

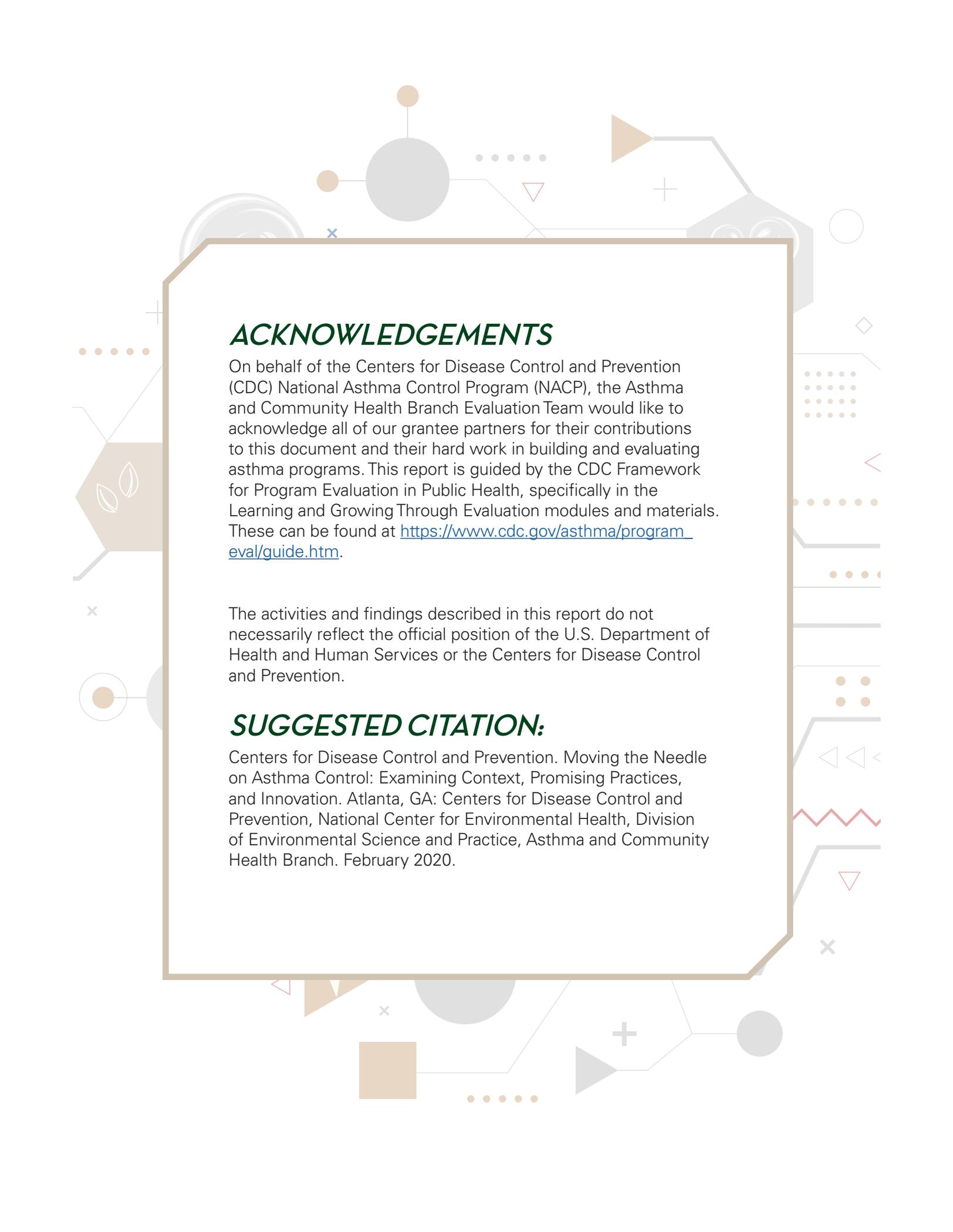


# ***MOVING THE NEEDLE***

*on Asthma Control: Examining Content,  
Promising Practices, and Innovation*



**Centers for Disease  
Control and Prevention**  
National Center for  
Environmental Health

The background of the page is decorated with various geometric shapes and lines in shades of brown, grey, and blue. There are circles, squares, triangles, and lines of varying sizes and orientations scattered across the page, creating a technical or scientific aesthetic. Some shapes are solid, while others are outlines. The central text is enclosed in a large, light brown rectangular frame with slightly rounded corners.

## ***ACKNOWLEDGEMENTS***

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The activities and findings described in this report do not necessarily reflect the official position of the U.S. Department of Health and Human Services or the Centers for Disease Control and Prevention.

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## EXECUTIVE SUMMARY

As 5-year grant cycles ended in the summer of 2019, the National Asthma Control Program's Evaluation Technical Advisors (ETAs) contacted the 25 funded asthma programs to assess their progress. Between 2014 and 2019, grantees achieved many accomplishments that provided higher quality, comprehensive asthma control:



Partnering with schools, community-based organizations, and health systems to build **robust infrastructure** that supports asthma services.



Using **surveillance and evaluation data** to keep partners informed, tailor services for those most in need, and improve program operations.



Initiating or expanding **home-visiting programs** to increase access to asthma services. These programs were often staffed with community health workers (CHWs).



Working with schools to offer or expand **asthma self-management education (AS-ME)** programs, such as Open Airways for Schools and Asthma Friendly Schools (AFS) initiatives.



Offering or promoting quality initiatives for clinical and community-based asthma services through innovative **workforce development** programs.



Using **electronic referral systems and team-based service models** in some locations, increasing the link between public health and healthcare services.



Pursuing **policy initiatives** to address asthma disparities and increasing reimbursements to better serve larger numbers of people with asthma.

<sup>1</sup>These asthma programs participated in cooperative agreements FOA 14-01404, awarded for the grant cycle 2014-2019 (5-years), and FOA 16-01606, grant cycle 2016-2019 (3-years). Data from performance measures are from reporting periods ending in October 2017 and October 2018.





## LIST OF ACRONYMS

Acronym	Definition
AAP	Asthma Action Plan
AE-C	Certified Asthma Educator
AS-ME	Asthma Self-Management Education
CAPP	Community Asthma Prevention Program
CHW	Community Health Workers
ED	Emergency Department
<b>EMR</b>	<b>Electronic Medical Record</b>
EMS	Emergency Medical Service
ETA	Evaluation Technical Advisor
FOA	Funding Opportunity Announcement
FQHC	Federally Qualified Health Center
HARP	Home Asthma Response Program
IPM	Integrated Pest Management
MATCH	Managing Asthma through Case Management in Homes
NACP	National Asthma Control Program
OAS	Open Airways for Schools
QI	Quality Improvement
TUAC	Teaming Up for Asthma Control





