Depending on the state governance structure and relationship with local health agencies, S/THAs may also provide support and approval for local health agencies to pilot these programs and support widespread adoption of promising approaches.

Braided and Layered Funding: Asthma Prevention

Asthma is largely caused by environmental factors at work and in the home, including allergens from pests, dust mites, mold, and fungi. The solutions are largely known, but funding for these various solutions often comes from several different agencies and programs that need to be braided and layered. In addition, the case studies below reveal that understanding the community is critical to engaging children and adults to assess, educate, and remediate problems related to asthma.

Overview and Funding

Traditional asthma education and outreach includes building on a patient's medical care with education on how to control their asthma, how to reduce allergens in the home that may trigger attacks, and providing cleaning products and equipment, such as vacuum cleaners, to help reduce those allergens. Home visits from public health nurses, asthma educators, and community health workers are a large element of that education. More intensive asthma management programs may include doing home improvements like tearing out old carpets and improving ventilation.

S/THAs can braid and layer several funding streams—including health funds and weatherization and energy efficiency funds—from different agencies to make these more intensive programs possible. For example, HUD's Healthy Homes Program covers many indoor health hazards—such as mold and pests—that might trigger asthma attacks, and EPA's Indoor Air Quality program focuses on allergens, including tobacco smoke. In addition, the U.S. Department of Energy's [Weatherization Assistance Program](#) encourages states to incorporate healthy housing repairs into their home weatherization programs to simultaneously promote energy efficiency and make indoor spaces healthier.

Overall Strategy

Through partnerships with other state and territorial agencies around a common goal, S/THAs may be able to leverage nontraditional funding streams to address asthma.

Case Study: Minnesota Department of Health

Between 2004 and 2014, the Minnesota Department of Health (MDH) conducted a series of demonstration projects focused on reducing asthma symptoms and increasing patients' daily functioning while also reducing healthcare costs.³⁸ The three demonstration projects began with home interventions to reduce asthma triggers. Funded by EPA, MDH partnered with the children's home healthcare agency Pediatric Home Service to send a respiratory therapist and asthma educator to homes to (1) ensure that patients had the right asthma medications, (2) deliver products such as vacuum cleaners, air filters, and mattress and pillow covers, and (3) help families advocate for improved housing conditions with their landlords.³⁹

During the second demonstration project, foundation funding allowed MDH to expand the home visit program and send a public health nurse to additional cities in coordination with two county health departments and one tribal health department.⁴⁰ The second demonstration project's short timeline caused some difficulties in recruiting participants because the local health departments did not have sufficient time to engage their communities and build trust. The third demonstration project was funded by HUD and provided services to children living in Section 8 rental housing. Building on the lessons learned in earlier demonstration projects, project organizers partnered with existing community organizations who employed community health workers to engage residents in the process of reducing environmental triggers, improving health outcomes, and improving self-management through asthma education.

All three projects reduced asthma symptoms and days of school/work missed, and had a positive return on investment, and helped to build relationships between the clinics, hospitals, community organizations, and local public health departments.

Case Study: Washington State's Weatherization Plus Health Program

The Washington State Department of Commerce runs the state's Weatherization Assistance Program, and has prioritized integrating the two compatible goals of energy efficiency and healthy housing, with support from the state legislature in 2015.⁴¹ Under this initiative, Washington state has been able to assess homes for both issues simultaneously and work with public health and weatherization partners to connect families with necessary home services and repairs in pilot sites across the state.⁴² For example, a family participating in a Weatherization Plus Health program can receive referrals to medical services, have their carpet replaced with low-VOC flooring, receive green cleaning kits and better mattress and pillow protectors, and receive new windows to make the residence more energy efficient. Program funding sources U.S. Department of Energy's Weatherization Assistance Program, HHS' Low-Income Home Energy Assistance Program, utility funds from Bonneville Power Administration, state capital budget funds, and Medicaid funds through an 1115 waiver.⁴³

Washington state's lessons learned so far include valuing and working with community partners, like community health workers, who have established residents' trust; choosing a specific and targeted strategy to prioritize residents with high medical needs; and recognizing the challenges of performing home upgrades in rental housing units.

