

WHEN ASTHMA MANAGEMENT ISN'T ENOUGH:

Reducing the Burden of Childhood Asthma: From Practice to Policy

by

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Childhood asthma has been prevalent for so long that we risk being lulled into complacency, even as the disease becomes an ever-increasing fixture in our homes, schools, and communities. However, we should be anything but complacent: asthma is one of the most common chronic conditions among children in the United States, responsible for deaths, hospitalizations, emergency room visits, missed school days, and other physical, emotional, and economic costs. Although the data are compelling enough, the terrifying and heartbreaking experience of a childhood asthma attack—the tight chest, the telltale wheeze as airways constrict, the look of panic on a child’s face as she struggles to breathe—carries its own special weight.

It doesn’t have to be this way. Asthma can be controlled, the worst outcomes of the disease are largely preventable, and we can lower the risk for the onset of asthma in otherwise healthy children. But how do we get there? How do we better manage and prevent childhood asthma?

The answer is clear: we need to take a comprehensive, policy-focused approach that goes beyond disease management for children with asthma.

The Burden of the Disease

Asthma is a chronic disease of the lungs characterized by wheezing, shortness of breath, and coughing. Asthma symptoms are triggered by a variety of factors, from allergens like pollens and cockroaches, to irritants like tobacco smoke and air pollution, to other issues like stress or colds. These triggers cause inflammation, obstruction, and constriction of the lungs’ airways, making it difficult—and sometimes impossible—to breathe.

Currently, approximately seven million U.S. children under the age of 18 have asthma, with low-income and minority children suffering a greater burden of this disease.¹ Despite advances in diagnosis and treatment and increased attention to prevention, asthma prevalence has been rising for several decades,² reaching nearly 1 out of 10 children in 2011.³ According to the Childhood Asthma Leadership Coalition, “[W]hile asthma symptoms can usually be controlled with guidelines-based management, most children do not have well-controlled asthma. Nearly 60 percent of children with diagnosed asthma have experienced an attack within the previous 12 months.”⁴

The economic impact of asthma is substantial. Asthma costs the United States approximately \$56 billion each year.⁵ In 2008, asthma caused 10.5 million missed days of school and 14.2 million missed days of work,⁶ imposing significant real-world burdens that impact a child’s ability to learn and an adult’s ability to work.

Disparities and Inequities

Although asthma affects children of all ages, races, and ethnic groups, some populations are inequitably effected. Nationally, African American children are twice as likely to have asthma as white children⁷ and nearly twice as likely as Hispanic children.⁸ The rates for emergency department visits and hospitalizations are higher for African Americans than whites.⁹ African Americans are two to three times more likely to die from asthma than any other racial or ethnic group,¹⁰ and Hispanic children are 40 percent more likely to die from asthma than white children.¹¹

Asthma disparities also exist across income level. Lower income is associated with higher asthma hospitalization rates and worse symptoms. In California, the rate of asthma hospitalizations is three

times higher among people from places where the median income is less than \$20,000 compared with people from places where the median income is greater than \$50,000.¹² These income-based asthma disparities are directly connected to and amplified by asthma disparities based on race and ethnicity, as African Americans and Latinos have disproportionately high rates of poverty.^{13,14}

The distribution of asthma according to race and socioeconomic status is influenced by larger inequalities in society.¹⁵ Take healthcare, for instance: People of color make up the majority of uninsured Americans.¹⁶ Even among those with access to healthcare, people of color experience discrepancies in care compared with that received by whites.¹⁷ African Americans and Latinos are less likely to receive appropriate asthma medications for preventive care, acute exacerbations, or post-emergency department care.¹⁸ These differences in diagnosis, quality of care, and treatment methods lead to consistently poorer health outcomes among people of color.¹⁹

There are also significant inequities in exposure to environmental risks, both indoor and outdoor. This context is critical. Even with the highest quality clinical care, a child will continue to suffer from asthma if frequently exposed to environmental triggers. Mold, rodents, and cockroaches are asthma triggers associated with physically deteriorating housing, schools, and child-care settings—deterioration that is more common in low-income communities and communities of color. Similarly, outdoor air pollution is higher among African American and Latino communities due to the proximity of ports, freeways, and other polluting facilities.²⁰ This dynamic is particularly noteworthy because, in addition to exacerbating asthma, certain components of outdoor air pollution have been implicated in the development of new asthma cases.²¹

