

Asthma Today



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From the very young to the elderly, asthma affects 24 million people in the United States, according to the Centers for Disease Control and Prevention (CDC). Between 2001 and 2011, the number of people with asthma in the U.S. increased by 28 percent. This challenging respiratory disease has taken its toll on our health and finances. Government agencies estimate that asthma costs the U.S. \$56 billion annually in medical bills, lost school and workdays, and premature deaths. Nearly three in five people with asthma say it interferes with their daily lives, causing them to limit their typical activities.

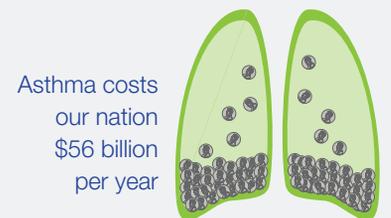
With this resource, you will learn:

- The Definition of Asthma
- Asthma Triggers
- How Asthma Is Diagnosed
- Treatments for Asthma
- New Research on Asthma
- Opportunities to Learn More

According to CDC statistics, asthma accounts for 479,000 hospitalizations, 1.9 million emergency room visits, and 8.9 million doctor visits each year. There is currently no cure for asthma, but it can be controlled with medicine and lifestyle changes.

Asthma causes the breathing tubes, or airways, that carry air in and out of your lungs to become inflamed, and filled with mucus.

FACTS & FIGURES



1 in 4
African-American adults can't afford their asthma medicines



1 in 5
Hispanic adults can't afford their asthma medicines



1 in 11 children have asthma



1 in 12 adults have asthma



1 in 5 children with asthma went to an emergency department for asthma-related care

Source: U.S. Centers for Disease Control and Prevention

Ultimately, the muscles around the breathing tubes tighten, narrowing them and making it difficult to breathe. The most common symptoms of asthma are coughing, shortness of breath, chest tightness, and wheezing

(a whistling sound in the chest). An asthma attack can be mild, moderate, or serious—even life-threatening. Often starting in childhood, the disease is chronic, which means it could last a lifetime.

Each year, the American Thoracic Society (ATS) International Conference presents the latest findings from asthma research conducted around the world. *Asthma Today*, part of the ATS Patient Information Series, shares this research as we continue to expand our knowledge of this common, yet complex, disease.

THE HISTORY OF ASTHMA

The earliest recorded reference to respiratory problems resembling asthma is from ancient China in 2600 BC. The Greeks called it “asthma” because the word means “short of breath.” London physician Henry Hyde Salter, who studied asthma in himself and his patients, contributed the most to understanding asthma in the 19th century. He helped advance the understanding of asthma and identified some common “triggers” that bring on asthma symptoms.

Now, the role of airway inflammation in asthma has been clearly defined, which has led to the development of a number of anti-inflammatory medicines.

Today, health care providers know that a combination of environmental and genetic factors can play a role in the airway inflammation that is a hallmark of asthma. As they study these factors, researchers are greatly increasing our knowledge of asthma. They are identifying distinct types of asthma, which in the future should allow health care providers to offer patients “precision medicine” based on their individual disease biology.

ASTHMA TRIGGERS AND HEALTH ISSUES

Asthma triggers vary from person to person. Irritants (such as air pollution and cigarette smoke) and allergies (such as animal dander, cockroaches, mold, and pollen) are common triggers for asthma. Additional triggers can include respiratory infections, cold air, exercise, and stress. Certain medicines, such as aspirin and other over-the-counter painkillers known as nonsteroidal anti-inflammatory drugs (NSAIDs), and beta blockers, can trigger or worsen asthma. Sulfites found in

COMMON ASTHMA TRIGGERS

Many factors can cause an asthma attack. If you have asthma, you need to be aware of your triggers and avoid them.

Tobacco Smoke

Although no one should smoke or be exposed to secondhand smoke, smoking risks for those with asthma are particularly high.



