CONDITION

Asthma in children

Learn how childhood asthma affects breathing, how it is diagnosed, and how medicines, trigger control, and an asthma action plan can help.

WHAT IT IS
Long-term inflammatory airway condition

BODY SYSTEM
Lungs and breathing

MAIN SYMPTOMS
Wheezing, coughing, shortness of breath, chest tightness

WHAT CAUSES IT
Inherited tendency, environmental exposure, immune overresponse

HOW IT IS DIAGNOSED
Clinical assessment and breathing tests

MAIN TREATMENT
Inhaled medicines, trigger control, asthma action plan

CAN IT BE CURED?
No, long-term condition requiring ongoing management

IS IT AN EMERGENCY?
Sometimes, severe breathing difficulty

LONG-TERM OUTLOOK
Normal activities for most, but severe attacks can be life-threatening

Overview

Asthma is a long-term condition that affects the airways, the tubes that carry air in and out of the lungs. In a child with asthma, these airways can become inflamed and overly sensitive. During a flare, muscles around the airways tighten, the lining swells, and extra mucus may form. This makes it harder to move air, especially when breathing out.

Symptoms may come and go. A child can breathe normally between episodes yet have coughing, wheezing, or shortness of breath after a viral infection, exercise, or another trigger. Some children have symptoms only at certain times of year. Others need daily treatment to keep inflammation under control.

Asthma can affect sleep, school attendance, sports, and family activities. Severe attacks can be dangerous, but most children can take part in normal activities when asthma is recognized

and managed. Treatment usually combines appropriate medicine, correct inhaler technique, trigger reduction, and a written asthma action plan.

Asthma is not contagious. It is also not caused by a child being anxious or physically unfit. Strong emotions and exercise can trigger symptoms in sensitive airways, but they are not the underlying cause.

Symptoms

Asthma symptoms vary by age and from one child to another. They may develop gradually or start during a respiratory infection.

Common symptoms include:

Not every child with asthma wheezes. A repeated cough may be the main symptom, although cough has many possible causes. Infants and toddlers may have noisy breathing, feeding difficulty, reduced activity, or repeated episodes of wheezing with viral infections.

Patterns can provide useful clues. Symptoms that recur, worsen at night, appear with specific triggers, or improve after asthma medicine may support an asthma diagnosis. A clinician still needs to consider other explanations.

Seek prompt medical advice if symptoms are becoming more frequent, waking the child, limiting normal activity, or requiring more quick-relief medicine than the asthma action plan recommends.

Call emergency services if a child is struggling to breathe, cannot speak or drink normally because of breathlessness, has marked pulling in around the ribs or neck, becomes unusually sleepy or confused, or develops blue or gray lips or skin. Emergency help is also needed when prescribed quick-relief treatment is not helping or the child is getting worse quickly.

- Wheezing, which is a high-pitched or whistling sound during breathing
- A cough that is worse at night, early in the morning, with exercise, or during a cold
- Shortness of breath or fast breathing
- Chest tightness, which a younger child may describe as a sore chest or "feeling funny"
- Trouble keeping up with other children during active play
- Waking because of coughing or breathing problems
- Needing a prescribed quick-relief inhaler more often than expected

Causes and risk factors

Asthma does not have one single cause. It is thought to develop through a combination of inherited tendency and environmental exposure. The immune system and airways respond too strongly to substances or conditions that are usually harmless.

A child may be more likely to develop asthma if they have a parent or sibling with asthma. Eczema, food allergy, and allergic rhinitis, often called hay fever, are also linked with asthma. Premature birth, exposure to tobacco smoke, and some early-life respiratory infections may increase risk. Having one or more risk factors does not mean that a child will develop asthma.

Once asthma is present, several factors can trigger symptoms or attacks. Common triggers include viral respiratory infections, pollen, dust mites, mold, animal allergens, tobacco or cannabis smoke, air pollution, cold air, strong odors, and changes in weather. Exercise, laughing, crying, or strong emotions can also bring on symptoms.

Triggers are not the same for every child. Broad restrictions may not help and can place an unnecessary burden on the family. For example, removing a pet may not improve asthma unless the child is actually sensitive to that animal. A clinician may recommend targeted allergy assessment when the history suggests an allergic trigger.

Smoke and aerosol exposure are important to address. Children should not be exposed to smoking or vaping in the home or car. Smoke particles can remain on clothing and surfaces even when someone smokes outside.

Diagnosis

There is no single test that confirms asthma in every child. Diagnosis is based on the pattern of symptoms, medical and family history, examination, and, when possible, breathing tests. The examination may be normal when the child is not having symptoms.

The clinician will ask when symptoms occur, what seems to trigger them, whether they disturb sleep, and whether the child has needed urgent care. Information about eczema, allergies, family history, smoke exposure, home conditions, medicines, and school or sports symptoms can be helpful.

Spirometry is a common breathing test for children who are old enough to follow the instructions, often from about age 5 or 6. The child blows forcefully into a machine that measures how much air can be exhaled and how quickly. Testing may be repeated after an airway-opening medicine. A meaningful improvement can support the diagnosis, although normal results do not always rule out asthma.