## Introduction

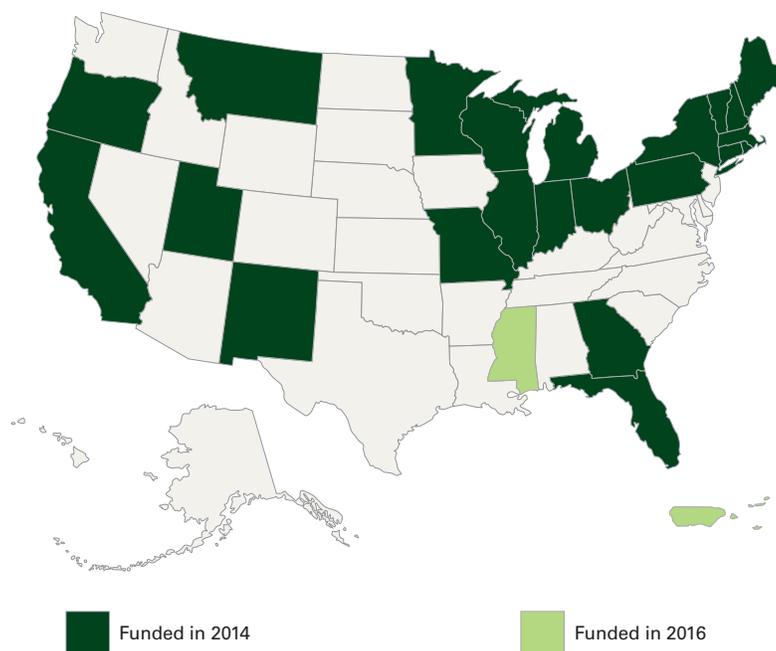
It is possible to live well with asthma. Effective, evidence-based strategies in both the healthcare and public health sectors are available. Yet the burden of asthma remains high, and disturbing disparities persist in asthma prevalence, asthma control, emergency department visits, and hospitalizations. Comprehensive asthma care across the public health and healthcare sectors is needed to allow people with asthma to have better asthma control and improved quality of life.

Recognizing the need for expanding comprehensive asthma services, the National Asthma Control Program (NACP) funded 25 asthma programs. This funding, provided through cooperative agreements, would maximize the reach, impact, efficiency, and sustainability of comprehensive asthma control services. The programs highlighted three types of strategies:

1. infrastructure strategies to support leadership, strategic partnerships, strategic communications, surveillance, and evaluation;
2. services strategies to expand school- and home-based services; and
3. health systems strategies to improve coverage, delivery, quality, and use of clinical services.

As illustrated in the logic model (Appendix A), these strategies were expected to improve outcomes for people with asthma by increasing the coordination of healthcare and public health services. The funding cycles for both cooperative agreements ended in August 2019.

In June and July 2019, NACP's Evaluation Technical Advisors (ETAs) held conference calls with staff from each program to ask five overarching evaluation questions. The programs also voluntarily submitted written responses. This document summarizes responses and shows information from performance measure data (submitted in October 2017 and 2018), which can be found in the gray text boxes. More information about these grants, evaluation questions, and methods is in Appendix B, and information on the performance measures is in Appendix C. The discussions were open-ended, so quantification of responses would be misleading. Also, the presence or absence of any specific topic reflects what we were able to cover in the limited time allowed.



*The figure shows a map with the outlines of all fifty states and Puerto Rico. Georgia, Florida, New York, Connecticut, Maine, Massachusetts, New Hampshire, Vermont, Rhode Island, Hawaii, California, Oregon, Utah, New Mexico, Indiana, Illinois, Michigan, Montana, Minnesota, Wisconsin, Missouri, Ohio, Pennsylvania are filled in dark green. Puerto Rico and Mississippi are filled in yellow-green. Beneath the map is a dark-green box labeled Funded in 2014, and a yellow-green box labeled Funded in 2016.*



***To improve asthma care, states built programmatic infrastructure that supports services strategies and health system changes.***

Asthma programs in each state took actions that enabled services strategies to occur. They built partnerships that created or expanded home-visiting programs, partnered with schools to address asthma, and partnered with health systems to expand services and improve quality of care. Communications, surveillance, and evaluation were strategically expanded to facilitate these activities. States varied in the types of partners they engaged and in their approaches, described below.

***Program infrastructure lays the foundation***

Strengthening programmatic Infrastructure is necessary to create the foundation for all other activities. For both cooperative agreements, grantees were asked to do the following:

- provide leadership and promote statewide planning, coordination, and expansion of asthma activities and resources;
- engage strategic partners to develop, evaluate, and sustain strategies and expand reach of comprehensive asthma control services;
- communicate and disseminate surveillance and evaluation findings tailored to key stakeholder audiences;
- maintain and enhance existing statewide surveillance systems; and
- evaluate comprehensive asthma control services and expansion strategies for effectiveness and efficiency.



## ***Subject matter expertise and guidance to other implementing partners are important levers to achieve change***

One of the key leadership strategies that were discussed was offering subject matter expertise and guidance to other organizations, such as the Department of Education. For example, several respondents provided input on school health policies, assuring asthma was represented accurately and appropriately.

Respondents described other leadership activities including working at a systems level, such as facilitating legislation for stock emergency medication in schools; or initiating state health improvement plans and state plan amendments to highlight and prioritize asthma and to seek reimbursement for asthma control services.

A few programs actively recruited people to serve as “asthma champions” as a way of further mobilizing support for asthma initiatives. These asthma champions have held influential positions such as Commissioner of Health, Director of Chronic Disease Prevention, Governor, Senior Vice President of Governmental Affairs and Public Policy, and state manager of the American Lung Association. One asthma champion was the governor of New York, who lead a “Health across All Policies” initiative that prioritized asthma and facilitated development of comprehensive value-based services for asthma, such as technical assistance and support for home-based environmental and safety strategies to initiate and sustain guidelines-based care.

### **LEADERSHIP & COLLABORATION**



*Many asthma programs have demonstrated leadership by creating and capitalizing on strategic collaborations, bringing more visibility to asthma. Programs recognize that the most efficient and effective way to bring asthma and areas of high burden to the forefront is through a network of coordinated partners.*



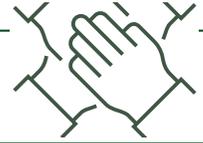


## ***Partnerships were essential to foster public health and healthcare connections and provide access to additional resources***

Grantees recognize that partnerships are especially effective in providing access to public health and healthcare resources. Many grantees were already linked to established, formal partnerships, such as an asthma coalition or strategic partnership. Formal, dedicated partnerships varied in scope and level of collaboration but represented a distinct organization whose members shared resources and a commitment to shared goals.

Dedicated partnerships in several states have been instrumental in developing community capacity by delivering technical assistance and training to schools, advisory board, and policy makers. Additionally, about one third of the grantees not only maintained affiliation with a state-level formal partnership but also engaged local coalitions, advisory boards, or workgroups. Partners among these collaborations often served as ambassadors on behalf of the asthma program, expanding the influence of the asthma control program. For example, to engage this type of local leadership, the Florida asthma coalition awarded mini-grants for two consecutive years to community groups proposing innovative approaches to asthma management.

### **PARTNERSHIPS**



*Formal partnerships or strategic alliances with entities such as chronic disease programs, Departments of Education, Federally Qualified Health Centers (FQHCs), Medicaid offices, hospitals, universities, healthcare providers, pharmacies, tobacco cessation programs, local health departments, and local communities help expand the influence of the asthma control program*



Below are a few examples of strategic partnerships that have effectively extended program reach and achievements toward particular goals.



#### NEW YORK

A strategic partnership with seven Children’s Environmental Health Centers provided asthma best practices to their local constituencies, such as how to effectively provide home-based environmental health and safety services.



#### MISSISSIPPI

A strategic partnership with the Green and Healthy Homes Initiative led to development of the Healthy Homes for Kids Program.



#### MISSOURI

A strategic partnership with the Missouri Department of Elementary and Secondary Education offers workforce development training to school nurses under their highly successful Childhood Asthma Linkages in Missouri Schools program.



#### INDIANA

A partnership with the Indiana State Department of Health Office of Primary Care develops operational measures and offers content expertise for asthma quality improvement (QI).



