

EXHALE Guide for Public Health Professionals

Strategies to Help People with Asthma Achieve Better Health

The Centers for Disease Control and Prevention's (CDC's) National Asthma Control Program created this Guide to assist public health professionals in using CDC's EXHALE strategies to help people with asthma achieve better health outcomes.

EXHALE

- Is a set of six strategies that each contribute to better asthma control.
- Can help both children and adults with asthma.
- Can have the greatest impact when multiple strategies are used together.

This Guide explains how public health professionals can use EXHALE strategies, individually or in combination, to help people with asthma achieve better health outcomes. Every person with asthma does not necessarily need every strategy.

Public health professionals have the power to provide and coordinate care for people with asthma, maximizing public health connections to optimize the health of the people they serve.



Centers for Disease
Control and Prevention
National Center for
Environmental Health

Welcome to EXHALE

CDC's National Asthma Control Program (NACP) and its partners help Americans with asthma achieve better health and improved quality of life. NACP developed EXHALE, a set of six strategies that each contribute to better asthma control.

EXHALE strategies can improve health

Each EXHALE strategy is effective in reducing asthma-related hospitalizations and emergency department (ED) visits, missed work and school days, limitations on activities, asthma attacks, and healthcare costs.



Public health professionals can use EXHALE to help people with asthma achieve better health

What are the EXHALE strategies?



EXHALE

Education

on asthma self-management

X-tinguishing

smoking and exposure to secondhand smoke

Home

visits for trigger reduction and asthma self-management education

Achievement

of guidelines-based medical management

Linkages

and coordination of care across settings

Environmental

policies or best practices to reduce asthma triggers from indoor, outdoor, or occupational sources

The Role of Public Health Professionals in Asthma Control

Managing a chronic condition like asthma can be affected by educational, environmental, behavioral, and social factors. Each person with asthma has a unique set of triggers that can cause them to experience symptoms.

Public health professionals can guide people, agencies, and other stakeholders working on asthma control to follow best practices to help people with asthma. Public health professionals can help reduce the morbidity and mortality of asthma by using the EXHALE strategies.

This Guide will explain how EXHALE-related interventions can help public health professionals, programs, and organizations improve the health of people with asthma.



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How Public Health Professionals Can Implement and Promote EXHALE

Public health agencies can collect and disseminate surveillance data, coordinate with partners to implement EXHALE strategies, promote information-sharing across sectors, evaluate accomplishments, and track progress toward goals.

Public health has an important role in EXHALE's success and the health of people with asthma.

How can EXHALE be used if resources are limited?

- Public health professionals can engage partners with the shared goal of improving the health of people with asthma.
- More resource-intensive strategies, such as home visits, can be focused on people at higher risk of asthma attacks.

How can EXHALE address social determinants of health?

Multiple EXHALE strategies can improve conditions in the places where people live, work, learn, play, and spend time.

For example:

- Strategies addressing asthma triggers (such as [Home visits for trigger reduction and asthma self-management education](#) and [Environmental policies or best practices to reduce asthma triggers from indoor, outdoor, or occupational sources](#)) can improve conditions in homes, schools, workplaces, and other settings.
- The strategy [Linkages and coordination of care across settings](#) includes connecting people with asthma to local support services that can improve housing conditions and thereby reduce asthma triggers, such as [home weatherization assistance programs](#).

EXHALE can have the greatest impact when:

- Multiple EXHALE strategies are used together in every community.
- Public health professionals, healthcare professionals, school personnel, health insurance plan administrators, people with asthma, their families, and other community members work together to use EXHALE.
- EXHALE-related programs consider the social and cultural context of the individuals and communities served by these programs.

Other EXHALE Guides are available for:

- Healthcare professionals.
- Healthcare system executive leaders.
- Managed care leaders and staff.
- Medicaid and Children's Health Insurance Program leaders.
- People with asthma, their families, and their caregivers.
- Schools.

These Guides are available at:
<https://www.cdc.gov/asthma/exhale/>



Examples of How Public Health Professionals Can Use EXHALE

Education on asthma self-management

- Connect people with asthma, their families, and their caregivers to existing asthma self-management education (AS-ME) programs, and encourage their partners (such as healthcare organizations and schools) to do the same.
- Offer opportunities for healthcare professionals, school personnel, and others to receive training in delivering AS-ME, so that AS-ME can be delivered in various settings (such as clinics, EDs, hospitals, pharmacies, schools, and homes).
- Inform health insurance plans how AS-ME can help health insurance plans (such as improve their members' health and reduce healthcare costs) and how AS-ME can be delivered and reimbursed (see [Appendix 1](#) for more information).