Dust Mites

Several types of dust mites live in almost every home and are commonly found in pillows, bedding, and mattresses. Use allergen-proof pillow and mattress covers, wash sheets and blankets weekly in hot water and dry completely at a high temperature, and don't allow pillows to become damp (i.e., don't rest your head on a pillow with wet or damp hair). Remove stuffed animals and clutter from your bedroom.



Outdoor Air Pollution

Air pollution commonly comes from factories and cars. Follow air quality forecasts in newspapers or on radio, television, and the internet, and plan your outdoor activities for when air pollution levels will be low.



Cockroaches

Cockroach droppings often are found in water and food sources, and where food crumbs accumulate. Keep your home clean by sweeping and vacuuming every two or three days and use roach traps or gels to reduce the cockroach population.



Upper Respiratory Infection

The common cold (i.e., a viral upper respiratory infection) is a common cause of an asthma exacerbation. Individuals who develop asthma attacks whenever they get a cold should discuss this with their health care provider, as they may benefit from additional medicine at the earliest sign of a cold.



Smoke from Burning Wood

Smoke from burning wood or plants contains harmful gases and small particles, so avoid burning wood in your home.



Pets

Cat allergies are twice as common as dog allergies. If you have a furry pet, vacuum often. If your floors have a hard surface, such as wood or tile, damp-mop them every week. Bathe pets every week and keep them outside the bedroom.



Mold

High humidity can lead to mold. An air conditioner or dehumidifier will help reduce the humidity. Use a hygrometer to check humidity levels and keep them below 50 percent. Fix water leaks, which let mold grow.



Certain Medications

Some medications, such as aspirin, ibuprofen, and beta-blockers, can cause or worsen asthma symptoms.



certain foods and drinks, including wine, may also trigger asthma problems in some people.

Underlying health problems may contribute to asthma severity or make it more difficult to control. For instance, sleep apnea, gastroesophageal reflux, and sinus infections make controlling asthma more difficult.

During the ATS 2016 International Conference, experts reported on the growing body of evidence indicating that asthma is often tied to obesity and is often found in people with metabolic syndrome, a condition associated with diabetes and high blood pressure.

Your genes appear to have a strong role as well. A young person is 30 percent more likely to have asthma if one parent has it. That number jumps to 70 percent if both parents have asthma. Allergies, which can trigger asthma, may also be inherited (run in the family).

Socioeconomic factors and race have been associated with a higher risk for developing asthma. At-risk populations for asthma include children, women, African-Americans, Hispanics, and individuals at lower education and income levels.

Socioeconomic factors and race have been associated with a higher risk for developing asthma. People who are at higher risk to develop asthma include children, women, African-Americans, Hispanics, and people who have lower education and income levels. Environmental and economic factors may further increase risk in these high-risk

populations. Air pollution or tobacco smoke exposure can result in higher risk. According to the CDC, one in four African-Americans and one in five Hispanics cannot afford their asthma medicines.

The ATS 2016 International Conference put a spotlight on new concepts regarding asthma triggers. Some researchers said they

TYPES OF ASTHMA

Asthma is a respiratory disease in which the lung's airways become inflamed and narrowed. Researchers are learning more each day about the different types of asthma that reflect the environmental and biologic triggers, as well as the patient's genetic makeup, which can worsen asthma or cause an asthma attack. Treatments may vary depending of the type of asthma you have.

Exercise-Induced Asthma

Some people experience asthma symptoms only when they exercise. For others, their symptoms grow worse when exercising or engaging in physical activity. The trigger is believed to be the rapid breathing and airway cooling associated with vigorous exercise. Sports linked to exercise-induced asthma include basketball, soccer, and long-distance running, as well as sports that occur in cold, dry conditions, such as hockey or skiing. Treatment and monitoring can allow people with exercise-induced asthma to participate in the physical activity or exercise of their choice.

Nocturnal/Nighttime Asthma

Many people experience a worsening of asthma

at night, often due to exposure to allergens in the bedroom, such as dust mites; a delayed allergic response; gastroesophageal reflux, which causes bad heartburn; a drop in body temperature that cools the airways; medications wearing off, especially in early morning hours; and sleep apnea.

