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Using Medicaid to Advance Community-Based Childhood Asthma Interventions: A Review of Innovative Medicaid Programs in Massachusetts and Opportunities for Expansion under Medicaid Nationwide

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Treating, managing and ultimately reducing the burden of childhood asthma requires coordinated interventions that integrate community-based approaches into patient care. Asthma education and environmental assessments provided in homes and community settings lead to improved asthma control by reinforcing treatment plans and taking the management of asthma beyond the doctor's office. These community-focused interventions, which teach children and their families to proactively manage their disease and mitigate asthma triggers, are fundamental to successful asthma control and show a significant return on investment. However, coverage for comprehensive asthma management is not typical among public and private insurers, and few children have access to these evidence-based interventions and services.

This report reviews community asthma interventions; describes new initiatives underway in Massachusetts to promote community-based asthma prevention for children; and discusses opportunities for state Medicaid programs to incorporate these interventions into Medicaid and the Children's Health Insurance Program (CHIP) programs nationwide.

PREVALENCE AND BURDEN OF CHILDHOOD ASTHMA

Asthma is the single most common chronic condition among children in the United States. Approximately 7 million children under age 18 in the U.S. have asthma, with poor and minority children suffering a greater burden of the disease.[1,2,3] Despite advances in diagnosis and treatment and increased attention to the prevention of symptoms, the incidence of the disease is rising: childhood asthma prevalence in the U.S. increased from 8.7% in 2001 to 9.5% in 2011.[4]

Not only is pediatric asthma widespread, the economic burden is substantial. Researchers estimate that asthma costs the U.S. healthcare system $56 billion annually in both direct healthcare expenditures and indirect costs from lost productivity.[5] Asthma is the third leading cause of hospitalization among children under the age of 15, and is associated with increased emergency department visits.[6] Pediatric asthma is also one of the leading causes of school absenteeism, accounting for 14.4 million lost school days and 14.2 million days of missed work by caretakers in 2011.[7,8]

Researchers project that improving asthma management among vulnerable populations could save as much as 25% of total asthma costs, and help millions of children lead healthy, active lives.[9] Unfortunately, while 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, and the prevalence of asthma attacks has been increasing by 1.6% per year.[10] Increasing the number of children that have their asthma appropriately managed and addressing the underlying factors that exacerbate symptoms should be priorities for health care and public health.

COMMUNITY-BASED ASTHMA INTERVENTIONS

A supportive and responsive health care system is certainly important for improving asthma management, but, given the complexity of the disease, a more comprehensive, community-based approach is needed to secure optimal asthma control. The 2007 National Asthma Education

Prevention Program (NAEPP) Expert Panel guidelines place a strong emphasis on community education for asthma self-management and control of environmental asthma triggers as vital components of effective asthma management.[11]

- ***Asthma Self-Management Education.*** As with many chronic conditions, it is the patient, not the practitioner, who must manage his or her own asthma; for pediatric asthma in particular, the patient's family bears significant responsibility.[12] Children and their families must learn to use prescribed asthma-control medicines and equipment correctly so that they can proactively prevent asthma symptoms throughout their daily routine. While children and their caregivers receive initial instruction in clinical settings, best practices call for repeated sessions of demonstration and practice in homes and community settings to reinforce treatment recommendations.[13]

- ***Reduction of Environmental Triggers.*** Studies show that exposure to tobacco smoke, certain allergens (dust mites, cockroaches, rodents, pests, and pet dander), and other environmental irritants increase the risk of developing – or losing control of – asthma.[14] As such, a critical component of asthma education is teaching children and their families to identify exposures and employ trigger-reduction strategies in homes and other community settings.[15] For example, community health workers might conduct a home environmental assessment to identify asthma triggers in their home and teach families how to use low-cost home improvements to reduce environmental triggers (such as dust-mite proof mattress and pillow covers, using HEPA vacuum cleaners, and Integrated Pest Management techniques) to prevent or eliminate pest infestations.

