Quality Insights Pediatric Asthma Management Practice Module

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Quality Insights

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Purpose of Module

This module contains a high-level overview of evidence-based pediatric asthma management information. It is designed to support and supplement your current quality improvement efforts.

Sections are organized by the **"3 As" – Awareness, Assessment, and Action –** and include many tools and resources that may also be located on the Quality Insights website.

Please note: *The guidelines and recommendations in this module are to be used in conjunction with physician/clinician judgment and treatment and should be based on each patient's unique needs and circumstances.*

Introduction

What is Asthma?

According to the Centers for Disease Control and Prevention (CDC, 2024):

- Asthma is a chronic disease of the lungs that causes inflammation and swelling of the airways. This results in narrowing of the airways that carry air from the nose and mouth to the lungs.
- Asthma symptoms include trouble breathing (shortness of breath), wheezing, coughing, and tightness or pain in the chest.
- Asthma symptoms can be triggered by different things for different people. Allergens, like dust or pet dander, are common triggers. Some people also develop asthma symptoms in response to poor indoor air quality, certain foods, or exercise.
- Without proper management, asthma can result in frequent emergency department or urgent care visits, hospitalizations, and premature death.
- There is no cure for asthma, but appropriate treatment prevents asthma attacks and can help patients have a better quality of life.
- Asthma is one of the most common and costly diseases in the United States and affects adults and children of all ages.

Prevalence: United States and Pennsylvania

Pediatric Asthma in the United States

In 1999, the CDC created the National Asthma Control Program (NACP) to help millions of people with asthma in the U.S. gain control over their asthma. The NACP conducts asthma surveillance and supports 29 programs with funds to monitor and focus efforts and resources.

The most recent CDC data shows that 4,675,475 U.S. children under the age of 18 had asthma.

Source: CDC, 2021.

CDC data shows that Black people are more likely to have asthma than both White and Hispanic people.

- In 2021, the asthma mortality rate for non-Hispanic Black or African American children was almost 8 times higher than that of non-Hispanic white children (U.S. Department of Health and Human Services, 2025).
- In 2020, Non-Hispanic Black or African American children were almost five times more likely to be admitted to the hospital for asthma than non-Hispanic white children (U.S. Department of Health and Human Services, 2025).
- While all the causes of asthma remain unclear, children exposed to secondhand tobacco smoke are at increased risk for acute lower respiratory tract infections, such as bronchitis. Children living below or near the poverty level are more likely to have high levels of blood cotinine, a breakdown product of nicotine, than children living in higher-income families (CDC, 2025).

Asthma prevalence percentage, children ages 18 and under, 2018			
	Non-Hispanic Black	**Non-Hispanic White**	**Non-Hispanic Black / Non-Hispanic White**
Boys	16.8	5.0	3.4
Girls	11.7	6.2	1.9
Both Sexes	14.3	5.6	2.6

Source: CDC 2021. National Health Interview Survey Data 2018. Table 4-1.

Most Recent National Asthma Data from the CDC

In 2020, the asthma prevalence for females and males under 18 was relatively the same. The prevalence for males was 5.7% (2,107,190) and slightly higher for females at 6% (2,119,469). In adults over 18, asthma prevalence is higher in females.

The chart below represents those, by adults/children and race/ethnicity, who answered "yes" to the questions: "Have you EVER been told by a doctor or other health professional that you had asthma?" and "Do you still have asthma?"

Race and Ethnicity	Total[2]		Children		Adults	
	Weighted Number with Current Asthma[1]	Percent (SE)	Weighted Number with Current Asthma[1]	Percent (SE)	Weighted Number with Current Asthma[1]	Percent (SE)
White NH	15,286,442	7.6 (0.14)	2,062,254	5.5 (0.26)	13,224,188	8.1 (0.16)
Black NH	4,025,268	10.8 (0.41)	1,151,712	12.3 (0.83)	2,873,555	10.3 (0.47)
AI/AN NH[3]	417,161	10.8 (1.09)	88,995	9.3 (2.10)	328,166	11.3 (1.23)
Asian NH	632,757	3.5 (0.34)	119,662	3.5 (0.54)	513,095	3.5 (0.39)
Multiple NH[4]	735,992	11.5 (0.89)	264,353	8.8 (0.94)	471,639	13.8 (1.40)
Hispanic	3,770,233	6.7 (0.29)	1,263,649	6.7 (0.44)	2,506,583	6.7 (0.34)
Mexican[5]	1,829,044	5.5 (0.34)	675,014	5.7 (0.52)	1,154,030	5.3 (0.39)
Other Hispanic[5]	1,916,020	8.7 (0.50)	583,337	8.7 (0.81)	1,332,683	8.8 (0.61)

Abbreviations: NH = Non-Hispanic, AI/AN = American Indian/ Alaska Native, SE = Standard Error

[1]Persons who answered "yes" to the questions: "Have you EVER been told by a doctor or other health professional that you had asthma?" and "Do you still have asthma?"

[2]Total may not equal the sum of children and adults due to rounding and varying missing values.

[3]NH AI/AN only and NH AI/AN with any other group combined for 2019 and 2020.

[4]Subcategory includes "Other single and multiple races" for 2019 and 2020.

[5]As a subset of Hispanic.

Source: 2018–2020 National Health Interview Survey (NHIS).

Asthma in Pennsylvania

According to 2022 Behavioral Risk Factor Surveillance System (BRFSS) data, 14% of children in Pennsylvania (PA) have ever been told by a medical professional that they have asthma; this is referred to as lifetime asthma. Lifetime asthma prevalence was higher in girls (16%) than boys (12%). Ten percent of children between the ages of 0-11 years and 9% of children ages 12-17 had lifetime asthma. By race and ethnicity, White, non-Hispanic children had the lowest prevalence (one in nine). Black non-Hispanic children were one in six, as were Hispanic children. Older children in Pennsylvania (PA) are predominantly affected by asthma (PA DOH, 2021). More data can be found on the PA Department of Health (DOH) Asthma Prevalence Fact Sheet , the PA Asthma Surveillance System website, or the PA DOH Enterprise Data Dissemination Informatics Exchange website.

Asthma and Allergy Foundation of America - In 2024, there were four Asthma Capitals in PA, including:

- #1 Allentown
- #5 Philadelphia
- #14 Harrisburg
- #45 Pittsburgh

PA DOH, through a collaborative agreement with the CDC, is working "to improve the reach, quality, effectiveness, and sustainability of asthma control services and to reduce asthma morbidity, mortality, and disparities by implementing evidence-based strategies across multiple sectors." Through the CDC initiative and EXHALE Strategies, partners throughout the state have engaged in the PA Asthma Control Program and PA Asthma Partnership (PAP).

Interested in joining the PAP? Please contact RA-DHPAAsthma@pa.gov.

3 A's – Awareness, Assessment, and Action

Awareness: Asthma Matters

Asthma is one of the most common lifelong diseases. It affects the lungs, causing episodes of wheezing, breathlessness, chest tightness, and coughing. Deaths from asthma are thought to be preventable, particularly among children and young adults. Often, it is not known what causes asthma nor how to cure it (CDC, 2024).

In 1999, the CDC created the National Asthma Control Program (NACP) to help people with asthma gain control of their disease.

The program goals included reducing the number of:

- Deaths
- Hospitalizations
- Emergency department visits
- School or workdays missed

The aim of the NACP is to ensure the availability and access of all people with asthma to guideline-based medical management and pharmacology, improve the quality of asthma care, improve asthma management in schools, and improve air quality through air pollution policies.

Social Determinants Matter

These guiding principles establish a vision to act collectively to address the burden of asthma in Pennsylvania. The following is an excerpt from the PA DOH Strategic Asthma Plan.

1. **Equity:** Achieve health equity by addressing the social determinants of health, dismantling systems of oppression, expanding activities into communities of greatest need, be they rural or urban, and partnering with these communities to reduce health disparities. The ACP is committed to approaching program development and implementation with a health equity lens.

2. **Collaboration and Partnerships:** Identify potential linkages and act upon opportunities to cooperate and partner responsibly to achieve greater impacts than can occur in isolation. All health care and public health partners understand, accept, and fulfill their roles and responsibilities.

3. **Access to Guidelines-Based Care and Community Support Services:** Guidelines-based asthma care, Asthma Self-Management Education, and appropriate support services are available, accessible, and affordable.

4. **Patient-centered Approaches:** The health care system is designed to recognize and value the needs of individuals, their caregivers, and their families and to provide coordinated care and support.

5. **Data Driven:** The use of national, state, local, and program data for asthma surveillance and to guide implementation, evaluation, and quality improvement activities to achieve ACP goals and improve health outcomes.

6. **Social Determinants of Health (SDOH)** *(Figure 1)*: The social circumstances in which people live, learn, work, and play can have a greater impact on health outcomes than health-related factors such as health care coverage and access to care. The ACP will leverage new and existing partnerships to address the SDOH that leads to asthma disparities in Pennsylvania.