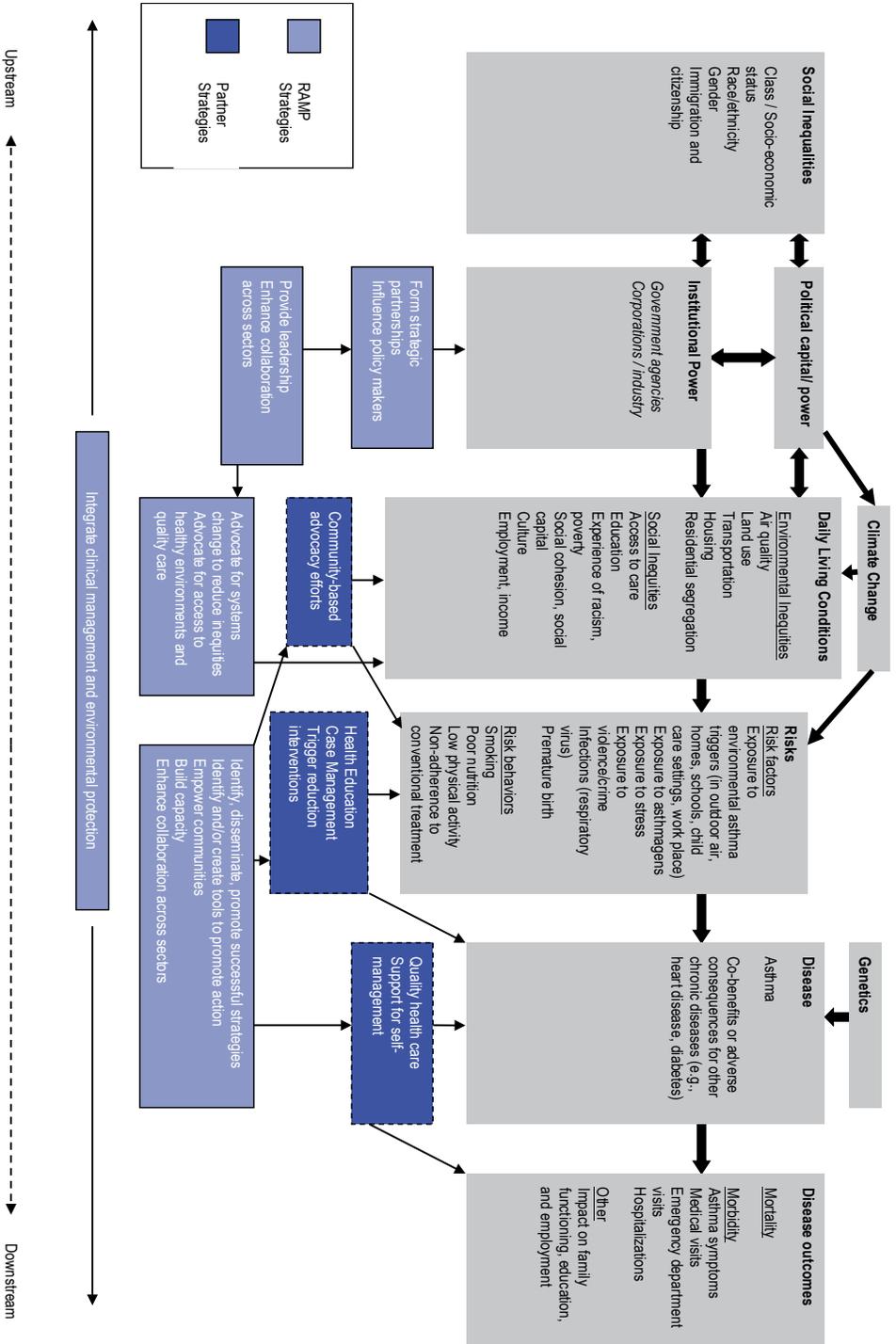
By associating differences in health outcomes with social determinants of health, such as access to care or indoor and outdoor air quality, policy change becomes a key solution to addressing the problem of childhood asthma.²² By challenging the social and economic policies at the root of inequities, it becomes possible to reduce disparities in access to quality clinical care and support for asthma management, as well as disparities in exposure to environmental asthma triggers.