Community-Based Approaches are Fundamental to Successful Asthma Control. Effective asthma management is multifaceted: comprehensive education on self-management, medication adherence and allergen-control should be coordinated with other aspects of clinical care, provided in concert with an individually-tailored, written asthma action plan.[16,17] However, the traditional clinical "health care" system does not always support the extensive educational role recommended by NAEPP guidelines. As a result, many patients do not learn to control their disease. For example, in 2008, less than half of patients with asthma reported being taught how to avoid asthma triggers in their homes.[18] Furthermore, education is only effective when patients receive sufficient education to put knowledge to use: the same study found that nearly half (48%) of those who received asthma education did not adhere to trigger-reduction strategies.[19]

Community-based approaches to educate and assist children and their caregivers with asthma outside of clinical settings are fundamental to successful asthma control.[20,21] Asthma education programs provided in homes, schools, and other community locations supplement and reinforce clinical disease self-management education and treatment by reaching children where they live, learn, and play. These programs follow evidence-based NAEPP guidelines that emphasize the need for asthma education to occur at all points of care, including nontraditional settings such as homes, schools, and community centers.[22]

Studies have shown that asthma home visitation programs can improve asthma management, reduce urgent care utilization, decrease allergens in the home, reduce missed school and work days, and lessen caregiver stress.[23,24,25,26,27,28] School settings represent an additional opportunity for asthma education. Several large controlled trials have shown that asthma education for self-management provided in a school setting (in a school-based clinic by healthcare providers or in the classroom by other school-based personnel) can improve symptom control, utilization of health care services, school absenteeism, academic performance and quality of life.[29,30,31,32,33]

Community Asthma Interventions Show a Significant Return on Investment. Multiple evaluations have shown the value of community-based approaches in reducing the burden of asthma. In its systematic review of existing research, the Community Preventive Services Task Force, which publishes the *Guide to Community Preventive Services* (Community Guide), found a return on investment (ROI) ranging from $5.30-$14 for every dollar invested in home-based multi-trigger, multi-component environmental interventions focused on children and adolescents.[34] Other studies have shown even higher returns when community interventions are combined with other improvements to clinical care.[35,36] A study evaluating a comprehensive clinic- and home-based asthma education program showed savings of $36 for every $1 spent.[37] School-based approaches demonstrate savings as well: one study estimated net savings of just under $1000 per child in a school-based asthma education program.[38]

The potential for significant return on investment makes a strong case for insurance policies to cover home and community-based asthma education and to connect this education with existing clinical services. While a few private health plans have incorporated community asthma education and environmental interventions into their plan design and have demonstrated a successful ROI and improved patient outcomes,[39,40] community-based asthma programs are not widely implemented by public and private insurers.[41,42]

Innovation in Massachusetts: Using Medicaid Demonstration and Waiver Authority to Implement Community-Based Asthma Interventions

Medicaid-eligible populations are more likely to have asthma and may be most likely to benefit from community-based interventions. The poorest of the poor, with income below 100% of the federal poverty line (FPL), have an asthma prevalence of 11.2%, compared to just 7.3% asthma prevalence among persons above 200% FPL.[43,44] In some states, more than half of all children with asthma rely on Medicaid for their health coverage.[45,46] The burden of asthma in the Medicaid population is also more acute: lower-income populations are less likely to have well-controlled asthma and are more likely to use an emergency department for crisis-oriented asthma treatment.[47,48,49]

While Medicaid could play a significant role in bringing effective community asthma programs to low-income and medically underserved populations, Medicaid programs do not generally offer coverage for non-traditional asthma services or traditional services provided in non-clinical settings; Medicaid payment structures are primarily designed to pay for clinical services in clinical

settings. However, recent efforts are underway in Massachusetts and other New England states to test community-based asthma service delivery models within traditional clinical service interventions that meet the needs of Medicaid-enrolled children and their families:

- ***MassHealth Pediatric Asthma Bundled Payment Pilot Program.*** In June 2010, Governor Deval Patrick approved legislation calling for a bundled payment system for high-risk pediatric asthma patients.[50] In December 2011, CMS approved a request from Massachusetts to extend its MassHealth Medicaid Section 1115 waiver[i] to develop a new pediatric asthma pilot program focused on improving health outcomes for children with asthma to reduce asthma-related emergency department utilization and hospitalizations, and to reduce associated Medicaid costs.[51] Children, aged 2 through 18, will be eligible for enrollment in the pilot if they (1) have "high-risk" asthma, defined as an asthma-related hospitalization or emergency department visit, an oral corticosteroid prescription for asthma in the last 12 months, or another indicator of poor asthma control based on validated assessment tools; and (2) receive their care at one of the pilot primary care sites engaged in the program.

