A Guide to Understanding What Asthma Is (and Isn't)

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What Is Asthma?

I can't remember a time in my life when I didn't have asthma. My childhood was fraught with frequent upper respiratory infections, which were complicated by my asthma. I carried around my "rescue" inhaler. Also, I knew my "daily" inhalers made me feel better, but I was resistant to use them, and my parents had to beg me to use them.

Who can relate?

As an adult living with asthma, the severity of my disease waxes and wanes. I still carry that rescue inhaler. My need for my "daily" inhaler is inconsistent.

There are periods in my life where my pulmonary function tests (PFTs) are pretty good, and I don't need any inhalers – and other times where I hear the nurse suck in her breath and say, "Wow – let me bring these results to the doctor!"

And the inhaler is inevitably re-prescribed.

What Is Asthma?

The first thing you must understand about asthma is that it is chronic. This means that it does not go away, and it must be managed every day.

Generally, a person without asthma has airways that allow air to pass freely. Someone with asthma has airways that become inflamed. This inflammation causes the airways to become sensitive to "triggers" – and each person's triggers are specific to them.

When exposed to a trigger (which we will discuss later in the article), the airway begins to swell again. This swelling makes the ability to breathe even worse.

Asthma Statistics and Facts

If you feel like you are the only person with coffee – you are not alone!

25 million Americans suffer from asthma – that is 1 in 12 people. And that number is on the rise each year. The number of Americans diagnosed grew by 4.3 million between 2001 and 2009 – and the numbers grew even more for black children. For black children, there was a 50 percent increase in the diagnosis of asthma.

Asthma is also costly; the financial burden of asthma was approximately $56 billion – yes, *billion* – in 2007. This number approximates the total of medical costs, lost work time, lost school days, and early death that is caused

by asthma. This number increased from $53 billion in 2002 – a six percent increase.

Unfortunately, asthma medications may be expensive! 40 percent of people (2 in 5 people) uninsured people with asthma are unable to afford their medications. Even people with insurance may not be able to afford their inhalers – 11 percent (1 in 9 people) are unable to afford their medications.

In the same vein, half of all people with asthma had an asthma attack in 2008 – which drives up that financial burden. Many of these asthma attacks are preventable. The problem? Only about 50 percent of adults with asthma have been instructed on how to avoid their asthma triggers!

Are There Different Types of Asthma?

When your physician states that you have a diagnosis of asthma, you may think that this is a blanket diagnosis. However, there are several different types.

Here are the most common types of asthma:

- **Allergy-induced asthma:** A very simple explanation of this type of asthma is that it is induced by allergens that trigger the airways, which worsens asthma symptoms. It can be treated by avoiding allergens and taking allergy medications.
- **Exercise-induced asthma**: Exercise triggers this type of asthma. This type of asthma can be a bit confusing because exercise triggers some people with asthma, but some people *only* have symptoms of asthma when they exercise. For people with this type of asthma, symptoms begin within minutes and improve shortly after stopping exercise. A rescue inhaler can improve symptoms.

- **Cough-variant asthma**: In this type of asthma, a cough is the primary symptom. This type of asthma can be caused by many different things, such as gastroesophageal reflux disease (GERD), postnasal drip, sinusitis, or chronic rhinitis, for example. The underlying cause dictates treatment.
- **Occupational asthma**: Just like it sounds, this type of asthma is caused by workplace triggers. Common occupations that may cause asthma include nurses, woodworkers, farmers, animal breeders, and hairdressers.
- **Nocturnal asthma**: One of the more common types of asthma, this type occurs only at night. According to WebMD, “the chances of having symptoms are much higher during sleep because asthma is powerfully influenced by the sleep-wake cycle (circadian rhythms).” As such, more deaths related to asthma occur at night.

Next page: What causes asthma? Who gets asthma? And what are the symptoms of asthma?

What Causes Asthma?

Why does anyone get any chronic condition? It is often a mystery that plagues doctors and researchers, and frustrates those who suffer from these conditions.

I know I grappled with this condition as a child, and still do when I am in the throes of an asthma exacerbation.

We do know that there are specific factors that can trigger asthma (which we will discuss in greater detail). We also know that certain risk factors seem to increase the likelihood of developing asthma – but these risk factors are not a guarantee of developing asthma.