#### MAINE

Maine developed a unique public-private statewide collaboration between its health department and major healthcare systems. The collaboration collects and displays data on community priorities through a Community Health Needs Assessment interactive data portal. The state asthma control program provides epidemiological support to the effort.



## ***A diverse range of communication channels, methods and venues are necessary***

Grantees employed a variety of communication methods to support home, school, and health system changes. Content was delivered through social media, websites, community broadcasting, and in person at local and national meetings. Popular print materials included toolkits, reports, fact sheets, and newsletters. Some communications activities are highlighted below:

*New Mexico used Photovoice to learn from Spanish-speaking communities what it means to live with asthma. Their evaluation identified beliefs about asthma and informed the development of media products for policy work. This approach led to more stakeholder buy-in and helped to generate effective messaging to promote asthma. The New Mexico asthma program distributed the findings through the New Mexico Council on Asthma website and a YouTube channel.*



### MISSISSIPPI

Mississippi created, with the advice of their asthma coalition, six surveillance fact sheets on topics including childhood asthma, adult asthma, and district-level adult asthma.



### GEORGIA

Georgia, in collaboration with the state Division of Communication, launched public awareness campaigns using radio ads, print, and social media. Campaigns targeted families of children with asthma in areas of high burden and were launched around asthma awareness month, back to school, World Asthma Day, and flu season.



### MAINE

Maine developed and distributed two success stories highlighting workforce development and implementation of the Maine In-Home Asthma Self-Management Education Program.



### WISCONSIN

Wisconsin developed and distributed a document showcasing that their asthma home-visiting program improved health outcomes, decreased asthma-related emergency department visits, and reduced hospital billed charges.



## **Programs enhanced surveillance by expanding access to data repositories, developing tracking tools, and accessing new data sources**

Asthma programs have enhanced their **surveillance** systems by expanding access to data repositories, developing tracking tools, and accessing new data sources that have facilitated information sharing for both the asthma program and partners. **Oregon**, for example, was uniquely positioned to use All Payers All Claims data and later align data with chronic absenteeism. **Hawaii** annually updates the [Hawaii Health Matter's Asthma Tracker](#), a publicly accessible data dashboard used to measure progress toward improving the quality of life for individuals with asthma in Hawaii. Key data indicators include asthma prevalence, emergency department and hospital use, morbidity, and mortality. **Utah** is working to create a statewide chronic disease reporting rule and a clinical data strategic plan which will collect asthma electronic health records data from all health systems in the state.

States have also helped to increase the use of surveillance data through creative, topic-focused, visually engaging data products. Roughly half of the grantees indicated they have improved the use of their data products for diverse stakeholders, providing data through webinars, burden reports, burden and disparities maps, fact sheets, and presentations. **Vermont**, for example, developed and published comprehensive Annual Asthma Data Pages, ten topic specific data briefs, and an annual asthma goal tracker, which visually shows trends and regional data/mapping for key respiratory measures. To promote the use of these data products, the analyst gave presentations to medical students, pharmacists, medical coders, EMS personnel, school nurse and other key partners. **New York** has also created a dashboard showing both state- and county-level asthma data: <https://health.ny.gov/asthmadashboard>

### **DATA DASHBOARD**



*The New York asthma program created a user-friendly data dashboard that contains data query tools for easy access. The public can obtain aggregate surveillance data in tables, graphs, and maps for more than 30 asthma measures. Interactive data visualizations are available at the state, county, and zip code levels to quickly identify high-risk groups and areas of asthma high burden.*



## ***There are many ways to use evaluation findings to improve programs***

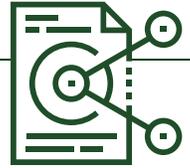
Grantees described innovative ways in which they used evaluation findings to guide their programs. Roughly half completed evaluation projects that were used to strengthen their core infrastructure, including several centered on how to assess the effectiveness of partnerships, better engage partners, and reorganize collaborative efforts. One grantee surveyed their regional coalitions to determine what types of surveillance products would be useful. Many states highlighted process and outcome evaluations of a wide range of asthma interventions:

- Youth asthma camps
- Educational programs for a variety of audiences
- Home-based interventions
- School-based interventions
- Healthcare delivery systems and QI

Below are some specific uses respondents noted for their evaluation findings:

- **Massachusetts** and **New York** used evaluation findings to develop toolkits and guides that have contributed to improvements in school-based asthma services programs.
- Based on their home-visiting program evaluation findings, **Wisconsin** improved data collection forms, created program protocol, developed a new asthma self-management education (AS-ME) guidebook, and added networking opportunities for the program implementers.
- **Minnesota** shared findings with their local public health partners and network of community-based organizations, which led to increased engagement and shared decision-making.
- **Illinois** received access to emergency medical service (EMS) data to assist in evaluating asthma school policies. EMS data included information on school visits for presumptive asthma for the past three years. Evaluation findings were recently provided to the data and evaluation workgroup, key partners, and providers for discussion.
- **Utah** used evaluation data to show the value of their home-visiting program to payers and get reimbursement approved for these services.

## **EVALUATION USE**



*Rhode Island's asthma program evaluated their evidence-based Home Asthma Response Program (HARP). The evaluation showed significantly improved health outcomes (75% reduction in asthma-related hospital and ED costs) and a 33% return on investment on ED/hospital costs. Rhode Island has used these data effectively to advance toward reimbursement of asthma-related home services.*

*Missouri's Teaming Up for Asthma Control (TUAC) program is a work force development intervention that increases the competency of school nurses in delivering guidelines-based asthma education. TUAC increased effectiveness in assessing asthma status, improving students' outcomes, and reducing healthcare utilization costs. The majority of participating school nurses highly recommended TUAC to others.*



## ***Quality, delivery, and use of clinical and community-based asthma services have improved.***

Every grantee shared multiple ways in which they improved the quality, delivery, and use of clinical- and community-based asthma services during the grant cycle. Grantees worked with partners to implement care in a stepwise approach, providing

- a. appropriate medical management for people with asthma,
- b. AS-ME, and
- c. home-visiting services for those with uncontrolled asthma.

### ***Home visits are a critical service for people with uncontrolled asthma***

These visits can help reduce environmental triggers, provide AS-ME, as well as reveal barriers to patient engagement and adherence. Most grantees described home-visiting programs for those with uncontrolled asthma. Respondents often chose to highlight expanding their home-based model of services to new communities. **Puerto Rico**, for example, has a well-liked home-visiting program with a long waiting list.

Respondents in a few states noted that they modified their existing home-visiting program and adopted an evidence-based model to increase quality. One respondent specifically noted that they now use monthly data checks on the records of the home visitors to address lapses in care quickly. In four states, respondents noted that the state asthma program was facilitating mentoring and networking calls between those who currently provide home-visiting programs and those who want to develop new programs.

In many states, home-visiting is conducted by community health workers (CHWs). California recently transitioned to using CHWs after discovering in the process evaluation of their LifeLong Asthma Home-Visiting Project that this workforce would be a good addition. **Training CHWs** was also described as an important strategy to both expand home-visiting options and ensure the provision of high-quality services. Several states explicitly noted developing an asthma-specific track within their curricula to train CHWs who provide home visits for other chronic diseases. Obtaining reimbursement for services provided by CHWs was also noted as a critical endeavor. For example, **Massachusetts** created a white paper for providers and for healthcare administrators on CHW-led asthma home-visiting models.