Figure 1: Social Determinants of Health

Source: National Academy of Medicine

To classify asthma severity, the provider will consider how often signs and symptoms of asthma exist and how severe they are. Providers will also consider the results of the physical exam and diagnostic tests.

Determining asthma severity helps the provider choose the best treatment. Asthma severity often changes over time, requiring treatment adjustments. The National Heart, Lung, and Blood Institute Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma includes guidelines for assessment of severity in children. Additional information can be found in the Asthma Management Guidelines: Focused Updates 2020.

Asthma is classified into the following four general categories:

Asthma Classification	Signs & Symptoms
Mild intermittent	Mild symptoms up to two days a week and up to two nights a month
Mild persistent	Symptoms more than twice a week, but no more than once in a single day
Moderate persistent	Symptoms once a day and more than one night a week
Severe persistent	Symptoms throughout the day on most days and frequently at night

According to the Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma, severity and control are defined as follows:

- **Severity:** The intrinsic intensity of the disease process. Severity is most easily and directly measured in a patient who is not receiving long-term control therapy. Severity can also be measured once asthma control is achieved, by the step of care (i.e., the amount of medication) required to maintain control.
- **Control:** The degree to which the manifestations of asthma are minimized by therapeutic intervention and the goals of therapy are met.

Childhood Asthma Control Test (C-ACT): This test can help patients and their providers determine whether asthma is being properly controlled.

Assessment: Is Asthma Under Control?

Rule of Twos - does the patient or caregiver report

If the answer is YES to any of these questions, the child's asthma may not be under control. Understand the signs and follow these tips to better manage asthma.

1. Does your child:
    a. ☐ YES ☐ NO Have an asthma control test (ACT) score of less than 20?*
    b. ☐ YES ☐ NO Cough or wheeze (use albuterol inhaler) more than two times per week?
    c. ☐ YES ☐ NO Wake up at night due to coughing more than two times per month?
    d. ☐ YES ☐ NO Stop playing or exercising due to asthma?

    **ACT age 4-11 (see Appendix A), 12 or older (see Appendix B)*

2. Assess Reasons for Poor Control
    a. **I**nhaler technique – Check patient's technique.
    b. **C**ompliance – Ask when and how much medication the patient is taking.
    c. **E**nvironment - Ask the patient/parent if something in his or her environment has changed.

Signs of Well-Controlled Asthma

- Sleeping well at night without coughing
- Running, playing sports, and being active in school activities
- Not missing school due to asthma
- Using your rescue inhaler less than two times per week for asthma symptoms
- Parents are not missing work due to their children's asthma
- No hospitalizations for asthma
- No emergency room visits for asthma
- Having an asthma action plan

Controlling asthma means the child should be able to:

- Sleep through the night without coughing, wheezing, or having shortness of breath
- Run and play without having asthma symptoms
- Go to school every day

Action: Asthma Control is the Goal

A July 2020 update from the American Academy of Pediatrics (AAP) states that up to 40 percent of childhood asthma patients have asthma that isn't well controlled due to "medication non-adherence, uncontrolled triggers, comorbid conditions, and under-prescribing". The AAP continues that the best asthma treatment "achieves asthma control, preserves lung function and minimizes side effects."

Prevention and long-term control are key to stopping asthma attacks before they start. Treatment usually involves learning to recognize asthma triggers, taking steps to avoid triggers, and tracking breathing to make sure the medications are keeping symptoms under control. In case of an asthma flare, patients may need to use a quick-relief inhaler.

EXHALE

The CDC's National Asthma Control Program (NACP) and its partners help people 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 can have the greatest impact when:

- Multiple EXHALE strategies are used together in every community.
- Health care professionals, health insurance plan administrators, public health professionals, school personnel, patients with asthma, their families, and other community members work together in using EXHALE.

EXHALE stands for:

- **E**ducation on asthma self-management
- **X**-tinguishing smoking and exposure to secondhand smoke
- **H**ome visits for trigger reduction and asthma self-management education
- **A**chievement of guidelines-based medical management
- **L**inkages and coordination of care across settings
- **E**nvironmental policies or best practices to reduce asthma triggers from indoor, outdoor, or occupational sources

EXHALE Resources

EXHALE Healthcare Professionals Guide: This guide is a condensed version of the technical guide designed to help care teams learn more about how to help people with asthma achieve better health.

EXHALE Guide for Schools**:** School personnel have the power to educate and help coordinate care for students with asthma. Schools can engage partners with the shared goal of helping people with asthma and reducing asthma-related missed school days.

Access a host of other EXHALE Guides, each developed for a specific audience, including:

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

Guidelines – Asthma Diagnosis and Care

The 2020 Focused Updates to the Asthma Management Guidelines include the most recent updates of the Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma (EPR-3). This update includes a better understanding of asthma as a diagnosis and the fact that it is not one disease but more of a syndrome composed of multiple phenotypes.

The six priority topics identified for systematic review were as follows:

1. Fractional exhaled nitric oxide (FeNO) in diagnosis, medication selection, and monitoring of treatment response in asthma
2. Remediation of indoor allergens (e.g., house dust mites/pets) in asthma management
3. Adjustable medication dosing in recurrent wheezing and asthma
4. Long-acting anti-muscarinic agents in asthma management as add-ons to inhaled corticosteroids
5. Immunotherapy and the management of asthma
6. Bronchial thermoplasty (BT) in adult severe asthma

2020 Focused Updates to the Asthma Management Guidelines: Clinician's Guide: This Clinician's Guide summarizes the 2020 Focused Updates to the Asthma Management Guidelines: A Report from the National Asthma Education and Prevention Program Coordinating Committee Expert Panel Working Group to help clinicians integrate the new recommendations into clinical care.

2020 Focused Updates to the Asthma Management Guidelines: At-a-Glance Guide (see Appendix C)

This guide describes a treatment management approach based on recommendations from the 2020 Focused Updates to the Asthma Management Guidelines: A Report from the National Asthma Education and Prevention Program Coordinating Committee Expert Panel Working Group. Step diagrams from the 2007 Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma (EPR-3) were updated with the new recommendations. The diagrams are intended to help clinicians integrate the new recommendations into clinical care and are meant to assist and not replace clinical judgment or decision-making for individual patient management, with input from individuals with asthma about their preferences.

What Providers Can Do

1. Assess asthma severity.
2. Assess and monitor asthma control.
3. Use inhaled corticosteroids on all persistent asthma patients.
4. Use written Asthma Action Plans (AAP).
5. Schedule follow-up appointments.
6. Initiate or continue a "Call Us First" initiative that includes contracting with pediatric asthma patients and/or caregivers to call the office for an appointment when:
    - The patient is in the Yellow Zone of their AAP and not responding to treatment.
    - For Red Zone recommendations from the provider for at-home treatments, in-office appointments, and Urgent Care or Emergency Room visits, when necessary (24/7).
7. Control environmental exposures.

Vaccinations

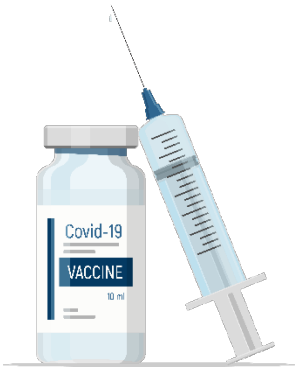
Flu Vaccine:

The CDC recommends the annual flu vaccine for children with asthma as they are at higher risk for developing serious flu complications, even if their asthma is mild or their symptoms are well-controlled by medication.

The recommendation of the Asthma Control Program:

1. Document each patient's influenza vaccination status, including "Not Administered – Reason" or "Administered Elsewhere".
2. It is recommended that a Population Health Management Outreach be initiated to ALL asthma patients every year to facilitate their receiving the annual influenza vaccine and an Asthma Action Plan update/review prior to the beginning of the influenza season in early fall.

Pediatric COVID-19 Vaccination Resources



Use of Covid-19 Vaccines for Persons Aged 6 Months and Older: Recommendations of the Advisory Committee on Immunization Practices (ACIP)- United States, 2024-2025 recommended in September 2024 for the use of the COVID-19 vaccine for patients ages six months and older. Additional resources can be found here:

- CDC's 2024-2025 COVID-19 Vaccination for Children
- CDC's Interim Clinical Considerations for Use of COVID-19 Vaccines – Check this page for updates
- Checklist for Pediatric COVID-19 Vaccination for health centers

Asthma Action Plan (see Appendix D)

Everyone with asthma needs an individualized Asthma Action Plan. The Asthma Control Program recommends initiation of an Asthma Action Plan (AAP), preferably in discrete data fields in the electronic health record (EHR), on every diagnosed asthma patient (including those created by Specialists) so the information can be reported and readily available.

It is also recommended that the AAP be reviewed with patients and their caregivers. The caregiver and/or patient should be encouraged to take a photo with their smartphone or print it and send it to the patient portal (if the EHR permits) at every asthma or wellness appointment.

