ramp
REGIONAL ASTHMA
MANAGEMENT & PREVENTION

National Center for
HEALTHY HOUSING

UNLOCKING THE POWER OF HOME-BASED ASTHMA SERVICES:

Model health benefit packages

September 2022

WELCOME

Dear managed care leaders, healthcare policy makers, and other healthcare payers,

Asthma home visiting services are a tried-and-true method for improving member health outcomes, lowering healthcare utilization costs, improving patient care, and reducing healthcare disparities; yet far too many people with poorly controlled asthma don't have access to these key interventions.

You can change that.

The purpose of this tool is to support your managed care organization (MCO) with improved asthma management among your members by ensuring the provision of asthma home visiting services. If a home-based asthma program sounds daunting, it's not, and fortunately you don't have to figure this out on your own as there are several existing tools and best practices to help you incorporate these services.

In this tool, we highlight the numerous benefits of asthma home visiting services, from their ability to achieve Triple Aim goals to supporting quality improvement initiatives to addressing more "upstream" health determinants.

(continued on next page)

Dear community, state, and federal stakeholders,

Asthma home visiting services are a tried-and-true method for improving health and well-being, lowering healthcare utilization costs, improving patient care, and reducing healthcare disparities; yet far too many people with poorly controlled asthma don't have access to these key interventions.

You can help change that.

While this tool is aimed at equipping managed care organizations (MCOs) or other healthcare payers with the information they need to improve asthma management among their enrollees by ensuring the provision of asthma home visiting services, you also have a key role to play. We've heard from MCOs that building a home-based asthma program can seem daunting. Knowing they can partner with groups like yours and build on existing tools and best practices can help motivate them to take that first step.

In this tool, we highlight the numerous benefits of asthma home visiting services in language that aligns with the focus of health plans, from their

(continued on next page)

"

Scott Coffin
Chief Executive Officer
Alameda Alliance for Health

"

Asthma home visiting services make a real difference in the lives of our members. They improve member health and reduce more costly medical interventions. By meeting members where they live, asthma home visiting services reflect our desire to be a valuable asset to the communities we serve. As participants of the safety net, the Alliance is committed to expanding these benefits to more homes throughout Alameda County. I'm proud of our support for asthma home visiting and the improved quality of care that comes along with providing these vital services.

(Managed care leaders, healthcare policy makers, and other healthcare payers continued)

We also walk you through an abundant number of opportunities you can take advantage of to make your support for asthma home visiting services as easy and efficient as possible, starting with a model benefits package describing the scope, staffing, and services associated with home-based asthma services. The package includes tiers of services (e.g., from a basic set of services to more premium sets of services) to provide a range of options for payers at different levels of readiness to provide home-based asthma services. Additionally, this tool includes best practice examples from the field and resources to help you get started.

MCOs are fundamental to the nation's healthcare system. While a variety of community, state, and federal stakeholders are working tirelessly to support people suffering from poorly controlled asthma, we can't do it without you. You're a key part of solving the asthma puzzle, and we look forward to working with you.

ADDITIONAL SUPPORT

askanexpert@nchh.org

410-992-0712

As you read through this resource, note that NCHH and RAMP offer customized technical assistance and support that can help you translate the information in this tool into concrete actions that achieve cross-sector partnerships and put sustainable, systems-level policies and programs in place.

Call or email us today.

(Community, state, and federal stakeholders continued)

ability to achieve Triple Aim goals to supporting quality improvement initiatives to addressing more "upstream" health determinants.

We also walk through an abundant number of opportunities MCOs (or other healthcare payers) can take advantage of to make their support for asthma home visiting services as easy and efficient as possible, starting with a model benefits package describing the scope, staffing, and services associated with home-based asthma services. The package includes tiers of services (e.g., from a very basic set of services to more premium sets of services) to provide a range of options for payers at different levels of readiness to provide home-based asthma services. Additionally, this tool includes best practice examples from the field and resources to help you get started.

We appreciate everything you already do to support people with poorly controlled asthma, and we hope that you will use this tool to reach out to and support health plans or other healthcare payers in your community. You can help them explore and embrace their role in improving asthma outcomes and reducing asthma disparities. Whether you're a hospital community benefits manager seeking advice on how to structure a new program, a community-based organization providing home-based asthma services and looking to partner with the healthcare system, or you work for or with a state Medicaid program, this tool can help.

Supported by the evidence base and years of real-world experience, we're confident that providing these services at scale will be transformative for individuals, families, communities, and our healthcare system. We look forward to seeing how you put asthma home visiting services into action in your own community.

— National Center for Healthy Housing and Regional Asthma Management and Prevention

CONTENTS

This tool describes the scope, staffing, and services associated with home-based asthma services that identify and address environmental asthma triggers in the home environment. The packages include tiers of services (e.g., from a very basic set of services to more premium sets of services) to provide a range of options for payers at different levels of readiness to provide home-based asthma services. To jump directly to Table A and Table B, which present the model health benefit package options by activity type and service tier, click here.

Look for this icon throughout the document for additional detail on key topics.

Look for this icon throughout the document for examples of how states and healthcare payers are providing home-based asthma services.

COMMON LANGUAGE FOR EFFECTIVE COLLABORATION

Many stakeholders have a role in the provision of home-based asthma services. From health insurance plans to Medicaid offices to state and local agencies to medical providers to local non-profits and many more, the partners and sectors increasingly seeking to collaborate to improve health, particularly in historically underserved communities, by addressing factors outside of clinical care that drive health outcomes and disparities is expanding. However, partners are sometimes challenged by the way different groups use varying terms to describe similar activities or populations. Helping partners share an understanding of terms and their use in different settings helps to facilitate effective collaboration.

To the right are several key terms used frequently in environmental health, public health, healthcare, community health, and asthma home visiting circles to (1) describe the provision of in-home asthma education, home environmental asthma trigger assessments and home environmental trigger remediation by a range of qualified professionals, and (2) describe the population served by these activities. Throughout this document, we have chosen not to make a distinction between these terms even if people use them to mean slightly different things. While we may use one term more than another, all are used interchangeably.

Another key term used throughout this document is "poorly controlled" asthma. We use this term broadly to refer to any patients/clients unable to consistently maintain well controlled asthma and are in need of additional interventions, such as home-based asthma services. Yet, we recognize that more precisely-defined terms can be important within the context of clinical interventions and describe them more in the appendix.

For additional detail, please see Appendix A.

DIFFERENT TERMS FOR SERVICES

Asthma home visiting services

Home-based asthma services

In-home asthma services

DIFFERENT TERMS FOR THOSE WE SERVE

Patients	**Clients**
Members	**Customers**
Beneficiaries	**Occupants**
Enrollees	**Units**

DIFFERENT TERMS FOR POOR ASTHMA CONTROL

Not well controlled

Uncontrolled

Poorly controlled

Very poorly controlled

INTRODUCTION

A home visit in action

Asthma home visiting services vary in the number of visits and specific activities. Here's a snapshot of what a program can look like.

Julia is an asthma home visitor working for a community-based organization in a neighborhood with a high burden of asthma. With support from a Medicaid managed care organization, Julia visits Marco and his parents in their home. Marco is seven and recently went to the emergency department for asthma — his second trip in the past year.

Julia hopes to connect with the family to support them as they learn how to better manage Marco's asthma. Over the course of 3-5 visits over 6-12 months, she'll provide education and work with the family to address any

WHAT SHOULD ASTHMA HOME VISITING SERVICES LOOK LIKE?

Asthma home visiting services, also called home-based asthma services or in-home asthma services, include asthma education, home environmental asthma trigger assessments, and home environmental trigger remediation provided by qualified professionals.

Asthma education means providing information about basic asthma facts, the use of medications, self-management techniques and self-monitoring skills, and actions to mitigate or control environmental exposures that exacerbate asthma symptoms.

Environmental asthma trigger assessment means the identification of environmental asthma triggers commonly found in and around the home, including allergens and irritants. This assessment guides the self-management education about actions to mitigate or control environmental exposures as well as remediation activities.

Home environmental trigger remediation means conducting specific actions to reduce or eliminate environmental exposures. Most home visiting programs provide minor to moderate environmental asthma trigger interventions. Examples include providing and putting on dust mite-proof mattress and pillow covers, providing products such as high-efficiency particulate air (HEPA) vacuums, asthma-friendly cleaning products, dehumidifiers, and portable air filtration units; and addressing pest issues with integrated pest management strategies like minor repairs to the home's structure, such as patching cracks and small holes through which pests can enter. At times, home visiting programs are able to offer a range of other more substantial home repair activities like fixing moisture problems through partnerships with weatherization, healthy homes, and other services.

environmental triggers in the home. It helps that Julia is fluent in Spanish, the family's primary language. Julia will also serve as a helpful liaison to Marco's primary care team, helping him get access to any other care he needs.

During the first visit, Julia talks with the family about how they're managing his asthma and listens to their barriers and challenges. She provides basic asthma education — describing, for example, what happens to the lungs during an asthma attack — that reinforces messages provided by Marco's doctors. She helps the family members address the barriers they've identified. For example, if Marco gets his two inhalers confused, she may put stickers on them indicating which is the rescue inhaler and which is the controller medication.

On her final visit, the family reports that Marco has been doing great, his symptoms have improved, and the entire family feels more confident about the future.

During the second visit, having already established trust and rapport, Julia and the family conduct an environmental assessment to identify asthma triggers. Julia provides education about ways to reduce exposure to those triggers. For example, Marco's dad smokes, so Julie suggests that he smoke outside using a plastic smoking jacket she provides for short-term help[i] while also working with him on the goal of smoking cessation. She also checks to see if the family is having any difficulties following the doctor's directions for medications and to see if any new issues have arisen.

For the third visit a month later, Julia returns with a HEPA vacuum. The family's entire apartment is carpeted, so vacuuming will help reduce dust mites, a common asthma trigger, and the vacuum's HEPA filter will remove more small particles than a that of a regular vacuum. She also brings cleaning supplies that are less likely to trigger asthma attacks than the bleach-based products the family was using. During this visit, Marco's mom mentions that a neighbor has experienced a bad cockroach infestation, and they've seen a few in their kitchen. Julia provides some advice on ways the family can seal cracks and holes that may allow cockroaches to enter their apartment and provides gels and other traps to capture some of the cockroaches without the use of pesticide sprays. She also provides materials to help patch a few holes under the kitchen sink through which the pests are likely entering. On her final visit, the family reports that Marco has been doing great, his symptoms have improved, and the entire family feels more confident about the future.

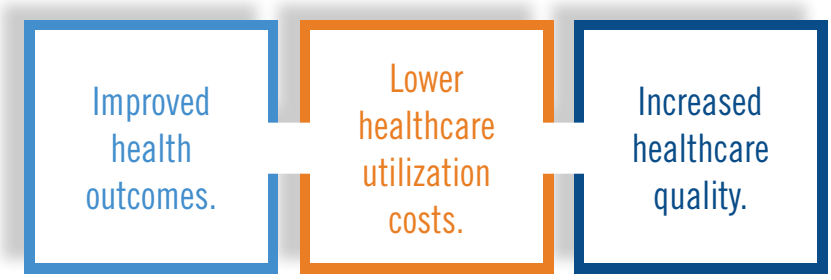
A home visitor explains how to change an air filter cartridge in a HEPA vacuum cleaner.

[i] Environmental tobacco smoke is known to both exacerbate asthma and to lead to the onset of asthma. The strategy of providing a smoking jacket does not eliminate environmental tobacco smoke as a trigger, which is the ultimate goal. However, many asthma home visiting programs have used a harm reduction approach to reduce exposure to environmental tobacco smoke as an interim step, recognizing that smoking cessation is often a longer-term goal.

BENEFITS

Triple Aim goals

As a leader of a managed care organization, you're deeply motivated to improve your members' health, increase the quality of the healthcare they receive, and keep healthcare costs in check. Asthma home visiting services will help you achieve all three.



The benefits of asthma education and environmental trigger remediation are well established. The *Guidelines for the Diagnosis and Management of Asthma*,[II] developed by the National Asthma Education and Prevention Program, include four vital components for effective asthma management:

- Assessment of disease severity and control,
- Comprehensive pharmacologic therapy,
- Patient education, and
- Environmental control measures to avoid or eliminate factors that contribute to asthma onset and severity.

While the first two components are routinely addressed during medical visits, evidence points to a need for more patient education. Meanwhile, reducing environmental triggers in the home — where people spend the vast majority of their time — can be logistically challenging to deliver as it requires home visits. That's where asthma home visiting services come in. Comprehensive in-home education and environmental interventions significantly reduce emergency department (ED) visits and associated costs, as well as missed days of school and work.[2, 3, 4, 5, 6, 7] According to a study by America's Health Insurance Plans (AHIP), health plan designs that support home-based asthma assessments and trigger remediation both reduce ED visits and improve patient experiences.[8]

The national Community Preventive Services Task Force's comprehensive, research-based assessment found cost-benefits from $5.30 to $14 per $1 invested among home-based asthma interventions for children and adolescents.

Asthma home visiting services can save money too by significantly reducing the use of more expensive healthcare services. The national Community Preventive Services Task Force's comprehensive, research-based assessment found cost-benefits from $5.30 to $14 per $1 invested among home-based asthma interventions for children and adolescents.[9] OptimaHealth won the EPA National Environmental Leadership Award in Asthma Management for a comprehensive home-based asthma care program that returned an estimated $4.40 for every $1 invested.[10] Affinity Health, as part of the Bronx Improving Asthma Care for Children Project, saw $10 saved per $1 spent among pediatric asthma enrollees of the health plan and $3 saved per $1 spent across the entire health plan.[11] While the impact of interventions on children has been studied and documented extensively, there is also significant evidence for interventions targeting adults, both in terms of health outcomes and economic benefits.[12, 13, 14]

Reducing health disparities

There is no doubt you're aware that the Medicaid population's health burden is greater than the overall population.

Low-income populations have higher asthma prevalence, worse asthma severity, poorer asthma control, and higher rates of asthma emergency department (ED) visits and hospitalizations. Most of these low-income populations are insured through Medicaid programs. Children with asthma are more likely to have coverage through Medicaid and the Children's Health Insurance Plan than children without asthma (47.6% versus 36.1%),[15] and adults aged 18 to 64 years in Medicaid have asthma at a rate almost twice that of people with private insurance (13.1% versus 7.1%).[16] As expected, people insured through Medicaid have higher asthma prevalence than those covered by commercial plans (6-9.6% for Medicaid versus 4.2-5.9% for commercial).[17] There are also significant disparities based on race and ethnicity. Compared to White children, Black children are twice as likely to have asthma, and Puerto Rican children are 82% more likely.[18] As another example, Black children are six times more likely to die from asthma than White or Hispanic kids.[19]

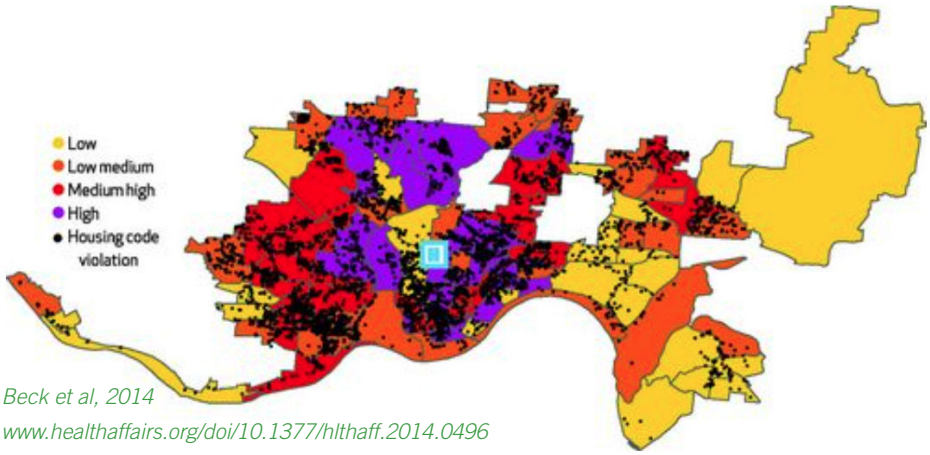
Black children are six times more likely to die from asthma than White or Hispanic kids.