### **EFFECTIVE DATA USE**



*Wisconsin's home-visiting program implemented by CHWs has adopted a social-determinants-of-health approach when addressing asthma. This approach has helped mitigate other circumstances that limit a patient's capacity to prioritizing their asthma treatment. Common issues are living with a smoker or limited access to housing, utilities, food, employment, or mental health services. One dispatched CHW assisted an asthma patient with finding housing after the patient was evicted.*



## School-based initiatives are smart ways to reach children

*21 grantees reported 85 formal agreements established with schools. These agreements covered approximately 2,100,000 students in 3,870 schools and 580 school districts.*



Grantees shared examples of working with schools to better reach children with asthma by developing and expanding **school-based initiatives**. Many respondents were implementing programs, such as Open Airways for Schools (OAS) or Kickin' Asthma, or used curricula developed specifically for their state. In its third year, **Minnesota's** asthma school mini-grants often fund assessment for environmental triggers, education, and organizational policy changes, such as fragrance policies and idling policies. Recipients of this program report that it "plants a seed" of interest that facilitates local public health training.

Below are other initiatives to expand or improve the quality of asthma services with schools:

- Partnering with a school district to study the relationship between asthma and chronic absenteeism
- Providing mini-grants to school nurses to develop asthma programs
- Providing mandatory emergency stock medications for asthma
- Using air quality flags to promote awareness of the effects of air pollution on asthma
- Creating award programs to designate "Asthma Friendly Schools"

Respondents also noted unique strategies for working with schools. To implement AS-ME, **Georgia** engaged youth development coordinators (YDCs), health district employees who focus on risk-reduction behaviors and partner with schools and community-based organizations that serve teens. Both **California** and **Connecticut** are conducting quality assessment in school-based health centers. To increase access, **Montana** is transferring the Creating Asthma Friendly Schools training to the state's online Teacher Learning Hub, a continuing education site for teachers and other school staff. **Indiana** is using a Telehealth program to expand access to care in schools. **Missouri** is creating and updating their School Asthma Manual to promote best practices for school-based health services.

**Wisconsin** is implementing the School-based Asthma Management Program (SAMPROTM) in three counties with high burden of asthma. This program is improving connections between providers and school nurses, increasing the number of students with asthma management plans (AMPs) and improving physician compliance with developing AMPs with their patients.

### INCREASING WORKFORCE CAPACITY



*Grantees are increasing workforce capacity through the recruitment and training of school nurses, paramedics, and CHWs. Trainings are facilitated by certified asthma educators.*



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## ***Asthma Action Plans are important tools for school- and home-based programs***

Several grantees highlighted **Asthma Action Plans (AAPs)** as important educational and communication tools for both school-based and home-based programs. Using AAPs effectively means that the information needs to be shared among the many people serving people with asthma. Several states noted revising their AAPs to enable parents to give permission to share information with school health centers, coaches, daycare providers and others. One grantee successfully modified procedures to facilitate AAP sharing while maintaining the Family Educational Rights and Privacy Act agreement. **New Hampshire** worked with the Head Start program to develop a pictorial asthma action plan to better support parents and patients with low literacy.

## ***Innovations through new partners can sustain asthma services***

Several respondents spoke of other innovations that promote the **sustainability** of asthma services.

- **Florida's** home-visiting program is leveraging other funding sources to provide supplies, such as green cleaning products and high-efficiency particulate air vacuum cleaners to families. Home visitors also seek no- or low-cost "fixes" that families can readily implement.
- In **Michigan**, policies to improve access to spacers, a suite of supporting interventions, and enhanced data collection and reporting activities helped Managing Asthma through Case Management in Homes (MATCH) case managers and other healthcare professionals track and provide improved asthma education and showcase their outcomes to funders.
- In **Pennsylvania**, the Community Asthma Prevention Program (CAPP) offers home-visiting services that include integrated pest management (IPM), vector control, referrals to the weatherization assistance program, Low Income Home Energy Assistance Program, and tenants' rights groups. CAPP has incorporated new standards and practices into its CHW training that now include training on tobacco cessation services, IPM, motivational interviewing, and other complementary services that can assist families in reducing home-based triggers.





## **Workforce development improves the quality and sustainability of programs**

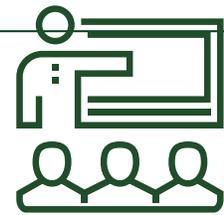
Many grantees have focused on **improving quality and sustainability** by building the workforce to support the home and school-based programs and building clinical skills of providers. Many grantees offered CHW **trainings** specific to asthma that are offered by certified asthma educators (AE-Cs); others offer training to CHW supervisors. **Massachusetts** has developed a mentorship program to help new CHWs develop their skills. In **California**, asthma program support helped assure state funding availability for CHW training.

Grantees are also providing training for paramedics, coaches, community leaders of public housing, teachers, and registered sanitarians. Some offer traditional classroom instruction to physicians, nurses, and paramedics, and training involving camps and child-friendly graphics for people with asthma and their families. Overall, grantees are increasing their support and provision of educational training opportunities around guidelines-based care. **Connecticut**, for example, noted that although initially skeptical, providers recognized the value of using an evidence-based protocol and are now “believers in the program.” After Hurricane Maria, **Puerto Rico** increased the number of trained school nurses from 13 to 430 to provide support in asthma care. **Montana** contracted with the University of Montana School of Pharmacy to increase the overall number of AE-Cs and the number of AE-C mentors available to assist individuals interested in taking the AE-C exam.

Below are some of the more unique training programs offered :

- Providing academic detailing for clinicians
- Working with college respiratory therapy programs to expand asthma curriculum
- Offering video or other types of online clinician training
- Presenting at grand rounds
- Encouraging medical students to conduct trainings with their peers
- Creating “Asthma Friendly” recognition program for providers who successfully complete trainings
- Offering AE-C exam courses

### **EFFECTIVE TRAINING PROGRAMS**



*Because of a comprehensive training program in Illinois, spirometry is now a part of all clinic pediatric asthma processes, which follows the National Heart, Blood, and Lung Institute Gold Guidelines for diagnosis. Each clinic is given a spirometer and now all children with asthma are being tested and diagnosed appropriately.*

Complementing training programs provide continuing education credits to participants. For example, **Michigan** provides such credits to participants of their Asthma Sharing Day, and **Ohio** offers such credits to registered sanitarians who complete the Asthma Care for Health Professionals independent study courses.



## ***QI initiatives enhance quality, delivery, and use of asthma services***

In addition to workforce initiatives, many grantees have undertaken a variety of **QI initiatives** to enhance the quality, delivery, and use of asthma services. Several grantees noted developing **learning collaboratives** as a key approach to promoting high-quality care. These collaboratives are designed to improve and coordinate the overall health system by allowing peers to share innovations and best practices. Respondents described collaboratives initiated and facilitated by partner organizations, such as the American Lung Association, and by national groups, such as the National Institute for Child Health Quality. Respondents in **Massachusetts** explained that learning collaboratives are an effective way to reach those they can't reach through direct technical assistance. The **Wisconsin** asthma program is partnering with the Wisconsin Collaborative for Healthcare Quality (WCHQ) to develop an asthma indicator for public reporting. WCHQ identified ACT utilization across systems; reporting will guide future quality improvement efforts.

*24 grantees reported over 360 organizations, primarily FQHCs, primary care clinics and school-based health clinics, undertook QI initiatives.*



Almost half the grantees discussed QI activities designed to increase guidelines-based care. To reach persons with asthma most in need, several focused efforts on collaboratives with FQHCs. **Missouri's** Project ECHO Asthma, for example, integrated asthma care QI and workforce training to work with FQHC staff, creating a cohort of clinicians who can take the changes they learned and drive QI to facilitate expansion of asthma programming.





