

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

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

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

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

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

***Asthma
Interventions
in Schools:
Free Care Rule
Clarification***

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

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

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

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

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

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

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

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

CHIP

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

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

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

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

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

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

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

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

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

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

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

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

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

*Models that
Enhance
Asthma Care
for Medicaid
Beneficiaries*

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

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

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

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

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

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

***Social Impact
Financing:
Engaging
Private
Investors in
Medicaid
Innovation***

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

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

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

PATHWAYS TO MEDICAID REIMBURSEMENT FOR PEDIATRIC ASTHMA SERVICES

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

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

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

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

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

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

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

⁵ 42 USC § 1396d(r).

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

²⁹ CMS. *State Innovation Models Initiative: General Information*. Last visited May1, 2016. Available at: <https://goo.gl/kbrxxv>.

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

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

³² Delaware State Innovation Models: Funding for Model Design. Available at: <http://dhss.delaware.gov/dhcc/files/stateinnovationgrantprojectpdf.pdf>

³³ Childhood Asthma Leadership Coalition. Issue Brief: Using Social Impact Financing to Improve Asthma Outcomes. Available at: <http://www.childhoodasthma.org/wp-content/uploads/2014/10/Social-Impact-Financing-Asthma.pdf>.

³⁴ Clay, R.F., Health Impact Bonds: Will Investors Pay for Intervention? *Environmental Health Perspectives*. 2013. 121(2): p. 45-46. Available from: http://ehp.niehs.nih.gov/pdf-files/2013/Feb/ehp.121-a45_508.pdf.