Risk factors for developing asthma include:

- Having a genetic connection to asthma – a parent or sibling who also has asthma
- Having another allergic condition, such as atopic dermatitis or allergic rhinitis
- Being overweight or obese

- Being a smoker or having exposure to secondhand smoke
- Having exposure to exhaust fumes and pollution
- Working in certain industries that use chemicals that are harmful to the lungs, such as manufacturing, being a hairdresser, and farming

Who Gets Asthma?

Anyone can get asthma! Asthma doesn't discriminate. That being said, as we've already discussed, there are certain patient populations that are much more apt to develop asthma than others.

Asthma is undoubtedly the most common chronic disease to affect children. A child's risk of developing asthma increases if they were born with a low birth weight, are raised in a low-income home, are black, and if they are exposed to secondhand smoke. Boys are more likely to develop asthma than girls, and children who have parents with asthma are also more apt to develop asthma.

During adulthood, women are more likely than men to develop asthma.

It is estimated that almost all people living with asthma also have some allergy; over 25 percent of people with hay fever also have asthma.

We know that smoking can lead to many health conditions, and asthma is one of them. Not only can it increase the risk of developing asthma, but it also increases the risk of dying from asthma. Children who have mothers who smoke also are at greater risk of developing asthma.

Genetics seem to play a big role. We've already discussed the fact that having a parent or sibling with asthma seems to increase the likelihood of developing asthma. Why? Researchers have identified approximately 100 genes that are linked to the development of asthma.

According to Medical News Today, "Mom and Dad may be partially to blame for asthma since three-fifths of all asthma cases are hereditary. The Centers for Disease Control (USA) say that having a parent with asthma increases a person's risk by three to six times."

To further complicate matters, genetics can interact with environmental factors – "exposure to the bacterial product endotoxin and having the genetic trait CD14 (single nucleotide polymorphism (SNP) C-159T) have remained a well-replicated example of a gene-environment interaction that is associated with asthma." This means that when certain genes are exposed to certain bacteria, asthma may develop.

And then we have good old hyperreactivity. Some people have hyperreactive airways, and having hyperreactive airways seems to react to allergens quickly, perhaps causing asthma.

What Are the Symptoms of Asthma?

The symptoms of asthma are pretty straight-forward (unless you have cough-variant asthma, in which your major symptom is a cough, making it more difficult to achieve a diagnosis!).

Although each person's symptoms will vary, they are a variation of these typical symptoms:

- Tightness in the chest
- Shortness of breath
- Coughing or wheezing – especially that is worsened with illness, such as an upper respiratory infection
- A wheezing/whistling sound that is heard with exhalation

Symptoms of an asthma exacerbation (when asthma worsens) include:

- All of the above symptoms, intensified.

- Increasing shortness of breath (although this symptom is subjective, it can also be objective – a healthcare practitioner can measure it by using a peak-flow meter, which measures how well the lungs are working).
- The use of the rescue inhaler more often.

Next page: How is asthma diagnosed? What types of treatment for asthma is available? How to successfully manage an asthma attack. And can asthma be prevented?

How Is Asthma Diagnosed?

There are several steps to diagnosing asthma.

Initially, your physician will want to obtain your medical history. This will entail discussing your symptoms in great detail. She will also ask you questions about your health in general. She may ask you questions that do not make sense – but they may help to figure out if you have any conditions that are linked to asthma.

A full physical exam is performed, which will include auscultation of your lungs – this simply means that your physician will listen to your lungs with a stethoscope.

Finally, your physician will order tests to determine how well your lungs are working.

- **Spirometry**: This test is used in people over the age of 5. The test requires you to breathe into a tiny tube (the spirometer). The spirometer records measurements of the volume of air that you exhaled, as well as how quickly you exhaled. If these measurements are below certain values, it may indicate asthma. Spirometry is also useful in determining the effectiveness of medications prescribed and adherence to medication.
- **Challenge test:** When your results are normal, but your physician still suspects asthma, spirometry is performed after having you inhale a chemical called methacholine. Methacholine triggers symptoms in people with asthma.
- **Exhaled nitric oxide test:** This test involves breathing into a tube, which measures the amount of nitric oxide that you exhale. High levels of nitric oxide signify asthma – it is a sign of inflammation in the airways.