## ***Linkages between public health and healthcare services that support asthma control were enhanced through communication systems.***

Enabling people with asthma to receive the services they need requires coordination among the many sectors involved in comprehensive care. To improve the linkage between public health and healthcare services that support asthma, grantees have developed formal and informal communication systems. The establishment and growth of linkages between and among programs and providers of asthma services have increased overall collaboration and information sharing.

### **ESTABLISHING LINKAGES**



*State asthma programs are increasingly working with children's hospitals in areas of high burden, local clinical practices, and school-based health centers to increase awareness of the In-Home AS-ME and streamline referral.*

***15 grantees implemented or improved 36 referral systems.***



States reported an increase in both the volume of referrals from local health departments to their home-based programs and the number and range of referral sources, including local health providers, various entities within health systems, and schools.

Several respondents noted successful partnerships with children's hospitals as critical to creating seamless referrals for children with asthma. For example, in **Ohio** representatives from all seven children's hospitals in the Ohio Hospital Association regularly attend and contribute to coalition efforts. **Pennsylvania** negotiated for CHWs to access to the electronic health records of children's hospitals,



which improved efficiency and coordination of services. **Wisconsin** incorporated the asthma home-visiting program referral system into the Children’s Hospital of Wisconsin Epic system, streamlining the referral process and increasing communication between asthma educators and providers.

Other respondents also described how seamless referrals are increasingly flowing in via modified electronic health records systems. For example, **New Hampshire** has worked to have the Asthma Visit Template included in the Asthma Support Decision Tools, a common reporting system that links utilization data from 7 FQHCs in 16 locations statewide with over 130 providers and hospitals. While a few respondents noted that bidirectional referral systems were operating at least among some organizations providing care, many programs’ referral processes were more informal or otherwise limited.

## INCREASING REFERRALS

*In Maine, the team approach has expanded to include paramedics. United Ambulance has embedded the asthma self-management modules from the In-Home Asthma Program into its electronic emergency management system. When using the system, the community paramedic is prompted to ask if the person has asthma and, if so, is guided through the modules.*

*16 grantees offer 48 team-based approaches. FQHCs were the most commonly named type of organization to offer this approach, followed by hospital systems.*



Several respondents noted that they were expanding a **team-based approach**, in which multiple providers from different sectors collaborate to assure coordinated care for a patient. Approaches varied widely, with the asthma program engaging different sectors on the teams.

- **Indiana** expanded services by pairing a Public Health Nurse with an Indoor Air Environmental Health Specialist.
- **Ohio** is partnering with nursing schools to involve student nurses during their community health rotations in providing OAS and early childhood asthma education in high-priority areas.
- **Vermont** has developed and is expanding a successful emergency room discharge referral program.
- **Rhode Island** is working with United HealthCare to pay for eligible members to receive HARP home-visiting services via direct recruitment at the hospital or referral by United.





## ***Progress was made toward achieving improvements in long-term asthma control outcomes.***

Because of delays in data reporting, many respondents were unable to obtain complete data by the end of the 5-year grant cycles. However, many reported making progress towards **long-term outcomes**. Many respondents noted a decrease ED and urgent care visits, as well as asthma-related hospitalizations, particularly in areas of high burden where programs are targeted. Increased capacity for data visualization is helping show areas of success. **Minnesota**, for example, noted that they used data visualization to be able to identify tiny pockets where asthma burden decreased.

As described earlier, many grantees have placed efforts and resources on developing and expanding their workforce through continuous training and guidance. With enhanced workforce capacity, grantees are able to reach more people in providing self-management education and high-quality care. Besides supporting training, programs have expanded communication and built relationships with key partners in local communities in areas of high burden, housing, integrated pest management, and clinical partners. With increased linkages with schools, FQHCs, and managed care organizations, grantees are strengthening the infrastructure that supports achievement of better asthma control and reduction of triggers.

### **IMPROVED OUTCOMES**

*Grantees are seeing a decrease in ED and urgent care visits, as well as asthma-related hospitalizations, particularly in areas of high burden where comprehensive services are co-located.*

*7 grantees were making progress towards coverage and reimbursement, most working with Medicaid Managed Care Organizations.*



Recognizing the key role that policy can play in achieving the desired long-term outcomes, some grantees are working with partners to work toward policy change in a variety of sectors. Several respondents noted working with payers, including state Medicaid, to bring attention to those with frequent ED visits or hospitalizations to make the case for cost savings and eventual reimbursement of asthma services.



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Respondents noted other innovative policy activities that are helping to reach positive long-term outcomes:

- Hawaii has adopted several tobacco policies that decreased exposure to secondhand smoke and reduced overall tobacco use. These policies include enacting strict smoking bans (cigarettes and electronic smoking devices) in indoor/outdoor areas and in any motor vehicle when a minor is present, and increasing the legal age to purchase tobacco products from 18 to 21.
- **Michigan** has improved access to spacers through policy change, effectively allowing pharmacy coverage: <https://getastmahelp.org/spacers.aspx>.
- **Oregon's** asthma program is integrated within chronic disease which helps leverage and connect asthma to many opportunities and conditions, such as tobacco prevention and obesity; in addition, their access to a dedicated evaluation team helps them monitor and examine their program's success.
- **Massachusetts** is using social impact bonds, achieved by leveraging grant funds, to promote intensive home-visiting and home remediation in local areas of high burden.
- **New Mexico** is involved in policy work on housing, including mold, and indoor air quality.
- **Indiana's** Health Rental Housing Agreement offers housing policy guides that landlords can use to be asthma friendly.





## *Progress has been made towards reducing disparities in the burden of asthma.*

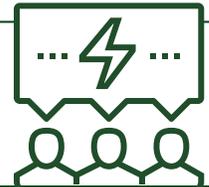
Surveillance data clearly show racial and ethnic disparities persist in asthma prevalence, asthma control, ED visits, and hospitalizations. Despite limited time and data in which to demonstrate **reduction in asthma disparities**, many respondents said they were starting to see decreases in ED visits, hospitalizations, and mortality among those disproportionately affected by asthma. All programs shared examples of how they were targeting the populations with poorly controlled asthma by adding services in regions where asthma burden was highest and access to healthcare was limited. Several respondents noted specific outreach programs to rural areas.

Many asthma programs have developed their infrastructure to target culturally specific groups and socioeconomic disparities. Guided by surveillance data, grantees are focusing training and educational efforts and support on their highest priority populations. Many are working with CHWs to navigate barriers in high-risk communities through local, trusted community organizations, like community health clinics, school-based health clinics, and school districts. Some grantees are implementing Asthma Friendly Schools in the poorest schools, providing services through FQHCs, and offering mini-grants to community groups.

Most grantees are leveraging new partnerships and coalitions to deliver asthma services and are looking to innovative avenues to reduce disparities. Several respondents noted that through strategic partnership with state asthma control programs, hospitals are integrating social determinants of health into programs. Below are a few of the innovative activities to address social determinants of health and health equity reported:

- **California** is using the Healthy Places Index to reassess high-burden priority areas to include social determinants of health and environmental health factors. The Index will be used to target where they offer AS-ME training.
- **Florida** is addressing stigma through work with coaches and physical education teachers.
- **Minnesota** earned media coverage by reaching out to the press with the results of their data analysis on asthma disparities.
- **Vermont** is engaged in a state initiative with pharmacy interns to address social determinants of health and conduct training to develop culturally appropriate language and materials.