Key Takeaways

Given some funding and trust, S/THAs, state energy officials, and state housing officials can align their goals to improve public health, housing, and energy efficiency. Whether pursuing a more traditional health education program or a more intensive home repair/education/health services program, state officials can find some nontraditional partners and nontraditional funding sources to make it work. Success tended to follow projects with trusted community partners like community health workers.

Asthma Prevention: Strategic Implementation Considerations:

- **Collaborate with Partners** S/THAs can find nontraditional partners to prevent and improve asthma in their jurisdictions, from energy agencies to housing and community development entities. Building bridges across those lines will make more funding streams available to braid and layer for greater impact.
- **Seek Out Nontraditional Funding** Health-adjacent funding streams or grant programs that prioritize health outcome measures, such as the Weatherization Assistance Program, may exist across an even broader range of governmental agencies than those documented in this report.
- **Utilize Individuals Established in the Community** Trust in the community is key. Both case studies suggest much better results when partnering with trusted community members, such as community health workers.

Braided and Layered Funding: Multi-Hazard Programs

While funding for many environmental health hazards tends to be highly categorical (for example, covering only lead or asthma), S/THAs have identified opportunities to address multiple hazards in the same programs.

The Children's Health Insurance Program

Overview and Funding

Through CHIP HSIs (discussed earlier in the Lead Prevention and Abatement section), S/THAs can improve the health of low-income children through public health and other initiatives, as HSIs explicitly authorize lead exposure prevention and abatement programs.⁴⁴ While the initiatives must be designed to directly improve the health of children under age 19 who are eligible for CHIP and/or Medicaid, they can serve children of all incomes.⁴⁵

Health agencies can review current funding streams that support program services related to the services proposed in the HSI to identify opportunities to move current budget line items into the HSI to avoid new spending. (For example, previous healthy homes HSIs have relied on sources like state general funds and tobacco settlement funds.)

Overall Strategy

State health officials may be able to leverage CHIP administrative money to develop both asthma measures and lead exposure prevention and lead abatement initiatives.

Strategic Implementation Tip

Use interagency collaboration and CHIP administrative funds to address multiple hazards at the same time and provide a wide range of services.

Case Study: Maryland Department of Health Lead and Asthma Programs

The Maryland Department of Health launched a \$7.2 million initiative to address childhood lead poisoning and asthma in collaboration with the Maryland Department of the Environment and the Maryland Department of Housing and Community Development.⁴⁶ The initiative leverages federal funds available through Maryland's CHIP using two separate but related programs. In 2018, the Healthy Homes for Healthy Kids Program received \$4.17 million in funding, using a combination of \$3.67 million in CHIP federal matching funds and \$500,000 in state fiscal year 2018 funds, to remove home lead hazards.⁴⁷ The Childhood Lead Poisoning Prevention & Environmental Case Management Program received \$3 million in total funding, using a combination of \$2.64 million in CHIP federal matching funds and \$360,000 in state funds, to focus on home visitation and case management.

The HSI provides lead abatement or hazards removal services for Medicaid-eligible children with blood lead levels of at least 5 micrograms per deciliter through its Healthy Homes for Healthy Kids program or with asthma that is moderate to severe.⁴⁸ Eligible children are identified by the Maryland Childhood Lead Registry, and by direct referrals.⁴⁹ To ensure a connection to treatment, the initiative engages in monthly data sharing. The Maryland Department of Health partners with Maryland Department of the Environment to distribute the Childhood Lead Registry (the state's mechanism for childhood blood lead surveillance) to managed care organizations every month. Additionally, the data is shared between the state and local health departments on a quarterly basis for case management and used by the Maryland Health Department to produce an annual report on statewide childhood blood lead levels and testing.⁵⁰

Maryland’s program demonstrates how interagency collaboration and a multi-pronged policy strategy can advance lead poisoning prevention and treatment. States can use an HSI to direct CHIP administrative funds for lead abatement through a CMS-approved state plan amendment. Leveraging CHIP funds can allow states and territories to provide a variety of healthy housing services, including lead abatement and testing, case management for lead-exposed children, case management for children with asthma, workforce development, poison control center operations, creation and operation of a database for lead-safe rental housing, and remediation of asthma triggers (including asthma home visiting, supplies, and environmental assessment).