HOUSING AND ASTHMA DISPARITIES

Social determinants of health are increasingly implicated as root causes of health disparities, and housing quality is perhaps the most critical social determinant in asthma disparities.[20] In many low-income communities and communities of color, "poor housing conditions and value are a legacy of historical policies and practices imbued with structural racism, including redlining, displacement, and exclusionary zoning. As a result, poor-quality, substandard housing is a characteristic feature of many underrepresented minority communities."[21] In homes that have been poorly designed or not well maintained, common structural issues can lead to and worsen environmental asthma triggers including but not limited to mold and pests. In addition to exacerbating asthma, exposure to these triggers may also lead to the onset of asthma in otherwise healthy people, contributing to disparities in both asthma outcomes and asthma prevalence.

This map shows the density of asthma-related housing code violations overlaid with asthma-related ED visits by census tract demonstrating that higher numbers of housing code violations tend to co-occur in places where the burden of asthma is high.

Exhibit 2 Greater Cincinnati Census Tracts With Rates Of Asthma-Related Emergency Department Visits Or Hospitalizations, 2009–12, And 11,371 Asthma-Related Housing Code Violations, 2008–12



Beck et al, 2014
www.healthaffairs.org/doi/10.1377/hlthaff.2014.0496

The good news: Asthma home visiting services are a tried-and-true method for alleviating this disparate burden. Why? One reason is that evidence shows greatest improvements in health outcomes and cost savings when targeting people with poorly controlled asthma. Another reason is that these services are often provided by professionals especially qualified to support the people most in need of help. For example, the Community Preventive Services Task Force highlights the value of community health workers (CHWs) in asthma interventions:

> "[I]t is beneficial to hire and train CHWs to implement this intervention for the purpose of reaching out to primarily low-income, ethnic minority populations. CHWs play an essential role in the implementation of interventions, bridging the gaps between underserved populations and researchers. Especially when they are from the same community, CHWs can connect culturally with local populations and build trusting relationships with clients and their families."[22]

Evidence shows greatest improvements in health outcomes and cost savings when targeting people with poorly controlled asthma.

As one group of researchers notes, "Interventions by [CHWs] appear to be effective when compared with alternatives…particularly when partnering with low-income, underserved, and racial and ethnic minority communities."[23]

Of course, CHWs represent one type of professional that has successfully implemented home-based asthma services. Depending on needs and capacities, MCOs can pick from a range of qualified professionals, both licensed and non-licensed, including community health workers, *promotoras de salud*, certified asthma educators, lay asthma educators, social workers, respiratory therapists, healthy homes specialists, nurses, and others. We'll delve further into the team-based approach most effective in delivering asthma services later in this resource (*Type of Providers*, page 24).

Help us improve this resource and others we plan to provide in the future. Please click on the link to the right and share your thoughts today!

FEEDBACK
https://bit.ly/Tool_Unlocking

Fulfilling MCO contractual obligations related to case management and disease management services

Your MCO is likely already providing sound member support for asthma (including both clinical management and education) as part of your overall healthcare mission.

Support for member case management generally — and disease management services more specifically — is also a core part of your Medicaid managed care contract with your state. Whether your disease management program is in-house, or you contract out with a third-party vendor, adding asthma home visiting services will build on your current strengths and help you realize additional improvements in asthma outcomes. Home-based asthma services may also be a useful resource for supporting basic or complex case management.

Research shows repeatedly that asthma home visiting services significantly reduce emergency department (ED) visits and associated costs.[24, 25, 26, 27, 28, 29, 30] For example, according to a study by America's Health Insurance Plans (AHIP), when health plans provide support in the home for enrollees with poorly controlled asthma, the enrollees end up going to the ED and hospital less often, and their patient experience is better.[31]

When MCOs provide support in the home for members with poorly controlled asthma, they end up going to the ED and hospital less, and their patient experience is better.

Quality improvement initiatives

Managed care leaders and other providers understand the importance of continuous quality improvement, whether it's delivering care in a more efficient manner or changing the type of care delivered. Given their proven record of success, home-based asthma services can be an important tool to add to your quality improvement "toolbox."

HEDIS Measures

The Healthcare Effectiveness Data and Information Set (HEDIS) is one of the healthcare sector's most common performance improvement resources.

The most commonly used HEDIS measure for asthma is the Asthma Medication Ratio (AMR), which assesses whether members are receiving the right ratio of controller medications to total asthma medications. ED admission rates may also serve as a useful asthma-related quality measure.[32]

If your asthma HEDIS measures are below minimum performance levels, or you're simply interested in making a solid score even higher, home-based asthma services can help. During asthma home visits, home visitors can reinforce key educational messages provided during the clinic visit, including messages about the importance of following prescribed medication regimens. Additionally, home visitors often excel at identifying barriers to medication compliance and helping the families overcome those barriers. These services can contribute to the improvement of HEDIS outcomes.

Member Satisfaction and the Consumer Assessment of Healthcare Providers and Systems Program (CAHPS)

Launched in 1995, CAHPS serves as a national standard for measuring consumers' health plan experiences. CAHPS can provide valuable information for consumers, as a tool to navigate the health insurance landscape, and to managed care organizations interested in assessing their own performance. Effectively implemented, members receiving asthma home visiting services often report high levels of satisfaction with the quality of care received. For example, a partnership in California between LA Care and QueensCare provided members with asthma home visits. One five-year old member with asthma made tremendous progress after completing the home-based asthma program. At the time of the referral, his mother reported that he was newly diagnosed with asthma and had been to the emergency department and hospitalized several times over the past year. His mother was especially concerned because her son also has a diagnosis of autism and is unable to verbalize symptoms. His mother was unfamiliar with asthma symptoms and felt overwhelmed by the medications for her son. With the assistance of an asthma home visitor, she became familiar with her son's asthma triggers and symptoms. Her son's Asthma Control Test™ rose from a very poorly controlled score of 13 at referral to a controlled score of 23 after completing the asthma home visits. The family was very satisfied with the asthma home visiting services they received.

CAHPS SURVEY SAMPLE QUESTION

25. In the last six months, how often did customer service at your child's health plan give you the information or help you needed?

1 Never
2 Sometimes
3 Usually
4 Always

> "I can actually say that my children are living a better life because of [the home visitor]. A resource like this can change your entire life. I can honestly say it really works. It really works."
>
> **Veona Rogers**
> client of Esperanza Community Housing Corporation's asthma home visiting program

Veona Rogers, a client of Esperanza Community Housing Corporation, another home-based asthma program in Los Angeles, shares a similar story: "I can actually say that my children are living a better life because of [the home visitor]. A resource like this can change your entire life. I can honestly say it really works. It really works." While there are many factors that go into CAHPS results, asthma home visiting services can help move the needle towards positive outcomes and member satisfaction in the health plan and the quality of its healthcare.

Achieving NCQA accreditation

In an increasingly competitive healthcare marketplace, more MCOs aim to distinguish themselves by achieving health plan accreditation from the National Committee for Quality Assurance (NCQA). If your MCO is pursuing NCQA accreditation, home-based asthma services can help.

Specifically, asthma home visiting services can enhance several different components of NCQA's population health management (PHM) requirements. Below are some key excerpts from the 2018 HP Standards and Guidelines for the Accreditation of Health Plans (the Standards).[33]

PHM 1: PHM Strategy

As part of a health plan's comprehensive strategy for meeting the needs of its enrollees, Factor 1 of "Element A: Strategy Description," describes four areas of focus; asthma home visiting services can help address two of them (right).

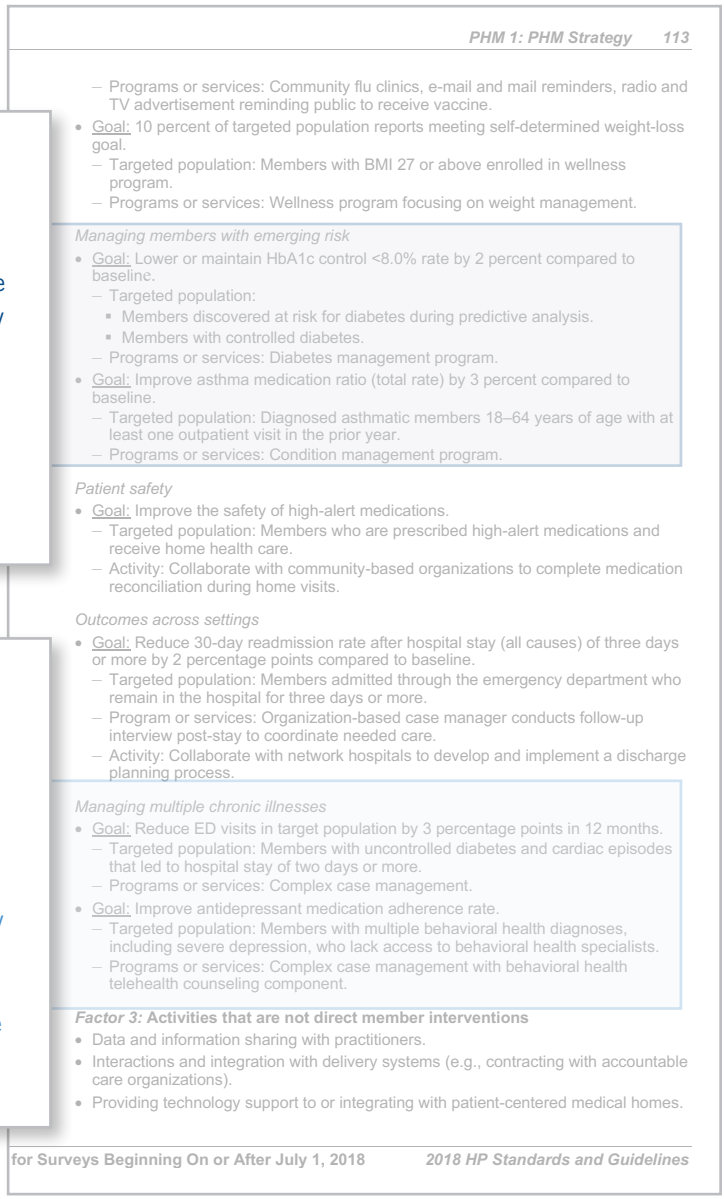
For both areas of focus, asthma home visiting services can help demonstrate an MCO's comprehensive PHM strategy.

Managing members with emerging risk:

Among those diagnosed with asthma, there are different levels of risk; home visiting services are typically offered to those with the highest risk. Within the Standards, asthma is one of the examples provided for managing members with emerging risk.

Managing multiple chronic illnesses:

Asthma can present with a variety of comorbidities. For example, in California adults who have respiratory co-morbidities, such as COPD, are also significantly less likely to have well controlled asthma (35.5%) than those who do not have respiratory co-morbidities (60.6%).[34]



PHM 1: PHM Strategy 113

– Programs or services: Community flu clinics, e-mail and mail reminders, radio and TV advertisement reminding public to receive vaccine.

- Goal: 10 percent of targeted population reports meeting self-determined weight-loss goal.
  – Targeted population: Members with BMI 27 or above enrolled in wellness program.
  – Programs or services: Wellness program focusing on weight management.

Managing members with emerging risk

- Goal: Lower or maintain HbA1c control <8.0% rate by 2 percent compared to baseline.
  – Targeted population:
    ▪ Members discovered at risk for diabetes during predictive analysis.
    ▪ Members with controlled diabetes.
  – Programs or services: Diabetes management program.
- Goal: Improve asthma medication ratio (total rate) by 3 percent compared to baseline.
  – Targeted population: Diagnosed asthmatic members 18–64 years of age with at least one outpatient visit in the prior year.
  – Programs or services: Condition management program.

Patient safety

- Goal: Improve the safety of high-alert medications.
  – Targeted population: Members who are prescribed high-alert medications and receive home health care.
  – Activity: Collaborate with community-based organizations to complete medication reconciliation during home visits.

Outcomes across settings

- Goal: Reduce 30-day readmission rate after hospital stay (all causes) of three days or more by 2 percentage points compared to baseline.
  – Targeted population: Members admitted through the emergency department who remain in the hospital for three days or more.
  – Program or services: Organization-based case manager conducts follow-up interview post-stay to coordinate needed care.
  – Activity: Collaborate with network hospitals to develop and implement a discharge planning process.

Managing multiple chronic illnesses

- Goal: Reduce ED visits in target population by 3 percentage points in 12 months.
  – Targeted population: Members with uncontrolled diabetes and cardiac episodes that led to hospital stay of two days or more.
  – Programs or services: Complex case management.
- Goal: Improve antidepressant medication adherence rate.
  – Targeted population: Members with multiple behavioral health diagnoses, including severe depression, who lack access to behavioral health specialists.
  – Programs or services: Complex case management with behavioral health telehealth counseling component.

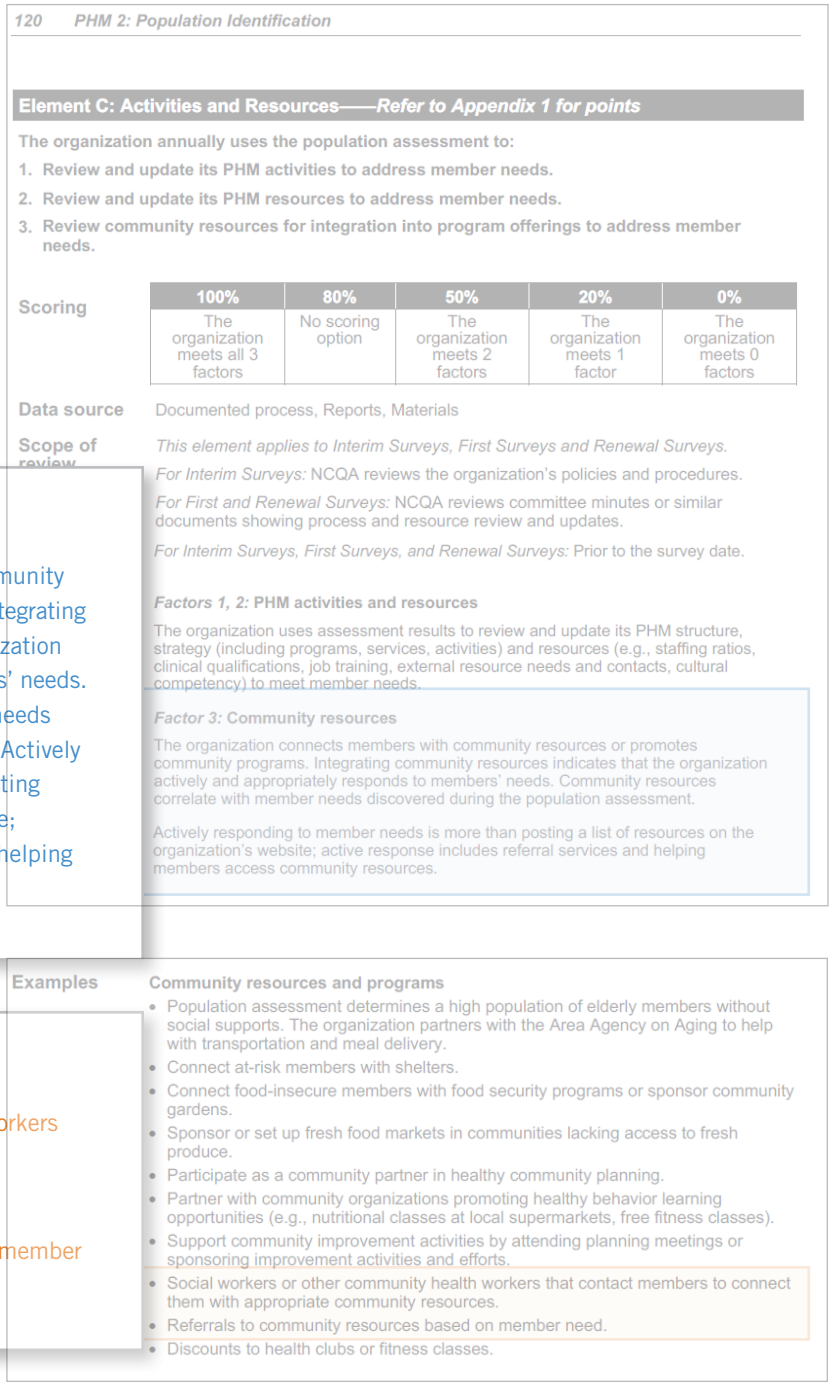
***Factor 3:* Activities that are not direct member interventions**

- Data and information sharing with practitioners.
- Interactions and integration with delivery systems (e.g., contracting with accountable care organizations).
- Providing technology support to or integrating with patient-centered medical homes.

for Surveys Beginning On or After July 1, 2018 *2018 HP Standards and Guidelines*

PHM 2: Population Identification

Home-based asthma services can also help MCOs to assess the needs of the population and determine actionable categories for appropriate interventions. Specifically, these services can help health plans review community resources for integration into program offerings to address member needs. From "Element C: Activities and Resources":



120 PHM 2: Population Identification

Element C: Activities and Resources——*Refer to Appendix 1 for points*

The organization annually uses the population assessment to:

1. Review and update its PHM activities to address member needs.
2. Review and update its PHM resources to address member needs.
3. Review community resources for integration into program offerings to address member needs.