### ADDRESSING HEALTH INEQUITIES



*Commitment to health equity and justice is a major driver in all of Massachusetts' asthma work. On a macro level, they are reframing their state asthma plan and state partnership with a focus on inequities: including racial equity awareness in trainings, learning through evaluation how to best modify conditions that lead to disparities, and leveraging partnerships to effect organizational policies. On a micro level, Massachusetts regularly collaborates with key stakeholders and holds listening sessions to hear directly from community voices. These efforts are resulting in expanded programming at FQHCs and schools, thus reaching underserved communities*



- **Ohio** has conducted an Affinity Focus Group and stakeholder interviews to inform development of Health Equity Action Plan.
- **Wisconsin** worked with partners in Milwaukee, to enable CHWs to help clients to address social determinants of health and make asthma care a priority in their lives.

## *Cross Cutting Facilitators and Challenges*

Grantees reported several factors that both helped and hindered their many successes. Collaborations and partnerships have been very beneficial, creating new synergies and opening doors to better and broader service delivery and to previously unavailable data. In many cases, collaborations leveraged additional resources. Funding, whether through the state, block grants, National Institutes of Health grants, various settlements, Medicaid, school repairs bonds, or other outside sources, has facilitated service expansion and improved linkages toward a more strategic approach to comprehensive asthma care. A few respondents specifically noted that receiving CDC funds helped them and partners to leverage additional resources.

Participants clearly acknowledged the tremendous support provided by the 6|18 initiative in moving their programs toward sustainability by encouraging state Medicaid programs to provide or reimburse for community services for high risk individuals. Interestingly, two programs that had not participated directly in 6|18 noted that discussions regarding possible participation increased collaboration with Medicaid and other payers.

Creating trust among partners was an oft-cited success factor. Respondents in Illinois, for example, explained how having someone from the community in a leadership role was essential to expanding the reach of the asthma program. Respondents in **Michigan** described how the evaluator made in-person visits to each MATCH home visiting program to build capacity and buy-in to show how data collected can be used for program improvement.

A few respondents noted that timing was an important facilitator, as was being prepared to act when opportunities arise. For example, respondents in **Utah** noted “strategic persistence” and thinking ahead enabled them to anticipate and take advantage of opportunities to secure Medicaid funding in fee-for-service areas.

Below are other facilitating factors:

- Commitment from key leadership to tackle disparities
- CHW workforce development improving the reach and quality of programs to communities with the greatest need
- New or modified EMR systems facilitating implementation of guidelines-based care
- Increased emphasis on a team-based approach to care

Though grantees achieved many successes, they also faced several **challenges**. A commonly mentioned issue was the amount of staff time it takes to coordinate with partners. Staff explained that effecting any meaningful changes on a population level takes time to achieve—and often the people and partners involved change before results are evident.





Some grantees experienced distinct local challenges that either affected their ability to implement interventions as originally planned or even increased the need for asthma services. **Illinois** did not have a state budget for three years, a challenge that required their asthma program to draw on the expertise and resources of partners to achieve their intended goals. For **Puerto Rico**, the combined devastation of Hurricane Irma and Maria was responsible for postponements and modifications to their asthma plans while also causing an urgent and broadened demand for asthma services across the island.

Other challenges are as follows:

- Overall funding limitations for public health initiatives generally
- Difficulty partnering with schools
- Staff shortages, including of school and public health nurses
- Partnership fatigue
- Barriers to obtaining coverage and reimbursement for asthma services
- Competing priorities or time constraints from key partners and due to other competing disease areas
- Data and tracking issues, including data delays, lack of optimal quality of care measures, and International Classification of Disease code changes hindering comparability across years

Despite these often-unavoidable challenges, many grantees diligently continue pursuing collaborations with their state Medicaid offices and Medicaid Managed Care Organizations to achieve sustainable funding for community asthma services. As the examples in this report show, grantees are developing more efficient and effective comprehensive asthma control programs. Several grantees have come to view the complex challenge of reducing asthma disparities through a wider lens—an equity and justice lens—and are engaging an increasingly broad range of partners to enable a more strategic focus on the systemic, underlying factors contributing to asthma disparities, tackling systemic problems such as poor housing quality.

Overall, grantees have clearly ***moved the needle*** between 2014 and 2019 and are using a wider lens to implement a more strategic approach to achieving higher quality, comprehensive asthma control.



## Conclusions

Reflecting on the progress made across these cooperative agreements, several common themes emerged:

- All grantees reported progress in some areas, most often in building infrastructure and piloting model asthma services initiatives.
- A few grantees have made progress in achieving health system level changes and are beginning to see substantive reach of programming. Programs that were able to expand projects and achieve system change were able to identify multiple, interconnected initiatives and strategies that were undertaken simultaneously.

Finally, many of the respondents described the process of reflecting on the evaluation questions itself was beneficial. Several said answering these questions and thinking evaluatively about their program enabled them to recognize successes and think anew about challenges and potential innovations to address them. Respondents also said that sharing their reflections through this report provided an opportunity to learn from each other.



*“We put a lot of effort into crafting our responses and upon reflection, we did agree that this process helped us reflect on our many accomplishments and how we have helped reduce the asthma burden in our state. I think it also helped us put into perspective hindering aspects of our structure and will allow us to focus on how we can impact those areas to reduce the effects on program activities. We look forward to reading the review and hearing about all the other wonderful things that the other programs are doing surrounding asthma.”*

*State Asthma Evaluator*



# Appendix A: Logic Model for Comprehensive Asthma Control through Evidence-based Strategies and Public Health-Healthcare Collaboration

## INPUTS

Established state asthma program, surveillance system, partnerships, & evaluation & communication capacity

Funding, guidance, & support from CDC

Surveillance data

Evidence base

Existing interventions

Health care reform

## STATEGIES & ACTIVITIES: INFRASTRUCTURE

- I. **Leadership**  
Promote statewide planning, coordination, & expansion of asthma activities & resources  
  
Promote adoption of evidence-based practices by payers & providers
- II. **Strategic Partnerships**  
Engage strategic partners to develop, evaluate, & sustain strategies & expand reach of comprehensive asthma control services
- III. **Strategic Communication**  
Support targeted dissemination of surveillance & evaluation findings tailored to key stakeholder audiences  
  
Conduct and/or support health communication activities for people w/asthma & their caregivers
- IV. **Surveillance**  
Maintain & enhance existing statewide surveillance system  
  
Monitor & use data to guide strategic action
- V. **Evaluation**  
Evaluate comprehensive asthma control services & expansion strategies for effectiveness & efficiency  
  
Build evaluation capacity & engage in cross-state evaluation & learning

## STATEGIES & ACTIVITIES: SERVICES & HEALTH SYSTEMS

*(To be coordinated at the highest administrative level possible in areas w/a disproportionate asthma burden; may be delivered in community or health care settings when*

- Expand access to comprehensive asthma control services through home-based and/or school-based strategies (SERVICES)**
- VI. Educate people w/asthma in self-management skills
  - VII. Assure linkages to guidelines-based care for people w/asthma
  - VIII. Educate caregivers (e.g., family members, school staff, home visitors) in asthma management
  - IX. Inform stakeholders about evidence-based policies supportive of asthma control, including trigger reduction and improved air quality
- Coordinate w/health care organizations to improve coverage, delivery, & use of clinical & other services (HEALTH SYSTEMS)**
- I. Implement quality improvement processes to increase access to guidelines-based care
  - II. Promote use of team-based care in health homes & other health care delivery models to improve coordination and cultural competence of asthma care across settings
  - III. Promote coverage for and utilization of comprehensive asthma control services including medicine, devices, self-management education, & home visits
  - IV. Support the development of public health-health care linkages to provide comprehensive asthma control services