A Framework for Reducing the Burden of Asthma

Based on our understanding of childhood asthma, disparities, and underlying societal and environmental inequities, the Regional Asthma Management and Prevention (RAMP) program created a framework for reducing the burden of asthma (Figure 1). This framework demonstrates the relationships among the array of factors impacting childhood asthma outcomes and the need for interventions at multiple target points, ranging from “downstream” interventions, such as support for self-management, to “upstream” interventions, such as land use policies.

Figure 1

RAMP's framework for reducing the burden of asthma



To illustrate the framework, let's take 10-year-old "Tanya," a child with persistent asthma that recently led to an emergency department (ED) visit. Outcomes like ED visits, represented in the far-right box of the framework, include disparities based on race, ethnicity, and income level. To directly address Tanya's "Disease" (the next box to the left), she needs access to quality healthcare and support for self-management (e.g., how to use inhalers, what to do in an emergency). To help her breathe easier, we also need to address Tanya's "Risks" (the next box to the left), which include exposure to environmental asthma triggers in the home. Health education and case management can help her family reduce some asthma triggers within their control, such as animal dander and tobacco smoke. However, some housing-related asthma triggers are beyond the control of tenants like Tanya's family. These "Daily Living Conditions" (one more box to the left) are connected to social and environmental inequities: if Tanya is African American or from a low-income family, then she is more likely to be exposed to substandard housing conditions where landlords fail to remove mold, repair leaks, or address other structural problems. For Tanya and her neighbors, their housing is more likely to be near freeways, ports, industrial facilities, and other polluting sources. By necessity, then, interventions can't just be child centered; they must also consider the role that policies related to housing codes and code enforcement, affordable housing, residential segregation, and land use play in fostering (or hindering) Tanya's health. Finally, as the framework suggests, we need not stop there: we could also focus on racism, lack of political power, and the other root causes of the inequities that lead to disparities in health (the far left portion of the framework).

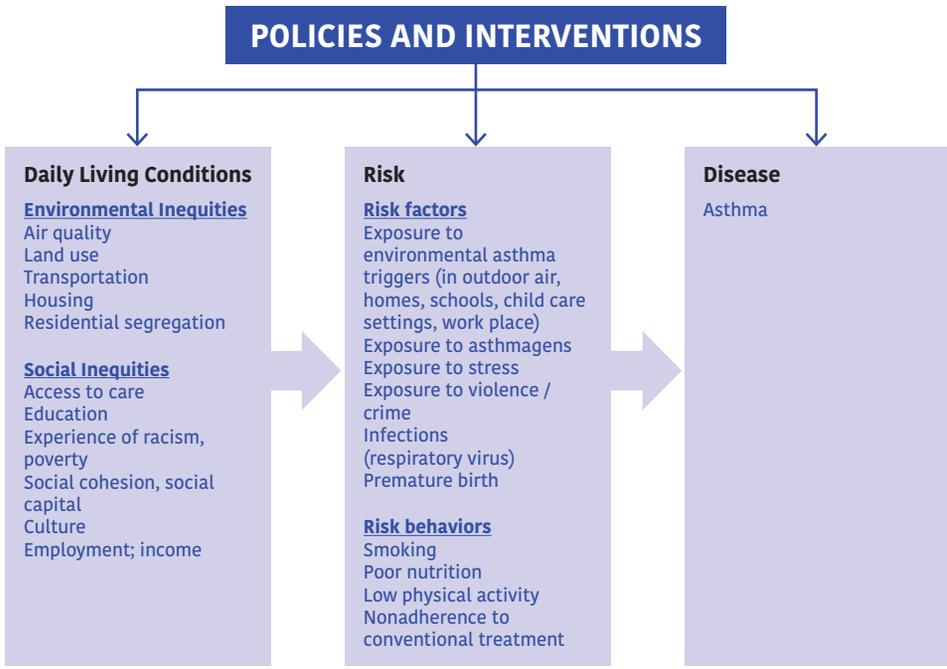
Managing and Preventing Childhood Asthma: Model Policies and Interventions