  The pilot will provide more flexibility for coverage of community-prevention services not traditionally covered by MassHealth, including home visits, care coordination by community health workers, and supplies to reduce environmental triggers. MassHealth expects to launch this pilot in 2013. Under the pilot's first phase, Medicaid will support a few providers selected through a competitive process to deliver non-traditional services and supplies to manage high-risk pediatric asthma patients, including home visits provided by community health workers and environmental mitigation supplies. In a second phase of the pilot, MassHealth will use the experience of the first phase to develop a bundled payment for children with asthma at high risk and may expand the services provided under the bundled payment to include additional ambulatory services that are required for effective treatment and management of asthma in high-risk pediatric patients.

  Primary care clinician sites may participate in the pilot. In the future, MassHealth may offer support to practice sites that need to make infrastructure modifications in order to better provide comprehensive pediatric asthma services. If the initial phases of the pilot are successful in improving patient outcomes and preventing asthma-related emergency department visits and hospitalizations, Massachusetts may request to expand the pilot to other populations, or to implement provider incentives for participation (such as a shared savings).

- ***Reducing Ethnic/Racial Asthma Disparities in Youth 2 (READY 2) Study.*** In April 2011, the US Department of Housing and Urban Development awarded the Massachusetts Department of Public Health a *Healthy Homes Technical Studies Grant Award*;[52] this award

[i] Under Section 1115 Waivers, States can apply to CMS for program flexibility to test new or existing approaches to financing and delivering services under Medicaid and CHIP.

continued a previous research grant from the National Institute of Environmental Health Sciences (NIEHS). With this grant funding, the READY Study will evaluate the cost-effectiveness of low-cost home interventions, combined with in-home environmental assessments and asthma education, targeted at children with poorly controlled asthma. Focusing on Medicaid-enrolled children, the study will evaluate the ability of home-based environmental and asthma education interventions to increase asthma self-management and trigger-reduction behaviors. The study will also examine whether these interventions lead to reduced healthcare costs, measuring reduction in environmental triggers, urgent care visits, use of rescue medication, and number of symptom days.

The target population for this intervention is low-income, minority children ages 2 – 13 with poorly controlled asthma; the READY Study aims to enroll 260 children and families over three years. Massachusetts intends to use study results to inform Medicaid and private insurance coverage decisions within the State.

- ***New England Asthma Innovations Collaborative***. In July 2012, Health Resources in Action (HRiA) and the Asthma Regional Council of New England (ARC) were awarded a Center for Medicare and Medicaid Innovation (CMMI) Health Care Innovation Award[ii] to support the "New England Asthma Innovation Collaborative" (NEAIC). NEIAC is a multi-state, multi-sector partnership that includes health care providers, payers, and policy makers, aimed at creating an innovative asthma marketplace in New England that that will increase the *supply and demand* for high-quality, cost-effective health care services delivered to Medicaid children with severe asthma, featuring the use of community health workers. This marketplace will test a service delivery model that targets patient self-management education and environmental interventions in the homes of children with poorly controlled asthma.

  Over the three-year demonstration period, services will be delivered to over 1400 children ages 2-17 who have had at least one asthma-related emergency department visit, observation stay, hospitalization or received an oral corticosteroid prescription for asthma in the 12 months prior to enrollment. NEAIC will also train approximately 64 health care workers and asthma educators to deliver cost-effective, prevention-oriented care in clinics and homes to teach children and their families to manage asthma and address environmental triggers. The intervention is expected to result in over $4 million in Medicaid savings through reduced emergency department visits and hospital admissions. NEAIC will work to sustain these interventions through an extensive evaluation process and by piloting reimbursement methodologies with payers.

[ii] CMMI was established under the Affordable Care Act to test innovative payment and service delivery models to reduce program expenditures, while preserving or enhancing quality of care for individuals who receive Medicare, Medicaid, or CHIP benefits.

These three examples highlight the innovative work underway in Massachusetts and New England to target community-based asthma interventions for Medicaid- and CHIP-eligible children. Should these programs prove successful, they will provide a model for inclusion of community asthma education and environmental interventions within Medicaid programs nationwide.

EXISTING MEDICAID AUTHORITY TO INCREASE COMMUNITY-BASED ASTHMA INTERVENTIONS

Although Massachusetts and other states have implemented innovative programs to address asthma through Medicaid waivers, demonstration projects, and other federal funding, current federal Medicaid regulations could give states the flexibility they need to expand coverage and payment to incorporate community-based services without special authority from Medicaid.[iii] The following discussion describes various pathways that state Medicaid programs can take under current Medicaid authority to support community asthma prevention and health education.