Scoring	100%	80%	50%	20%	0%
	The organization meets all 3 factors	No scoring option	The organization meets 2 factors	The organization meets 1 factor	The organization meets 0 factors

Data source Documented process, Reports, Materials

Scope of review *This element applies to Interim Surveys, First Surveys and Renewal Surveys.*

For Interim Surveys: NCQA reviews the organization's policies and procedures.

For First and Renewal Surveys: NCQA reviews committee minutes or similar documents showing process and resource review and updates.

For Interim Surveys, First Surveys, and Renewal Surveys: Prior to the survey date.

***Factors 1, 2:* PHM activities and resources**

The organization uses assessment results to review and update its PHM structure, strategy (including programs, services, activities) and resources (e.g., staffing ratios, clinical qualifications, job training, external resource needs and contacts, cultural competency) to meet member needs.

***Factor 3:* Community resources**

The organization connects members with community resources or promotes community programs. Integrating community resources indicates that the organization actively and appropriately responds to members' needs. Community resources correlate with member needs discovered during the population assessment.

Actively responding to member needs is more than posting a list of resources on the organization's website; active response includes referral services and helping members access community resources.

Examples **Community resources and programs**

- Population assessment determines a high population of elderly members without social supports. The organization partners with the Area Agency on Aging to help with transportation and meal delivery.
- Connect at-risk members with shelters.
- Connect food-insecure members with food security programs or sponsor community gardens.
- Sponsor or set up fresh food markets in communities lacking access to fresh produce.
- Participate as a community partner in healthy community planning.
- Partner with community organizations promoting healthy behavior learning opportunities (e.g., nutritional classes at local supermarkets, free fitness classes).
- Support community improvement activities by attending planning meetings or sponsoring improvement activities and efforts.
- Social workers or other community health workers that contact members to connect them with appropriate community resources.
- Referrals to community resources based on member need.
- Discounts to health clubs or fitness classes.

Factor 3: Community resources:

The organization connects members with community resources or promotes community programs. Integrating community resources indicates that the organization actively and appropriately responds to members' needs. Community resources correlate with member needs discovered during the population assessment. Actively responding to member needs is more than posting a list of resources on the organization's website; active response includes referral services and helping members access community resources.

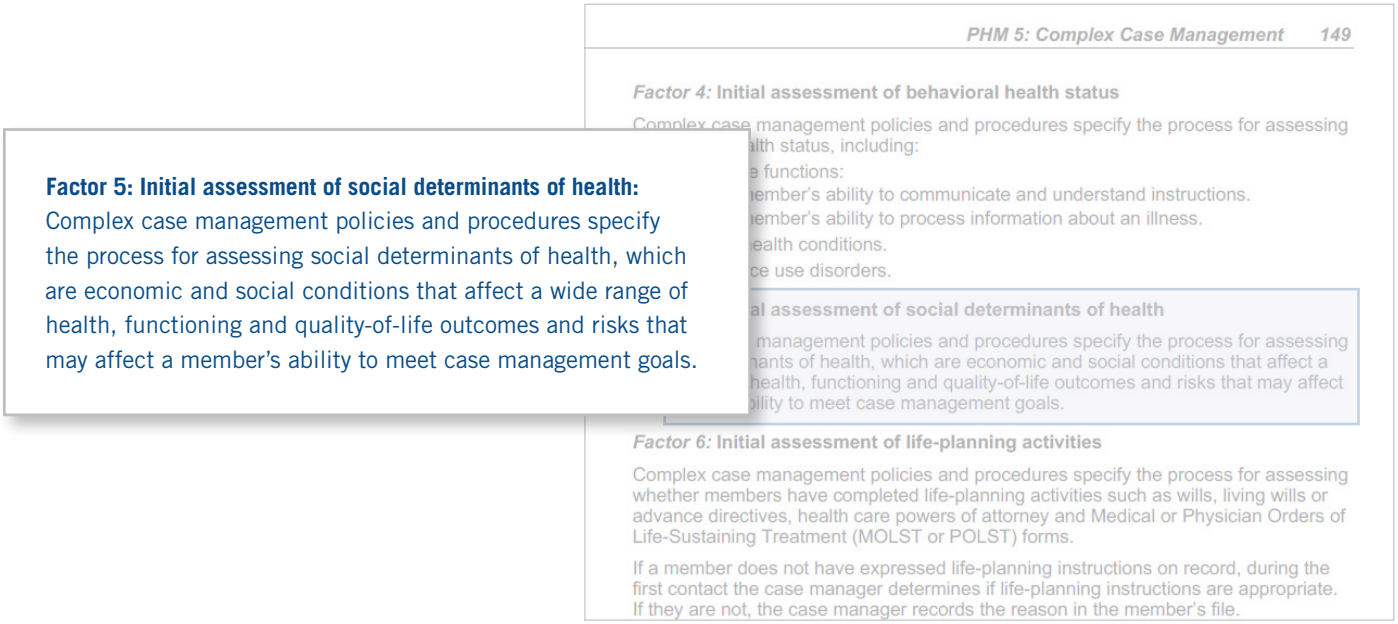
Examples:

- Social workers or other community health workers that contact members to connect them with appropriate community resources.
- Referrals to community resources based on member need.

Local public health departments or community-based organizations offering home-based asthma services would likely seize the opportunity to create connections with MCOs to increase access to these services. For those cases where health plans already offer asthma home visiting services in-house, you can still identify and refer to additional community resources. For example, staff with Contra Costa Health Plan's asthma home visiting program provide referrals to the Contra Costa County's energy weatherization program, which serves low-income households.

PHM 5: Complex Case Management

One factor in Element C of the Complex Case Management Standard requires MCOs to assess and respond to a member's social determinants of health — those social, environmental and economic conditions that affect health, well-being, and capacity to follow a care plan. Typically, asthma home visiting services identify and help remediate environmental triggers contributing to a member's poorly controlled asthma. Home visitors can also connect the member to other community-based resources — such as legal aid services to help tenants correct housing code problems caused by landlord inaction — that can affect health.



PHM 5: Complex Case Management 149

Factor 4: **Initial assessment of behavioral health status**

Complex case management policies and procedures specify the process for assessing
lth status, including:
e functions:
ember's ability to communicate and understand instructions.
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al assessment of social determinants of health
management policies and procedures specify the process for assessing
nants of health, which are economic and social conditions that affect a
health, functioning and quality-of-life outcomes and risks that may affect
ility to meet case management goals.

Factor 6: **Initial assessment of life-planning activities**

Complex case management policies and procedures specify the process for assessing whether members have completed life-planning activities such as wills, living wills or advance directives, health care powers of attorney and Medical or Physician Orders of Life-Sustaining Treatment (MOLST or POLST) forms.

If a member does not have expressed life-planning instructions on record, during the first contact the case manager determines if life-planning instructions are appropriate. If they are not, the case manager records the reason in the member's file.

Factor 5: Initial assessment of social determinants of health: Complex case management policies and procedures specify the process for assessing social determinants of health, which are economic and social conditions that affect a wide range of health, functioning and quality-of-life outcomes and risks that may affect a member's ability to meet case management goals.

"

Kevin Drury
Director of Quality
Contra Costa Health Plan

The asthma home visiting program provides evidence of compliance with several NCQA standards, especially Population Health Management Strategy. It helps us meet two of the four required areas in that section: managing members with emerging risk and managing multiple chronic illnesses. The program should also improve the scores on the two HEDIS asthma measures, giving us more points toward the score."

Building trust and positive perceptions in your community

There is something meaningful about “meeting people where they are.” It generates trust, increases client engagement, and makes relationships between the care team and clients more productive.

Home-based asthma services can literally and figuratively embody the best of meeting people where they are: by entering a member’s home, seeing what the family’s day-to-day environment is like, and providing much needed help and support, the home visitor can establish trust and rapport that’s hard to replicate in other settings. Not only does this trust and rapport have positive outcomes for the enrollee, but it has positive outcomes for the MCO as well. Beyond improving the health of the enrollees and reducing costs, providing services that are client-centered and based on trust and rapport can improve community relations.

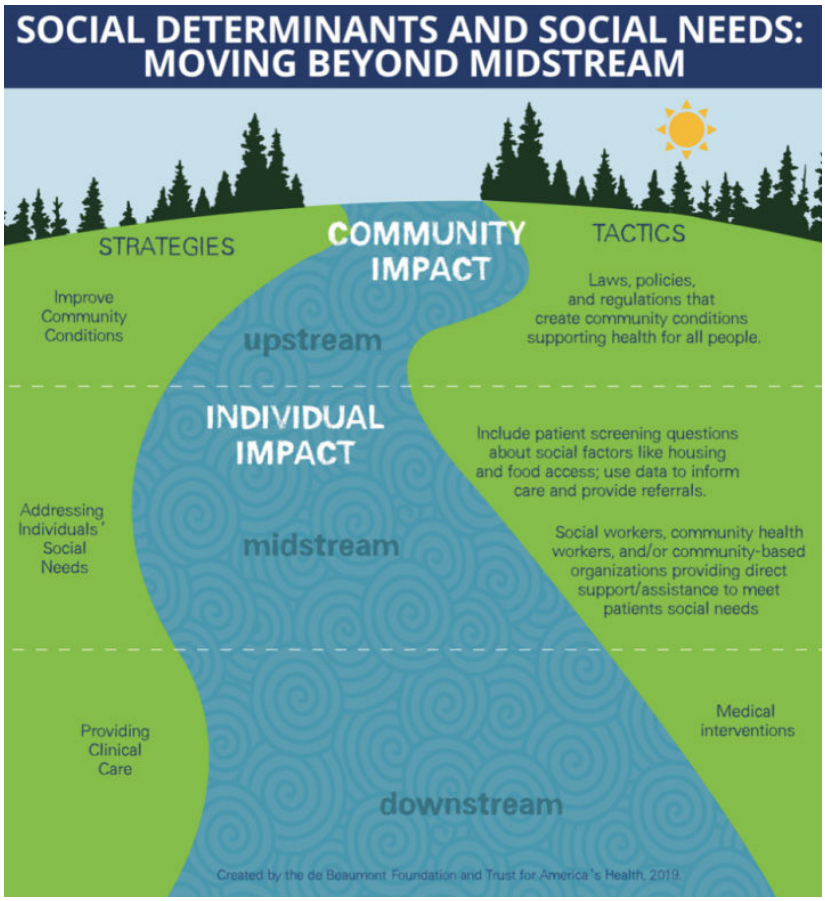
Home visits can also promote client engagement and agency. Assessing the home for environmental triggers is a process that actively involves the client, drawing out their knowledge and understanding of their home and its condition. Working in partnership with the home visitor to address environmental triggers also reinforces the client’s agency and sense of control – a key component to long-term and sustained health improvements. Clients experiencing this growth of individual power are also likely to be more satisfied with the MCO providing the supportive services.

Position your MCO as a leader aligning with healthcare trends

Asthma home visiting services are not a new intervention, yet in many ways they provide leading-edge care.

Providing these services can help your MCO get ahead of the curve on growing needs and better align with a variety of today's healthcare trends. Here are just a few:

- **Prevention:** Research demonstrates that home-based asthma services help keep members from utilizing more intensive and costly healthcare services, such as urgent care, emergency department visits, and hospitalizations.[35, 36, 37, 38, 39] In this era of limited healthcare dollars, prevention is key.
- **Social and environmental conditions:** The healthcare sector is shifting its services to account for the fact that social and environmental conditions facing individuals and families — the social determinants of health — have as much, if not more, of an effect on health as medical care. Additionally, providers and plans are being asked to demonstrate their commitment to addressing social determinants of health. By assessing and helping to improve members' living conditions, asthma home visiting services can promote healthy environments.



Created by the de Beaumont Foundation and Trust for America's Health, 2019

- **Health equity:** Across the healthcare field, it's a growing priority not only to improve the health outcomes of a population but also to close gaps between different groups. Home-based asthma services can play a key role in reducing disparities.
- **Flexible, responsive care:** The COVID-19 pandemic provided additional evidence for the effective role telehealth – including virtual home visits – can play in supporting patients. Many asthma home visiting programs plan to continue integrating a virtual component into home visiting programs for additional flexibility in meeting client needs.
- **Value-based care:** Home-based asthma services align well with current trends toward value-based financing, which focuses on improving quality and outcomes for patients as well as lowering costs.

The healthcare sector is shifting its services to account for the fact that the social determinants of health have as much effect on health as medical care, if not more.

Diverse models for program structure and design

There is no "one size fits all" approach to structuring and implementing home-based asthma services.

Rather, there are many different program models, giving MCOs a great deal of flexibility for determining how best to accommodate needs of enrollees, quality assurance, staffing capabilities, community partnerships, and cost considerations.

Some MCOs may prefer to build a new asthma-specific program in-house. Others may opt to add asthma to an existing home visiting program focused on other topics and build on its established infrastructure. Still other MCOs may decide to connect with external partners such as clinics, community-based organizations, public health departments, or other third-party vendors to provide the services. Regardless of the approach your MCO takes, you'll expand the number of valuable resources available to your members.

While some healthcare payers appreciate the flexibility, others cite the lack of "turnkey" infrastructure as a barrier to implementing asthma home visiting services. This includes reports from healthcare payers that while the evidence-base is compelling, the diversity of approaches and models makes it hard to know where to start in building their own program or services. In response, NCHH convened a number of asthma and housing experts, including RAMP, to develop a model benefit package for MCOs and other healthcare payers to deliver home-based asthma services. The model benefits package describes the scope, staffing, and services associated with providing asthma home visiting services and includes four tiers of services to provide a range of options for health plans to consider.