Taking a comprehensive, policy-focused approach that goes beyond disease management necessitates a broader understanding of childhood asthma, including its influences and causes. It demands interventions that address not just clinical management but also housing, school and child-care environments, outdoor air quality, transportation, and land use. Of course, caring for individual children will be the central and motivating factor behind any asthma intervention, but we have to consider *both* the child and the community in which he or she plays.

Fortunately, there are numerous model interventions and policies from across the country. Asthma outcomes can improve quickly when conducting evidence-based interventions—particularly those focused on addressing disease symptoms and trigger reductions. We also need to address the factors that shape daily living conditions and that contribute to risk factors and behaviors. Such interventions may lack a robust evidence base to support their effectiveness—largely because traditional evaluation measures are designed for individually focused interventions and are not equipped to assess the impact of policies, systems, and environmental changes on communities. However, these interventions have the potential to not only limit asthma exacerbations but also reduce asthma prevalence by preventing the onset of asthma in otherwise healthy children. Both evidence-based and promising practices are essential.

The following policy recommendations and examples of interventions tackle one or more of the contributing factors identified within different sections of the framework, with a particular emphasis on Disease, Risks, and Daily Living Conditions. Taken separately or together, these approaches offer an array of possibilities for improving childhood asthma.

Figure 2



Policy Recommendations and Interventions

1. Promote a systems change to increase the delivery of culturally responsive, guidelines-based care to all children with asthma. Although clinical practice for children with asthma continues to improve, the healthcare sector needs to systematically promote the use of clinical guidelines and strategies for enhancing cultural responsiveness. Providing care consistent with the “Guidelines for the Diagnosis and Management of Asthma,” developed by the National Heart Lung and Blood Institute, would have an enormous impact on childhood asthma outcomes, and yet implementation is limited. One telling example: despite the recommendation that all patients with asthma receive an asthma action plan, one survey found that less than one-third (31 percent) of patients received one.²³

Healthcare providers can and should use existing curricula and tools to help them consistently use guidelines-based care. Physician Asthma Care Education (PACE) is one of many curricula for improving physician practices,²⁴ including cultural competency.²⁵ In addition, asthma action plans are available at no cost and in multiple languages.²⁶ Many clinical programs include community health workers as key members of the care team, thus emphasizing the value of cultural competency.²⁷ Other programs expand access to clinical care by providing clinical management at community sites, such as school-based health centers or through mobile clinics.²⁸

In addition to these interventions, we also need continued policy improvements related to access to care. We should keep advocating for insurance coverage for the millions of people who remain uninsured, despite advances in healthcare reform.²⁹ Changing insurance practices for chronic diseases like asthma is another option; for example, researchers have cited co-pays as a barrier to effective chronic disease management.³⁰

From Practice to Policy: Expanding Reimbursement for Asthma Education

A recent rule change from the Centers for Medicaid and Medicare Services (CMS) provides a potentially significant opportunity for asthma management. The rule expands the types of providers that can be reimbursed for preventive services. Previously, regulations limited the scope of allowable coverage for preventive services to those that are *provided* by a physician or other licensed practitioner. The new rule allows state Medicaid programs to reimburse for preventive services provided by those professionals that may fall outside the state's clinical licensure system, as long as they have been *recommended* by a physician or other licensed professional. This change means that Medicaid can cover and pay for community-based asthma interventions when carried out by asthma educators, healthy homes specialists, or other community health workers. However, implementation at the state level is optional; policymakers and advocates must play a key role in pushing their state Medicaid program to adopt the rule.³¹

- 2. Increase patient education and case management to support asthma self-management and support behavior changes that reduce exposure to risks.** Medical providers in a variety of settings need to offer more education to support self-management and reduce exposure to environmental triggers. Health Resources in Action puts it well: "In dozens of studies, asthma education sessions delivered in the clinic [or] home ... have helped patients overcome key factors in poorly managed asthma. Demonstrated benefits of asthma education include reduced asthma symptoms, enhanced quality of life, improved medication adherence, fewer activity limitations, and reduced medical costs."³²