Asthma Interventions in Non-Clinical Settings: Early, Periodic, Screening, Diagnosis and Treatment (EPSDT)

The EPSDT program ensures that Medicaid-enrolled children under age 21 receive a broad range of preventive, acute care, and diagnostic and treatment services. Under EPSDT regulations, each state must cover periodic assessments, which must include health education and anticipatory guidance designed, in part, to promote healthy lifestyles and disease prevention.[53] Educating children and their families about asthma self-management, medication adherence and home trigger reduction strategies can and should be included within EPSDT.

Although EPSDT regulations do not limit health education to clinical settings, states have traditionally paid for these services within a well-child visit. Accordingly, health education is typically delivered by a pediatrician or nurse in a clinical setting. Arguably, however, health education could be provided under the EPSDT benefit in *non-clinical* settings. CMS guidance emphasizes that any practitioner licensed by the state may become qualified to provide EPSDT services, and encourages states to "[t]ake advantage of all [provider] resources available."[54] CMS also encourages EPSDT programs to coordinate with a broad range of social service programs to provide various services, including health education and counseling.[55]

States should use the EPSDT benefit more liberally to promote community-based symptom prevention strategies for children with asthma. A comprehensive assessment of the EPSDT program in 2008 recommended that to modernize and improve the EPSDT benefit, state Medicaid programs should increase the provision of preventive services under EPSDT – including health education and anticipatory guidance – in non-clinical settings, such as public

[iii] Medicaid demonstration authority is still important for allowing state Medicaid programs to cover supplies not otherwise considered "medical assistance", such as allergen-proof mattress covers or air humidifiers.

	health agencies and childhood educational settings.[56]
Asthma Interventions Furnished by Non-Traditional Providers: Preventive Benefits under Medicaid	In general, the Medicaid statute states that preventive services are reimbursable by Medicaid when "recommended by a physician or other licensed practitioner of the healing arts within the scope of their practice under State law…".[57] However, implementing regulations have limited the scope of allowable coverage of preventive services to those that are actually "*provided by* a physician or other licensed practitioner…" (emphasis added).[58] As a result, most state Medicaid programs have limited coverage of preventive services (both inside and outside EPSDT) to those furnished by a physician. For example, while Utah's Medicaid program covers asthma self-management, these services are only covered when "*provided to patients by the physician during medical visits*."[59] This type of Medicaid provider limitation largely prevents otherwise capable community health workers and health care professionals from providing community-based interventions, as well as restricts the level of education that can be given in a time-limited visit by a physician. Proposed regulations issued January 22, 2013 aim to remedy this limitation. CMS proposes to align its Medicaid regulations with the enabling Medicaid statute, changing the language to "*recommended by* a physician or other licensed practitioner…" (emphasis added).[60] This shift would mean that state Medicaid programs can reimburse for the preventive services provided by those professionals that may fall outside of a state's clinical licensure system – such as certified asthma educators – so long as the services have been initially recommended by a physician or licensed practitioner. If this proposed regulatory change is finalized, states should extend Medicaid reimbursement to services provided by appropriate community health workers that meet a state's training and certification standards. In addition, federal Medicaid law gives states discretion to define the settings where covered preventive services can be administered, stating that reimbursable preventive services can include those provided in "a home, or other setting."[61] Therefore, Medicaid programs can authorize payment to providers who offer recommended asthma interventions outside of the "traditional" clinical healthcare setting, such as in the home, school or other community location. Taken together, the flexibility Medicaid law gives to states to define provider qualifications and settings would allow Medicaid to reimburse for numerous science-based asthma interventions using non-traditional providers in non-clinical settings.
Community-	The Affordable Care Act (ACA) creates a new state Medicaid option to permit

Based Asthma Interventions under Medicaid Health Homes

individuals with one or more chronic conditions – specifically including asthma – to seek care through a "health home."[62] The health home model has the potential to greatly improve the quality of asthma treatment for children. 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.[63] Health homes can target any Medicaid-eligible population, including children.