These model benefit package tiers were designed with reference to the National Asthma Education and Prevention Program's Expert *Panel Report 3: Guidelines for the Diagnosis and Management of Asthma* (NAEPP *Guidelines*)[40] and informed by the "Guide to Community Preventive Services" (Community Guide).[41] The NAEPP *Guidelines* are a widely used resource for setting standards in asthma management and emphasize the importance of asthma self-management education along with control of environmental asthma triggers, while the Community Guide provides evidence-based findings and recommendations about community preventive services.[iii]

It should be noted that the NAEPP *Guidelines* emphasize the importance of asthma self-management education along with control of environmental asthma triggers for every patient with asthma, regardless of whether a healthcare payer provides coverage of asthma home visiting services. This document

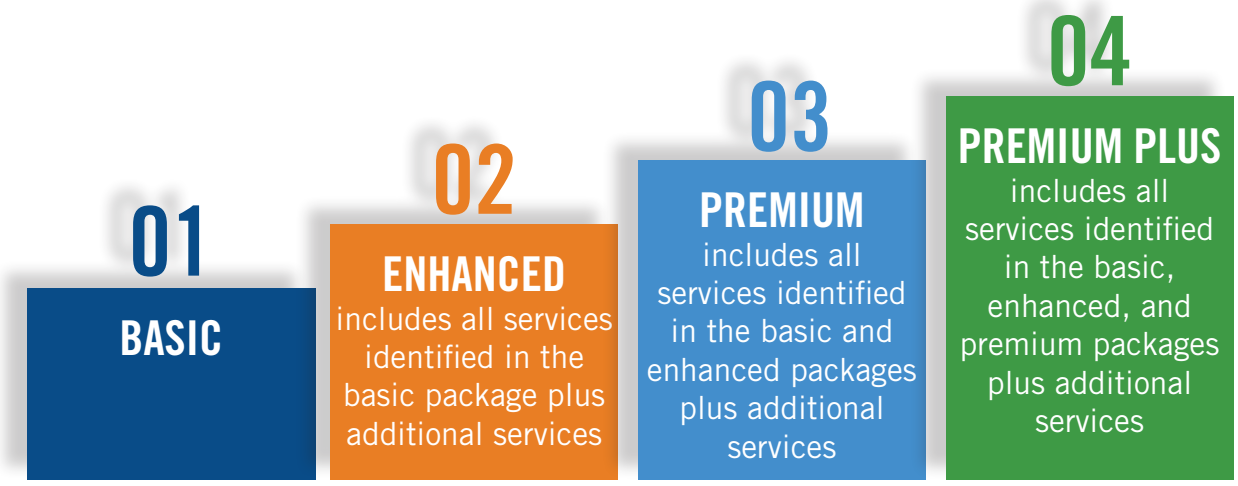
PRIORITY HEALTH (MICHIGAN)

Priority Health Plan of Michigan began contracting with the Asthma Network of West Michigan in 1999 to provide home-based asthma services to low-income children and adults with moderate to severe asthma.[42,43] The asthma home visiting intervention includes home-based asthma self-management education, trigger avoidance education, and mitigation of environmental risk factors. The first year of the intervention saw improved medication use and a significant reduction in ED visits and hospitalizations. The long-term ROI is estimated at $2.10 per dollar invested in the program.[44]

[iii] Note: The overall process supporting development of the model benefits package and how the contents of the different tiers were established is further described in Appendix B.

focuses on services provided in the home environment, but education provided in the clinical setting should include messages about environmental asthma triggers.

The model benefit package is not intended to serve as a specific list of services that must be delivered regularly to all members with asthma in a health plan. Instead, the model benefit package tiers are designed to allow health plans the flexibility to choose from various levels of intervention intensity depending on members' need, available resources, and other factors. The tiers build upon each other and include:



For each tier, the services in the model benefit package fall into two general categories: (1) environmental interventions that address specific asthma triggers and risk factors in the home setting and (2) non-environmental interventions that help empower individuals and families to manage asthma effectively. Table 1 (environmental) and Table 2 (non-environmental) on the following pages describe the recommended services that members should receive. Each of these service components are described in greater detail in Appendix D.

Within each tier, each service component is coded with one of three designations. A filled circle means the service component is recommended, an open circle means that the service component is optional and could be considered as part of a package of services corresponding to the intensity of that particular tier, and no circle means that service component would not typically be included as part of a package of services associated with that tier or intensity of services. Workforce requirements are also indicated for each service component. Given the demonstrated value of including CHWs as part of the workforce for delivering home-based asthma services, these tables outline whether a CHW is likely to be able to perform the specific service component or whether a professional with specialty training might be required.

Additionally, as you consider how to provide asthma home visiting services to your enrollees, a number of key considerations should be addressed including (1) member eligibility and scope of services, (2) type of setting, and (3) type of providers used to deliver services. Each of these is discussed in more detail following the tables.

As noted above, there are a range of reasons health plans might choose one tier over another including members' need, available resources, and overall level of readiness to provide home-based asthma services. As health plans consider how to provide home-based asthma services to their enrollees, a number of key considerations should be addressed including (1) patient eligibility and scope of services, (2) type of setting, and (3) type of providers used to deliver services. For instance, they can decide to set their own minimum set of services at a moderate level of intensity or they could stratify their patient population and offer low-intensity services more broadly and higher-intensity services for only patients with the most poorly controlled asthma. Each of these key considerations is discussed in the sections following the tables.

INTEGRATING VIRTUAL SERVICES

Over the last decade, several leaders in asthma home visiting have successfully incorporated virtual visits into their protocols. The COVID-19 pandemic pushed countless more to experiment with, expand upon, and rely on virtual delivery of services almost overnight. Pandemic or not, there are many reasons to consider combining virtual and in-person visits, including geographic reach, client preference, safety concerns, scheduling difficulties, workforce shortages, budget challenges, and more.

As you consider the service components in the tables, you may want to consider which, if any, to provide through a virtual approach. Some activities can likely be performed virtually just as effectively, and perhaps more efficiently, than in-person. Screening, interviews, education, and coordinating referrals are examples of service components that can easily be handled virtually. Other service components could be done virtually with minor modifications. For example, monitoring for pests could be done virtually if staff drop off supplies and retrieve them later. Trigger assessments could be performed virtually through use of a smartphone or tablet with additional instructions, like asking the clients to touch certain surfaces to try to detect moisture or to ask about particular smells. Lastly, some service components can be done virtually when necessary, but they may be compromised. For example, it may be harder to uncover another unmet need like domestic violence or food insecurity if the staff are not physically in the home.

Table A. Model benefit package options by activity type and service tier (environmental)

		Service Component	Service Tier				Workforce Requirements	
			Basic	Enhanced	Premium	Premium Plus	CHW?	Specialty Training Required?
Environmental	ASSESSMENT	Screening or initial consult via phone, app, or online	o	o	o	o	•	
		Interviews with residents	•	•	•	•	•	
		Visual assessment	•	•	•	•	•	
		Visual assessment with instruments	o	•	•	•	o	•
		Monitoring for pests	o	•	•	•	o	•
		Testing exhaust ventilation systems	o	o	•	•		•
		Assessing dampness, moisture, and mold	o	•	•	•		•
		Dust sampling for allergens		o	•	•		•
		Mold sampling (surface)		o	o	•		•
		Testing for gasses (e.g., NO_2) - onsite		o	o	•		•
		Testing air handling systems (circulation)		o	•	•		•
		Measurement of particulates		o	o	•		•
		Air sampling (Chemical)			o	•		•
		Sampling for VOCs*			o	o		•
		Mold sampling (air) (in right conditions, unnecessary if visible mold)			o	o		•
		Air sampling (gas)*			o	o		•
	TRIGGER REDUCTION	Provision of low-cost supplies (e.g., green cleaning kits, mattress and pillow encasements, food storage containers, gel baits)	•	•	•	•	•	
		Referrals to community programs for additional support	•	•	•	•	•	
		Referral to smoking cessation services for smokers with asthma or occupants of residences of children who have asthma	•	•	•	•	•	
		Integrated pest management services (limited)	•	•	•	•		•
		Work with landlord and codes to resolve issues (rental properties only)	•	•	•	•	o	
		Minor repairs (e.g., patching holes, fix leaky plumbing)	o	•	•	•		•
		Coordination of home intervention services	•	•	•	•	•	
		Advocacy/legal support (e.g., tenants' rights)	o	•	•	•	o	•
		Provision of higher cost supplies (e.g., HEPA vacuums, dehumidifiers)		•	•	•	•	
		Professional cleaning services		•	•	•		•
		Integrated pest management services (more robust)		•	•	•		•
		Referrals to other private services (e.g., mold remediation)		•	•	•	•	
		Moderate repairs (e.g., replacing carpet with cleanable flooring)			•	•		•
		Minor to moderate ventilation improvements (e.g., MERV 13 HVAC filters, HEPA air purifiers, air conditioners, bathroom/kitchen exhaust fan) based on local conditions (e.g., wildfire smoke, high outdoor air pollution, extreme heat)			•	•	o	•
		Other emergency supplies and services to respond to extreme weather events (e.g., flooding, extreme cold)			•	•	o	•
	EDUCATION	Individual education on strategies to identify and reduce triggers (tailored to the specific needs of the patient and/or household)	•	•	•	•	•	
		Development of a personalized household action plan to help prioritize action on addressing identified asthma triggers	•	•	•	•	o	•
		Culturally competent, linguistically relevant, and accessible online and/or print resources	•	•	•	•	•	
		Access hotline for environmental questions (limited in scope)	o	o	o	o		•
		Phone follow-up/check-ins	o	o	o	o	•	
		Tailored environmental education with behavior modeling (home visitor demonstrates technique, then client performs technique and receives feedback)		•	•	•	•	
		Additional visits to assist in implementing the action plan, determine action plan progress, and provide reinforcement		•	•	•	•	

**These sampling techniques can complement a healthy homes assessment but are typically not necessary.*

• **Recommended** o **Optional**

• **Recommended** o **Potential for role, with appropriate training**

Table B. Model benefit package options by activity type and service tier (non-environmental)

			Service Tier				Workforce Requirements	
		Service Component	Basic	Enhanced	Premium	Premium Plus	CHW?	RN/MD/ MSW/A-EC Required?
Non-Environmental	SELF-MANAGEMENT EDUCATION AND TRAINING	Group basic asthma self-management education (e.g., proper use of medications and devices, self-monitoring of asthma control status, use of action plans, knowledge of early warning signs and what to do for worsening asthma, knowledge of personal triggers and trigger avoidance strategies)	●	●	●	●	○	●
		Individual (tailored) basic asthma self-management education (e.g., proper use of medications and devices, self-monitoring of asthma control status, use of action plans)	●	●	●	●	○	●
		Education about managing care within the healthcare system (e.g., effective use of the healthcare system, patient-provider communication)	●	●	●	●	●	
		24-hour telephone hotline for patients for questions regarding acute asthma management (for asthma and environmental conditions)	○	○	○	○	○	●
		Culturally competent and linguistically relevant online/print resources readily available and in community	●	●	●	●	●	
		Education about managing care within a social system		○	○	●		●
		Coaching and support to reinforce educational materials (e.g., self-efficacy, motivating patients to change address/behaviors)		●	●	●	●	
	SOCAIL SERVICES AND SUPPORT	Assessment of family's social service needs (e.g., housing issues, insurance coverage, transportation, legal support)	●	●	●	●	●	
		Referrals to community resources	●	●	●	●	●	
		Coordination with interpreter services	●	●	●	●	●	
		Coverage of tobacco cessation	●	●	●	●	●	
		Assistance/coaching for families with problem-solving techniques		●	●	●	●	
		Work with licensed social workers to address other client needs		○	●	●	●	
		Coordination of social services		○	●	●	○	●
	COORDINATED CARE	Build capacity of client or caretaker to communicate concerns or questions directly with clinical providers (e.g., encouraging client to contact clinical provider for medication questions)	●	●	●	●	●	
		Facilitate linkages to primary care (e.g., assist families with finding a primary care provider or medical home, help schedule visits, make referrals to specialists)	●	●	●	●	●	
		Direct communication between primary care providers and home visitors regarding clients (e.g., home visit reports sent to primary care provider)	●	●	●	●	●	
		Develop or review and refine an individually tailored asthma management plan and share with provider(s); or obtain plan from provider(s)	●	●	●	●		●
		Referral for comorbid conditions	○	○	●	●		●
		Overcoming any HIPAA/FERPA issues	○	○	●	●	○	●
		Home visitor participates in phone calls and/or office visits with healthcare provider/medical home staff		○	●	●	●	
		Coordinated disease management program with clinical- and community-based staff working closely to facilitate client care		○	●	●	○	●

● Recommended ○ Optional

● Recommended ○ Potential for role, with appropriate training

Patient eligibility and stratification of services

One question that often arises from health plan leadership is how to determine eligibility for asthma home visiting services.

While the NAEPP *Guidelines* describe the general effectiveness of home-based asthma services, not every enrollee may need these services.[45] Some MCOs may choose to offer asthma home visiting services to all enrollees with asthma, while others may offer certain services only to those with poorly controlled asthma, and still others may use predictive modeling or different methods to determine which clients have the greatest need for home-based asthma services. When considering how to determine eligibility and stratify services, at a minimum, all members with poorly controlled asthma should be eligible for the basic tier of home-based asthma services. For additional information on the definition of "poorly controlled," see Appendix A.

The biggest return comes from being able to identify those who are at risk for poor control and intervening before they have a significant event.

Health plans and asthma home visiting programs can consider an array of criteria to determine eligibility for different tiers of asthma home visiting services. These tiers, in turn, guide the intensity of asthma education, environmental interventions, and case management services that should be provided to members and their caregivers. Examples include the following:

- Results of an asthma control assessment, such as the Asthma Control Test (ACT), Childhood Asthma Control Test (C-ACT), Asthma Therapy Assessment Questionnaire (ATAQ), Asthma Control Questionnaire (ACQ), or a similar test.
- Healthcare utilization, such as hospitalization, ED visit, or urgent care visit for asthma in the 12 months prior to enrollment.

OPTIMA HEALTH (VIRGINIA)

NETWORK HEALTH (MASSACHUSETTS)

To ensure members with different levels of asthma severity and control receive the appropriate level of service, you could consider using risk stratification categories. For example, Optima Health offers enrollees with asthma one of three different interventions depending on their asthma severity. Low- and moderate-risk individuals receive telephone-based education and case management. High-risk individuals with recent asthma-related hospitalizations receive home visits provided by nurses or respiratory therapists that include environmental assessments and education.[46]

In another example, Network Health, a statewide Medicaid MCO in Massachusetts that is part of Cambridge Health Alliance, operates a home-based asthma program[47] that utilizes an electronic member registry. The program tracks members' asthma-related healthcare utilization and flags specific criteria or "flagging events" to providers during clinical visits to generate referrals for home visits when needed.[48]

- Medication/pharmacy data, such as a course of oral corticosteroids.
- An Asthma Medication Ratio (AMR) lower than .5.
- Referral from a licensed clinician.

In other words, not everybody with asthma needs a home visit. Many programs target these services to people with poorly controlled asthma, but deciding who has poorly controlled asthma (or may be at risk for poor asthma control) is a key to understanding the scope of the necessary. Targeting affects costs in multiple ways but most directly in the number of people that will be eligible to receive the services.