Education doesn't start and end with a visit to a doctor; many other people provide effective asthma education, including nurses, health educators, case managers, and community health workers. There are also multiple settings in which education can be effective, including clinics, in-home visits,³³ school-based health centers, and classrooms (e.g., the American Lung Association's Open Airways for Schools).³⁴ Education programs also target specific age groups (e.g., the Asthma and Allergy Association's Wee Wheezers for children under seven)³⁵ or specific behavior changes (e.g., the Clinical Effort Against Secondhand Smoke Exposure, targeting parents of children with asthma).³⁶

- 3. Institutionalize programs that link clinical care with social determinants of health.**

In asthma management, it is essential to think of clinical care as a key component of an integrated strategy, rather than a stand-alone service. One way to do this is to use the clinical setting to establish connections to community services. For example, as part of their clinical care, the Family Information and Navigation Desk at University of California, San Francisco Benioff Children's Hospital in Oakland systematically screens and assists patients with social determinants of health-related needs (e.g., food access, housing, linkages to community resources).³⁷

Another approach is to create a medical home or health home that integrates asthma clinical services and community services into one coordinated approach. The U.S. Department of

Health and Human Services recently issued State Innovation Model Awards to 25 states to design and implement healthcare system improvements, with a particular focus on children. As states develop their models, they have the opportunity to integrate comprehensive asthma management and prevention. As but one example, a model health home should include community health workers who provide in-clinic asthma education *and* in-home environmental assessments for families.³⁸

From Practice to Policy: Making the Financial Case for Asthma Interventions

Given today's reality of limited healthcare and public health dollars, advocates are focusing more than ever on return-on-investment (ROI) opportunities to institutionalize asthma programs. ROI calculates dollars saved, or expenditures avoided, per dollar invested. In the field of asthma, a positive ROI can be one helpful tactic to convince a managed-care organization to cover a particular asthma service or a private foundation to provide funds to scale up a program.

Many asthma interventions have already demonstrated a positive ROI. In the analysis by the U.S. Centers for Disease Control's Task Force on Community Preventive Services (described in item #4), researchers found that home-based interventions with an environmental focus had ROIs ranging from \$5.30 to \$14.00 for every dollar invested.³⁹ Other types of asthma programs have also demonstrated a positive ROI. One education program targeting high-risk children demonstrated a ROI of \$11.22 for every \$1.00 spent,³⁹ while a case management program targeting children demonstrated a ROI of \$7.69–\$11.67 for every \$1.00 spent.^{40,41}

As we sustain and expand effective asthma programs, demonstrating their financial benefits and their well-documented health benefits is essential. Health Resources in Action's *Investing in Best Practices for Asthma: A Business Case* provides many more examples of interventions with a positive ROI and strategies for making the business case for asthma interventions.⁴² The Agency for Health Care Research and Quality offers an Asthma Return on Investment calculator.⁴³

- 4. Advance policy, systems, and environmental changes that reduce exposure to risks in homes, schools, and child-care settings.** Indoor air quality is a major concern for asthma, with such factors as mold, rodents, roaches, dust mites, and pesticides directly linked to asthma attacks. According to the U.S. Centers for Disease Control's Task Force on Community Preventive Services, there is "strong evidence of effectiveness of in-home environmental interventions."⁴⁴ The task force concluded that combining minor to moderate environmental remediation, defined as structural changes in the home, with an educational component provides "good value for the money invested based on improvements in symptom-free days, savings from averted costs of asthma care, and improvement in productivity." These programs move beyond education on how to reduce triggers by creating sustainable environmental changes in homes.