Home Visit Trigger Assessment

A key to the reduction in exacerbations of asthma in children is home trigger assessment and reduction.

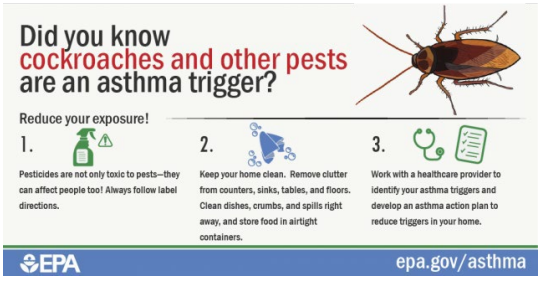
The American Lung Association (ALA) has resources to assist people in identifying home triggers that could be affecting childhood asthma patients. See Appendix E.

Resources:

- Removing Asthma Triggers in the Home: Reducing Pet Allergens
- What Are Your Asthma Triggers - (poster available in English and Spanish)
- What Triggers Your Asthma Worksheets - Identifying Asthma Triggers in English. Translated worksheets are available on the ALA website in Arabic, Burmese, Chinese, Hmong, Russian, Somali, Tagalog, Ukrainian, Spanish, Navajo, and Vietnamese.

Indoor Asthma Triggers

The United States Environmental Protection Agency (EPA) has identified that Americans spend up to 90 percent of their time indoors. Asthma triggers include secondhand/thirdhand smoke, dust mites, molds, pests like rodents and cockroaches, pets, outdoor air pollution, chemical irritants, and wood smoke.



On the Publications page, there are guides to help children with asthma reduce triggers. Exposures can be identified through a comprehensive asthma home visit program. EPA offers free publications to help children, parents, and caregivers better understand the asthma triggers and how to reduce them.

Children's Hospital of Philadelphia's Home Visitor Program

Children's Hospital of Philadelphia's Community Asthma Prevention Program (CAPP) supports children with asthma in the Philadelphia region. They operate a Home Visitor Program utilizing Community Health Workers to teach in-home classes and provide families with supplies to reduce asthma triggers in the home. Contact the CAPP office at 215-590-5261 or via the online form.

CAPP
Community Asthma Prevention Program

Partners in Care

School Districts

When a student has asthma, the care team is expanded to include school nurses, coaches, and teachers.

To ensure that a child has his or her asthma medication immediately available when an asthma attack occurs, Pennsylvania has enacted a law (Act 187) requiring schools to develop a written policy that allows school-aged children to carry (possess) and use (self-administer) their asthma medication.

The Use of Asthma Inhalers in Schools resource provides more information and guidance.

Resources

- The American Lung Association, the National Asthma Education and Prevention Program (NAEPP), the U.S. Environmental Protection Agency, and other asthma experts all have recognized that asthma management education is an important part of making schools asthma-friendly. The CDC recommends that all schools provide asthma education programs for students and school staff, such as Managing Asthma in Schools.
- The Community Preventive Services Task Force CPSTF) recommends school-based asthma self-management interventions to reduce hospitalizations and emergency room visits among children and adolescents with asthma.
- Expanding Asthma Knowledge from the American Lung Association contains valuable resources for learning asthma basics, spirometry training, and much more. Visit the American Lung Association's website to access additional resources.
- Women for a Healthy Environment is dedicated to creating "healthy spaces where all people can thrive." Their initiatives encompass Healthy Homes, Healthy Schools, and Healthy Early Learning Centers, along with advocacy for environmental health policies. By taking action, advocating for policy solutions, and engaging with communities, they aim to address environmental challenges and foster positive changes.

Asthma Self-Management Education Classes

Open Airways for Schools

Open Airways for Schools (OAS) is the most recognized asthma management program for children. The program teaches asthma self-management to children aged 8-11 years old at a level they can understand. Children who take OAS can take steps to prevent symptoms; they learn to recognize triggers and feel more confident about taking care of their asthma.

The program has been recommended by the National Association of School Nurses and honored with a Health Education Research Award from the NAEPP. The CDC recognizes it as very effective for managing childhood asthma.

Children who participate have:

- Fewer and less severe exacerbations
- Improved school performance
- More confidence in their understanding and ability to take action to manage their asthma
- Increase communication with parents and caregivers for asthma management

Kickin' Asthma

Kickin' Asthma is an asthma self-management education program for kids ages 11-16 (grades 6-10) that empowers them through a fun and interactive approach to asthma self-management. *Kickin' Asthma* includes different learning techniques suitable for older children and highlights self-management practices, such as recognizing triggers and proper medication use.

Consider supporting your local school district in starting an *Open Airways for Schools* or *Kickin' Asthma* program. Evidence shows interventions are effective when delivered by trained school staff, nurses, and health educators in elementary, middle, and high schools serving diverse populations. This may be a perfect opportunity for high schoolers to meet volunteer hours that may be required for graduation by assisting in facilitating the program. Additional resources provided by the American Lung Association can be found in Appendix F.

More information can also be found on the American Lung Association website or by emailing Robina Montague, RN, Quality Insights Practice Transformation Specialist.

Tobacco Cessation Programs

Cigarette smoke can increase the risk of children developing asthma during their lives.

Resources are available to help parents and caregivers reduce childhood exposure to secondhand/thirdhand smoke. Secondhand or thirdhand smoke can be a trigger for an asthma attack in a child. Children exposed to smoke have worse and more frequent asthma attacks. More than 40% of children who go to the emergency room for asthma live with smokers (AAP, 2017).

Thirdhand smoke particles are extremely tiny residues from tobacco smoke that can easily make their way into the lungs. These particles stick to surfaces and dust for months after the smoke is gone. Thirdhand smoke may be worse for those with asthma as it sticks to skin and clothes, so smoking outdoors, confining to a certain room, or airing out a car does not decrease the exposure to thirdhand smoke. Quitting is not easy, but there are resources that can help!

PA Free Quitline

The PA Free Quitline is a telephone-based tobacco cessation counseling service offering free coaching with no judgment (up to five sessions), free nicotine replacement therapy (if medically eligible), and web-based and text-messaging support. The phone number to access the PA Free Quitline is 1-800-QUIT-NOW (1-800-784-8669). A video guides first-time callers.

My Life My Quit - Youth Tobacco and Vaping Cessation Program

- Visit MyLifeMyQuit.com.
- Five coaching sessions by phone, live texting, or chat.
- Coaches who help teens navigate social situations while finding healthy ways to cope with stress.
- Call a dedicated toll-free number (**1-855-891-9989**) for real-time coaching or text **"Start My Quit" to 36072** for instant support.
- Promotional and educational materials designed for youth, with messages about quitting tobacco and vaping.
- It's Free. It's Confidential. **IT WORKS!**

Quality Insights Practice Transformation Specialists can order free direct-ship tobacco/vaping cessation print materials for you.

Additional Programs

- Health System Tobacco Cessation Programs: These programs are listed on the PA Tobacco Cessation Registry website.
- YMCAs: Local Pennsylvania YMCAs may offer *Freedom from Smoking* programs, such as the program at the Harrisburg Area YMCA. You can locate a YMCA in your area here.

Additional Resources

- Smokefree.gov
- American Lung Association

The Pressure is Off: Partner with Quality Insights

Quality Insights is dedicated to assisting your health care team in achieving optimal pediatric asthma management. Through our partnership with the PA DOH, we offer a wide variety of services designed to help you improve and reach your quality improvement goals focused on the reduction of asthma exacerbations through a population approach of proactive asthma management, stepwise treatment, and asthma self-management education.

A few key services Quality Insights is ready to offer include:

1. Quality Insights' Practice Transformation Specialists are available to support your clinical quality improvement goals and improve value-based care in your practice setting with no-cost technical assistance.
2. Workflow assessments and chart audits are conducted to evaluate your status and monitor the success of your quality improvement activities.
3. Clinical guidelines education, including severity assessment, categorization, and step therapy guidelines are provided. Technical assistance on workflow modifications for proactive outpatient pediatric asthma population health management, patient engagement, and portal optimization strategies.
4. Evidence-based, proven strategies through this NO-COST initiative.

Quality Improvement Solutions for You and Your Patients

The services above represent just a small sample of ways Quality Insights can support your practice. Discover all the ways the team at Quality Insights can help you and your patients make asthma control the goal by reviewing the workflow modifications guide in the appendices.

Childhood Asthma Control Test for Children 4 to 11 Years

Enter Name

Enter Address

Enter City/State/Zip

Today's Date: _____

Patient's Name: _____

This test will provide a score that may help the doctor determine if your child's asthma treatment plan is working or if it might be time for a change.

How to Take the Childhood Asthma Control Test

Step 1: Let your child respond to the first four questions (1 to 4). If your child needs help reading or understanding the question, you may help, but let your child select the response. Complete the remaining three questions (5 to 7) on your own and without letting your child's response influence your answers. There are no right or wrong answers.