Medicaid Value-Based Payment

Overview and Funding

“Value-based Payments” (VBP) are financing models that aim to drive system change towards improved health outcomes by holding a provider or a managed care organization (MCO) accountable for the costs and quality of care they provide or pay for.⁵¹ In contrast to fee-for-service payments models that are based on the volume of care provided, VBPs reward providers based on achievement of quality goals and, in some cases, cost savings.⁵² Because over two-thirds of Medicaid beneficiaries receive care through MCOs, and because the majority of states contract with MCOs, this model could be applicable in many states and territories.⁵³

States and territories can utilize the current authority within Medicaid managed care that allows MCOs to implement value-based purchasing arrangements to pay for improved health outcomes that address lead housing health issues. S/THAs can braid and layer Medicaid funding with other funding sources such as energy or housing funds to fund the program’s activities.

Overall Strategy

State and territorial health agencies that oversee Medicaid can support paying for improved health outcomes through MCOs, while agencies that do not oversee Medicaid can collaborate across agencies on a shared goal of improving health outcomes.

Case Study: New York State Healthy Homes

The New York State Healthy Homes Value-Based seeks to develop a replicable model for implementing a healthy homes approach to residential building treatments using the VBP framework.⁵⁴ The program facilitates the adoption of healthy homes treatments by Medicaid MCOs as part of the Medicaid VBP arrangements that incorporate social determinants of health.

The program is implemented in partnership with the New York State Department of Health (DOH). The New York State Energy Research and Development Authority funds the pilot’s activities, advises on planning, assists with implementation on the energy and housing measures, and is responsible for collecting data. This entity also provides market support, including technical support, to develop a network of qualified healthy homes service providers and guidance on standardized contract language for healthy homes improvements that MCOs, VBP providers, and residential service providers can use. DOH’s Office of Health Insurance Programs secured MCO participation in the pilot and oversees all VBP contracting activities, and DOH’s Office of Public Health will advise intervention planning and facilitate implementation.

Pilot participant households undergo a full intervention, which includes the following services: residential energy and environmental assessment, energy efficiency measures improvements, asthma trigger reduction measures, household injury prevention measures, home skilled nursing visits,

community health worker support, resident education, connection to local services, and post-remediation follow-up. The pilot is funded through the New York State Energy Research and Development Authority's Clean Energy Fund, estimated at approximately \$10 million.⁵⁵ (The Clean Energy Fund gets its funding from an assessment on retail sales of electricity by state utilities.)

States can work with MCOs to improve screening rates by using value-based purchasing metrics and performance improvement projects. If the New York pilot program is successful in encouraging broad adoption of healthy homes treatments under Medicaid MCOs, it can serve as a funding stream to address the health and safety issues that states and territories cannot currently fund through traditional energy efficiency programs.

Strategic Implementation Tip

Health officials can work with other state agencies and managed care organizations to focus on outcomes, not activities, to simultaneously provide a broad range of health and home remediation services.

Strategic Implementation Tips

Below are several tips for strategically implementing funding for multi-hazard programs.

- **Work Through Coordination Challenges:** Multi-hazard approaches make sense from the individual perspective but can be challenging to coordinate; not only are multiple funding sources and agencies collaborating, potentially at multiple levels of government, they may be collaborating toward more than one goal at a time. However, if S/THAs can successfully work through these challenges, their interventions can have a large impact on households.
- **Coordinate with HUD's Healthy Homes Program:** For HSI programs, if local health departments are already implementing a statewide HUD Lead and Healthy Homes grant, it may make sense to send HSI funds to these local agencies to manage programs at the local level. State coordination will be necessary to receive the appropriate federal approvals, however.
- **Factor in Racial Disparities:** While taking a multi-hazard approach, state policymakers have an opportunity to assess racial disparities among those hazards and to concentrate their efforts in neighborhoods and communities with the greatest exposures, including communities of color.

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