X-tinguishing smoking and exposure to secondhand smoke

- Work with healthcare partners to integrate the following screening practices into routine clinical care:
 - People with asthma receive screening for tobacco use and exposure to secondhand smoke.
 - Family members and caregivers of people with asthma receive screening for tobacco use.
- Work with healthcare partners to ensure treatment for tobacco use and dependence is provided for people with asthma, family members, and caregivers who use tobacco.
- Work with community partners to make referrals to local tobacco cessation programs for people with asthma, family members, and caregivers who use tobacco.
- Encourage smokefree policies, which can support tobacco cessation and reduce exposure to secondhand smoke. More information is available in the section [Environmental policies or best practices to reduce asthma triggers from indoor, outdoor, or occupational sources](#).

Home visits for trigger reduction and asthma self-management education

- Connect people with asthma, their families, and their caregivers to existing asthma-related home visit programs, and encourage their partners (such as healthcare organizations and schools) to do the same.
- Offer opportunities for community health workers, health insurance plan case managers, and others to receive training in delivering home visits to people with asthma, using evidence-based tools such as this [checklist](#) (Spanish version [here](#); standardized home visit training in English [here](#)).
- Inform health insurance plans how home visits can help health insurance plans (such as improve health and reduce healthcare costs) and how home visits can be delivered and reimbursed (see [Appendix 3](#) for more information).



Examples of How Public Health Professionals Can Use EXHALE (continued)

Achievement of guidelines-based medical management

- Work with healthcare partners to:
 - Offer training opportunities for healthcare professionals on strategies to improve medication adherence, such as shared decision-making and AS-ME.
 - Analyze health insurance claims data to identify asthma medication purchases that do not appear guidelines-based. Ask prescribing healthcare professionals to reconsider these patients' medication regimens.
 - Help people with asthma obtain multiple spacers within one year (when prescribed) for use with asthma inhalers in various settings (such as school or home), without a prior authorization process.

Linkages and coordination of care across settings

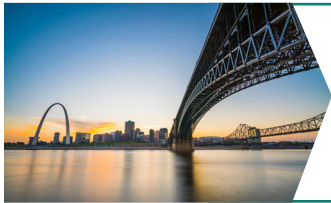
- Inform and help people with asthma, their families, and their caregivers connect to local support services such as:
 - Prescription assistance programs that offer reduced costs for prescription medications.
 - [Home weatherization assistance programs](#) that provide loans or grants to low-income residents to repair or improve their homes, which can reduce asthma triggers in their homes (such as mold or pests).
- Encourage healthcare partners to expand access to patient-centered medical homes for people with asthma.
- Convene partners (such as from healthcare, schools, and health insurance plans) to facilitate coordinated care for people with asthma and build synergy.

Environmental policies or best practices to reduce asthma triggers from indoor, outdoor, or occupational sources

- Inform and encourage the public, partners, and community leaders to consider policies or practices that help people with asthma in places where they live, work, learn, play, and spend time, including:
 - Home weatherization assistance programs that provide loans or grants to low-income residents to repair or improve their homes, which can reduce asthma triggers in their homes such as mold and pests; more information is [here](#).
 - Smokefree policies, including:
 - Comprehensive smokefree policies that prohibit smoking in all indoor spaces of workplaces, restaurants, bars, and multi-unit housing (public and private).
 - Smokefree rules that prohibit smoking in homes and vehicles.
- Modifying older diesel engines of school buses to run more cleanly to reduce air pollution.
- Eliminating, when possible, or reducing exposure to asthma triggers in the workplace.



What EXHALE Can Look Like in a State: An Example from Missouri



The **Missouri Asthma Prevention and Control Program (MAPCP)** has been funded by CDC's National Asthma Control Program since 2001. MAPCP and its partners have successfully carried out EXHALE-related activities to help people with asthma in Missouri. Here are some examples, listed by strategy:

Education on asthma self-management

Offered training opportunities on how to deliver AS-ME. MAPCP partnered with the University of Missouri and others to train school nurses, pharmacists, and others to deliver AS-ME to people with asthma and their families. For example, MAPCP and its partners obtained approval from school district superintendents to provide online or face-to-face training to school nurses, using [Teaming Up for Asthma Control© \(TUAC\)](#), a program developed with support from CDC in 2010.