Step 2: Write the number of each answer in the score box provided.

Step 3: Add up each score box for the total.

Step 4: Take the test to the doctor to talk about your child's total score.

19 or less If your child's score is 19 or less, it may be a sign that your child's asthma is not controlled as well as it could be. Bring this test to the doctor to talk about the results.

Have your child complete these questions.

1. How is your asthma today?

0	1	2	3	SCORE
Very bad	Bad	Good	Very good	

2. How much of a problem is your asthma when you run, exercise, or play sports?

0	1	2	3	
It's a big problem, I can't do what I want to do.	It's a problem and I don't like it.	It's a little problem but it's okay.	It's not a problem.	

3. Do you cough because of your asthma?

0	1	2	3	
Yes, all of the time.	Yes, most of the time.	Yes, some of the time.	No, none of the time.	

4. Do you wake up during the night because of your asthma?

0	1	2	3	
Yes, all of the time.	Yes, most of the time.	Yes, some of the time.	No, none of the time.	

Please complete the following questions on your own.

5. During the last 4 weeks, how many days did your child have any daytime asthma symptoms?

5	4	3	2	1	0	
Not at all	1-3 days	4-10 days	11-18 days	19-24 days	Everyday	

6. During the last 4 weeks, how many days did your child wheeze during the day because of asthma?

5	4	3	2	1	0	
Not at all	1-3 days	4-10 days	11-18 days	19-24 days	Everyday	

7. During the last 4 weeks, how many days did your child wake up during the night because of asthma?

5	4	3	2	1	0	
Not at all	1-3 days	4-10 days	11-18 days	19-24 days	Everyday	

TOTAL

Enter Name

Enter Address

Enter City/State/Zip

Today's Date: _____

Patient's Name: _____

FOR PATIENTS:

Take the Asthma Control Test™ (ACT) for People 12 Years and Older

Know your score. Share your results with your doctor.

Step 1 Write the number of each answer in the score box provided.

Step 2 Add the score boxes for your total.

Step 3 Take the test to the doctor to talk about your score.

1. In the past **4 weeks**, how much of the time did your **asthma** keep you from getting as much done at work, school or at home?

All of the time	1	Most of the time	2	Some of the time	3	A little of the time	4	None of the time	5

2. During the past **4 weeks**, how often have you had shortness of breath?

More than once a day	1	Once a day	2	3 to 6 times a week	3	Once or twice a week	4	Not at all	5

3. During the past **4 weeks**, how often did your **asthma** symptoms (wheezi g, coughing, shortness of breath, chest tightness or pain) wake you up at night or earlier than usual in the morning?

4 or more nights a week	1	2 or 3 nights a week	2	Once a week	3	Once or twice	4	Not at all	5

4. During the past **4 weeks**, how often have you used your rescue inhaler or nebulizer medication (uch as albuterol)?

3 or more times per day	1	1 or 2 times per day	2	2 or 3 times per week	3	Once a week or less	4	Not at all	5

5. How would you rate your **asthma** control durin; the **past 4 weeks**?

Not controlled at all	1	Poorly controlled	2	Somewhat controlled	3	Well controlled	4	Completely controlled	5

SCORE

TOTAL

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If your score is 19 or less, your asthma may not be controlled as well as it could be. Talk to your doctor.

FOR PHYSICIANS:

The ACT is:

- A simple, 5-question tool that is self-administered by the patient
- Clinically validated by specialist assessment and spirometry[1]
- Recognized by the National Institutes of Health

Appendix B

Reference: 1. Nathan RA et al. J Allergy Clin Immunol. 2004;113:59-65.

2020 FOCUSED UPDATES TO THE

Asthma Management Guidelines

AT-A-GLANCE GUIDE

This At-A-Glance Guide describes a treatment management approach based on recommendations from the *2020 Focused Updates to the Asthma Management Guidelines: A Report from the National Asthma Education and Prevention Program Coordinating Committee Expert Panel Working Group*.[1] Step diagrams from the 2007 Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma (EPR-3) were updated with the new recommendations. The diagrams are intended to help clinicians integrate the new recommendations into clinical care, and are meant to assist, and not replace, clinical judgment or decision-making for individual patient management, with input from individuals with asthma about their preferences.

AGES 0–4 YEARS: STEPWISE APPROACH FOR MANAGEMENT OF ASTHMA

	Intermittent Asthma	Management of Persistent Asthma in Individuals Ages 0–4 Years				
Treatment	**STEP 1**	**STEP 2**	**STEP 3**	**STEP 4**	**STEP 5**	**STEP 6**
Preferred	PRN SABA and At the start of RTI: Add short course daily ICS▲	Daily low-dose ICS and PRN SABA	Daily medium-dose ICS and PRN SABA	Daily medium-dose ICS-LABA and PRN SABA	Daily high-dose ICS-LABA and PRN SABA	Daily high-dose ICS-LABA + oral systemic corticosteroid and PRN SABA
Alternative		Daily montelukast* or Cromolyn,* and PRN SABA		Daily medium-dose ICS + montelukast* and PRN SABA	Daily high-dose ICS + montelukast* and PRN SABA	Daily high-dose ICS + montelukast*+ oral systemic corticosteroid and PRN SABA
			For children age 4 years only, see Step 3 and Step 4 on Management of Persistent Asthma in Individuals Ages 5–11 Yearsdiagram.			

Assess Control

- First check adherence, inhaler technique, environmental factors,▲ and comorbid conditions.
- **Step up** if needed; reassess in 4–6 weeks
- **Step down** if possible (if asthma is well controlled for at least 3 consecutive months)

Consult with asthma specialist if Step 3 or higher is required. Consider consultation at Step 2.

Control assessment is a key element of asthma care. This involves both impairment and risk. Use of objective measures, self-reported control, and health care utilization are complementary and should be employed on an ongoing basis, depending on the individual's clinical situation.

Abbreviations: ICS, inhaled corticosteroid; LABA, long-acting beta$_2$-agonist; SABA, inhaled short-acting beta$_2$-agonist; RTI, respiratory tract infection; PRN, as needed

▲ Updated based on the 2020 guidelines.

* Cromolyn and montelukast were not considered for this update and/or have limited availability for use in the United States. The FDA issued a Boxed Warning for montelukast in March 2020.

[1]The full-length report, *2020 Focused Updates to the Asthma Management Guidelines: A Report from the National Asthma Education and Prevention Program Coordinating Committee Expert Panel Working Group*, can be accessed at **nhlbi.nih.gov/asthmaguidelines**.

U.S. Department of Health and Human Services
National Institutes of Health
National Heart, Lung, and Blood Institute

Appendix C

NIH Publication No. 20-HL-8142
December 2020

NOTES FOR INDIVIDUALS AGES 0–4 YEARS DIAGRAM

Quick-relief medications	• Use SABA as needed for symptoms. The intensity of treatment depends on severity of symptoms: up to 3 treatments at 20-minute intervals as needed. • **Caution:** Increasing use of SABA or use >2 days a week for symptom relief (not prevention of EIB) generally indicates inadequate control and may require a step up in treatment. • Consider short course of oral systemic corticosteroid if exacerbation is severe or individual has history of previous severe exacerbations.
Each step: Assess environmental factors, provide patient education, and manage comorbidities▲	• In individuals with sensitization (or symptoms) related to exposure to pests‡: conditionally recommend integrated pest management as a single or multicomponent allergen-specific mitigation intervention.▲ • In individuals with sensitization (or symptoms) related to exposure to identified indoor allergens, conditionally recommend a multi-component allergen-specific mitigation strategy.▲ • In individuals with sensitization (or symptoms) related to exposure to dust mites, conditionally recommend impermeable pillow/mattress covers only as part of a multicomponent allergen-specific mitigation intervention, but not as a single component intervention.▲
Notes	• If clear benefit is not observed within 4–6 weeks and the medication technique and adherence are satisfactory, the clinician should consider adjusting therapy or alternative diagnoses.
Abbreviations	EIB, exercise-induced bronchoconstriction; SABA, inhaled short-acting beta$_2$-agonist. ▲Updated based on the 2020 guidelines. ‡ Refers to mice and cockroaches, which were specifically examined in the Agency for Healthcare Research and Quality systematic review.