Educational institutions also have an important role in adopting systems and policies to reduce exposure to asthma triggers. One excellent road map is the U.S. Environmental Protection Agency's Tools for Schools (TFS) program.⁴⁵ Comprehensive in scope, TFS lays out school policies and procedures to improve indoor air quality, from maintenance practices for heating and ventilation systems to promoting asthma-friendly cleaning products. School district and state policymakers can also codify such innovations across all schools. New York and Illinois passed laws requiring schools to use environmentally sensitive cleaners. In California, legislators and advocates are working to improve indoor air quality through the construction

and renovation of schools by shaping facility funding standards to emphasize health and equity. Child-care advocates and staff can also reduce exposure to triggers by adopting practices like using nontoxic art supplies, preventing the development of mold through moisture control, and using alternatives to bleach (a risk factor for asthma).^{46,47,48,49}

- 5. Create policies that promote affordable and healthy housing.** Although in-home visiting programs have been proven to help families reduce exposure to triggers, often there are housing triggers beyond the control of tenants. We need policy changes that address substandard housing where landlords fail to remove mold, repair leaks, or address structural problems.

To better protect the health and well-being of tenants and their children, more code enforcement agencies should turn to Proactive Rental Inspection programs. Rather than wait for health and safety code complaints, enforcement staff should conduct regular inspections of rental properties. Doing so would help catch health-related problems early, while also preventing retribution against tenants (since they didn't initiate the inspection).⁵⁰ States can also work to strengthen health and safety codes directly. For example, California passed legislation that requires landlords cited for a pest infestation to remediate housing conditions that contribute to the infestation, such as leaky plumbing and openings in walls or flooring. This reduces the use of harmful chemical treatments (an asthma trigger), while also preventing future infestations.

From Practice to Policy: Protecting Children from Mold

Research affirms an association between visible mold or mold odor with a wide range of respiratory and allergic health effects, including asthma.⁵¹ Yet, mold is not specifically identified as a housing or health code violation in most states, leaving local enforcement officers uncertain about their authority to address mold problems. The mold assessment and remediation industry also lacks regulations, posing risks of unhealthy exposure to mold from unsafe work practices and leaving owners vulnerable to unscrupulous operators that use the fear of “toxic mold” to inflate prices.

The California Healthy Housing Coalition is exploring state legislation to provide local enforcement agencies with clear standards for addressing mold complaints and to establish business licensing requirements and mold remediation standards. At the time of publication, the state of New Jersey had a bill moving through the legislature that would establish standards for inspection and clean-up of mold in residential buildings and school facilities. The state of Texas already has requirements for licensing and registering people performing mold assessments and remediation. With some states leading the way, this is clearly an opportunity for other states to take action.

- 6. Advocate for healthy air quality, with a particular focus on those communities inequitably affected and engage in climate action to reduce the burden of asthma.** With evidence suggesting that outdoor air pollution contributes to the onset of asthma,⁵² we need to continue to push for air quality improvements, particularly in low-income communities and communities of color, where air pollution is disproportionately high. Cleaner air means healthier communities: in California, air quality regulators, supported by diverse partners including RAMP, implemented diesel emissions regulations that will reduce diesel particulate matter by 43 percent by 2020. Such improvements are expected to prevent 150,000 cases of asthma, 12,000 cases of acute bronchitis, and 9,400 premature deaths over the next 15 years. The economic benefits of the regulations are estimated at between \$48 and \$69 billion.⁵³ Beyond the immediate effects of air pollution, we

need more leadership from policymakers and children’s health advocates to respond to the reality that climate change is exacerbating the problem of asthma.⁵⁴ It can be a challenge to make the transition from thinking about inhalers and asthma action plans to also thinking about such issues as diesel regulations and climate change, but these are key ways to reduce asthma and asthma disparities.

From Practice to Policy: Climate Change and Air Pollution Opportunities

In June 2014, the U.S. Environmental Protection Agency proposed cutting carbon emissions from power plants. Such carbon emissions will reduce particulate pollution and ozone, both of which are clear asthma triggers. If implemented as planned, the EPA estimates that by 2030, the proposed reductions will avoid a projected “**140,000 to 150,000** asthma attacks in children.”⁵⁵ However, more work is needed by advocates and policymakers to turn this proposal into action.