As to whether an asthma specific health home will include asthma health educators in home and community settings will depend on how a state defines members of the "health team" responsible for the care of health home participants. While federal guidance on health homes makes clear that states have discretion to determine the range of participating providers and treatment settings, the guidelines also emphasize that a health home must contain sufficient providers to deliver a "whole-person approach to care," including promotion of disease self-management, access to preventive and health promotion services, and coordination with community-based services.[64]

To date, seven states (Idaho, Iowa, Missouri, New York, North Carolina, Oregon, and Rhode Island) have established Medicaid health homes that specifically include persons with asthma within the targeted population.[65] State definitions for eligible health home providers and settings vary, but some are broad-enough to include community health workers capable of educating asthma patients about their care:

- Oregon's definition of eligible health home participating providers includes "community health workers" and "peer wellness specialists" that meet criteria established by the Oregon Health Authority.[66]
- Iowa's definition of a designated provider includes health coaches.[67]

While 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 – this new ACA program 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.[68]

CHIP	Children receive health coverage through Medicaid and the state Children's Health Insurance Program (CHIP). In 2011, CHIP provided health coverage for approximately 8.0 million children.[69] 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 flexibilities 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 like community health workers and certified asthma educators.
Managed Care Contracts that Promote Community-Based Asthma Interventions	Many Medicaid agencies contract with managed care organizations (MCOs) to provide coverage to Medicaid-eligible populations. Today, more than 70 percent of Medicaid and CHIP enrollees receive care through a managed care arrangement.[70] States can require MCO plans, through contractual agreements, to offer community-based asthma interventions to plan enrollees. MCOs also have the flexibility to manage their members' health using cost-effective techniques that may go beyond what is available under traditional fee-for-service Medicaid, such as disease management strategies to manage chronic conditions. Some Medicaid MCOs have designed disease management programs for their members that include community-based asthma interventions. For example, in 2002, Monroe Plan for Medical Care – a Medicaid MCO plan in New York State – launched a program for children with asthma, providing specialty clinical care, case management services, educational materials, home environmental assessments, and supplies for reducing exposure to environmental triggers. For every $1 spent, $1.48 was saved in direct medical costs through a 60 percent reduction in hospitalizations and 78 percent fewer ED visits.[71,72] Other MCOs implementing similar community asthma interventions have yielded comparable results. [73,74] However, some states are more proactive than others in encouraging MCOs, through the managed care contracting process, to utilize community-based interventions. For example, while some states require contractually that MCOs provide patient education and care coordination for individuals with chronic illness, others do not.[75] States should better promote the use of evidence-based community asthma interventions in MCO contracts. This is particularly important as states are likely to continue utilizing managed care arrangements to serve newly eligible Medicaid populations under the Affordable Care Act's Medicaid expansion.

WHAT STEPS CAN CMS TAKE TO SUPPORT COMMUNITY-BASED ASTHMA INTERVENTIONS WITHIN STATE MEDICAID PROGRAMS?

In their 2012 Consensus Report, the Institute of Medicine's *Committee on Integrating Primary Care and Public Health* recognized the value of leveraging Medicaid reimbursement to implement community-based asthma education and achieve enhanced quality of care.[76] As this review has demonstrated, there are several mechanisms under Medicaid to expand the provision of effective community-based asthma programs to secure optimal asthma management for low-income and medically-underserved populations. Moreover, Medicaid can serve as a stable funding source to maintain community-based asthma interventions.

CMS should take a number of steps to support community prevention within the Medicaid program:

- CMS should encourage states to use the EPSDT benefit more liberally to promote evidenced- and community-based asthma management strategies in non-clinical settings.
- CMS should finalize the rule granting states discretion to cover preventive services without limitation on provider type, as long as the services are recommended by a physician or other licensed practitioner. Through communications to state Medicaid leadership, CMS should clarify and promote this new flexibility as well as the ongoing ability of states to fund preventive services in non-clinical settings.
- As states apply for the Medicaid health home state plan amendment, CMS should promote the inclusion of asthma educators and other community health workers within the health team.
- CMS should better promote the use of community asthma interventions in Medicaid managed care contracts; CMS could develop and distribute resources that would support states in engaging MCOs to offer community-based prevention.
- CMS should continue to use its waiver and demonstration authorities as vehicles for testing innovative community-based asthma prevention management programs for Medicaid beneficiaries. If these waivers are cost-effective and improve care, CMS should bring them into practice.
- As Medicaid is expanded under the Affordable Care Act, CMS should work to ensure that Medicaid expansion plans offer a broad range of community-based asthma interventions.
- As one of the federal partners responsible for implementing the *Coordinated Federal Action Plan to Reduce Racial and Ethnic Asthma Disparities*, CMS should coordinate these efforts to improve coverage for community-based asthma interventions with its other obligations under the Action Plan, and with other federal agencies, where appropriate.[77]

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