WHAT'S NEW (AGES 0–4 YEARS)

- **Step 1:** In children ages 0–4 years with recurrent wheezing, a short (7–10 day) course of daily ICS with as-needed SABA for quick-relief therapy is recommended starting at the onset of a respiratory tract infection.
  - ✓ Recurrent wheezing is defined as at least three episodes of wheezing triggered by apparent infection in their lifetime, or two episodes in the past year, and no symptoms between infections.
  - ✓ One regimen, used in two reviewed studies, is budesonide inhalation suspension, 1 mg twice daily for 7 days at the first sign of respiratory tract infection-associated symptoms.
  - ✓ The main benefit during respiratory tract infections is a reduction in exacerbations requiring systemic corticosteroids.
  - ✓ Caregivers can initiate intermittent ICS treatment at home without a visit to a health care provider when they have clear instructions.
  - ✓ This treatment could affect growth. Carefully monitor growth in children who use this treatment.
- **Steps 3 and 4:** For children age 4 years only with persistent asthma, see Steps 3 and 4 on Management of Persistent Asthma in Individuals Ages 5–11 Years.
- **Each step:**
  - ✓ Consider the severity of an individual's asthma, the small potential benefit, and the extent of previous symptoms and exacerbations when recommending allergen mitigation interventions.

AGES 5–11 YEARS: STEPWISE APPROACH FOR MANAGEMENT OF ASTHMA

	Intermittent Asthma	Management of Persistent Asthma in Individuals Ages 5–11 Years				
Treatment	STEP 1	STEP 2	STEP 3	STEP 4	STEP 5	STEP 6
Preferred	PRN SABA	Daily low-dose ICS and PRN SABA	Daily and PRN combination low-dose ICS-formoterol▲	Daily and PRN combination medium-dose ICS-formoterol▲	Daily high-dose ICS-LABA and PRN SABA	Daily high-dose ICS-LABA + oral systemic corticosteroid and PRN SABA
Alternative		Daily LTRA,* or Cromolyn,* or Nedocromil,* or Theophylline,* and PRN SABA	Daily medium-dose ICS and PRN SABA or Daily low-dose ICS-LABA, or daily low-dose ICS + LTRA,* or daily low-dose ICS +Theophylline,* and PRN SABA	Daily medium-dose ICS-LABA and PRN SABA or Daily medium-dose ICS + LTRA* or daily medium-dose ICS + Theophylline,* and PRN SABA	Daily high-dose ICS + LTRA* or daily high-dose ICS + Theophylline,* and PRN SABA	Daily high-dose ICS + LTRA* + oral systemic corticosteroid or daily high-dose ICS + Theophylline* + oral systemic corticosteroid, and PRN SABA
		Steps 2–4: Conditionally recommend the use of subcutaneous immunotherapy as an adjunct treatment to standard pharmacotherapy in individuals ≥ 5 years of age whose asthma is controlled at the initiation, build up, and maintenance phases of immunotherapy▲			Consider Omalizumab**▲	

Assess Control

- First check adherence, inhaler technique, environmental factors,▲ and comorbid conditions.
- **Step up** if needed; reassess in 2–6 weeks
- **Step down** if possible (if asthma is well controlled for at least 3 consecutive months)

Consult with asthma specialist if Step 4 or higher is required. Consider consultation at Step 3.

Control assessment is a key element of asthma care. This involves both impairment and risk. Use of objective measures, self-reported control, and health care utilization are complementary and should be employed on an ongoing basis, depending on the individual's clinical situation.

Abbreviations: ICS, inhaled corticosteroid; LABA, long-acting beta$_2$-agonist; LTRA, leukotriene receptor antagonist; SABA, inhaled short-acting beta$_2$-agonist

▲ Updated based on the 2020 guidelines.

* Cromolyn, Nedocromil, LTRAs including montelukast, and Theophylline were not considered in this update and/or have limited availability for use in the United States, and/or have an increased risk of adverse consequences and need for monitoring that make their use less desirable. The FDA issued a Boxed Warning for montelukast in March 2020.

** Omalizumab is the only asthma biologic currently FDA-approved for this age range.

National Heart, Lung, and Blood Institute

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NOTES FOR INDIVIDUALS AGES 5–11 YEARS DIAGRAM

Quick-relief medications	• Use SABA as needed for symptoms. The intensity of treatment depends on severity of symptoms: up to 3 treatments at 20-minute intervals as needed. • In Steps 3 and 4, the preferred option includes the use of ICS-formoterol 1 to 2 puffs as needed up to a maximum total daily maintenance and rescue dose of 8 puffs (36 mcg).▲ • **Caution:** Increasing use of SABA or use >2 days a week for symptom relief (not prevention of EIB) generally indicates inadequate control and may require a step up in treatment.
Each step: Assess environmental factors, provide patient education, and manage comorbidities▲	• In individuals with sensitization (or symptoms) related to exposure to pests‡: conditionally recommend integrated pest management as a single or multicomponent allergen-specific mitigation intervention.▲ • In individuals with sensitization (or symptoms) related to exposure to identified indoor allergens, conditionally recommend a multi-component allergen-specific mitigation strategy.▲ • In individuals with sensitization (or symptoms) related to exposure to dust mites, conditionally recommend impermeable pillow/mattress covers only as part of a multicomponent allergen-specific mitigation intervention, but not as a single component intervention.▲
Notes	• The terms ICS-LABA and ICS-formoterol indicate combination therapy with both an ICS and a LABA, usually and preferably in a single inhaler. • Where formoterol is specified in the steps, it is because the evidence is based on studies specific to formoterol. • In individuals ages 5–11 years with persistent allergic asthma in which there is uncertainty in choosing, monitoring, or adjusting anti-inflammatory therapies based on history, clinical findings, and spirometry, FeNO measurement is conditionally recommended as part of an ongoing asthma monitoring and management strategy that includes frequent assessment.
Abbreviations	EIB (exercise-induced bronchoconstriction); FeNO (fractional exhaled nitric oxide); ICS (inhaled corticosteroid); LABA (long-acting beta$_2$-agonist); SABA (inhaled short-acting beta$_2$-agonist). ▲Updated based on the 2020 guidelines. ‡ Refers to mice and cockroaches, which were specifically examined in the Agency for Healthcare Research and Quality systematic review.

WHAT'S NEW (AGES 5–11 YEARS)

- For individuals with mild to moderate persistent asthma who are taking daily ICS treatment (likely adherent with prescribed daily ICS) as a controller, increasing the regular daily ICS dose for short periods is not recommended when symptoms increase or peak flow decreases.
- **Steps 2–4:** Subcutaneous immunotherapy (SCIT) is recommended as an adjunct treatment for individuals who have demonstrated allergic sensitization and evidence of worsening asthma symptoms after exposure to the relevant antigen or antigens.
  - ✓ Do not initiate, increase, or administer maintenance SCIT doses while individuals have asthma symptoms.
  - ✓ Do not administer SCIT in individuals with severe asthma.
- **Steps 3 and 4:** For individuals with moderate to severe persistent asthma already taking low- or medium-dose ICS, the preferred treatment is a single inhaler with ICS-formoterol (referred to as single maintenance and reliever therapy, or "SMART") used both daily and as needed.
  - ✓ Individuals with a severe exacerbation in the prior year are particularly good candidates for SMART to reduce exacerbations.
  - ✓ Do not use ICS-formoterol as reliever therapy in individuals taking ICS-salmeterol as maintenance therapy.
  - ✓ Individuals whose asthma is uncontrolled on maintenance ICS-LABA with SABA as quick-relief therapy should receive the preferred SMART if possible before moving to a higher step of therapy.
  - ✓ In children ages 4–11 years, there may be a lower risk of growth suppression among those taking SMART versus daily higher-dose ICS treatment.
- **Steps 5 and 6:** Consider Omalizumab, the only FDA-approved asthma biologic for this age group.
- **Each step:**
  - ✓ Consider the severity of an individual's asthma, the small potential benefit, and the extent of previous symptoms and exacerbations when recommending allergen mitigation interventions.

AGES 12+ YEARS: STEPWISE APPROACH FOR MANAGEMENT OF ASTHMA

Treatment	Intermittent Asthma: STEP 1	Management of Persistent Asthma in Individuals Ages 12+ Years: STEP 2	STEP 3	STEP 4	STEP 5	STEP 6 ■
Preferred	PRN SABA	Daily low-dose ICS and PRN SABA or PRN concomitant ICS and SABA▲	Daily and PRN combination low-dose ICS-formoterol▲	Daily and PRN combination medium-dose ICS-formoterol▲	Daily medium-high dose ICS-LABA + LAMA and PRN SABA▲	Daily high-dose ICS-LABA + oral systemic corticosteroids + PRN SABA
Alternative		Daily LTRA* and PRN SABA or Cromolyn,* or Nedocromil,* or Zileuton,* or Theophylline,* and PRN SABA	Daily medium-dose ICS and PRN SABA or Daily low-dose ICS-LABA, or daily low-dose ICS + LAMA,▲ or daily low-dose ICS + LTRA,* and PRN SABA or Daily low-dose ICS + Theophylline* or Zileuton,* and PRN SABA	Daily medium-dose ICS-LABA or daily medium-dose ICS + LAMA, and PRN SABA▲ or Daily medium-dose ICS + LTRA,* or daily medium-dose ICS + Theophylline,* or daily medium-dose ICS + Zileuton,* and PRN SABA	Daily medium-high dose ICS-LABA or daily high-dose ICS + LTRA,* and PRN SABA	
		Steps 2–4: Conditionally recommend the use of subcutaneous immunotherapy as an adjunct treatment to standard pharmacotherapy in individuals ≥ 5 years of age whose asthma is controlled at the initiation, build up, and maintenance phases of immunotherapy▲			Consider adding Asthma Biologics (e.g., anti-IgE, anti-IL5, anti-IL5R, anti-IL4/IL13)**	

Assess Control

- First check adherence, inhaler technique, environmental factors,▲ and comorbid conditions.
- **Step up** if needed; reassess in 2–6 weeks
- **Step down** if possible (if asthma is well controlled for at least 3 consecutive months)

Consult with asthma specialist if Step 4 or higher is required. Consider consultation at Step 3.