## SHORT-TERM OUTCOMES

Increased promotion of comprehensive asthma control services by the state asthma program & strategic partners

People w/asthma & caregivers demonstrate increased knowledge about appropriate self-management practices

Increased linkages to guidelines-based care for people w/asthma

People w/asthma experience less stigma & receive greater acceptance & support

Education, housing, & other organizations adopt & adhere to evidence-based practices & policies supportive of asthma control

Increased coverage for comprehensive asthma control services

Increased efforts by payers & health care organizations to improve the quality of asthma care

Increased capacity, infrastructure, & partnerships to support health care & public health linkages

## INTERMEDIATE OUTCOMES

State asthma program and strategic partners have increased input into the plans, programs, & policies of payers & health care organizations

Comprehensive asthma control services are expanded to other populations & areas in the state

More people w/asthma have access to guidelines-based care

More people w/asthma adopt appropriate self-management practices

Public health & health care services are increasingly linked & coordinated

More communities are prepared to support people w/asthma

## LONG-TERM OUTCOMES

People w/asthma have better control of their disease & better quality of life

Comprehensive asthma control services are expanded & sustained statewide

State has fewer disparities in asthma care/management & health outcomes

States develop and use practice-based evidence about effective approaches to asthma control

An explanation of this chart is on the following page.



## **Appendix A: Logic Model for Comprehensive Asthma Control through Evidence-based Strategies and Public Health-Healthcare Collaboration (Continued)**

The figure shows a logic model with five columns. The first column has a header of Inputs and then lists six groups of inputs. The first group is Established state asthma program, surveillance system, partnerships, & evaluation & communication capacity. The second is Funding, guidance, & support from CDC. The third is Surveillance data. The fourth is Evidence base. The fifth is Existing interventions. The sixth is Health care reform. To show that inputs are used to develop and sustain state asthma program infrastructure, midway down the column an arrow leads from this column to the next column, which is labeled infrastructure strategies.

The second and third columns have a header of Strategies and Activities. The second column lists INFRASTRUCTURE STRATEGIES (Implemented statewide) grouped by type. Group 1 is Leadership: Promote statewide planning, coordination, & expansion of asthma activities & resources; Promote adoption of evidence-based practices by payers & providers. Group 2 is Strategic Partnerships: Engage strategic partners to develop, evaluate, & sustain strategies & expand reach of comprehensive asthma control services. Group 3 is Strategic Communication: Support targeted dissemination of surveillance & evaluation findings tailored to key stakeholder audiences; Conduct and/or support health communication activities for people w/asthma & their caregivers. Group 4 is Surveillance: Maintain & enhance existing statewide surveillance system, Monitor & use data to guide strategic action. Group 5 is Evaluation: Evaluate comprehensive asthma control services & expansion strategies for effectiveness & efficiency, Build evaluation capacity & engage in cross-state evaluation & learning. To show that infrastructure is needed to implement services & health systems strategies, midway down the column an arrow points to the third column.

The third column is labeled SERVICES & HEALTH SYSTEMS STRATEGIES (To be coordinated at the highest administrative level possible in areas w/a disproportionate asthma burden; may be delivered in community or health care settings when deemed more appropriate for target population.) Beneath the label are two major strategies. The first is Expand access to comprehensive asthma control services through home-based and/or school-based strategies (SERVICES). The four sub-strategies listed under this are: 1. Educate people w/asthma in self-management skills; 2. Assure linkages to guidelines-based care for people w/asthma; 3. Educate caregivers (e.g., family members, school staff, home visitors) in asthma management; 4. Inform stakeholders about evidence-based policies supportive of asthma control, including trigger reduction and improved air quality. The second major strategy is Coordinate w/health care organizations to improve coverage, delivery, & use of clinical & other services (HEALTH SYSTEMS). The four sub-strategies are listed under this are: 1. Implement quality improvement processes to increase access to guidelines-based care; 2. Promote use of team-based care in health homes & other health care delivery models to improve coordination and cultural competence of asthma care across settings; 3. Promote coverage for and utilization of comprehensive asthma control services including medicine, devices, self-management education, & home visits; and 4. Support the development of public health-health care linkages to provide comprehensive asthma control services. To show that services and health systems strategies are expected to create outcomes, midway down the column an arrow points to the next column, Short-term outcomes.





The fourth and fifth columns have a header of Outcomes. The fourth column is labeled Short-term outcomes and lists eight outcomes in this order: Increased promotion of comprehensive asthma control services by the state asthma program & strategic partners; People w/asthma & caregivers demonstrate increased knowledge about appropriate self-management practices; Increased linkages to guidelines-based care for people w/asthma; People w/asthma experience less stigma & receive greater acceptance & support; Education, housing, & other organizations adopt & adhere to evidence-based practices & policies supportive of asthma control; Increased coverage for comprehensive asthma control services; Increased efforts by payers & health care organizations to improve the quality of asthma care; Increased capacity, infrastructure, & partnerships to support health care & public health linkages. To show that short-term outcomes are expected to lead to intermediate outcomes, midway down the column an arrow points to the next column, which is labeled intermediate outcomes.

The top of the fifth column is labeled Intermediate. Six intermediate outcomes are listed in this order: State asthma program and strategic partners have increased input into the plans, programs, & policies of payers & health care organizations; Comprehensive asthma control services are expanded to other populations & areas in the state; More people w/asthma have access to guidelines-based care; More people w/asthma adopt appropriate self-management practices; Public health & health care services are increasingly linked & coordinated; More communities are prepared to support people w/asthma. To show that intermediate outcomes are expected to lead to long-term outcomes, a vertical arrow points downward to the next section, Long-term outcomes.

The lower part of the fifth column is labeled Long-term. Four long-term outcomes are listed in this order: People w/asthma have better control of their disease & better quality of life; Comprehensive asthma control services are expanded & sustained statewide; State has fewer disparities in asthma care/management & health outcomes; States develop and use practice-based evidence about effective approaches to asthma control.



## **Appendix B: About the programs, questions and methods**

In September 2014, the National Asthma Control Program (NACP) funded 23 asthma programs through a cooperative agreement (FOA 14-01404). Two years later, two additional asthma programs, were funded through FOA 16-01606. The awards were to maximize the reach, impact, efficiency, and sustainability of comprehensive asthma control services. Three types of strategies were highlighted: 1) infrastructure strategies to support leadership, strategic partnerships, strategic communications, surveillance, and evaluation; 2) services strategies to expand school- and home-based services; and 3) health systems strategies to improve coverage, delivery, quality, and use of clinical services. The funding cycles for both cooperative agreements ended in August 2019.

In June and July 2019, near the end of the funding cycles, NACP's Evaluation Technical Advisors (ETAs) held conference calls with program staff from each funded asthma program. The purpose of these calls was to assess grantees' progress toward achieving outcomes laid out in the FOA. To guide the discussion, the ETAs asked the five evaluation questions put forth in the 1404 and 1606 funding announcements.

### **Evaluation Questions**

1. To what extent has the state built programmatic infrastructure that supports home- and/or school-based strategies and health system changes to improve asthma care?
2. To what extent have the quality, delivery, and use of clinical and community-based asthma services been improved?
3. To what extent have linkages increased between public health and healthcare services that support asthma control?
4. To what extent has progress been made toward achieving the long-term outcomes associated with asthma control?
5. To what extent have disparities in the burden of asthma been reduced?