Occupational Asthma

Exposure to high concentrations of chemicals or dust in the workplace can trigger an asthma attack. To confirm occupational asthma, your doctor will compare the results of a peak flow test at work and away from work. If confirmed, you will need to develop a plan to limit your exposure to triggers in addition to taking any medications prescribed.

Steroid-Resistant Asthma

Despite being one of the most common asthma treatments, corticosteroid treatment does not work for some people with severe asthma. If you are in this category, you will need to work with your doctor to develop an action treatment plan.

Allergic Asthma

Allergies to a wide range of irritants remain a common cause of asthma. Among the most

common are allergies to animals, dust mites, mold, pollen, and the sulfites found in foods and drinks, including wines. Many asthma sufferers adjust their lifestyles to avoid these allergens, or get tested to confirm their allergies and get allergy shots.

Cough-Variant Asthma

Many people with asthma do not wheeze. Instead, they have a dry, non-productive cough in which they do not expel any mucus. It is common in children, and usually worsens while exercising or sleeping. Treatments involve the use of inhalers, and it can take six to eight weeks of consistent treatment for symptoms to improve.

Certain Health Conditions-Induced Asthma

Beyond sleep apnea and reflux, several other health conditions can cause or worsen asthma symptoms, including a cold or sinus infection, and even obesity. Newer research has indicated there also may be a relationship between asthma and certain metabolic diseases, such as diabetes and high blood pressure.

believe current medical treatments are not effective in many asthma patients because they were designed with a “one size fits all” approach that addresses the severity of the disease, but not the underlying biology of the disease in individuals. Specifically, several speakers indicated that new information about asthma genetics, inflammation, and the makeup of the airway has revealed unexpected triggers that may be used to develop new medicines to help people whose asthma is not well controlled by current therapies.

Another research group at the ATS 2016 International Conference discussed new findings about the relationship between asthma and the allergens related to farming. Contrary to popular belief, the researchers indicated that exposure to “farm dust” offers a protective barrier against asthma and allergies. Researchers may be able to build on this discovery by determining the protective effects of such exposure and developing therapies that reduce asthma symptoms.

DIAGNOSIS OF ASTHMA

Diagnosing asthma requires a physical examination, a careful patient and family medical history, and testing. While gathering the medical history, the physician will ask about triggers that you suspect might relate to the onset of your or your child’s symptoms.

It is also important to tell your physician or your child’s doctor about:

- Excessive coughing, especially at night
- Chest tightness, wheezing, or a cough that lasts more than 10 days
- Shortness of breath or breathing symptoms with exercise/physical activity

In 70 percent of people with asthma, the disease starts during childhood. Asthma is the third-leading cause of hospitalization among children. People who have the onset of asthma in childhood have more asthma-related office, emergency department, and urgent care visits than people with adult-onset asthma.

If you are being diagnosed as an adult, your physician will want to rule out other lung diseases, including COPD—chronic obstructive pulmonary disease. COPD is a lung disease that resembles asthma, but

usually grows worse over time. COPD is usually not diagnosed until age 40 or later. COPD is most often associated with cigarette smoking or long-term exposure to other lung irritants, such as smoke from cigars or pipes, air pollution, chemical fumes, or dust.

There is no single definitive test for diagnosing asthma. However, the most common method of testing for asthma is a breathing (lung function) test called spirometry, which measures the amount of air you exhale after taking a deep breath and how quickly you exhale. During the test, an inhaled medication known as a bronchodilator may be given to see if it widens your airways.

Other tests used to diagnose asthma:

- Methacholine challenge: If your airways narrow after inhaling methacholine, you most likely have asthma. You can learn more about this test by reading another ATS Patient Information Series fact sheet, [Lung Function Studies: Methacholine or](#)

[Challenge Test at thoracic.org/patients/patient-resources/resources/lung-function-studies-methacholine.pdf](http://thoracic.org/patients/patient-resources/resources/lung-function-studies-methacholine.pdf).