Control assessment is a key element of asthma care. This involves both impairment and risk. Use of objective measures, self-reported control, and health care utilization are complementary and should be employed on an ongoing basis, depending on the individual's clinical situation.

Abbreviations: ICS, inhaled corticosteroid; LABA, long-acting beta$_2$-agonist; LAMA, long-acting muscarinic antagonist; LTRA, leukotriene receptor antagonist; SABA, inhaled short-acting beta$_2$-agonist

▲ Updated based on the 2020 guidelines.

* Cromolyn, Nedocromil, LTRAs including Zileuton and montelukast, and Theophylline were not considered for this update, and/or have limited availability for use in the United States, and/or have an increased risk of adverse consequences and need for monitoring that make their use less desirable. The FDA issued a Boxed Warning for montelukast in March 2020.

** The AHRQ systematic reviews that informed this report did not include studies that examined the role of asthma biologics (e.g. anti-IgE, anti-IL5, anti-IL5R, anti-IL4/IL13). Thus, this report does not contain specific recommendations for the use of biologics in asthma in Steps 5 and 6.

■ Data on the use of LAMA therapy in individuals with severe persistent asthma (Step 6) were not included in the AHRQ systematic review and thus no recommendation is made.

National Heart, Lung, and Blood Institute

NIH Publication No. 20-HL-8142
December 2020

NOTES FOR INDIVIDUALS AGES 12+ YEARS DIAGRAM

Quick-relief medications	• Use SABA as needed for symptoms. The intensity of treatment depends on the severity of symptoms: up to 3 treatments at 20-minute intervals as needed. • In steps 3 and 4, the preferred option includes the use of ICS-formoterol 1 to 2 puffs as needed up to a maximum total daily maintenance and rescue dose of 12 puffs (54 mcg).▲ • **Caution:** Increasing use of SABA or use >2 days a week for symptom relief (not prevention of EIB) generally indicates inadequate control and may require a step up in treatment.
Each step: Assess environmental factors, provide patient education, and manage comorbidities▲	• In individuals with sensitization (or symptoms) related to exposure to pests‡: conditionally recommend integrated pest management as a single or multicomponent allergen-specific mitigation intervention.▲ • In individuals with sensitization (or symptoms) related to exposure to identified indoor allergens, conditionally recommend a multi-component allergen-specific mitigation strategy.▲ • In individuals with sensitization (or symptoms) related to exposure to dust mites, conditionally recommend impermeable pillow/mattress covers only as part of a multicomponent allergen-specific mitigation intervention, but not as a single component intervention.▲
Notes	• The terms ICS-LABA and ICS-formoterol indicate combination therapy with both an ICS and a LABA, usually and preferably in a single inhaler. • Where formoterol is specified in the steps, it is because the evidence is based on studies specific to formoterol. • In individuals ages 12 years and older with persistent allergic asthma in which there is uncertainty in choosing, monitoring, or adjusting anti-inflammatory therapies based on history, clinical findings, and spirometry, FeNO measurement is conditionally recommended as part of an ongoing asthma monitoring and management strategy that includes frequent assessment. • Bronchial thermoplasty was evaluated in Step 6. The outcome was a conditional recommendation against the therapy.
Abbreviations	EIB, exercise-induced bronchoconstriction; FeNO, fractional exhaled nitric oxide; ICS, inhaled corticosteroid; LABA, long-acting $beta_2$-agonist; SABA, inhaled short-acting $beta_2$-agonist. ▲Updated based on the 2020 guidelines. ‡ Refers to mice and cockroaches, which were specifically examined in the Agency for Healthcare Research and Quality systematic review.

WHAT'S NEW (AGES 12+ YEARS)

- For individuals with mild to moderate persistent asthma who are taking daily ICS treatment (likely adherent with prescribed daily ICS) as a controller, increasing the regular daily ICS dose for short periods is not recommended when symptoms increase or peak flow decreases.
- **Step 2:** For individuals with mild persistent asthma, either of the following two treatments are recommended as part of Step 2 therapy: 1) a daily low-dose ICS and as-needed SABA for quick-relief therapy, or 2) intermittent as-needed SABA and ICS used one after the other for worsening asthma.
  - ✓ One approach to intermittent therapy is two to four puffs of albuterol followed by 80–250 mcg of beclomethasone equivalent every 4 hours as needed for asthma symptoms.
  - ✓ Intermittent therapy can be initiated at home with regular provider follow-up to ensure that the intermittent regimen is still appropriate.
  - ✓ Individuals with either low or high perception of symptoms may not be good candidates for as-needed ICS therapy. Daily low-dose ICS with as-needed SABA may be preferred.
- **Steps 2–4:** Subcutaneous immunotherapy (SCIT) is recommended as an adjunct treatment for individuals who have demonstrated allergic sensitization and evidence of worsening asthma symptoms after exposure to the relevant antigen or antigens.
  - ✓ Do not initiate, increase, or administer maintenance SCIT doses while individuals have asthma symptoms.
  - ✓ Do not administer SCIT in individuals with severe asthma.
- **Steps 3 and 4:** For individuals with moderate to severe persistent asthma already taking low- or medium-dose ICS, the preferred treatment is a single inhaler with ICS-formoterol (referred to as single maintenance and reliever therapy, or "SMART") used both daily and as needed.
  - ✓ Individuals with a severe exacerbation in the prior year are particularly good candidates for SMART to reduce exacerbations.
  - ✓ Do not use ICS-formoterol as reliever therapy in individuals taking ICS-salmeterol as maintenance therapy.
  - ✓ Individuals whose asthma is uncontrolled on maintenance ICS-LABA with SABA as quick-relief therapy should receive the preferred SMART if possible before moving to a higher step of therapy.
- **Each step:**
  - ✓ Consider the severity of an individual's asthma, the small benefit, and the extent of previous symptoms and exacerbations when recommending allergen mitigation interventions.

Asthma Action Plan

Name: Enter Name _____ **Date:** ____/____/_____

Doctor's Name: _____ **Main Emergency Contact:** _____

Doctor's Phone Number: _____ **Backup Emergency Contact:** _____

Green Zone: No coughing, wheezing, chest tightness, or shortness of breath. Can do usual activities.

Doing Well

Every day: Take these medicines, even if you're not having any symptoms. Avoid triggers that you know make your asthma worse.

Medicine	How much to take	When to take

Before you exercise: Take [ ]2 or [ ]4 Puffs of _____ 5 minutes before you start, as needed.

Yellow Zone: One or more of these symptoms: coughing, wheezing, chest tightness, breathing trouble, waking up at night due to asthma. Or, if you can only do some, but not all, usual activities.

Some Symptoms

Keep taking your Green Zone medicine and avoiding triggers as usual, AND take this medicine:

Medicine	How much to take and how often		
(Quick-relief)	_____ Puffs Can repeat every ___ minutes, Up to ___ times	OR	Nebulizer: Use it once

If you return to the Green Zone after 1 hour, keep monitoring to ensure that you stay there.

If you do not return to the Green Zone after 1 hour, take this medicine:

Medicine	How much to take and how often		
(Quick-relief)	_____ Puffs	OR	Nebulizer: Use it once
AND: (Oral Steroid)	Take_____mg each day for____(3 to 10) days		

Call your doctor (or have someone call) just before you take the oral steroid OR_____minutes/hours after taking the oral steroid, based on the instructions your doctor gave when the medicine was prescribed.

Asthma Action Plan

Name: Enter Name _____ **Date:**____/____/_____

Doctor's Name:_____ **Main Emergency Contact:** _____

Doctor's Phone Number:_____ **Backup Emergency Contact:** _____

Red Zone: EMERGENCY! Very short of breath, or quick- relief medicines have not helped, or symptoms are the same or worse after 24 hours in the Yellow Zone. Or, if you cannot do any of your usual activities.

Severe Symptoms Emergency

Take this medicine	How much to take		
(Quick-relief)	_____ Puffs Can repeat every___minutes, up to___times	OR	Nebulizer: Can repeat every ___minutes, up to ___times
(Oral steroid)	Take_____mg.		

After you take your medicine, call your doctor right away!
If you're still in the Red Zone after 15 minutes and have not reached your doctor, go to the hospital or call 911!