We conceptualized these five evaluation questions to capture progress towards achieving our goal of creating comprehensive asthma control through evidence-based strategies and public health-healthcare collaboration. As illustrated in the logic model for these FOAs (Appendix A), these questions are interrelated to overall success; therefore, responses to these questions build on and overlap one another. While many initiatives address and answer multiple questions, for this report, we have categorized information to reduce repetition.

As part of these FOAs, the asthma programs also submitted performance measure data that align with the evaluation questions. Information gleaned from the most recent submission (October 2018) has been added to this report to offer additional context, where appropriate.

The ETA assigned to each state led the calls, and another evaluation team member served as a note taker. In most cases, the NACP Project Officer for the state also participated in the calls. Asthma program respondents typically included the program manager and the program's evaluator, and occasionally involved the principal investigator, epidemiologist, and any other staff invited by the program manager. The 25 state asthma programs were notified that these calls would take place months in advance to allow time for the program staff to reflect on the questions and review performance measures and other program data. Similar processes for responding to the evaluation questions occurred in November and December 2016 (14-1404 grantees only) and November and December 2017 (both cooperative agreements).





ETAs used the evaluation questions as a general guide for the discussion. All of the asthma programs also used their brief written responses shared prior to the calls to guide what they chose to highlight. ETAs asked probing questions to solicit successes and challenges.

Information about data collection for the performance measures can be found in Appendix C.

### ***Limits to the Information***

Although the ETAs, note takers, and Project Officers were free to ask additional clarifying questions, there was no attempt to specifically structure or direct responses. Given the qualitative, open-ended design of these discussions, quantification of responses would be misleading. Additionally, the presence or absence of any specific topic reflects where the respondents chose to focus the answer. The limited time allotted for the calls may also have influenced the choice of responses.

### ***Analysis and Interpretation***

After all calls were completed, the ETAs (and note takers) reviewed the notes for clarity and accuracy. ETAs used Excel to organize and analyze the information. In the first stage of analyses, codes identified in previous data collection were used to assess if there was continuity in themes across the years. Emerging findings were also sought using various inductive analytic techniques such as grounded theory. ETAs examined the aggregated data specifically for examples of successes and challenges to describe the collective impact of the grants. Initial findings were shared with NACP staff and participating asthma programs; their comments have been integrated into the final report.

## ***Appendix C: Asthma performance measurement***

CDC's National Asthma Control Program (NACP) funded state health departments to build on the strong infrastructure developed in previous funding cycles. An important difference from previous cooperative agreements is the inclusion of and requirement for grantees to report on a common core set of performance measures on an annual basis. Collecting performance measures serves several purposes: assuring accountability, promoting priority activities, identifying and addressing problems early on, and providing comprehensive information or the "story" about what the national and state programs are achieving.

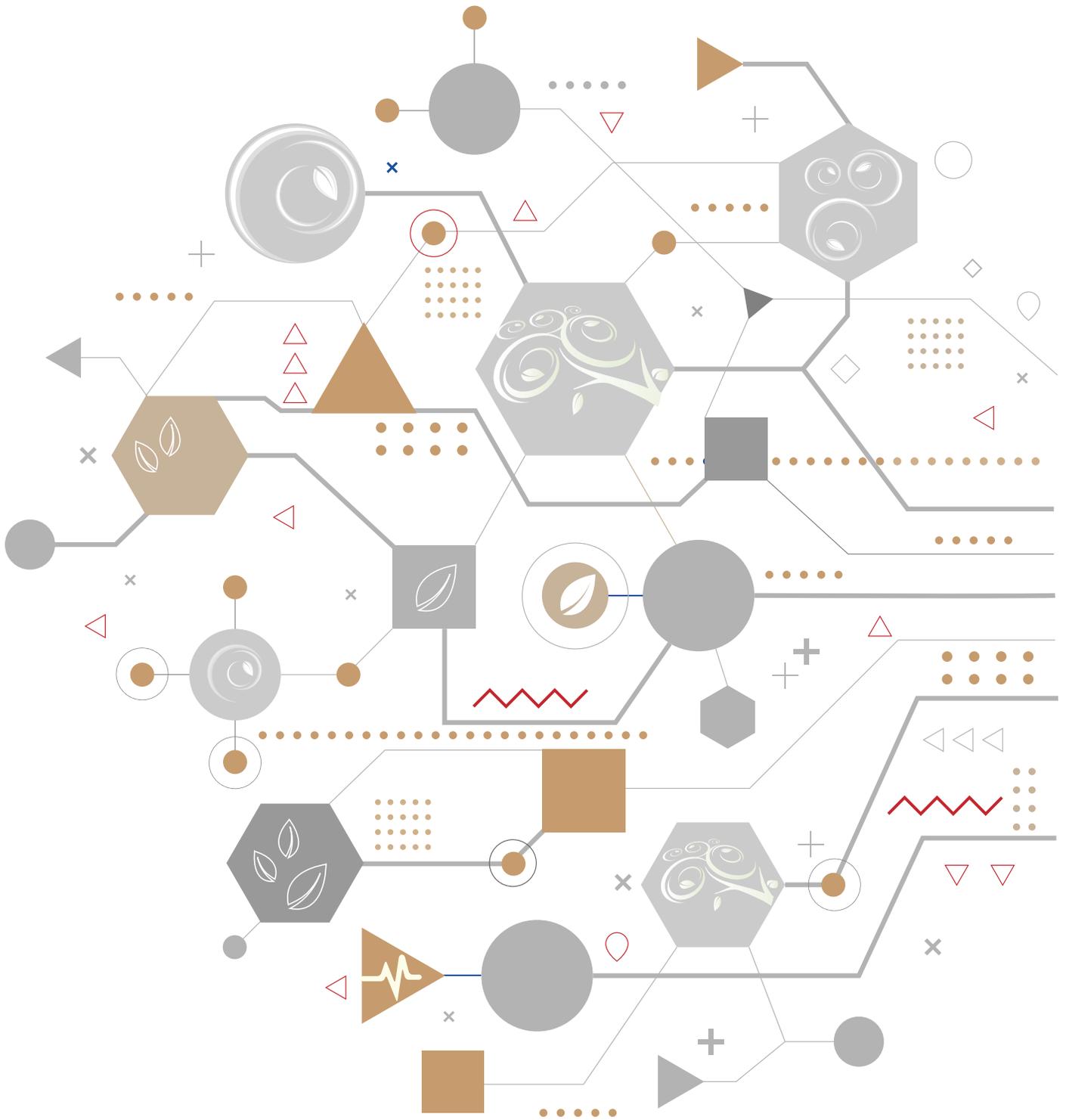
Both FOA 14-1404 and 16-1606 identified 18 core performance measures (A through S) covering infrastructure, services and health systems strategies. To assure consistency with the overall evaluation approach, measures were aligned with the logic model and with the evaluation questions. Because of reporting burden, one measure was dropped before reporting began, and several measures became optional.

Measures were rolled out in a sequence to allow program development and all asthma programs were required to begin reporting by October 2017, following the close of the grant year. Excel spreadsheets were sent to the asthma programs for data entry, and then returned to NACP for cleaning and review. Inconsistencies were reviewed and resolved through an iterative process. Data included in this report reflect reporting in October 2017 (year 3 for 1404 grantees and year 1 for 1606 grantees) and October 2018 (year 4 for 1404 grantees and year 2 for 1606 grantees).









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