Other tests may be considered when the diagnosis remains uncertain. These can include

repeated lung-function measurements, exercise or airway-challenge testing, and fractional exhaled nitric oxide, or FeNO. FeNO measures a gas in exhaled breath that can be associated with one type of airway inflammation. It is an additional tool rather than a stand-alone asthma test.

Diagnosing asthma in preschool children can be difficult because viral infections commonly cause wheezing at this age. A clinician may follow the pattern over time and assess the response to a supervised treatment trial. Chest X-rays and allergy tests are not routinely needed to diagnose straightforward asthma, but they may help answer specific questions.

Other conditions can resemble asthma, including inhaled foreign objects, airway abnormalities, reflux, vocal cord problems, chronic infection, and some heart or lung conditions. The clinician may investigate these when symptoms are unusual or treatment is not working as expected.

Treatment and management

Asthma treatment is matched to the child's age, symptom pattern, risk of attacks, and response to previous care. The goal is for the child to sleep well, attend school, exercise, and avoid serious flares with as few medicine side effects as possible.

Most asthma medicines are inhaled so they reach the airways directly. A metered-dose inhaler is usually used with a spacer, a holding chamber that makes it easier for medicine to reach the lungs. Young children may need a spacer with a face mask. Technique should be checked regularly because small errors can greatly reduce the amount of medicine delivered.

Asthma medicines generally have two roles:

Long-acting bronchodilator medicines should not be used alone for asthma; when prescribed, they are combined with an inhaled corticosteroid like budesonide or fluticasone . Children with severe asthma that remains uncontrolled despite standard treatment may be referred to a specialist. Additional options can include targeted injectable medicines called biologics.

Short courses of corticosteroid medicine taken by mouth may be used for significant attacks. Because repeated courses can cause important side effects, they are not a substitute for good long-term control.

Inhaled corticosteroids like budesonide or fluticasone can cause hoarseness or oral thrush, a yeast infection in the mouth. Using a spacer when appropriate and rinsing the mouth after treatment can reduce these effects. Clinicians usually monitor growth as part of routine asthma care. Poorly controlled asthma can also affect growth, sleep, and overall health, so treatment decisions balance risks and benefits.

Montelukast is a non-steroid controller option in selected situations. It carries a boxed warning

in the United States about serious mood, sleep, and behavior changes. Families should discuss these risks with the prescriber and report concerning changes promptly.

Every child with asthma should have a written action plan prepared with their healthcare team. It should explain daily treatment, how to recognize worsening asthma, what medicine to use, and when to seek urgent or emergency help. The plan should be shared with the school, caregivers, coaches, and others responsible for the child.

Regular physical activity should usually be encouraged rather than avoided. If exercise often causes symptoms, the treatment plan may need adjustment.

- Controller treatment reduces airway inflammation and lowers the risk of symptoms and attacks. Inhaled corticosteroids like budesonide or fluticasone are the main controller medicines for most children who need ongoing treatment. These are anti-inflammatory medicines and are different from anabolic steroids.
- Reliever treatment is used according to the asthma action plan when symptoms occur. The exact reliever approach depends on the child's age, local approvals, and treatment plan. It may involve a short-acting airway-opening medicine or, for some children, an inhaler that combines an inhaled corticosteroid like budesonide or fluticasone with a rapid-acting bronchodilator.

Complications

Poorly controlled asthma can lead to repeated attacks, emergency visits, hospitalization, disturbed sleep, missed school, and reduced participation in play or sports. A severe asthma attack can become life-threatening.

Frequent symptoms may also affect mood and confidence. Some children begin avoiding activity because they expect to become breathless. Effective treatment should support normal participation rather than require routine limits.

Medicine-related problems can occur when technique is poor, doses are missed, or treatment is used differently from the plan. Side effects are also possible. Regular review helps ensure that the child is receiving enough treatment to control asthma without unnecessary medicine exposure.

Follow up

Asthma should be reviewed periodically and after a significant flare, emergency visit, hospital stay, or major treatment change. Routine follow-up is also important when the child seems well

because airway inflammation and attack risk do not always match day-to-day symptoms.

At visits, the healthcare team may review daytime and nighttime symptoms, activity limits, school absences, reliever use, and recent attacks. They should check inhaler and spacer technique, medicine access, adherence, side effects, growth, trigger exposure, and the asthma action plan. Lung-function testing may be repeated when the child is able to perform it.

If control is poor, the clinician will usually check technique, missed treatment, triggers, and other health conditions before increasing therapy. If asthma remains well controlled over time, treatment may sometimes be reduced under medical supervision. Controller medicine should not be stopped or changed without discussing it with the prescriber.

Contact the healthcare team between routine visits if symptoms increase, the child repeatedly needs reliever medicine, treatment interferes with daily life, or there are possible medicine side effects. Use the action plan for urgent symptoms and seek emergency care for severe breathing difficulty.

Sources

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