TYPE OF SETTING

In addition to addressing asthma in the home setting, the services included in the model benefit package could be delivered in multiple other settings where people learn, work, and play. The NAEPP *Guidelines* support the provision of asthma services in a range of clinical and non-clinical settings. Among non-clinical settings, the NAEPP *Guidelines* provide evidence for asthma services delivered in homes, schools, community settings such as community centers or places of worship.[49] Many programs have also found success offering programs in part or in full through telehealth or online programs.[50]

You may find value in providing home-based services in places where multiple individuals may stand to benefit. For example, a community educator could provide group asthma self-management and environmental education in multi-dwelling locations in which several individuals may face shared triggers, such as cockroaches, pests, or mold.

Scope and intensity of services provided

Scope is the range of potential asthma triggers and trigger-promoting conditions that are assessed and addressed as part of the intervention. Scope also clarifies whether other components, such as asthma self-management education, are provided with the intervention.

The Guide to Community Preventive Services and the *Clinical Guidelines for the Diagnosis and Treatment of Asthma* both recommend an approach that addresses more than a single environmental trigger and integrates environmental services with other components of asthma care and, specifically, self-management education.

The scope of services you choose may depend on a variety of factors including what types of triggers or trigger-promoting conditions are most prevalent in the homes of your target population.

Intensity in a home-based visit describes the extent or magnitude of the assessment, remediation, or other intervention. For example, a visual assessment is considered a lower-intensity approach than an assessment that includes collecting dust samples.

The Guide to Community Preventive Services defines three different levels of intervention intensity. Low-intensity interventions will cost less but may also deliver more modest health improvements. High-intensity approaches cost significantly more but may yield greater health improvements. The challenge is to find the right balance, so you get the biggest benefit.

For the healthcare sector, low- to moderate-intensity interventions are usually the most appropriate approach; however, there are occasions when a high level of intensity is merited or possible.

As you consider which tier of service you might offer from the tables above, you should decide upon the required intensity level needed for an effective home environmental intervention by asking yourself questions like these:

- What are the number of home visits needed to address the issue?
- How intense and comprehensive should the remediation be?
- How much education is required to address the issue?

"IN LIEU OF SERVICES"

In California, as part of a broad state Medicaid reform effort called CalAIM, MCOs now have the option to pay for remediating home environmental asthma triggers using Medicaid funding typically restricted to traditional medical services. Consistent with federal "In Lieu of Services" guidelines, the Asthma Remediation option under the Community Supports program allows MCOs to pay for "physical modifications to a home environment that are necessary to ensure the health, welfare, and safety of the individual, or enable the individual to function in the home and without which acute asthma episodes could result in the need for emergency services and hospitalization." With a lifetime cap of $7,500 per member, MCOs can pay for allergen-impermeable mattress and pillow dust covers, high-efficiency particulate air (HEPA) filtered vacuums, integrated pest management (IPM) services, dehumidifiers, portable HEPA air cleaners, minor mold removal and remediation services, ventilation improvements, asthma-friendlier cleaning products and supplies, and other interventions identified to be medically appropriate and cost-effective. Various MCOs started opting into the program in early 2022. Hopefully, it can serve as a model for other states.

HEALTHY NEIGHBORHOODS PROGRAM (NEW YORK)

The New York State Healthy Neighborhoods Program, a state-funded healthy homes program for children and adults with asthma, provides in-home environmental assessments, trigger reduction, and environmental and self-management education.[51] A recent evaluation of the program compared the relative impact of the intervention on two groups of participants: those with poorly controlled asthma and those with asthma at any severity level (including those with poorly controlled asthma). The study found that the intervention decreased hospitalizations for both groups; however, greater reductions were realized among those with poorly controlled asthma. The average cost of the home visit was $302. For the poorly controlled asthma group, the per person savings for all healthcare utilization and medications filled was $1,083 per in-home asthma visit, resulting in a benefit-to-cost ratio of 3.58 with a net benefit of $781 per asthma visit. For the overall asthma group, the per-person savings were $613 per asthma visit, resulting in a benefit-to-cost ratio of 2.03 with a net benefit of $311. Simply put, the evaluation found an average ROI of $2.03 for every dollar invested for all those with asthma and $3.58 for every dollar invested for those with poorly controlled asthma.[52]

In some instances, a healthcare payer may only be interested or able to pay for very low-intensity activities. Some programs have found innovative ways to provide a greater range of services by partnering with other community resources to complement the services covered by a managed care plan. In other words, the MCO might pay for the visual assessment and education, and a local health department may provide low-cost supplies and integrated pest management services.

How you deploy the care team in delivering services will not only affect the bottom line but also the impact. Some types of staff cost more; for example, a nurse likely costs more than a community health worker (CHW), and some types of staff may be more effective at delivering specific parts of the intervention. See the *Type of Providers* section below for more information on how to assemble a qualified workforce.

Similarly, the number of visits you provide will impact costs. More visits imply more cost but may also yield greater health improvements (and greater savings). Programs can be very effective and generate health outcomes with as few as one or two visits, though many advocate for four to six visits with opportunities to offer additional visits as needed. While it may seem intuitive that the basic tier should have fewer visits, there are many factors involved. For example, programs that integrate virtual visits into their program design often keep the visits shorter and as such, need more visits to complete their entire curriculum. Programs may also tailor the number of visits to the client's needs. For example, for a child who spends time at multiple households, there may be a need to conduct visits at both homes, thus increasing the number of visits needed. In short, there is no "one size fits all" approach. Asthma home visiting programs are most successful when they can adapt to the needs of their clients and communities.

The benefits package tiers described in Tables A and B can help you determine the scope and intensity of services that are right for your members.

Type of providers

The NAEPP *Guidelines* emphasize a team-based approach to delivering asthma services and recommend that asthma management begin at the time of diagnosis and be reinforced by all health professionals across the care continuum.[53]

Many asthma home visiting services have relied heavily on qualified, non-licensed professionals to deliver anywhere from some to all of the support to clients. For asthma patients of all risk levels, evidence suggests that a range of licensed and non-licensed providers — including respiratory therapists, nurses, asthma educators, social workers, CHWs, and *promotoras de salud* — can efficiently provide asthma education and environmental interventions. Robust evidence shows that CHWs and *promotoras* can provide effective asthma self-management and environmental education, bridge the gap between patients and their providers, offer social services such as interpretation and referrals, and perform care coordination.[54, 55, 56] Innovations in state approaches to Medicaid, as well as the leadership of some private payers, have created more opportunities for CHWs, *promotoras* and other non-licensed providers to be reimbursed for providing services in home and community settings.

Of course, the mix of professionals is ultimately up to you. Some services are staffed fully by licensed providers like nurses, who manage cases including conducting home visits. More commonplace are services where home visiting staff have clear connections to licensed providers (e.g., often as supervisors) but are themselves non-licensed. The use of qualified, non-licensed staffing configurations seen in the field is typically a function of multiple factors including costs — licensed staff are simply more expensive — or needing extremely high levels of cultural familiarity and expertise to connect with a variety of populations. More technical environmental services may require a specialist. For example, individuals with poorly controlled asthma may require a pest control professional to perform integrated pest management in the home or a trained sanitarian to screen for household triggers, such as sources of mold and moisture.[57, 58]

Regardless of which types of providers are involved, there's a good chance your MCO will want to take advantage of resources related to developing the workforce that will ultimately deliver the services. There are several resources you can take advantage of to quickly help staff build the requisite skills to provide effective services. Here are just a few:

- The Association of Asthma Educators (AAE), a national organization developed to strengthen the asthma educator workforce, offers a variety of trainings and resources. Classes include preparatory sessions for those reading for the certified asthma educator (AE-C®) exam, as well as more introductory trainings for CHWs. See https://www.asthmaeducators.org/ for more.

THE IMPORTANCE OF CULTURAL HUMILITY IN ASTHMA HOME VISITING

CHWs and *promotoras* are recognized as uniquely effective in delivering culturally competent home-based asthma interventions because they often have shared cultural backgrounds with participants. Even in cases where there is not a shared cultural background, effective asthma educators practice cultural humility, which is the process of bringing into check the power imbalances between the provider and the individual or family. These power imbalances may be differences in race, ethnicity, income, immigration status, education level, or other factors. A culturally humble process involves asking questions to gain knowledge, achieving mutual respect, and moving toward shared goal-setting and decision-making.

- The Asthma Community Network has resource banks, including the "Community Health Worker Training Programs" locator. This tool was designed to help you find existing training options for CHWs in your community and nationally. For more information, visit www.asthmacommunitynetwork.org/chw_programs
- The Minnesota Department of Health (MDH) Asthma Program offers a free 40-minute online training module called *Reducing Environmental Triggers of Asthma in the Home (RETA)*. MDH designed the module for healthcare providers, public health nurses, and certified asthma educators (AE-C) to learn about environmental triggers found in the home; the training module also has a "resources section" with links to additional information. For more information, visit https://asthmahealthyhomes.web.health.state.mn.us/
- The U.S. Department of Housing's Office of Lead Hazard Control and Healthy Homes offers a variety of trainings related to healthy homes best practices (many associated with addressing in-home environmental asthma triggers) and provides links to many partners sponsoring similar trainings across the country. For more information, visit https://www.hud.gov/program_offices/healthy_homes/training
- Community colleges are excellent pipelines for the health education workforce and many offer CHW certificates (e.g., the City College of San Francisco's Community Health Worker Certificate Program, https://www.ccsf.edu/degrees-certificates/community-health-worker). In New Jersey, a partnership between the New Jersey Department of Health and four community colleges (https://www.nj.gov/health/fhs/clgi/training/) has established the Colette Lamothe-Galette (CLG) Community Health Worker Institute (https://www.nj.gov/health/fhs/clgi/) to lead a sustainable CHW workforce development effort. Additionally, non-profit organizations often have training programs for CHWs, *promotoras*, and/or specifically about asthma home visiting (e.g., Center for Health Impact, https://www.centerforhealthimpact.org/training/chw-core-competency-course/; Community Health Worker Network of NYC, https://www.chwnetwork.org/community-health-worker-training; and Esperanza Community Housing Corporation, https://www.esperanzacommunityhousing.org/). Contact organizations in your community to identify local options.

Building Systems to Sustain Home-Based Asthma Services

Visit our e-learning and technical assistance platform to support the launch and growth of large-scale, evidence-based, sustainable asthma home visiting programs. With guidance on topics such as Medicaid reimbursement opportunities and other financing options, developing a business case, scaling up, referrals and eligibility, staffing and training, supplies and services, community resources, and evaluation and reporting, each of the e-learning modules offers a deeper look into some of the topics and strategies to consider while working to design and implement home-based asthma services.

https://bit.ly/NCHH_eLearn

Costs and savings

A strong evidence base and increasing real-world examples illustrate the potential for home-based asthma services to provide a positive return on investment to healthcare payers.[59, 60, 61]

For example, one study of a large-scale program in New York State evaluated the benefits to a public payer (Medicaid) and found that the intervention provided a return of $2.03-$3.58 for every dollar invested.[62]

Home-based asthma services can range in cost from $300 for programs that provide more basic education to several hundred or thousands of dollars for programs that include major environmental remediation. The design of a program or service will influence how much the program or service costs as well as the potential for health or financial impacts. Some of the ways that program design can influence costs and potential savings include:

- Targeting eligible patients or clients
- Scope
- Intensity
- Staffing
- Number of visits

SINAI URBAN HEALTH INSTITUTE (ILLINOIS)

The Sinai Urban Health Institute conducted an evaluation of the Sinai Pediatric Asthma Intervention operated by the Sinai Children's Hospital in Chicago, Illinois. The pilot program provided home visitation by CHWs for children with asthma. The evaluation found the program resulted in a reduction in symptom frequency by 35% and a reduction in urgent healthcare utilization by 75% over the course of one year. The intervention also led to improved asthma-related knowledge, decreased exposure to asthma triggers, and improved medical management.[63] After one year, the program was shown to be cost-effective and resulted in an estimated ROI of $5.58 per dollar spent on the intervention.[64]

Evidence suggests that you get the biggest return from targeting asthma home visiting services to the people with the greatest need (see previous section on member eligibility for an overview of approaches to stratifying services); however, if you're looking to quantify your return on investment, it's important to consider these questions:

- How long will it take to achieve specified environmental and health outcomes?
- How long will it take to realize savings, if any?
- How long can the benefits be expected to last?

Make sure you define a time frame that will allow specific long-term benefits to be assessed because some events, such as hospital admissions, are less frequent and capturing real improvements in these measures may take longer. Additionally, longer follow-up periods will allow for a better characterization of improvements in other, more frequent avoidable events, such as more averted costs of visits to the doctor for worsening asthma or emergency department visits. This is especially helpful for capturing the benefits to a range of enrollees (see above for discussion of the benefits of stratifying services). Longer follow-up periods also account for seasonal variability in patterns of morbidity, which is common with asthma.

OPTIMA HEALTH PLAN (VIRGINIA)

Optima Health Plan, the managed care division of Virginia-based Sentara Healthcare, operates an Asthma Life Coach program that provides home-based asthma self-management and environmental education, home assessment, trigger reduction and care coordination delivered by nurses and respiratory therapists. The intervention demonstrated a decrease in asthma-related hospitalizations and ED visits and improved medication adherence. Between 1994 and 2004, hospitalizations decreased by 32% and ED visits decreased by 33% among Medicaid participants. As a result, overall costs for members considered high-risk and receiving home-based services decreased by 35%. The intervention estimates a ROI of $4.40 per dollar invested realized over a five-year period.[65]

Further, in addition to program or service design, the rules you develop for administering the program or service will also influence cost. To have an accurate estimate of how much the service will cost, you must estimate the number of people who will benefit from the services offered, determine the rules for how the services will be offered and how often, think about some of the special situations you may encounter, and consider possible exceptions to established rules. Questions to consider when designing rules for administering the program or service include:

- How many people will benefit from the services offered?
- Will you impose a limit on the number of times a client is eligible for a service?
- Will there be a minimum time-interval limit between multiple interventions?
- Will you offer services for an eligible client's second residence?
- Will you provide services to additional clients in a home with a limited scope or reduced payment?

Recommendations for getting started

Successfully improving access to asthma home visiting services requires leadership and collaboration across a variety of stakeholders. While this tool is aimed primarily at managed care leaders and other healthcare payers, others have critical roles too. The following recommendations, organized by relevant stakeholder group, flow from the work of the experts convened during development of this model benefits package and are meant to guide first steps and support ongoing action at all levels.

Managed care leaders, healthcare policy makers, and other healthcare payers

Health plans

Health plans, especially Medicaid MCOs serving a disproportionate number of low-income individuals, should adopt the model benefit package and offer one or more tiers of home-based asthma services to their enrollees. Health plans should consider the following strategies:

- Develop a plan for providing home-based asthma services. Start by determining whether there are existing asthma home visiting programs in your community or if there are partner organizations—community-based organizations, community clinics, local health departments—that are interested in starting an asthma home visiting program. While contracting with outside organizations is a best practice, some MCOs may provide the services in-house. Regardless of where they're housed, ensure that the asthma home visitors provide culturally and linguistically appropriate services.
- Conduct analysis of health plan enrollees to determine asthma prevalence and severity and/or healthcare utilization (hospitalizations or ED visits due to asthma) and establish appropriate risk stratification categories to determine eligibility for home-based asthma services.
- Develop member education materials—such as online information, brochures or other printed materials—to publicize the availability of home-based asthma services to plan enrollees with asthma.
- Engage with providers within the MCO's network(s) to educate them about the availability of asthma home visiting services

Community, state, and federal stakeholders

Asthma home visiting programs

Asthma home visiting programs can build relationships with MCOs and other healthcare payers to help sustain programs, and they can bridge connections with other healthy housing and health programs to promote a coordinated, comprehensive approach. Home visiting programs can:

- Document and share success stories. Whether providing data about a reduction in ED use or sharing the story of a child who achieved her goal of running track, collecting data, evaluating outcomes, and sharing stories is important for sustainability.
- Cultivate and support relationships with MCOs and other healthcare payers in the community.
- Build connections across the healthcare and public health landscape--and your local landscape—to increase your general knowledge base and identify multiple opportunities and strategies to expand coverage for home-based asthma services.
- Make the case to MCOs or other healthcare payers in the community to explore and embrace their role in improving asthma outcomes and reducing asthma disparities.
- Bridge connections with healthy housing, weatherization, energy efficiency, housing rehab programs, or health organizations in the community to develop cross-referral systems, share tools and resources, and create systems of coordination.
- Examine local systems to identify strengths and weaknesses and begin to develop plans to addresses gaps (e.g., ensuring and adequate workforce and the ability to provide culturally competent care).