These nurses then used materials provided by MAPCP and its partners to deliver AS-ME to students who enrolled (with parental consent). More information about how these activities were conducted, as well as health and economic outcomes, is available in a [peer-reviewed publication](#) and a [white paper](#).

Partnered with health insurance plans and provided information on how AS-ME can be reimbursed.

MAPCP partnered with the state Medicaid agency (MO HealthNet) to establish a system to reimburse for AS-ME delivered in people's homes, by submitting a Medicaid state plan amendment (SPA) to the Centers for Medicare & Medicaid Services (CMS).

The SPA also addresses home environmental assessments. MAPCP's contributions to this partnership included data on the health and economic benefits of AS-ME and home environmental assessments, as well as assistance in developing standards for how these strategies would be delivered and which providers would deliver them. CMS approved this SPA in 2016 (available [here](#)). Peggy Gaddy, RRT, MBA, from MAPCP describes her experience working with MO HealthNet in this [webinar](#).

X-tinguishing smoking and exposure to secondhand smoke

Worked with partners to increase referrals to tobacco cessation programs. MAPCP worked with partners, including the Missouri Comprehensive Tobacco Control Program, to increase referrals to guidelines-recommended tobacco cessation treatments for people with asthma, their families, and their caregivers.

Home visits for trigger reduction and asthma self-management education

Partnered with health insurance plans and provided information on how home visits for asthma can be reimbursed. MAPCP partnered with MO HealthNet to establish a system to reimburse for home environmental assessments and in-home AS-ME, by submitting and receiving CMS approval for a Medicaid SPA. The SPA helps MAPCP's partners that deliver home visits to seek reimbursement for their services. More information is available in the description of MAPCP activities related to Education on asthma self-management.

Worked with partners to connect people with asthma and their families to existing asthma-related programs and support services. MAPCP and its partners created [AsthmaBridge](#), a website that helps physicians, school nurses, and other healthcare professionals directly connect children with asthma to local AS-ME and home environmental assessments. Also, MAPCP and its partners created [School Nurse Link](#), a website to help school nurses connect with health insurance plans for case management, transportation, and other services.

What EXHALE Can Look Like in a State: An Example from Missouri (continued)

Achievement of guidelines-based medical management

Analyzed health insurance claims data to identify asthma medication purchases that did not appear guidelines-based. MAPCP partnered with MO HealthNet and others to conduct a quality improvement project. Under the project, Medicaid pharmacy claims data were analyzed to identify people with asthma whose medication did not appear to follow guidelines. These individuals' physicians were then notified by mail. In one year, the program increased guidelines-based use of asthma medications and saved the state Medicaid agency approximately \$430,000 in medication costs over 6 months. More information about this project is available in this [brief](#).

Worked with healthcare partners to offer training opportunities on how to deliver guidelines-based medical care to people with asthma. MAPCP partnered with the University of Missouri and others to offer IMPACT Asthma ECHO®, which uses videoconferencing technology to provide online lunch-hour training to healthcare professionals on how to deliver guidelines-based medical care. More information is available [here](#) and [here](#).



Linkages and coordination of care across settings

Encouraged health insurance plans to expand access to patient-centered medical homes for people with asthma. MAPCP partnered with MO HealthNet to expand access for children with asthma to MO HealthNet's Primary Care Health Homes Initiative (which focuses on care coordination via selected local healthcare providers), by submitting and receiving CMS approval in 2016 for a Medicaid SPA (available [here](#)). About a year after the SPA was approved, more than 3,000 children with asthma were supported by this new approach to care coordination.

Convened partners to facilitate coordinated care for people with asthma and build synergy. MAPCP partnered with MO HealthNet, Medicaid managed care organizations (MCOs), Missouri School Boards Association, Missouri Primary Care Association, and Missouri School Health Program to form the Care Coordination for School-Aged Children Workgroup. The partnership resulted in the creation of a template parental consent form that allows schools to share health-related information with students' healthcare professionals and health insurance plans. The template is compliant with the Family Educational Rights and Privacy Act (FERPA). Distribution of the customizable form occurs via [School Nurse Link](#), a website that facilitates linkages between school nurses and health insurance plans.