- Exercise challenge: If your airways narrow with physical activity, you may have exercise-induced asthma. This test is done using a treadmill or stationary bicycle with lung-function testing.
- Exhaled nitric oxide test: When your airways are inflamed, your breath may have high levels of the gas nitric oxide, which may be a sign you have asthma. In this test you exhale into a device that can measure the nitric oxide level in your breath.
- Peak flow meter: This device measures how hard you can breathe out.
- Allergy testing: Skin tests and blood tests can be used to determine allergies to pets, dust, mold, and pollen, all of which can be asthma triggers.
- Eosinophil levels: Eosinophils are a type of white blood cell. Elevated eosinophil levels

ASTHMA ACTION PLAN

Asthma is a chronic respiratory disease with no cure. However, with proper monitoring, medication, and certain lifestyle changes, you can reduce asthma’s impact on your life and maintain your health. It is critical to work with your health care provider to develop a personalized asthma worksheet that lists the proper steps to reduce the triggers that worsen asthma or lead to an asthma attack.

The plan should have specific instructions for treating symptoms as soon as they start, when to call your health care provider, and when to go to the emergency room. You can download a PDF of an [action plan at www.nhlbi.nih.gov/files/docs/public/lung/asthma_actplan.pdf](http://www.nhlbi.nih.gov/files/docs/public/lung/asthma_actplan.pdf) from the U.S. National Institutes of Health. Your asthma action plan should include:

- Your name
- Emergency contact information
- Contact information for your health care provider
- Your asthma severity classification

- A list of triggers that may cause an asthma attack
- A list of your medicines

An asthma action plan is divided into three zones—green, yellow, and red.

The green zone, which is classified as “doing well,” is where you want to be daily because you have no asthma symptoms and you feel good. Continue to take your long-term maintenance medicines even if you’re feeling good.

The yellow zone, classified as “asthma is getting worse,” means that you are experiencing asthma symptoms, so you should use your rescue medicine to keep your asthma from getting worse.

The red zone, classified as “red alert!” means you are experiencing severe asthma symptoms or an asthma attack. Follow the steps of your asthma action plan and get immediate medical treatment if your symptoms do not improve.



Researchers are making advances in the diagnosis and treatment of all types of asthma, particularly by identifying biomarkers of disease, and understanding how other health problems affect asthma.

can trigger an inflammatory response. Eosinophils can be measured in your blood or from the mucus you discharge when you cough.

Asthma diagnosis research presented at the ATS 2016 International Conference included the latest information on asthma-COPD overlap syndrome, or ACOS. ACOS is an umbrella term for difficult to diagnose and treat obstructive lung disease that has features of asthma and COPD. People with obstructive lung diseases find it difficult to exhale, or breathe out. About 20 percent of people with obstructive airway disease have ACOS, and the cost to treat ACOS is about twice that of treating asthma.

ACOS research has identified key characteristics of the disorder:

- Asthma
- COPD
- Smoking-related lung disease
- Onset of the disease before age 40

Currently, treatment guidelines provide little advice on how patients with ACOS should be managed. Researchers are investigating the biology, genetics, and possible triggers for ACOS in an effort to develop new drug treatments.

ASTHMA TREATMENT AND MEDICINES

Asthma is a chronic disease, which means it is lifelong, and currently there is no cure. However, by taking an active role in managing the disease, you can control symptoms, reduce the burden of the disease, and improve your quality of life. Here are three things you can do:

- Work with your doctor to treat other conditions that can interfere with asthma management, such as acid reflux, sleep apnea, or sinusitis.
- Avoid asthma triggers, with the exception of physical activity, which is an important

part of a healthy lifestyle. Talk with your doctor about asthma medicines that will allow you to stay active.

- Follow an asthma action plan designed by your doctor or other health care providers.

In addition to avoiding asthma triggers, you will need to take medicine. There are two main types of asthma drugs: maintenance (daily control) and quick-relief. Effective maintenance medicines are now available to control asthma symptoms. Daily control medicines include inhaled corticosteroids, long-acting beta agonists, and leukotriene modifiers. Long-acting beta agonists are only recommended for use when prescribed in combination with inhaled corticosteroids. Occasionally, a long-acting anticholinergic medicine or theophylline is used to help control asthma. These daily control medications do not provide immediate relief but are used over time to prevent an asthma attack.