Managed care leaders, healthcare policy makers, and other healthcare payers *(continued)*

and ways in which eligible members can access them.

- Provide specific outreach to enrollees who are eligible for home-based asthma services. Share information and provide relevant support services to successfully enroll them in the program.
- Use administrative dollars to fund a home-based asthma services program if home-based asthma services are not reimbursed as medical services.
- Carefully track outcomes and measure value (such as ROI, reduced rates of cost increases, quality-of-life improvements, provider satisfaction, et cetera) of their asthma home visiting services program and adjust variables of the program throughout implementation.

MEASURING VALUE OF HOME-BASED ASTHMA SERVICES

When measuring value of home-based asthma services, it's important to look for all the ways value can accrue to health plans in addition to improving asthma-related health outcomes and reducing healthcare costs. While quality-of-life outcomes, like reductions in missed days of school or work and a decrease in the limitations on physical activity, don't necessarily affect a healthcare payer's bottom line, some payers may still be interested in these outcomes. Also, increased client/provider engagement and satisfaction may also be of interest to some payers and funders. Finally, while positive benefit-cost analysis or ROI evidence is often a key method of measuring value, interventions and services don't *have* to save money to be compelling. There is a role for cost-neutral or cost-effective interventions in achieving the triple aim of healthcare reform and showing a slower rate of increase in costs is often a compelling case.

Community, state, and federal stakeholders *(continued)*

- Offer to run a pilot project with a healthcare payer in the community; this often turns data and stories into action.

Medical providers and organizations

As the people providing the most direct care for people with asthma, healthcare providers can also play an important role in supporting asthma home visiting services. Specifically, providers can:

- Identify and build relationships with asthma home visiting programs in the community.
- Develop referral systems to identify eligible patients and refer them for home-based services and ensure that asthma home visiting programs are circling back to providers with information about clients served.
- Advocate with the local MCO, hospital community benefit program, state Medicaid office, or others to develop and support asthma home visiting programs if there are none currently in the community.
- Consider developing an in-house asthma home visiting program if there are none currently in the community.

Philanthropy

The philanthropic sector plays an important role in supporting critical activities related to asthma home visiting services that are typically difficult to fund through the traditional healthcare system. Examples of this support include the following:

- Start and/or continue to fund home-based asthma services in order to refine the interventions' effectiveness, test new approaches, and provide support for services that may not be readily reimbursable through Medicaid, such as certain environmental trigger remediations, services that aren't funded, clients that aren't covered, and/or the ability to exceed caps.
- Support organizations advocating for increased access to and sustainable funding for asthma home visiting services.
- Invest in proactively improving housing quality to help prevent and reduce the need for these programs in the first place.

Managed care leaders, healthcare policy makers, and other healthcare payers *(continued)*

State Medicaid offices

State Medicaid offices can take important steps to promote asthma home visiting services and ensure that there are no barriers to successful implementation (e.g., ensuring access to non-licensed workers critical to the success of these interventions). Specifically, state Medicaid offices should:

- Convene stakeholders to identify needs related to coverage and reimbursement of home-based asthma services.
- Require or incentivize Medicaid MCOs to provide home-based asthma services.
  - Develop contract language for state contracts with health plans to ensure the delivery of home-based asthma services.
  - Develop quality and performance measures related to home-based asthma services programs and require reporting of these measures to state Medicaid offices.
- Provide coverage for asthma home visiting services through strategies appropriate to the state Medicaid program.
  - Pursue federal approvals as needed to obtain reimbursement for home-based asthma services (e.g., through a state plan amendment or waiver process).
  - Ensure that proper billing, coverage, and reimbursement mechanisms are in place to facilitate the coverage, delivery, and reimbursement of home-based asthma services, including the development of procedure and billing codes for home-based asthma services.

Hospital community benefit programs

These programs have compiled data related to the needs of their patient population and community and the ability to support upstream interventions to complement the medical care. Recommendations include:

- Provide funding to asthma home visiting programs in your community.
- If none exist, build relationships with organizations that may have the interest and capacity to add asthma home visiting services.

Community, state, and federal stakeholders *(continued)*

Healthy homes and energy efficiency/ weatherization programs

These types of programs often provide support for housing improvements that aren't typically covered by traditional asthma home visiting services. As such they are important partners in this work. Specifically, these programs can:

- Identify and build relationships with managed care plans and asthma home visiting programs in your community in order to be a resource to delivery elements of asthma home visiting services related to home repairs.
- Encourage cross-training and cross-referrals to ensure a more comprehensive approach to addressing unhealthy housing conditions.
- Articulate the co-benefits of improved housing conditions and energy efficiency/ weatherization and advocate for less siloed approaches.
- Explore local policy levers (e.g., proactive rental inspection programs, strong tenant and rent escrow programs) that improve housing quality before people are exposed and harmed.
- Engage with healthcare providers and MCOs working on social determinants of health to ensure clients with energy or housing needs can be directed to appropriate services, building relationships with healthcare systems and MCOs.

Other non-asthma home visiting programs

Many public health and social service providers work directly with clients and families in their homes on a range of issues other than asthma. These services can be leveraged to provide an opportunity to identify and address critical issues related to asthma and unhealthy housing conditions. Examples include the following:

- Build relationships with asthma programs and healthy housing programs.
- Learn from them about the key ways to identify asthma-related problems while working with clients in their homes and set up systems for providing referrals.

Managed care leaders, healthcare policy makers, and other healthcare payers *(continued)*

to their scope of work, and provide them with seed funding and help them to build the relationships they will need to sustain funding over time.

- Leverage your ability to invest in repairs that many other funding streams cannot. Since housing shapes health outcomes, work to improve housing quality proactively in your communities and not just in response to an asthma diagnosis.

Community, state, and federal stakeholders *(continued)*

- Provide basic asthma education and trigger identification and/or provide referrals to clients as appropriate.

State and federal agencies

State and federal agencies are uniquely positioned to provide funding to launch and build the capacity of asthma home visiting programs and pass policies aimed at supporting sustainability. Specifically, government agencies can:

- Fund programs that build workforce capacity.
- Fund research to add to the evidence base and continue to identify best practices.
- Advance policies that make it easier for state Medicaid offices, MCOs, and other payers to provide reimbursement for asthma home visiting programs, remove or expand caps, and/or increase coverage of services.
- Reduce barriers to enrollment in local MCOs.
- Reduce silos and barriers to coordination between different types of public health and healthy housing programs.
- Incentivize primary prevention (improving housing quality before people are exposed and harmed).

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Future policy and financing supports

As described throughout this tool, your MCO can support asthma home visiting services now, and MCOs across the nation are already doing so in a variety of models that link clinical and community-based asthma care and deliver a range of home-based asthma services. MCOs occasionally employ home visitors directly but more often contract with community organizations to provide the services.

Several states, such as Missouri and Maryland, already have state-level policies in place to support payments for asthma home visits using Medicaid and Children's Health Insurance Program (CHIP) funds. Missouri's state plan amendment (SPA) to its Medicaid program supports nurses or certified asthma educators and trained environmental specialists to provide home-based asthma visits for at-risk children. Maryland supports CHWs working at local health departments to conduct lead and asthma environmental home visits with CHIP financing supplemented with matching funds from the state legislature.

There are also exciting opportunities on the horizon, as federal policy development and activity in states nationwide opens doors for asthma home visiting. Many states are pursuing healthcare transformation to achieve the Triple Aim in their Medicaid and Medicare programs by investing to connect clinical care teams more meaningfully with patient lived experience in their communities and at home. As they focus on health equity, meaningful use of health record data, and quality improvement, many states are testing, expanding and formalizing CHW, home visiting, and built environments investments, among others, in their Medicaid programs to improve a range of complex chronic conditions and, in some cases, for population health. For example, in California and Massachusetts, diverse stakeholders from home visiting, public health, advocacy and clinical providers are helping to design policy, making it easier for MCOs, accountable care organizations (ACOs), and

California State Senator Melissa Hurtado (right) introduces legislation to expand asthma home visiting services to low-income families.

others to partner with community services to deliver asthma home visits to members with poorly controlled asthma.

Moves across the states to create new policy and delivery models reflect federal efforts to find solutions for the social determinants of health (SDOH). Recent guidance from the Centers for Medicaid and Medicare Services (CMS) emphasizes that states have broad discretion to recognize and potentially reimburse a range of health professionals as well as individuals trained and qualified to provide health education to furnish services to Medicaid beneficiaries. The federal "Medicaid Preventive Services Rule" change allowed states to reimburse non-licensed providers for preventive services if they are recommended by a physician or other licensed practitioner.[66] This regulatory change opened the door for states to reimburse asthma educators, healthy homes specialists, and CHWs to provide asthma education encouraging states like New Jersey, Massachusetts, and California to pursue expanded financing for asthma home visits.

The direction from policy makers at all levels to invest in community-based solutions in healthcare continues to grow.

In January of 2021, CMS indicated in guidance on managed care plan contracting strategies that states may develop and implement managed care plan procurement and contracting strategies to incentivize care coordination across medical and *nonmedical* contexts, including to address the social determinants of health.[67] For example, states may require MCOs, through their plan contracts, to assess enrollee needs related to the social determinants of health using a standardized instrument, refer enrollees to community supports and services, track referrals, include MSWs or CHWs in care coordination teams, and other initiatives that promote holistic, person-centered care across medical and nonmedical contexts. The guidance clarifies that states may also require managed care plans to contract with community-based organizations with expertise in addressing the social determinants of health for coordination of care purposes. If MCOs implement activities that meet the requirements, they may include the costs in the numerator of the medical loss ratio (MLR) as activities that improve healthcare quality.

The direction from policy makers at all levels to invest in community-based solutions in healthcare continues to grow and there has never been a better time for states and managed care plans to adapt evidence-based in-home asthma care programs into their community-based service packages for social determinants of health and population health investments.

Support to help MCOs and healthcare stakeholders move forward

If the idea of your MCO supporting asthma home visiting programs sounds daunting, don't worry—it's likely not as complicated as it sounds.

More importantly, if you have a question about how to support, implement, or otherwise operationalize these services, the answer is likely close by. Home-based asthma services are not a new idea, and technical assistance is available through a wide range of different options.

Here are a few examples:

- The U.S. Environmental Protection Agency has a how-to guide specifically for MCOs. *Implementing an Asthma Home Visit Program: 10 Steps to Help Health Plans Get Started* provides helpful, nuts-and-bolts-level details for this work. https://www.epa.gov/sites/production/files/2013-08/documents/implementing_an_asthma_home_visit_program.pdf
- The National Center for Healthy Housing has an extensive set of free online resources—including e-learning modules—as part of its *Building Systems to Sustain Home-Based Asthma Services* program. https://nchh.org/tools-and-data/financing-and-funding/buildingsystems-to-sustain-home-based-asthma-services
- America's Health Insurance Plans (AHIP) published case studies and strategies to support MCOs in this work. *Next Generation Asthma Care: Integrating Clinical and Environmental Strategies to Improve Asthma Outcomes* is a useful overview. https://www.ahip.org/wpcontent/uploads/2016/11/AsthmaReport_11.18.16.pdf
- NCHH and RAMP offer individualized technical assistance and support. Other organizations may also offer tailored support. Contact us; we're here to help!

ADDITIONAL SUPPORT

askanexpert@nchh.org

410-992-0712

As you read through this resource, note that NCHH and RAMP offer customized technical assistance and support that can help you translate the information in this tool into concrete actions that achieve cross-sector partnerships and put sustainable, systems-level policies and programs in place. Call or email us today.

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APPENDIX A

Common Language for Effective Collaboration

Many organizations have a role in asthma care. Private, public, and nonprofit actors deliver social and public health services, clinical care, and health insurance. Increasingly, partners across these sectors seek to collaborate to improve health, particularly in historically underserved communities, by addressing factors outside of clinical care that drive health outcomes and disparities.

When collaborating to address the upstream determinants of health, partners are sometimes challenged by the way different sectors, fields, and organizations use similar terms. For example, different fields use various terms to refer to the people they serve—clients, customers, patients, members, enrollees, occupants, families, eligible population, community members, etc. This leads to their collection of different data and evaluation of different indicators of success, which can make effective collaboration more difficult.

Collaborations between healthcare and community services benefit when all partners share understanding of terms and their use in different settings. Experts in innovation in asthma care with community services confirm that a common language to translate across sectors helps to facilitate effective collaboration. The terms below are used frequently in environmental health, public health, healthcare, community health, and asthma home visiting to (1) describe the provision of in-home asthma education, home environmental asthma trigger assessments and home environmental trigger remediation by a range of qualified professionals, (2) describe the population served by these activities. We provide a short description of these terms and their use across fields here and encourage readers to clarify terms' use and importance with new partners when working to improve asthma outcomes with home visiting, and (3) different terms for describing asthma control.

Different Terms for Services:

Home-based asthma services

Asthma home visiting services

In-home asthma services

These terms describe a wide range of services provided by a variety of professionals—sometimes licensed, sometimes not—including but not limited to respiratory therapists, nurses, asthma educators, community health workers (CHWs), *promotoras*, social workers (MSWs), healthy housing professionals, energy service providers (e.g., weatherization), environmental sanitarians, public health staff, and others—who provide care that may include outreach, education, health assessment and in-home monitoring, supply provision (cleaning supplies, HEPA vacuums, et cetera), pest management, environmental assessment, and home remediation for occupants with asthma. The term asthma home visiting services and slight variations of it are more common in healthcare settings (i.e., among clinical care teams and healthcare payers), while home-based asthma services may resonate more in environmental health/public health settings (i.e., among healthy housing professionals and public health staff). We use these terms interchangeably throughout this document.

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Different Terms for Those We Serve:

Patients

Members

Beneficiaries

Enrollees

Clients

Customers

Occupants

Units

Clinical care teams and some healthcare payers (i.e., insurers) use *patients*. Other healthcare payers such as Medicaid, managed care organizations (MCOs), and commercial insurers refer to *members*, *enrollees*, or *beneficiaries*, among other terms, and monitor who is on which plan with which services covered at any one time. Health plan members move plans frequently, particularly in Medicaid. This is important to healthcare payers because they pay for covered services for their members (and typically, only for members). Plan enrollees receive different benefits determined in advance by contract. The concept of *covered members* is key to the business of healthcare. Some healthcare providers and payers are starting to refer to *clients*, but clients and *customers* are the common terms in community-based services, such as healthy homes, weatherization, public health home visiting, and among CHWs and MSWs who see clients at home or in the community. *Occupants* is sometimes used among housing, environment, energy and community development partners involved in home services including remediations and they may refer to and track information about occupants and *units* because of their focus on the home structure.