Environmental policies or best practices to reduce asthma triggers from indoor, outdoor, or occupational sources

Informed and encouraged partners to consider policies or practices that help people with asthma. MAPCP's partners in public housing adopted and implemented new smokefree policies for public housing in Kansas City, Joplin, and Columbia (2014–2017). The policies can reduce exposure to secondhand smoke among people with asthma who live in public housing, which can reduce hospitalizations and ED visits for asthma. Also, every year since 2014, the [Missouri Clean Diesel Program](#) in the Missouri Department of Natural Resources has helped school districts increase their number of school buses that run more cleanly. These improvements can reduce air pollution and help children with asthma avoid hospitalizations and ED visits for asthma.

How Program Evaluation Can Help with EXHALE

Overview of program evaluation:

Evaluation asks important questions and systematically answers them. For example:

- How do public health professionals know if a program is working as expected?
- How can a program be improved?

Evaluation is a learning process that doesn't need to be overly complex.

Examples of questions that can be used for program evaluation:

This table has some basic evaluation questions EXHALE-related programs can use to address each EXHALE strategy. Using evaluation to answer these example questions can provide information about why programs work well and what can improve.

Examples of Possible Evaluation Questions Related to EXHALE Strategies	
EXHALE Strategy	Examples of Possible Evaluation Questions
Education on asthma self-management	<ul style="list-style-type: none"> • Are program participants using what they learn to reduce asthma attacks? • What barriers to participation are program participants encountering?
X-tinguishing smoking and exposure to secondhand smoke	<ul style="list-style-type: none"> • Are people with asthma who smoke accepting referrals to tobacco cessation programs? • Are they quitting?
Home visits for trigger reduction and asthma self-management education	<ul style="list-style-type: none"> • Are people at highest risk of asthma attacks receiving referrals to home visit programs? • Are they accepting the service and fully participating?
Achievement of guidelines-based medical management	<ul style="list-style-type: none"> • For a quality improvement initiative involving healthcare professionals, are the changes adopted in clinical practices being sustained over time?
Linkages and coordination of care across settings	<ul style="list-style-type: none"> • Are people with asthma receiving sufficient services tailored to their needs? • What gaps exist?
Environmental policies or best practices to reduce asthma triggers from indoor, outdoor, or occupational sources	<ul style="list-style-type: none"> • Are adopted policies or best practices being fully implemented? • What are barriers to implementation?

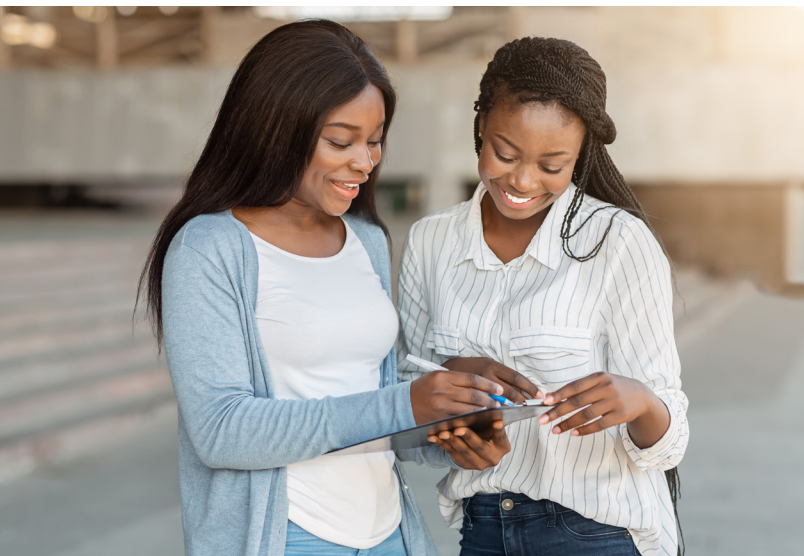
How Program Evaluation Can Help with EXHALE (continued)

Program evaluation can provide information on:

- How well EXHALE-related programs are working.
- How to best change or sustain program activities (including partners' activities) to improve program effectiveness.
- How well programs are doing the right things for the communities they serve.
- How to expand access to EXHALE-related programs within communities or to other communities with limited or no access to these programs.

Best practices in asthma program evaluation include:

- Developing a systematic process.
- Involving people who are working with or served by the program.
- Working with program partners to decide on evaluation questions for a program.
- Sharing program evaluation results with program partners and deciding together how to use these results to improve program effectiveness.
- Following a standard evaluation framework, such as the [CDC Framework for Program Evaluation in Public Health](#).