Patients with moderate to severe asthma may also be treated with omalizumab or one of the newer biologic medicines described on page 7.

In contrast to maintenance medicines, quick-relief medications, also known as rescue medications, are typically used during an asthma attack or at the onset of more severe asthma symptoms. They can quickly relax the muscles, opening your airways. The most commonly prescribed asthma rescue medication is albuterol.

Doctors have found that certain combinations of asthma medicines are more effective in particular patients.

New asthma drug development is likely to follow an emphasis on “precision medicine.” In his 2015 State of the Union address, President Barack Obama announced the Precision Medicine Initiative—also known as PMI—an approach that takes into account the individual variability of a person’s genes,

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Some people find it more effective to treat their asthma symptoms using a nebulizer, which converts liquid medicine into a fine mist that is inhaled using a mouthpiece or mask.

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PMI aims to usher in a new era of medicine that allows researchers, providers, and patients to work together to develop

ASTHMA WEEK AT ATS

To learn more about the latest advances in asthma research and treatments, check out Lung Disease Week at the ATS at thoracic.org/patients/lung-disease-week/.

Throughout the week of June 19-25, 2016, asthma experts with the American Thoracic Society (ATS) provided a variety of information for patients developed with the Society's Public Advisory Roundtable partner, the Asthma and Allergy Foundation of America at www.aafa.org.

The website includes links to asthma information from ATS publications, the ATS International Conference, and ATS educational sessions. Also, look for the informative webinar, presented by an asthma health care professional.

individualized care. The ATS 2016 International Conference featured a lecture about the promise of precision medicine in treating people with asthma. Cleveland Clinic asthma researcher Serpil Erzurum, MD, discussed specific biomarkers, or signs of the disease that can be measured. This is important in determining asthma severity and treatment benefits in individual patients. These biomarkers include the exhalation of nitric oxide; white blood cells; immunoglobulin E (IgE) levels; and certain biomarkers found in urine. Individually and together, these markers may give clinicians critical insights into the biological processes involved in a particular patient's asthma and a more sensitive measurement of how well his or her asthma is controlled.

INHALERS AND NEBULIZERS

It is important to follow your health care provider's instructions when taking your medicine, particularly the guidelines for using inhalers and nebulizers. Years of research have shown that the most effective way to administer asthma medicines is to inhale them through the mouth so they can travel through your airways to your lungs. This is done using

three types of devices—a metered-dose inhaler, a dry-powder inhaler, or a nebulizer.

Both types of inhalers are small and easy to carry, and when used properly, they deliver the full benefit of medicine to patients. Unfortunately, a study in the medical journal *Asthma* in 2011 found that nearly 98 percent of people with severe asthma don't follow their prescribed medication schedules or don't use their inhalers properly. Many studies have shown people make mistakes in the steps of using inhalers, so be sure to ask your health care provider to show you how to use your inhaler properly.

The most common type of inhaler is a metered-dose inhaler (MDI), which is pressurized so it releases a fixed amount of medicine. It is best to use an MDI that has a dose counter that you can look at to know how much medicine is left in the inhaler. For MDIs without a dose counter, you will need to know how many puffs your inhaler holds and how many puffs you take each day so that you calculate how many days your inhaler will last. You cannot tell how much medicine is left in an inhaler by shaking it. Relying on that approach could result in not having medicine at a critical time.

For the most effective delivery of medicine to the airways, health care providers usually recommend attaching the metered dose inhaler to a spacer (valved holding chamber). You can learn more about MDIs in another ATS Patient Information Series flier, [Using Your Metered Dose Inhaler \(MDI\) at www.thoracic.org/patients/patient-resources/resources/metered-dose-inhaler-mdi.pdf](http://Using Your Metered Dose Inhaler (MDI) at www.thoracic.org/patients/patient-resources/resources/metered-dose-inhaler-mdi.pdf).