It's instructive to note that community-based, housing-focused services think of the building as a locus for action and all occupants as *clients* (based on income eligibility) when designing service packages, and they tend to operate at what healthcare calls "the population level." Healthcare more often conceives of patients by diagnosis. Combining both views to conceive of clients with asthma in communities that can benefit from in-home asthma services creates opportunities for cross-sector partners. Because we recognize the people whose asthma we seek to improve as our clients and know that client-centeredness is one of the keys to effectiveness in asthma home visiting, we primarily use *clients* throughout this document but do employ other terms interchangeably as appropriate.

Different Terms for Poor Asthma Control

Not well controlled

Uncontrolled

Poorly controlled

Very poorly controlled

Across a range of asthma-related literature and guidance, the terms *uncontrolled*, *not well controlled*, *poorly controlled*, and *very poorly controlled* are frequently used interchangeably—often for ease of use.

Of course, more precisely defined terms are important especially within the context of clinical interventions. The NAEPP *Guidelines* define asthma control as the "degree to which the manifestations of asthma (symptoms, functional impairments, and risks of untoward events) are minimized and the goals of therapy are met." The *Guidelines* define uncontrolled asthma as any of the following: in past 30 days, asthma symptoms more than two days a week, nighttime awakenings (more than one time a month in ages 0-4 years, two or more times a month in ages 5-11 years, and one to three times a week in ages 12 years and older), and in past three months, short-acting β2-agonists use more than two days a week. The *Guidelines* classify asthma control as *well controlled*, *not well controlled*, or *very poorly controlled* based on the level of impairment and risk, with variations based on age group.

In this document, we use the term *poorly controlled* broadly to refer to any patients/clients who are unable to consistently maintain well controlled asthma and need additional interventions, such as home-based asthma services.

APPENDIX B

Stakeholder Consensus Process Utilized to Develop a Model Health Benefit Package for Home-Based Asthma Services

In the years leading up to October 2016, there was a sustained, and growing, interest among healthcare payers to address social determinants of health as a means of curbing costs and improving patient outcomes. However, many interested payers cited the lack of a turnkey infrastructure as a barrier to covering home- and community-based preventive services. Additionally, questions remain about the public health significance of very-low- or very-high-intensity interventions (e.g., education and coaching provided as part of telephone-based case management at the low-intensity end and structural remediation at the high-intensity end). To reduce barriers and provide a ready-made solution for payers, NCHH hosted a stakeholder meeting October 11-12, 2016, gathering many key partners, leaders, and experts to (1) reflect on the current landscape of healthcare financing of home-based asthma services and (2) organize the existing diversity of approaches to providing home-based asthma services into a draft model benefits package that describes the scope, staffing, and services menu of options that could be used as a common starting point in designing a program or service and the associated healthcare coverage of these services.

At the stakeholder meeting, participants were presented with a model benefits package template prepopulated by NCHH with activities in the following categories: environmental (assessment, trigger reduction, environmental education); non-environmental (self-management education/training, social services and support, coordinated care); and operational (patient eligibility, staffing, number of visits). Activities included in the template were identified through an evidence-based literature review and scan of existing program practices and each category contained a range of activities at various levels of intensity. In addition, to inform the development of the model benefits package, the expert panel utilized the Guide to Community Preventive Services (Community Guide) that provides evidence-based findings and recommendations about community preventive services. The Community Guide defines home-based multi-trigger, multi-component asthma interventions as “Interventions [that] involve trained personnel making one or more home visits to conduct activities within the home. These activities focus on reducing exposures to a range of asthma triggers (allergens and irritants) through environmental assessment, education, and remediation.” The Community Guide also notes that most programs delivering home-based asthma services include additional components, such as self-management training, social support, and coordinated care. Facilitated working sessions took attendees through a coordinated process that allowed attendees to suggest revisions and additions to the activities in the template provided and then provided time to agree on a final working template.

After reaching a consensus on the array of activities for each category, attendees then voted to assign each activity to a tier of service (e.g., from a very basic set of services to more premium sets of services) to provide a range of options for payers at different levels of readiness to provide home-based asthma services. Payers or funders would be able to use these tiers in different ways. For instance, they can decide to set their own minimum set of services at a moderate level of intensity, or they could stratify their patient population and offer low-intensity services more broadly and higher-intensity services for only patients with the most poorly controlled asthma. If the vote for an activity was not unanimous, attendees dialogued until a consensus was reached on the appropriate tier. Many activities were voted into one of the three tiers originally proposed in the template (*Basic*, *Enhanced*, and *Premium*); however, during the discussion, attendees identified a need for an additional activity tier and created the *Premium Plus* category. The model benefit package tiers were designed with reference to the National Asthma Education and Prevention Program *Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma* (NAEPP *Guidelines*). The *Guidelines* are a widely used resource for setting standards in asthma management and emphasize the importance of patient self-management education along with control of environmental asthma triggers.

Attendees also agreed that an accompanying resource guide should be developed to enhance the general acceptability and utility of the model benefits package concept. Preliminarily, it was recommended that the resource guide contain information on necessary components such as:

- Building capacity and infrastructure to facilitate adopting the model benefits package,
- Outlining costs and outcomes for package components, and
- Addressing operational issues in implementing the package.

Post-meeting, NCHH worked to revise the model benefits package template based on the stakeholder input and consensus agreements and explored options to add model contract language to further support MCO acceptance. Although finalization efforts temporarily stalled due to political uncertainty around healthcare reform, federal policy development and activity in states nationwide has opened new doors for asthma home visiting, making this tool more relevant than ever.

APPENDIX C

The Burden of Asthma and the Benefits of Providing Home-Based Asthma Services

Asthma: A Costly Chronic Disease

An estimated 25 million—or one in 12—Americans have asthma; of these 5.1 million are children, making asthma the most common chronic condition among children in the United States.[68, 69, 70] Not only is asthma widespread, but it is also very costly to society. Asthma accounts for over 1.6 million ED visits, almost 200 million hospitalizations, over 10 million lost days of school, and 14 million lost days of work each year.[71, 72] In total, these direct healthcare expenditures and indirect costs from lost productivity (e.g., school absenteeism and missed days of work) amount to approximately $56 billion annually.[73]

Asthma impacts a household in many ways, including the financial strain of affording medications and treatment,[74, 75] missed days of work,[76, 77] the stress and worry of managing asthma attacks,[78, 79] and the emotional distress caused by missing social or physical activities.[80, 81]

In addition, there are long-standing racial, ethnic, and economic disparities in both the prevalence and management of asthma and, as a result, the severity of its impact on individuals, families, and communities. For example, according to the U.S. Department of Health and Human Services Office of Minority Health (OMH), Black individuals are nearly three times more likely to be hospitalized or to die from asthma complications than Whites.[82]

The Evidence Base: Home-Based Asthma Services

A large body of literature suggests home-based asthma interventions lead to many positive health outcomes, such as improved asthma symptoms and management, and reductions in urgent care visits, ED visits, allergen triggers, missed school and workdays, and caregiver stress.[83, 84, 85] Improved care coordination and control of asthma may be associated with improvements in costly asthma-related comorbidities such as obesity, rhinosinusitis, gastroesophageal reflux disease (GERD), sleep apnea, and mental health conditions.[86, 87, 88]

In addition, there is considerable evidence that the economic benefits of home-based asthma interventions exceed their cost and can result in a positive return-on-investment (ROI) for insurers.[89, 90, 91] Projected costs and savings from the delivery of home-based services vary based on the design, intensity, and targeted population of the program. While there is a robust body of literature demonstrating the cost-effectiveness of home-based asthma interventions for children and those with poorly controlled asthma, there is emerging evidence of the potential to achieve a positive ROI through interventions that address all individuals with asthma, including adults.[92]

Examples of the impact of home-based asthma interventions including the health and economic outcomes associated with these interventions are provided throughout the main text of this tool (*Unlocking the power of home-based asthma services: Model health benefit packages*). For additional detail on the current burden of asthma or in exploring the significant health and financial benefits of providing home-based asthma services, please visit the following resources:

- CDC: Asthma in the US: Growing Every Year, Vital Signs
- CDC: Home Visits for Trigger Reduction and Asthma Self-Management Education
- CDC: Guides on Using EXHALE
- NCHH's Asthma and Respiratory Illness Research Projects page
- American Lung Association: Asthma and Children Fact Sheet and Asthma in Adults Fact Sheet
- The Community Guide: Children and Adolescents with Asthma and Adults with Asthma

APPENDIX D

Definitions of Service Components Included in the Model Benefit Package Tiers

Environmental

ASSESSMENT - In-home assessment of environmental triggers

Definitions for Environmental Service Components

Service Component	Definition
Screening or initial consult via phone, app, or online	Screenings or consults are the initial discussions with clients who may benefit from receiving home-based asthma services to discuss health and environmental concerns, health behaviors, social services needs, and specific characteristics of the housing unit or household (e.g., size of mattress encasements that may be needed). In some cases, these may be used to determine who is eligible or would benefit from a home visit.
Interviews with residents	Interviews are the more in-depth discussions typically held in the client's home (but may be completed virtually) to review any health and environmental concerns, health behaviors, and social services needs noted in the initial screening. Interview structure/components may vary but likely include questions related to housing characteristics, potential indoor environmental asthma triggers and other indoor pollutants, and medication management and use. Many also include opportunities for staff to record other observations related to the home environment. Actively involving the client, drawing out their knowledge and understanding of their home and its condition, and partnering with the home visitor to address environmental triggers also reinforces the client's agency and sense of control – a key component to long-term and sustained health improvements. These interviews are often conducted as informal conversations but are guided by a standard checklist or data collection tool (e.g., EPA's *Home Characteristics and Asthma Triggers: Checklist for Home Visitors*).
Visual assessment	One part of an environmental assessment, a visual assessment is an observational evaluation of the complete home environment to gather information on structural, environmental, and behavioral risk factors, and identify potential asthma triggers and trigger-promoting conditions. Often, these visual assessments are guided by a standard checklist or data collection tool and either provide a starting point for developing solutions or have suggested actions embedded in them.
Visual assessment with instruments	The visual assessment can be complemented with advanced testing and/or sampling, lab analysis, advanced technical skills, and specialized equipment to provide additional analysis of potential asthma triggers and assist in the development of solutions to resolve them. This can range from a very simple set of tools (e.g., moisture meter, temperature/humidity) to the addition of more specialized techniques (see sampling and testing below).
Monitoring for pests	Methods of detecting pests are varied and described in detail in the CDC manual on integrated pest management. According to HUD's Healthy Homes Program Guidance Manual, resident complaints, pest fecal matter, pest exoskeletons, rub marks, burrows, and/or pest sightings during the visual assessment are some of the ways an infestation may be identified. Glue traps and baits may also be used.
Testing exhaust ventilation systems	Per HUD's Healthy Homes Program Guidance Manual, local exhaust ventilation for bathrooms and kitchens should be present, properly installed and maintained (e.g., operational and vented to the exterior), and used by the client. Testing can be as simple as turning on the fan and using a piece of tissue paper to observe air flow and identify adequate performance. Identifying an exterior exhaust can be more complicated and may require an HVAC expert, depending on the type of system.
Assessing dampness, moisture, and mold	Many dampness, moisture, and mold problems may be identified during a visual assessment through either visual signs or the presence of musty odors. A mold assessment is an advanced, in-depth evaluation focused on mold identification and resolution by an environmental professional that might accompany a more standard environmental assessment to identify the presence of common asthma triggers or trigger-promoting conditions in the home environment. For example, a community health worker can be trained to use basic tools or perform a visual assessment for mold and moisture, but an environmental professional may also use additional tools to determine the extent or origin of a problem (e.g., a leaky pipe or hole in the roof). Mold testing is generally not necessary or recommended.
Sampling and testing, such as dust sampling for allergens, mold sampling (surface, air), testing for gases (e.g., NO_2), testing air handling systems, measuring particulates, air sampling (chemical, gas), and/or sampling for VOCs	As outlined in HUD's Healthy Homes Program Guidance Manual, visual assessment can be used in conjunction with environmental testing (sometimes called "sampling and analysis") and building performance testing to determine levels of harmful substances and agents in air, soil, dust, water, or on surfaces or other media. A range of sampling methods can be used which may include dust vacuum/filter-type materials for allergens, passive badge or canister sampling for gasses or VOCs, air sampling for particulates, and more. Sensors may also be used to monitor specific aspects of indoor air quality over a specific period of time.

(continued)

Definitions for Environmental Service Components (continued)

Environmental

TRIGGER REDUCTION - Actions conducted or financed to reduce or eliminate exposure to triggers in the home

Service Component	Definition
Provision of low-cost supplies (e.g., asthma-friendly cleaning kits, mattress and pillow encasements, food storage containers, gel baits)	This strategy involves providing clients and caregivers with low-cost, effective supplies to reduce or eliminate potential asthma triggers. For example, cleaning is an important part of reducing exposure to multiple asthma triggers, but it's important to make sure that the cleaning supplies provided are not irritants that can also trigger asthma. Items in this category include mops, buckets, spray bottles, and asthma-friendly cleaning products. Other supplies might include such items as food storage containers, which act as a barrier between pests and the food, water, and shelter on which they depend; gel baits that help to eliminate pests already present; and allergen-impermeable mattress and pillow encasements to prevent contact with dust mite allergens. The low-cost nature of the supplies is also important; for many clients, high-cost supplies will be a barrier to long-term use.
Referrals to community programs for additional support	A referral is the process of directing or redirecting (as a medical case or a patient) to an appropriate specialist or agency. Health plans, care management programs, healthcare providers, schools, and community-based programs can all direct eligible clients to services. Examples of programs that may be able to assist with trigger reduction include but are not limited to county vector control programs, extension services for integrated pest management, or local home repair programs. The ability to refer clients to services will depend on local availability.
Referral to smoking cessation services for smokers with asthma or occupants of residences of children who have asthma	A referral to cessation counseling or coaching through classes, telephone counseling, or individual coaching. Referrals to cessation services can also include recommendations for over-the-counter cessation products like skin patches, lozenges, and gum as well as prescription medications approved for cessation by the U.S. Food and Drug Administration.
Integrated pest management services (limited or more robust)	According to the U.S. Environmental Protection Agency, integrated pest management (IPM) is an effective and environmentally sensitive approach to pest management that combines current, comprehensive information about the life cycles of pests and their interaction with the environment, with available pest control methods to manage pest damage by the most economical means and with the least hazard to people, property, and the environment. San Francisco Department of the Environment further notes that IPM services offer a healthier way to eliminate pests (such as cockroaches and rodents) than traditional pesticide applications and are safer than traditional pest control measures, since pesticides may also worsen asthma and have other harmful effects. IPM focuses on prevention by limiting entry, access to food and water, and harborage for pests. IPM also includes identification, monitoring, and nontoxic controls. The size, scope, and intensity of an IPM plan will vary based on client needs.
Work with landlord and codes to resolve issues (rental properties only)	When clients are renters, landlord involvement may be required to address identified asthma triggers or trigger-promoting conditions. For example, a moldy, dusty carpet may need to be removed. This would require landlord permission and, depending on the services provided by the asthma organization, may require the landlord to conduct or pay for the work. Other triggers or trigger-promoting conditions may result from housing code violations, such as a plumbing leak. The asthma home visitors may inform the landlord, or, if the landlord refuses to address the problem, they may need to involve code enforcement officers. It is important to note that tenants may have concerns about retaliation if landlords or code enforcers are involved. Home visiting staff should obtain permission of the client or caregivers before involving landlords and/or code enforcement. If permission is not obtained, consult with your organizational policy and/or local laws regarding potential mandated reporting or moral obligations. In communities where it is available, referrals to local home repair programs may assist landlords with making needed repairs.
Minor repairs (e.g., patching holes, fix leaky plumbing)	Minor repair services may be needed to fix defects like plumbing leaks (which can contribute to mold growth or provide a water source for pests) or patch small holes (which can provide harborage or entry points for pests). Some programs provide these minor repair services directly, while others provide supplies (such as caulk) for clients to complete the repairs themselves.
Coordination of home intervention services	Coordination of home intervention services may be necessary when different experts or programs are involved. For example, home interventions may involve pest control operators, contractors, weatherization service providers, and others. Staff providing in-home services can support clients by coordinating with an array of providers.
Advocacy/legal support (e.g., tenants' rights)	When landlords fail to address code violations that lead to asthma triggers or trigger-promoting conditions, asthma home visiting staff can support clients by connecting them to legal support (often free or low-cost support like that offered through Legal Aid in many communities). Experts can help tenants understand their legal rights and even provide guidance and representation if needed.
Provision of higher cost supplies (e.g., HEPA vacuums, dehumidifiers)	Higher-cost supplies may be more appropriate in some homes. For example, HEPA vacuum cleaners can reduce allergens in the home environment and are more effective than standard vacuum cleaners. Dehumidifiers reduce dampness or humidity, which can contribute to the presence of triggers like mold, dust mites, and even pests. HEPA air cleaners can help create clean indoor air spaces, particularly important for clients exposed to wildfire smoke, elevated outdoor air pollution, or other trigger sources. Window air conditioning units may assist clients needing relief from excessive heat and humidity.