Program evaluation resources include:

- Learning & Growing through Evaluation: State Asthma Program Evaluation Guide: https://www.cdc.gov/asthma/program_eval/guide.htm.
- Tool for Assessing Asthma Referral Systems (TAARS): https://www.cdc.gov/asthma/program_eval/taars.html.

Selected Resources Related to EXHALE

Resources related to multiple EXHALE strategies

- CDC's [EXHALE: A Technical Package to Control Asthma \(full document\)](#).
- CDC's [6|18 Initiative: Control Asthma](#).
- American Lung Association's Asthma Guidelines-Based Care Coverage Project's [jurisdiction-specific database](#).



For strategy-specific resources, please see the following appendices:



For more information, visit:
<https://www.cdc.gov/asthma/exhale/>

Appendix 1: Selected Information About Education on Asthma Self-Management

Resources that can help public health professionals and others deliver AS-ME:

Examples of Online AS-ME for Patients with Asthma, Their Families, and Their Caregivers			
Name (Source)	Intended Audience	Language(s)	How to Access
Asthma Basics (ALA)	School nurses, CHWs, and others who teach adults and children with asthma, their families, and caregivers.	English, Spanish	Go to website (use hyperlink)
Asthma Basics for Children (AAFA)	Healthcare professionals who teach parents and teachers of young children with asthma.	English, Spanish	Go to website (use hyperlink)
Asthma Education for the Community Health Worker (AAE)	CHWs who teach people with asthma (adults or children) and their families.	English	Go to website (use hyperlink)
Breathe Well, Live Well Training for Educators (ALA)	Healthcare professionals, health educators, or CHWs who teach adults with asthma.	English	See note*
Kickin' Asthma (ALA)	School personnel and others who teach children with asthma aged 11–16 years.	English	See note*
Open Airways for Schools (ALA)	School personnel and others who teach children with asthma aged 8–11 years.	English, Spanish	See note*
Wee Breathers (AAFA)	Healthcare professionals who teach parents of young children with asthma.	English, Spanish	Go to website (use hyperlink)
You Can Control Asthma (AAFA)	Healthcare professionals who teach school-age children with asthma and their families.	English, Spanish	Go to website (use hyperlink)

* Contact the American Lung Association at 1-800-586-4872 to access training and program materials. *Kickin' Asthma* and *Open Airways for Schools* are designed to be delivered as group AS-ME.

AAE, Association of Asthma Educators; AAFA, Asthma and Allergy Foundation of America; ALA, American Lung Association; CHW, community health worker.

Appendix 1: Selected Information About Education on Asthma Self-Management (continued)

AS-ME that people with asthma, their families, and their caregivers can access online:

Examples of Online AS-ME for People with Asthma, Their Families, and Their Caregivers			
Name (Source)	Intended Audience	Language(s)	How to Access
Asthma Basics (ALA)	Adults and children with asthma, their families, and their caregivers.	English, Spanish	Go to website (use hyperlink)
Asthma Care for Adults (AAFA)	Adults with asthma and their caregivers.	English	Go to website (use hyperlink)

ALA, American Lung Association; AAFA, Asthma and Allergy Foundation of America.

Notes about this page:

- This information is current as of August 2020.
- More information on some of these tools and other AS-ME tools is available at the Agency for Healthcare Research and Quality [Technical Brief on AS-ME packages](#).

Medical billing codes that have been used for AS-ME:

AS-ME: Medical Billing Code Examples	
Code	Brief Description
94664 (CPT)	Demonstration and evaluation of patient utilization of an aerosol generator, nebulizer, metered dose inhaler, or intermittent positive pressure breathing device.
98960 (CPT)	Education and training for patient self-management.
99401–99404 (CPT)	Preventive medicine counseling (individual).
99411–99412 (CPT)	Preventive medicine counseling (group).
99605–99607 (CPT)	Medication therapy management service(s) provided by a pharmacist.
S9441 (HCPCS)	Asthma education.

CPT, Current Procedural Terminology code; HCPCS, Healthcare Common Procedure Coding System code.

Reimbursement for these codes is not guaranteed because health insurance plans (including state Medicaid agencies) vary in which codes they reimburse. Some health insurance plans have reimbursed one or more of these codes. Documents describing use of medical billing codes for AS-ME have been identified from [California](#) and [Missouri](#).

Appendix 1: Selected Information About Education on Asthma Self-Management (continued)

Sources of asthma action plans include:

- CDC’s [Tools for Asthma Control](#), which includes printable, electronic, and computer-based asthma action plans.
- American Lung Association’s [Create an Asthma Action Plan](#), which includes English and Spanish asthma action plans.