Inhalers using extra-fine particles can more effectively reach the small airways and airways near the edges of the lung. Preliminary evidence from studies of extrafine-particle inhalers appears to show that they not only control asthma better, they are more cost-effective.

Another way to take an inhaled asthma medication is with a nebulizer, a device that converts liquid medicine into a fine, inhaled mist using a mouthpiece or mask. A nebulizer is particularly effective for infants, small children, and the elderly, and it may also make it easier for someone experiencing severe breathing problems to inhale medication. If

you do use a nebulizer, make sure you know how to keep the components clean to reduce the risk of infection.

NEW ASTHMA RESEARCH

During the ATS 2016 International Conference, a review of asthma research over the last year highlighted a number of promising new findings, including medicines and the impact of obesity on asthma.

One of the most promising areas of drug discovery is the development of biologic medicines to treat specific groups of patients, such as those with severe allergic asthma. Biologic medicines are manufactured in living systems and target the immune system to reduce inflammation. Omalizumab was the first biologic medicine approved by the Food and Drug Administration (FDA) for use with moderate to severe allergic asthma that is not controlled

by inhaled corticosteroids. The primary action of omalizumab is to bind immunoglobulin E (IgE) blocking allergic reactions.

More recently, the FDA approved two new biologics for asthma, reslizumab and mepolizumab. Reslizumab is delivered by IV infusion. Mepolizumab, like omalizumab, is injected. One lecture reviewed a clinical study of reslizumab, which is prescribed for people with severe asthma with an eosinophilic phenotype. Reslizumab lowers levels of eosinophils, the white blood cells that contribute to asthma and asthma attacks.

Other ATS 2016 International Conference lectures discussed mepolizumab. Mepolizumab is an add-on maintenance drug for people 12 years of age and older with severe asthma and an eosinophilic phenotype. The drug is injected every four weeks, and it also lowers levels of eosinophils.

If you have severe asthma, talk to your

health care provider about your asthma to see if reslizumab or mepolizumab might be beneficial as part of your treatment plan.

Experts from the National Institutes of Health reported on a study aimed at developing asthma drugs based on the structure and function of the smooth muscle that surrounds the bronchial tubes, which are the airways in the lungs. When irritated, smooth muscle shrinks, narrowing these air passages and making it difficult to breathe. New medicine may be able to prevent smooth muscle from shrinking or reverse the narrowing if it has already occurred.

New research presented at ATS 2016 also focused on the role weight loss can play in asthma control. Studies have found that obesity, particularly lower-body obesity, is a contributing factor in asthma, especially in women. Researchers reported that a 10 percent weight loss in those who are obese may make a significant difference in improving asthma symptoms.

ONE PATIENT'S ASTHMA STORY

Kathy Przywara has allergies and asthma. However, it took years before she was properly diagnosed. Przywara shared her story at the ATS 2016 International Conference. The first time she saw a doctor to complain about the difficulty she had breathing, she was given an inhaler to open her airways, but the term asthma was never mentioned. She was formally diagnosed with asthma during her first pregnancy, and during her second pregnancy she was started on maintenance medications.

"I really didn't want to use any drugs while I was pregnant, but my doctor told me that my baby needed to breathe so I needed to breathe," she said.

Like many with asthma, Przywara says her symptoms have grown more severe and persistent. Her medications help, but she is always aware of her triggers. "If my family or friends want to do something active, I have to think: What are my triggers like today? Is there a lot of pollen? Is my breathing already a little tight?"

Both her son and daughter were diagnosed with asthma as toddlers. Now that they are young adults, her son's condition has improved. Her daughter, however, still has allergic and exercise-induced asthma. But with persistence

and pre-treatment, she has continued to participate in martial arts and earned her second-degree black belt.

Przywara recalls a time when her daughter was sparring and coughing so much that her opponent easily landed a "really wicked punch." Przywara took her daughter to her asthma doctor and said, "Hey, we need to do something more because it's not OK to get sucker punched by asthma."