If you have these DANGER SIGNS: trouble walking or talking due to shortness of breath or your lips or fingernails are blue, pale, or gray, take_____puffs of your quick- relief medicine and GO to the hospital or call 911 NOW!

These DANGER SIGNS mean you need help right away. Don't wait to hear back from your doctor. GO to the hospital or call 911 NOW!

If you use a peak flow meter you can use these scores to determine your current zone:

Your best score	Your green zone	Your yellow zone	Your red zone
_____	_____ or higher (80% of best score)	_____ to _____ (50 to 80% of best score)	_____ or lower (50% of best score)

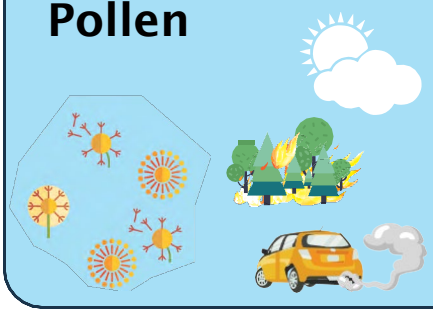
Know Your Asthma Triggers

Learn how to avoid triggers to control your asthma.

Triggers are things that make your asthma symptoms worse. People with asthma do not all have the same triggers. Avoiding your triggers is one step you can take to help keep your asthma under control. Work with your healthcare provider to check whether any of these things make your asthma worse, then take the related steps below. Check CDC's webpage for other steps you can take: www.cdc.gov/asthma

Outdoor Triggers

Weather
Air Quality
Pollen



- Pay attention to radio, television, the internet, or newspaper reports about things that might trigger your asthma. These might include reports about weather, air quality, pollen count, or wildfire conditions.
- Plan outdoor activities for when the air quality is best.
- If pollen triggers your asthma, close windows and turn on air conditioning (if possible) when pollen levels are high.
- When there are wildfires, stay away from areas where there is smoke or vapors. Stay indoors, if possible, to avoid smoke or vapors.
- When it is cold, wear a scarf or face mask that covers your nose and mouth to keep airflow as warm as possible.

Indoor Triggers

If you are allergic to dust mites, cockroaches, rodents, indoor mold, or pets, use an air purifier with a high-energy particulate air (HEPA) filter, and use HEPA filters for vacuum cleaners. Keep your home as clean as possible. If you can, ask someone else to clean your home regularly, or wear a dust mask while you clean.

Pets

If you are allergic to your pet, the best way to avoid exposure is to remove the pet from your home and have the house cleaned. If you can't remove the pet:

- Keep the pet out of your bedroom.
- Ask a family member to wash your pet regularly.
- Use allergen-proof pillow and mattress covers.
- Use an air cleaner with HEPA filter.

Note: Pet fur, skin, and saliva trigger some people's asthma.

Dust mites

(tiny bugs that live in dust and fabric)

- Keep relative humidity levels in your home low, around 30%–50%.
- Wash your bedding every week and dry completely.
- Use allergen-proof pillow and mattress covers.

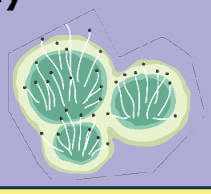
Know Your Asthma Triggers.

Indoor Triggers

Cockroaches
Mice
Rats

- Keep your kitchen clean and store food and garbage in closed containers.
- Don't leave out any standing water or other liquids.
- Seal cracks or openings in cabinets, walls, floorboards, and around plumbing.
- Use traps or poison bait to get rid of roaches, mice, or rats. Keep bait away and out of reach of children and pets. Avoid sprays and foggers.

Mold
Humidity



- Fix water leaks as soon as possible and dry damp or wet items within 48 hours.
- Remove all moldy items from your home.
- Use an air conditioner or dehumidifier to keep the air dry in your home. Keep relative humidity levels in your home low, around 30%–50%.
- Empty and clean refrigerator and air conditioner drip pans regularly.
- Use bathroom exhaust fans or open windows when you shower.

Smoke
Sprays
Scents
Disinfectants

- Avoid places where people smoke. If you smoke, ask your healthcare provider how to quit.
- Don't use a wood-burning stove, kerosene heater, or fireplace.
- Avoid perfume, paint, hairspray, and talcum powder.
- Try to stay away when cleaners or disinfectants are being used and right after their use.
- Increase air flow by opening doors and windows and turning on exhaust fans.

Other Common Triggers

Illness

- Contact your healthcare provider if you think you have another health problem that is making it harder for you to breathe. Such problems might include the flu, a cold, acid reflux (heartburn), a sinus infection, severe allergies, or another health concern.

Emotions

- Talk to your healthcare provider if anxiety, stress, or other emotions make your asthma worse.

Notes:

What Are Your Asthma Triggers?

AMERICAN LUNG ASSOCIATION.

Trees

Mold

Cleaners

Indoor/Outdoor Dust

Mites

Roaches

Paint Fumes

Car Fumes

Scents

Wood Burning Smoke

Pets

Smoking

Mold

Cooking Scents Smoke

Pests

Flowers

Appendix F

American Lung Association.

Programs Available to Support Lung Health

Asthma Basics — In Person or Online
Lung.org/asthma-basics

Asthma Basics program features a FREE one-hour interactive online learning module designed to help people learn more about asthma. Participants are able to obtain a certificate upon successful completion of the course. The Asthma Basics online learning module is available in English and Spanish.

Advocacy Basics
Lung.training/courses/advocacy-basics

The Advocacy Basics course is a free, 45-minute interactive online learning program designed to help people understand more about lung health advocacy and how they can get involved. In this course, participants will learn about the difference between advocacy and lobbying, how state and federal bill processes work, and how to advocate and speak with legislators.

Radon Basics
Lung.org/radon-basics

Radon Basics course is a free one-hour interactive online learning program designed to help people understand more about radon, a radioactive gas commonly found indoors at dangerous levels. The program is also appropriate for anyone who wants to learn more about radon and how to test it and fix problems. Individuals who smoke or who have a family history of lung cancer, or parents and guardians, may be especially interested.

Tobacco Basics
Lung.org/quit-smoking/smoking-facts/tobacco-basics

Tobacco Basics is a free one-hour online course including five learning modules designed to lay the foundation in understanding the toll of tobacco use in the U.S. In this course participants will learn the difference between tobacco products, including e-cigarettes and vaping devices; the effects of tobacco use on the human body and brain; nicotine dependence and why quitting is so challenging; proven policies that protect public health from the toll of tobacco; and the programs available to help all tobacco users successfully quit for good.

Kickin' Asthma
Lung.org/kickin-asthma

Kickin' Asthma is a program that educates and empowers children through a fun and interactive approach to asthma self-management. The program teaches children with asthma ages 11 to 16 the concepts of taking responsibility and self-management, and taking action early so that they don't need to go to the emergency room.

Open Airways For Schools®
Lung.org/open-airways

Open Airways For Schools® is a program that educates and empowers children through a fun and interactive approach to asthma self-management. The program teaches children with asthma ages 8 to 11 how to detect the warning signs of asthma, avoid their triggers, and make decisions about their health.

The Breathe Well, Live Well®
Lung.org/breathe-well

The Breathe Well, Live Well® Educator Training prepares health professionals, health educators and community health workers to deliver asthma self-management education to adults and families using the American Lung Association's Breathe Well, Live Well program. The program teaches adults the management steps to take control of their asthma so they can be active and healthy.

Asthma-Friendly Schools Initiative
Lung.org/afsi

The Asthma-Friendly Schools Initiative provides a framework and tools that communities and schools can use to work together on a comprehensive approach to asthma management, including planning tools, policy recommendations, and education programs.

Asthma Medication in Schools: Assessing a Child's Readiness to Carry and Use a Quick-Relief Inhaler
Lung.training/courses/readiness

A free interactive online learning module designed to assist designated school health staff assess a child's readiness to carry and use a quick-relief inhaler. This course will teach participants to: describe the barriers to access to asthma medication in schools; overcome barriers with a variety of resources; assess a child's readiness to self-carry asthma medications in schools; and implement support activities for all students with asthma regardless of their level of independence. Learn more.

Four Steps for Creating an Asthma-Friendly School
Lung.training/courses/four-steps

The American Lung Association's Four Steps for Creating an Asthma-Friendly School is a series of short interactive modules designed to help schools and school districts create a safe and healthy learning environment for students with asthma. In this course, you will learn how to create a comprehensive asthma management plan using the Asthma-Friendly Schools Initiative Toolkit.

Not On Tobacco® Group (N-O-T)
Lung.org/NOT

N-O-T is the American Lung Association's voluntary smoking cessation program for teens 14 to 19. Over the 10-week program, participants learn to identify their reasons for vaping, smoking, or chewing, as well as identify healthy alternatives to tobacco use, and people who will support them in their efforts to quit.