Asthma action plans can be a useful tool to facilitate or reinforce AS-ME, guidelines-based medical care, and linkages and coordination of care.



Relevant resources developed using state or local experience include:

Resource	Brief Description
American Lung Association’s Advancing Guidelines-Based Asthma Care: Collaboration with State Medicaid Programs Webinar and White Paper	These resources describe best practices and lessons learned from public health asthma programs in Missouri, Montana, Rhode Island, and Wisconsin.
Indiana Health Coverage Programs Bulletin (BT201826)	This bulletin describes community health worker services reimbursed in Indiana.
Medicaid State Plan Amendment (SPA) from Missouri	This SPA describes Missouri’s system to reimburse for in-home AS-ME and home environmental assessments.
Subcontractor Provider Agreement from Asthma & Allergy Foundation of America, St. Louis Chapter	This contract language describes AS-ME and home environmental assessments to be provided to health insurance plan members by a subcontractor.

Appendix 2: Selected Information About X-tinguishing Smoking and Exposure to Secondhand Smoke

Resources that can help public health professionals and others reduce smoking and exposure to secondhand smoke among people with asthma:

- [Smoking Cessation: A Report of the Surgeon General—Executive Summary](#). Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2020.
- CDC's [Cessation Materials for State Tobacco Control Programs](#).
- CDC's [Tips From Former Smokers®](#), which include videos, podcasts, and print ads about people and families affected by asthma and exposure to secondhand smoke:
 - [Ellie's story](#).
 - [Jamason's story](#).
 - [Jessica's story](#).
 - [Nathan's story](#).
- Campaign for Tobacco-Free Kids' [U.S. State and Local Issues: Prevention and Cessation Programs](#), which addresses elements of comprehensive and well-funded state programs that prevent children from smoking and help smokers quit.

Smokefree policies can support tobacco cessation and reduce exposure to secondhand smoke. More information is available in [Appendix 6](#).



Appendix 3: Selected Information About Home Visits for Trigger Reduction and Asthma Self-Management Education

Core elements in a home visit for asthma are described in CDC’s [Strategies for Addressing Asthma in Homes](#).

Trainings and tools to build sustainable systems for asthma-related home visits are available in the National Center for Healthy Housing’s eLearning: [Building Systems to Sustain Home-Based Asthma Services](#).



Resources that have been used to deliver home visits for asthma include:

- [Home Characteristics and Asthma Triggers Checklist for Home Visitors \(English version\)](#) created by CDC, U.S. Environmental Protection Agency, and U.S. Department of Housing and Urban Development (Spanish version [here](#); standardized home visit training in English [here](#)).
- AS-ME resources described in [Appendix 1: Selected Information About Education on Asthma Self-Management](#).

Medical billing codes that have been used for home visits for asthma:

Home Visits for Asthma: Medical Billing Code Examples	
Code	Brief Description
95199 (CPT)	Unlisted allergy/clinical immunologic service or procedure.
G0299 (HCPCS)	Direct skilled nursing services in the home health or hospice setting.
S0315 (HCPCS)	Disease management program, initial assessment, and initiation of program.
S0316 (HCPCS)	Disease management program, follow-up/reassessment.
S8097 (HCPCS)	Asthma kit, including but not limited to portable peak expiratory flow meter, instructional video, brochure, and/or spacer.
S9441 (HCPCS)	Asthma education.
T1017 (HCPCS)	Targeted case management.
T1028 (HCPCS)	Home environment assessment.

CPT, Current Procedural Terminology code.

HCPCS, Healthcare Common Procedure Coding System code.

Reimbursement for these codes is not guaranteed because health insurance plans (including state Medicaid agencies) vary in which codes they reimburse. Some health insurance plans have reimbursed one or more of these codes. Documents describing use of medical billing codes for home visits have been identified from [Michigan](#) and [Missouri](#).