Przywara's story is a good reminder that asthma triggers and response to medication are different for each person. However, the ATS recommends a few simple steps to reduce the incidence of asthma attacks and to better monitor your asthma.

First, talk with your health care provider to identify your symptoms and triggers, and develop your asthma action plan. Use your asthma medications as directed and discuss their effectiveness with your doctor. If you are not getting relief, tell your health care provider. Finally, once you've identified your triggers, make some simple lifestyle changes to limit your exposure to those triggers, such as avoiding smoky environments, pets, or being outdoors when the air quality is low.

Don't let your asthma symptoms go unchecked. Talk to your doctor if you suspect you have asthma or if your asthma is getting worse. Here are important questions to ask your health care provider:

- I'm coughing excessively, especially at certain times of the day or during certain seasons. Could I have asthma?
- What sort of changes should I make around my home and in my life to reduce my risk of an asthma attack?
- What kinds of tests will I need to monitor my asthma?
- What kind of inhalers do I need? Should I use a spacer?
- Can you show me how to properly use my inhaler and spacer or do I need a nebulizer?
- How will I know when my inhaler is empty?
- Are there alternative therapies I can use along with my asthma medications?
- Is it safe to exercise with asthma?
- Why do I need an asthma plan?
- Can stress and other illnesses trigger asthma? If so, which illnesses?
- What are the side effects of my asthma medications?
- What type of planning should I do before traveling?

This same lecture examined the role of a patient asthma action plan, which has long been a standard recommendation in asthma clinical practice guidelines. The study found that asthma action plans are important tools for asthma patients, especially those who see a primary care doctor or other general practice health professional. Using your asthma action plan increases your chances of maintaining good control of your asthma symptoms and reducing your risk of an asthma attack and emergency room visit or hospitalization.

The ATS continues to follow the most promising research, much of which is led by its members. All discoveries must be rigorously tested before being accepted.

You also can have access to new treatments in development and help researchers by taking part in clinical trials. For information about certain asthma clinical trials, visit the [ATS Clinical Trials web page at thoracic.org/about/industry-resources/clinical-trials/](http://thoracic.org/about/industry-resources/clinical-trials/).

LOOKING AHEAD

Asthma is a disease that affects 334 million people around the world, and experts predict that another 100 million people could be diagnosed with asthma by 2025. Evidence suggests that asthma's growing prevalence is due to increased urbanization and the adoption of a "Western" lifestyle. Despite these gloomy statistics, researchers are making amazing advances



A peak flow meter can be used to measure how hard a patient breathes out, a common test for asthma.

in the diagnosis and treatment of all types of asthma, particularly by identifying biomarkers of disease and understanding how other health problems, such as obesity, affect asthma. These advances will take us one step closer to the promise of precision medicine, which will treat the genetic and environmental factors that give rise to asthma in a particular person.

If you suspect you have asthma, be sure to consult a doctor. If you do have asthma, remember that it is a chronic disease that cannot be cured, but it can be controlled. The key to control is to follow recommendations from health care professionals concerning your lifestyle and to take all medicines as directed.

Research suggests that many people who struggle to control their asthma are not taking their medicines as prescribed. One study of people with severe asthma found that only 2 percent of participants took their medicines exactly as prescribed and used their inhalers correctly. The CDC offers a [video at cdc.gov/asthma/inhaler_video/](http://cdc.gov/asthma/inhaler_video/) that demonstrates how to use an inhaler.

To stay informed about the latest recommendations and developments about asthma, visit the [American Thoracic Society web page about asthma at thoracic.org/patients/patient-resources/topic-specific/asthma.php](http://thoracic.org/patients/patient-resources/topic-specific/asthma.php), which also contains links to asthma resources for patients.

FACTS & FIGURES



479,000
asthma-related
hospitalizations



1.9 million
asthma-related
emergency
department visits



8.9 million
asthma-related
doctor visits

Source: U.S. Centers for Disease Control and Prevention