INDEPTH ® (Intervention for Nicotine Dependence: Education, Prevention, Tobacco and Health)
Lung.org/INDEPTH

The American Lung Association's INDEPTH program is an alternative to suspension or citation program that is offered as an option to students who face suspension for violation of school tobacco or nicotine use policies. An adult facilitator administers this program in either a one-on-one or group format and can be offered in a school or community-based setting. The program consists of four sessions of approximately 50 minutes geared towards youth and focused on tobacco use, nicotine addiction, establishing healthy alternatives, and making the change to be free of all nicotine and tobacco products. For students who choose the INDEPTH program, attendance is *mandatory*.

Freedom From Smoking®

Lung.org/freedom-from-smoking

The Freedom From Smoking® program is for tobacco users who are ready to quit. Because most people already know that smoking is bad for their health, the program focuses almost exclusively on how to quit, not why to quit. The program uses techniques based on pharmacological and psychological principles and methods designed to help tobacco users gain control over their behavior and break their addiction. Because no single quit-smoking method is effective for all tobacco users, the program includes a comprehensive variety of evidence-based, proven-effective cessation techniques.

Vape-Free Schools Initiative

Lung.org/vape-free-schools

To help schools navigate the vaping public health emergency with tools to protect and support students impacted by vaping, we invite all schools nationwide to become a recognized member of the American Lung Association Vape-Free Schools Initiative. Being recognized as a member of the American Lung Association Vape-Free Schools Initiative means that your school is a leader in supporting students impacted by the youth vaping epidemic, offering education, cessation, and support. One or more of your school personnel has completed: INDEPTH® facilitator training, N-O-T® facilitator training, and a tobacco-free school policy assessment.

Lung HelpLine

Lung.org/helpline

To help schools navigate the vaping public health emergency with tools to protect and support students impacted by vaping, we invite all schools nationwide to become a recognized member of the American Lung Association Vape-Free Schools Initiative. Being recognized as a member of the American Lung Association Vape-Free Schools Initiative means that your school is a leader in supporting students impacted by the youth vaping epidemic, offering education, cessation, and support. One or more of your school personnel has completed: INDEPTH® facilitator training, N-O-T® facilitator training, and a tobacco-free school policy assessment.

Pennsylvania Pediatric Asthma Control Program:

Workflow Modifications Your Practice Can Implement to Help Improve Pediatric Asthma Management

The following list includes workflow modifications that can be implemented to help your practice and patients better manage pediatric patients diagnosed with asthma. We encourage you to partner with Quality Insights to implement at least one of the recommendations listed below. If you are not currently working with Quality Insights and would like assistance, please email Robina Montague, RN, or call **267-642-0904.**

Electronic Health Record (EHR) Actions

	Generate an EHR report of patients with asthma (J45.XX diagnosis code) to ensure an asthma diagnosis code is added to the Problem List. Explore EHR capabilities to add clinical decision support (CDS) alerts or prompts.
	Execute an EHR report on patients with asthma who have not had a wellness appointment or disease management appointment in the last six months. Perform outreach utilizing phone calls, text messaging, and/or patient portal to schedule a follow-up appointment for an asthma check.
	Review EHR dashboards to identify opportunities for asthma management in subsets of patients. Determine EHR capabilities for identification and reporting on priority populations (underserved) and disparities, including positive responses to social determinants of health (SDOH) screening.
	Utilize EHR templates for Asthma Control Tests (ACT) and Asthma Action Plans (AAP). Update/review both at every visit and educate the patient.
	Evaluate and document SDOH ICD-10 codes. Partner with Quality Insights to mitigate barriers related to the use of SDOH identification tools and ICD-10 coding.
	Implement a process for documenting all referrals (including specialist, Asthma Self-Management & Education (AS-ME), and community-based organizations) in structured data fields or via a non-EHR tracking method for monitoring feedback and participation.

Protocol & Workflow Actions

	Review practice protocols with a focus on disparate populations for sharing and discussing asthma control and management among clinicians and providers.
	Develop an asthma office protocol that promotes current guidelines, AS-ME, medication adherence, healthy diet, physical activity, and promotion of lifestyle change programs.
	Implement annual staff training to review: 1) appropriate procedures for obtaining an accurate spirometry or peak flow reading, and 2) competency in teaching proper techniques for inhaler use with the teach-back method.

Practice & Clinical Solutions

Using the 2024 Pediatric Asthma Practice Education Module as a guide:

	Utilize and share asthma inhaler instructional videos with patients (i.e., waiting room, patient portal, email, text messaging). Additional videos are also available.
	Share the asthma patient engagement video, ***Small Steps to Big Improvements***, from Quality Insights and the PA DOH Asthma Control Program (available in English and Spanish). English Spanish
	Implement a proactive Outpatient Asthma Monitoring Program. Identify a staff member who can act as an Asthma Champion and partner with a Quality Insights Practice Transformation Specialist for resources and technical assistance.
	Promote apps, Bluetooth, and patient portals to improve the reporting of childhood asthma control test results to clinicians by patients/parents and caregivers.
	Review capability and use of telehealth for the management of pediatric asthma.
	Identify and refer eligible patients to AS-ME as available in the area, including Supplemental Nutrition Assistance Program Education (SNAP-Ed) programs and Expanded Food and Nutrition Education Programs.
	Establish a closed-loop referral process with an AS-ME program. Partner with Quality Insights for a portal message or text campaign to encourage referrals to the program.
	Participate in an in-person or virtual presentation to learn more about American Lung Association Open Airways for Schools and/or Kickin' Asthma AS-ME programs.

Patient Education Actions

	Share community resources with patients, promoting CDC-approved programs for asthma self-management and education (e.g., American Lung Association Open Airways for Schools and Kickin' Asthma).
	Provide patient education on how to use inhalers.
	Create and review an Asthma Action Plan with the patient, parent/caregiver.
	Start asthma education early by teaching younger children about their condition using age-appropriate resources, such as Dusty the Asthma Goldfish and His Asthma Triggers Funbook.

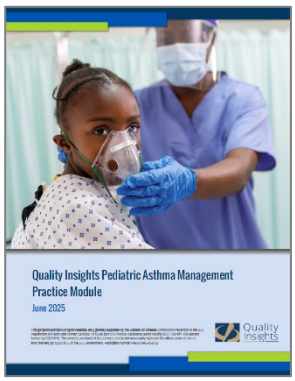
This [project/publication/program/website, etc.] [is/was] supported by the Centers for Disease Control and Prevention of the U.S. Department of Health and Human Services (HHS) as part of a financial assistance award totaling $637,729, with 100 percent funded by CDC/HHS. The contents are those of the author(s) and do not necessarily represent the official views of, nor an endorsement by CDC/HHS, or the U.S. Government. Publication number PADOH-AS-052025

Quality Insights

Quality Insights Pediatric Asthma Practice Education Module

Earn Free Continuing Medical or Nursing Education Credits (1.0 credit hours)

Description



The Asthma and Allergy Foundation of America (AAFA) identified four Pennsylvania cities in their 2024 list of the Top 100 Asthma Capitals: #1 Allentown, #5 Philadelphia, #14 Harrisburg, and #45 Pittsburgh. This report's ranking is based on weighted outcomes: asthma prevalence, asthma-related emergency department visits, and asthma-related deaths.

According to the Centers for Disease Control and Prevention (CDC), in 2020, **11.5% of Pennsylvania children ages 0-17 had asthma.**

This program provides an in-depth review of the Quality Insights 2024 Pediatric Asthma Management Module. This module was developed through a partnership with Quality Insights and the Pennsylvania Department of Health Asthma Control Program with CDC-grant funding. The purpose of this course is to support and supplement practice quality improvement efforts related to pediatric asthma management. The information presented is appropriate for physicians, physician assistants, nurse practitioners, nurses, and other clinical support staff.

After completing this evidence-based program, the learner will be able to:

1. Explain asthma severity assessment and categorization.
2. Implement key aspects of proactive asthma practice management.
3. Utilize your electronic health record (EHR) to identify, monitor, and manage patients living with asthma.

CME/CEU Requirements

Receive continuing education credit now through June 6, 2028 by:

1. Attending an in-person or virtual presentation **or** reading the Pediatric Asthma Practice Education Module located on the Quality Insights website.
2. If you choose the virtual option, watch the recorded presentation.
3. Complete an online evaluation as part of a 60-minute learning activity.

For questions related to this course or to schedule a live presentation, please contact Robina Montague, RN, at RMontague@qualityinsights.org.

Scan to access the online evaluation

Accreditation

Nursing: The CAMC Institute for Academic Medicine is an approved provider of continuing nursing education by the American Nurses Credentialing Center's Commission on Accreditation. This offering has been approved for one contact hour (JA0026-22-22-450) and expires 6/6/2028.

Physicians: The CAMC Institute for Academic Medicine designates this live activity for a maximum of 1 hour for AMA PRA Category I Credit(s)™. Physicians should only claim credit commensurate with the extent of their participation in the activity.

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Appendix I