(continued)

Definitions for Environmental Service Components (continued)

	Service Component	Definition
Environmental — TRIGGER REDUCTION (continued)	Professional cleaning services	In some cases, professional cleaning may be needed to remove allergens and irritants from carpets and other sources. Costs will vary depending on the size of the area that needs cleaning and how much cleaning is needed.
	Referrals to other private services (e.g., mold remediation)	Referrals to other private companies may be needed to address identified hazards or repairs that are more substantial in nature, such as mold remediation, roof or moisture repairs, HVAC repairs, or carpet replacement.
	Moderate repairs (e.g., replacing carpet with cleanable flooring)	More moderate repair services may be needed in some homes. For example, carpets can become reservoirs for dust and allergens. Replacing carpets with hard flooring that is easier to clean can help clients reduce exposure to allergens in the home environment. A broken kitchen exhaust fan can be replaced to remove cooking gases (if the fan vents to the outside). Gas stoves may also be replaced with electric stoves. Care should be taken in the selection of replacement materials to not introduce new asthma triggers or other environmental hazards.
	Minor to moderate ventilation improvements (e.g., MERV 13 HVAC filters, HEPA air purifiers, air conditioners, bathroom/ kitchen exhaust fan)	Effective filtration (e.g., using MERV 13 filters in the HVAC system) can improve indoor air quality, including reducing exposure to wildfire smoke that can enter the home. Non-ozone-generating HEPA air cleaners can help create clean indoor air spaces, particularly important for clients exposed to wildfire smoke, elevated outdoor air pollution, or other trigger sources. When used properly, bathroom and kitchen exhaust fans that vent to the outside can improve indoor air quality and reduce asthma triggers. In areas facing extreme heat, air conditioners are important for reducing heat-related illness, including asthma exacerbations.
	Other emergency supplies and services to respond to extreme weather events (e.g., flooding, extreme cold)	Keeping families safe in their homes during extreme weather events is essential for asthma management and overall health. Managed care plans can support beneficiaries by providing supplies and/or connections to supplemental services to help during emergency conditions.
Environmental — EDUCATION - Patient and/or caregiver education regarding actions to reduce triggers in the home	Individual education on strategies to identify and reduce triggers (tailored to the specific needs of the patient and/or household)	From an environmental perspective, asthma education involves equipping people with asthma and their families with information about the importance of trigger management in the home environment and steps they can take to reduce environmental triggers at home. For example, home visitors can teach the client and their family steps to manage and control pests, such as proper food storage habits and the need to eliminate standing water sources (eliminating sources of food, water, and/or shelter for cockroaches or other pests). Similarly, educating the family about the connections between traditional cleaning products and asthma can help motivate clients to use asthma-friendly alternatives or find alternative strategies to reduce exposure to cleaning products (like ensuring adequate ventilation or having someone else be responsible for cleaning tasks).
	Development of personalized household action plan to help prioritize action on addressing identified asthma triggers	After the assessment is complete, the provider can work with the client to establish priorities for addressing identified asthma triggers or trigger-promoting conditions. Many homes have multiple triggers or trigger-promoting conditions, so it's important to establish priorities. They may prioritize triggers that exacerbate the client's asthma most, or select small, feasible goals to make quick progress.
	Culturally competent, linguistically relevant, and accessible online and/or print resources	These terms refer to the ability of providers and organizations to effectively deliver services that respect and meet the social, cultural, and linguistic needs of clients. Some examples that are commonly used by home visiting programs include hiring home visitors who come from the community being served, having staff that can provide services in languages spoken in the community, and providing translation services.
	Access hotline for environmental questions (limited in scope)	An access telephone hotline operates 24 hours a day, seven days a week to provide general assistance to the public from experienced staff as it relates to concerns about the home environment in a non-emergency situation. This assistance may include answering questions about the health risks of environmental factors or identification and remediation approaches.
	Phone follow-up/check-ins	Asthma home visitors often follow up with clients via the telephone between home visits or after the home visits are completed. Follow-up calls and check-ins provide opportunities to reinforce key educational messages, discuss progress, strategize ways to overcome barriers, and identify new problems or needs.
	Tailored environmental education with behavior modeling	In behavior modeling, the home visitor demonstrates a technique, then the client performs the technique and receives feedback from the home visitor (e.g., learning how to fit a mattress encasement properly).
	Additional visits to assist in implementing the home intervention plan, determine plan progress, and provide positive reinforcement.	Additional visits provide an opportunity to reinforce key educational messages, discuss progress, strategize ways to overcome barriers, and identify new needs. Visits (rather than phone calls) are particularly important when a need exists to demonstrate techniques and/or visually inspect environmental conditions. Some programs also consider providing services for more than one home (if a client spends their time at multiple residences) and/or other important settings, like schools or daycares.

Definitions for Non-Environmental Service Components

		Service Component	Definition
Non-Environmental	**SELF-MANAGEMENT EDUCATION AND TRAINING** - Patient and/or caregiver education on monitoring symptoms and taking action to modify treatment	Group basic asthma self-management education	According to CDC's *EXHALE Guide for People with Asthma, Their Families, and Their Caregivers*, asthma self-management education generally provides clients and/or caregivers information about basic asthma facts, the use of medications, self-management techniques and self-monitoring skills, the use of action plans, knowledge of early warning signs and what to do for worsening asthma, the role of triggers, and actions to mitigate or control environmental exposures that exacerbate asthma symptoms. Group sessions can provide opportunities for peer-to-peer learning, can be conducted in a variety of settings (e.g., clinics, schools, faith-based institutions, community centers), may be more appealing to some clients who are reticent about having people enter their home, and can be cost-effective. However, opportunities for more tailored education are limited.
		Individual (tailored) basic asthma self-management education	According to CDC's *EXHALE Guide for People with Asthma, Their Families, and Their Caregivers*, asthma self-management education generally provides basic information about asthma, the use of medications, self-management techniques and self-monitoring skills, the use of action plans, knowledge of early warning signs and what to do for worsening asthma, the role of triggers, and actions to mitigate or control environmental exposures that exacerbate symptoms. Individual education can happen anywhere, including at home. Individual education also increases the opportunities for more tailored education and may allow other family members and caregivers to participate.
		Education about managing care within the healthcare system (effective use of the healthcare system, patient-provider communication)	An asthma home visitor provides information, training, referrals, or support to assist clients with accessing healthcare, understanding the healthcare system, or engaging in their own healthcare, including assistance enrolling in health insurance coverage. Health navigation may also include serving as a cultural liaison or assisting a licensed healthcare provider to create a care plan, as part of a healthcare team.
		24-hr telephone hotline for patients for questions regarding acute asthma management (for asthma and environmental conditions)	According to the American Lung Association and the Asthma and Allergy Foundation of America, this service consists of a telephone hotline operated 24 hours a day, seven days a week to provide general assistance to the public from experienced staff as it relates to managing their acute asthma symptoms in a non-emergency situation. This assistance may include assessing and keeping track of symptoms, following an asthma management plan, and identifying and reducing asthma triggers.
		Online/print resources readily available to clients and community members	Having resources easily available online or in print about asthma for parents, caregivers, and kids such as sample asthma action plans, an online asthma community, and brochures with tips on how to minimize exposure to indoor and outdoor asthma triggers. Example resources from EPA are available here.
		Education about managing care within a social system	Some patients may benefit from support and coaching on how to manage their asthma in other settings (e.g., schools, daycares). Home visitors may be able to provide general guidance, assist patients with enlisting the help of their healthcare providers in communicating with school nurses or others, provide linkages to community supports, and in some cases, may be able to conduct additional visits to another setting to provide advice about managing asthma in other settings.
		Coaching and support to reinforce educational materials	As described in HUD's *Guide to Sustaining Effective Asthma Home Intervention Programs*, coaching and support from case managers and community health workers, in addition to the education provided to the patient on asthma management, is critical to compliment and sustain behavioral changes that can reduce triggers. Additional support can motivate a patient and lead to successful asthma management and achievement of patient health improvement. Some ways that programs provide this ongoing support are through follow-up visits, phone calls, and sharing information with healthcare providers who can help reinforce key messages (with the patient's consent).
	SOCIAL SERVICES AND SUPPORTS - To improve access to medical care or advocate for environmental remediation	Assessment of family's social service needs (e.g., housing issues, insurance coverage, transportation, legal support)	Staff providing home-based asthma services will assess a family's needs, refer them to needed social services, and provide care coordination. This can include referrals to other local health, housing, energy programs, discussions about health insurance coverage and enrollment, and referrals for counseling and financial assistance.
		Referrals to community resources	As outlined in this *Health Affairs* article, healthcare systems are increasingly experimenting with interventions to identify and help address patients' social risks. Staff conducting home visits can be prepared to make referrals to community resources including food banks, benefits enrollment services, medical-legal partnerships, and housing eviction prevention programs based on a client's needs and social risks.
		Coordination with interpreter services	To ensure the highest level of care, non-native English speakers can be provided with interpreter services. These services will interpret and translate the provided information and healthcare guidance into the patient's first or most-used language.
		Coverage of tobacco cessation	During home visits, staff are prepared to review environmental asthma triggers including tobacco smoke and discuss smoking cessation when needed. Per CDC's smoking cessation fact sheet, insurance coverage for smoking cessation treatment that is comprehensive, barrier-free, and widely promoted increases the use of these treatment services, leads to higher rates of successful quitting, and is cost-effective.

(continued)

Definitions for Non-Environmental Service Components (continued)

		Service Component	Definition
Non-Environmental	SOCIAL SERVICES AND SUPPORTS (continued)	Assistance/coaching for families with problem-solving techniques	In helping families become more empowered partners in their health, staff providing home-based asthma services can build their capacity to solve problems that they may encounter. That can include among other things clearly defining the problem and identifying and evaluating solutions.
		Work with licensed social workers to address other patient needs	As defined by the National Association of Social Workers, icensed social workers focus on the assessment, diagnosis, treatment, and prevention of mental illness, emotional disorders, and other behavioral disturbances. They can be available with asthma home visitors and other members of the care team to comprehensively address patient needs through the provision of individual, group, and/or family therapy and connection to community supports or services.
		Coordination of social services	Asthma home visitors can serve an important role in coordinating the full array of services provided to the client; this can include serving as the liaison with other organizations, agencies, and providers.
		Build capacity of client or caretaker to communicate concerns or questions directly with clinical providers (e.g., encouraging client to contact clinical provider for medication questions)	Because patients will be in regular contact with their healthcare provider during office visits or over the phone, home visitors can be prepared to support clients in communicating effectively about their asthma. This can include modeling and role-playing communication techniques and working together to identify questions in advance of the opportunities to communicate with healthcare providers. Visit ALA's *Making Your Medical Visits More Productive* page for additional tips.
		Facilitate linkages to primary care (e.g., assist families with finding a primary care provider or medical home, help schedule visits, make referrals to specialists)	An important role for home health workers is health navigation, which includes helping clients access healthcare, understand the healthcare system, or engage in their own healthcare, including assistance enrolling in health insurance coverage and connecting with providers.
	COORDINATED CARE - Services to improve coordination of care between healthcare providers and home health workers	Direct communication between primary care providers and home visitors regarding patients (e.g., home visit reports sent to primary care provider)	Health plans can have a system in place to support direct communication between home visiting staff and the patient's primary care provider to coordinate care. This can include sending home visit reports and electronic medical records directly to the provider. As noted in *Managing Asthma Through Home Visits: Empowering Individuals to Create Healthy Home Environments*, primary care providers can use the results of the home visit to understand the context of exposure, customize treatment accordingly, and help to reinforce key messages after the home visit.
		Develop or review and refine an individually tailored asthma management plan and share with provider(s); or obtain plan from provider(s)	As defined by the American Lung Association, an asthma action plan is a written, individualized worksheet that shows clients the steps to take to keep their asthma well managed, prevent exacerbations, and know when to their healthcare provider or when to go to the emergency room. The asthma action plan should be developed by a licensed medical professional; the role of the home visitor is to help encourage its development and review it with the client as part of home-based asthma education.
		Referral for comorbid conditions	The term *comorbid conditions* describes the existence of multiple, coexisting, typically long-term or chronic diseases or conditions in a client. Home health workers can be prepared to make referrals to address the management of individuals with multiple chronic conditions in addition to their asthma to improve the patient's health outcomes and quality of care.
		Overcoming any HIPAA/FERPA issues	Asthma home visitors need to have a basic understanding of HIPAA/FERPA standards to protect sensitive patient health information from being disclosed without the patient's consent or knowledge. Asthma home visitors can work with the family and providers to establish effective communication strategies that comply with the rules.
		Home visitor participates in phone calls and/or office visits with healthcare provider/medical home staff	Asthma home visitors can serve as cultural liaisons, helping to ensure effective communication between the family and providers. During the visit, they can help ensure that the family understands the information and gets their questions answered. After the visits, the asthma home visitors can reinforce key educational messages.
		Coordinated disease management program with clinical- and community-based staff working closely to facilitate patient care	According to the Centers for Healthcare Strategies, care management is a team-based, patient-centered approach "designed to assist patients and their support systems in managing medical conditions more effectively." It also encompasses those care coordination activities needed to help manage chronic illness.

APPENDIX E

Endnotes

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Regional Asthma Management & Prevention (RAMP) aims to reduce the burden of asthma through a comprehensive approach, ranging from clinical management to environmental protection. We collaborate, coordinate, share resources, advocate, and promote policy change in order to reduce inequities, strengthen asthma prevention efforts, and improve management for all communities. For more information, visit: www.rampasthma.org.

The National Center for Healthy Housing (NCHH) is the preeminent national nonprofit dedicated to transforming lives by transforming housing. Since 1992, NCHH has served as a highly regarded and credible change agent, successfully integrating healthy housing advocacy, research, and capacity building under one roof to reduce health disparities nationwide. Follow NCHH on Twitter (@NCHH), Instagram (@nchhorg), or LinkedIn, become a fan on Facebook, or subscribe to NCHH's YouTube channel.

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