Children’s health advocates can and should tackle the asthma and other health effects from the freight and general transportation sectors as well. In California, asthma, environmental health, and justice organizations, as well as other stakeholders, are collaborating with policymakers to shape the state’s Sustainable Freight Transport Initiative⁵⁶ to aggressively move the state to a zero- or near-zero emission system. Similar efforts are happening in other states and communities across the nation and could be replicated and expanded.^{57,58}

- 7. Advocate for land use and transportation decisions that ensure a positive impact on public health and equity.** Land use and transportation policies shape exposure to air pollution and determine which communities will be disproportionately affected by air pollution and associated health effects, such as asthma. We need policymakers who are committed to making land use and transportation decisions with an eye toward health equity, which in turn can help children suffering the most from asthma. Policymakers can design communities to reduce the need to drive long distances and promote walking and biking, shape permitting policies so that polluting industries aren’t located next to residential communities, or create policies to limit housing development near freeways.

One example in California of policymakers and advocates working to promote health and equity is the development of the Sustainable Communities Strategies, which determine housing and transportation plans for each region in the state. By incorporating public health and environmental justice priorities into the plans, they can create healthier environments for children with asthma.⁵⁹

Effective Policies and Interventions Will Require Both Traditional and Innovative Funding Sources

Although the program and policy changes described here can pave the way for broad-scale asthma improvements, the regrettable fact is that there is little sustainable funding available for national implementation. We need funders of all types—government, foundations, investors, managed care organizations, and others—to provide support for both proven and promising programs and policies.

Innovative funding strategies aren’t hard to find. In California, the Alameda Alliance for Health, a Medicaid managed care organization, provides financial reimbursement to the county public health department to conduct in-home visits for children that focus on asthma management and behavior

changes to reduce exposure to asthma triggers.⁶⁰ Hospitals, such as the Parkview Health System in Indiana,⁶¹ have incorporated community-centered programs into their budgets, providing asthma education and environmental asthma trigger assessment. Massachusetts approved legislation for a bundled payment system for high-risk pediatric asthma patients that supports a pilot project with home visits, care coordination by community health workers, and supplies to reduce environmental triggers.⁶² In Fresno, California, diverse stakeholders are implementing a social impact bond (SIB) to fund an intervention that includes environmental risk reduction in the homes of patients with asthma.⁶³ A successful SIB will raise program funds from investors and reduce costly emergency department and hospitalization visits, while also producing sufficient savings to provide a return on investment. The adoption of the CMS preventive services rule, mentioned earlier, may be another source of financial support to provide reimbursement for asthma education.

In addition to these creative ideas, however, we still need more traditional funders—government agencies and foundations—to prioritize asthma and fund an array of approaches. This includes funding to build political will and support advocacy efforts that tackle the social and environmental inequities contributing to asthma disparities.

From Practice to Policy: A Call to Action

A broader framework for understanding childhood asthma necessitates new strategies for addressing the problem, with policy change a key solution.⁶⁴ A narrow focus on the disease of asthma is not enough; policymakers, children's health advocates, and funders must also tackle the risks and daily living conditions that have a profound influence on health outcomes, particularly for those children suffering the most. Although policy approaches are far removed from the practice of the clinic, case management, or health education, they are part of the trajectory toward a new, expanded, exciting approach to tackling asthma and public health problems. Yes, policy changes can be tough, for they require something harder to find than the well-crafted intervention or the right amount of funding—that is, they require political will. However, policy improvements don't happen without this will, which is why we need policymakers with the courage to summon it and advocates with the capacity to push them for it.

By implementing effective interventions and by taking action to institutionalize policy solutions, we can move out of complacency about the rising rates of asthma and instead solve the problem through a more comprehensive approach. Asthma may be a leading chronic condition among children in the United States, but it is a public health issue with so many solutions, so now is a key time for all of us to make a broad, long-term commitment to support asthma management and prevention.

Anne Kelsey Lamb is the Director, Joel Ervice is the Associate Director, and Jessica Peters is the Program Associate of Regional Asthma Management and Prevention. RAMP's mission is to reduce the burden of asthma through a comprehensive approach, ranging from clinical management to environmental protection. We collaborate, coordinate, share resources, advocate, and promote policy change in order to reduce inequities, strengthen asthma prevention efforts, and improve management for all communities. RAMP is a Project of the Public Health Institute.

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