Appendix 3: Selected Information About Home Visits for Trigger Reduction and Asthma Self-Management Education (continued)

Relevant resources developed using state or local experience include:

Resource	Brief Description
American Lung Association’s Advancing Guidelines-Based Asthma Care: Collaboration with State Medicaid Programs Webinar and White Paper	These resources describe best practices and lessons learned from public health asthma programs in Missouri, Montana, Rhode Island, and Wisconsin.
Center for Health Care Strategies’ Technical Assistance Tool – Proposing a Potential New or Enhanced Medicaid-Covered Benefit: Template for Enhanced Asthma Control Services	This document includes sample language on how home visits for people with asthma can be described to a Medicaid agency.
Children’s Health Insurance Program (CHIP) State Plan Amendment (SPA) from Maryland	This SPA describes Maryland’s CHIP Health Services Initiative to provide home assessments for children with asthma and/or blood lead levels over 5 mcg/dL.
Infographic on the Home Asthma Response Program (HARP) in Rhode Island	This infographic describes the health and economic evidence for HARP, a home visit program for children with 1 or more asthma-related ED visit or hospitalization.
Massachusetts Department of Public Health’s Community Health Worker Pediatric Asthma Home Visiting Program	This website includes information on program: <ul style="list-style-type: none"> • Training for community health workers. • Educational content.
Medicaid State Plan Amendment (SPA) from Missouri	This SPA describes Missouri’s system to reimburse for home environmental assessments and AS-ME.
Michigan’s Managing Asthma Through Case Management in Homes (MATCH) Program: Evaluation Outcomes and Sustainability Success	This white paper describes Michigan’s MATCH program model and evaluation outcomes.
Michigan’s MATCH Program Website	This website includes information on the program: <ul style="list-style-type: none"> • Components. • Eligibility criteria. • Flyers for healthcare professionals and potential program participants.
Subcontractor Provider Agreement from Asthma & Allergy Foundation of America, St. Louis Chapter	This contract language describes AS-ME and home environmental assessments to be provided to health insurance plan members by a subcontractor.

Appendix 4: Selected Information About Achievement of Guidelines-Based Medical Management

Trainings available to healthcare professionals and others on guidelines-based medical management of asthma include:

Examples of Training Opportunities for Healthcare Professionals and Others on Guidelines-Based Medical Management of Asthma	
Name (Source)	Notes
Asthma Educator Institute (ALA)	Continuing education credits vary by location.
Asthma Management Education Online (AAFA)	Nurses and respiratory therapists can earn 8.75 contact hours.
Athletes and Asthma: The Community Coach's Role (MDH)	Continuing education credits not available.
Creating Asthma-friendly Environments and Promoting Access to Guidelines-based Care for Children with Asthma (NASN, NEEF)	Nurses can earn 3.0 contact hours.
Environmental Management of Pediatric Asthma: Guidelines for Health Care Providers (NEEF)	Continuing education credits not available.
Environmental Triggers of Asthma (ATSDR)	Physicians can earn 1.75 continuing education credits; nurses can earn 1.75 contact hours; health educators can earn 1.5 contact hours.
EQIPP: Asthma (AAP)	Physicians can earn 54 continuing education credits; nurses can earn 54 contact hours.
Physician Asthma Care Education (NIH)	Website contains materials to deliver this curriculum to physicians.
Putting It Into Practice: Pediatric Environmental Health Training Resource (CEHN)	Continuing education credits not available.

ALA, American Lung Association; AAFA, Asthma and Allergy Foundation of America; AAP, American Academy of Pediatrics; ATSDR, Agency for Toxic Substances and Disease Registry; CEHN, Children's Environmental Health Network; EQIPP, Education in Quality Improvement for Pediatric Practice; MDH, Minnesota Department of Health; NASN, National Association of School Nurses; NEEF, National Environmental Education Foundation; NIH, National Institutes of Health.

The information in this table is current as of August 2020.

Appendix 4: Selected Information About Achievement of Guidelines-Based Medical Management (continued)

Resources related to healthcare quality improvement or quality measures include:

- Center for Health Care Strategies' [Return on Investment Forecasting Calculator for Quality Improvement Initiatives](#).
- Centers for Medicare & Medicaid Services' [Adult and Child Health Care Quality Measures](#).
- Health Resources and Services Administration's [Health Center Data & Reporting](#).
- National Committee for Quality Assurance's [Health Insurance Plan Ratings](#).

Sources of asthma action plans include:

- CDC's [Tools for Asthma Control](#), which includes printable, electronic, and computer-based asthma action plans.
- American Lung Association's [Create an Asthma Action Plan](#), which includes English and Spanish asthma action plans.

Asthma action plans can be a useful tool to facilitate or reinforce guidelines-based medical care, AS-ME, and linkages and coordination of care.



Appendix 5: Selected Information About Linkages and Coordination of Care Across Settings

The information provided in this appendix is organized according to the examples on [page 7](#) of how public health professionals can use EXHALE:

- Inform and help people with asthma, their families, and their caregivers connect to local support services.
- Encourage healthcare partners to expand access to patient-centered medical homes for people with asthma.
- Convene partners (for example, from healthcare, schools, and health insurance plans) to facilitate coordinated care for people with asthma and build synergy.



Example 1: Inform and help people with asthma, their families, and their caregivers connect to local support services

Relevant resources include:

Resource	Brief Description
American Academy of Family Physicians' The EveryONE Project® Neighborhood Navigator	This interactive tool can identify community resources by zip code. It is available in more than 100 languages.
U.S. Department of Energy's Where to Apply for Weatherization Assistance	This website includes information on how and where to apply for home weatherization assistance programs providing loans or grants to low-income residents to repair or improve their homes, which can reduce asthma triggers in their homes such as mold and pests.

Example 2: Encourage healthcare partners to expand access to patient-centered medical homes for people with asthma

Relevant resources include:

Resource	Brief Description
American Academy of Pediatrics' National Resource Center for Patient/Family-Centered Medical Home	This website includes state-specific information on medical home initiatives and partners.
Center for Health Care Strategies' Return on Investment Forecasting Calculator for Health Homes and Medical Homes	This interactive tool can estimate a return on investment from patient-centered health homes and medical homes.
Medicaid State Plan Amendment (SPA) from Missouri	This SPA expanded access for children with asthma to health home services in Missouri.

Appendix 5: Selected Information About Linkages and Coordination of Care Across Settings (continued)

Example 3: Convene partners to facilitate coordinated care for people with asthma and build synergy

Relevant resources include:

Resource	Brief Description
National Association of Chronic Disease Directors' Making a Case for Coverage in Medicaid	This website includes general considerations about building relationships between public health and Medicaid.
National Association of State Boards of Education's How Schools Work and How to Work with Schools	This document includes practical steps for working with schools.

Additional tools to facilitate linkages and coordination of care across settings:

Asthma action plans can be a useful tool to facilitate or reinforce linkages and coordination of care, guidelines-based medical care, and AS-ME. Sources of asthma action plans include:

- CDC's [Tools for Asthma Control](#), which includes printable, electronic, and computer-based asthma action plans.
- American Lung Association's [Create an Asthma Action Plan](#), which includes English and Spanish asthma action plans.

More tools to improve care coordination between healthcare organizations and schools are available through the [School-Based Asthma Management Program \(SAMPRO\)](#), from the American Academy of Allergy, Asthma & Immunology.



Appendix 6: Selected Information About Environmental Policies or Best Practices to Reduce Asthma Triggers From Indoor, Outdoor, or Occupational Sources

The information provided in this appendix is organized according to the examples on [page 7](#) of how public health professionals can use EXHALE:

- Home weatherization assistance programs that provide loans or grants to low-income residents to repair or improve their homes, which can reduce asthma triggers in their homes such as mold and pests; more information is available [here](#).
- Smokefree policies, including:
 - Comprehensive smokefree policies that prohibit smoking in all indoor spaces of workplaces, restaurants, and bars.
 - Smokefree policies that prohibit smoking inside private places, such as in homes (including multiunit housing) and in vehicles.
- Modifying older diesel engines of school buses to run more cleanly to reduce air pollution.
- Eliminating, when possible, or reducing exposure to asthma triggers in the workplace.



Example 1: Home weatherization assistance programs

- CDC's Health Impact in 5 Years (HI-5) initiative includes [home weatherization assistance programs](#).
- The U.S. Department of Energy's [Where to Apply for Weatherization Assistance](#) includes information on how and where to apply for home weatherization assistance programs.

Example 2: Comprehensive smokefree policies

- CDC's Health Impact in 5 Years (HI-5) initiative includes [comprehensive smokefree policies](#).

Example 3: Modifying older diesel engines of school buses

- CDC's Health Impact in 5 Years (HI-5) initiative includes [clean diesel bus fleets](#).
- The U.S. Environmental Protection Agency administers a [School Bus Rebate Program](#).

Example 4: Eliminating, when possible, or reducing exposure to asthma triggers in the workplace

- CDC's National Institute for Occupational Safety and Health has information on [work-related asthma](#).
- The American Lung Association's [Create an Asthma-Friendly Work Environment](#) includes information on how to help employees with asthma.