Treatment of Asthma

The treatment of your asthma will depend on many factors, such as your symptoms, your triggers, and the cause of your asthma. Luckily, there are many different treatment options for asthma.

Long-term controller medications are typically taken daily. These medications help to prevent asthma symptoms from occurring and thus, keep asthma under control. Options include:

- **Inhaled corticosteroids:** fluticasone (Flovent HFA), budesonide (Pulmicort Flexhaler), mometasone (Asmanex); although these are corticosteroids, their side effect profile is low, unlike their oral medication counterpart.
- **Leukotriene modifiers:** montelukast (Singulair); these are oral medications that control symptoms for approximately 24 hours.
- **Long-acting beta agonists**: salmeterol (Serevent), formoterol (Foradil); these open the airways if taken in conjunction with inhaled corticosteroids.
- **Combined inhalers**: fluticasone-salmeterol (Advair Diskus), budenoside-formoterol (Symbicort); a long-acting beta agonist is combined with a corticosteroid.
- **Theophylline**: theophylline is a daily oral medication that relaxes the airways.

Quick-acting/rescue medications are used during an asthma attack or when your symptoms begin to worsen. Options include:

- **Short-acting beta agonists:** albuterol (ProAir HFA, Ventolin HFA), levalbuterol (Xopenex); these inhalers

act within minutes and can also be used through a face mask in the hospital setting or at home for children or people who have a difficult time with inhalers.
- **Ipratropium (Atrovent)**: similar to short-acting beta agonists, ipratropium helps to relax the airways. It is most commonly used for chronic emphysema and bronchitis, but it is sometimes used for asthma.
- **Oral corticosteroids**: methylprednisolone, prednisone; corticosteroids help to reduce inflammation. They do have a laundry list of side effects, so they are only prescribed when symptoms are very bad and are only prescribed short-term.

What Triggers Asthma?

If you have allergies that trigger your asthma, unfortunately, many things may trigger your symptoms.

The unfortunate thing is that *anything* can be a trigger. And everyone is unique. We know the common triggers, but no two people are alike. What triggers person A's asthma will be different than what triggers person B's – and person C may have a trigger that may not even be on this list!

Common asthma triggers include:

- **Cigarette smoke.** Exposure to cigarette smoke is not good for *anyone*, for many reasons, but it can trigger an asthma attack in people with asthma.
- **Dust mites.** Unfortunately, dust mites live in almost every home, despite your best cleaning efforts. However, keeping dust at bay, placing mattress and pillow protectors over your bedding, washing bedding weekly, and removing clutter from the bedroom can minimize your risk of triggering an asthma attack from dust mites.
- **Outdoor air pollution.** This one is a tough one because there are so many different pollutants in the environment – and it is difficult to avoid them. The best way to reduce your exposure to air pollution is to limit your exposure by reviewing air quality forecasts and being outside when the pollution level is low.
- Yes, **cockroach allergy** is real. Cockroaches leave droppings that are highly allergenic. They live in areas where there are food and water sources, so ensuring that your home is free of these sources can minimize your risk of cockroaches in your home. If you do have cockroaches in your home, use traps to get rid of them and sweep every 2 to 3 days to get rid of potential droppings.
- Unfortunately, our pets can be highly allergenic for some people who are sensitive to **pet dander**. Re-homing your pet is a good idea if your symptoms are extreme. If you are not willing to do this, wash your pet frequently, do not allow your pet in your bedroom, and vacuum or mop weekly.
- This doesn't mean **mold** on food. We're talking about mold in your environment. Control the humidity levels in your home by using a dehumidifier, use air conditioning, fix water leaks, and remove all sources of mold in your home.
- If you have frequent exposure to a **wood burning stove or other exposure to smoke**, this can trigger your asthma. Limit your exposure.

If environmental allergies trigger your asthma, this can be difficult to control. After all, it isn't like you can control the atmosphere. However, there are options:

- **Immunotherapy:** This is a fancy way of saying "allergy shots." Allergy shots involve injecting tiny amounts of the things that you are allergic to, and increasing the amounts over time; eventually, reducing your immune response to the allergens.
- **Omalizumab (Xolair):** an injection that is given every two to four weeks, this is given to people who have both environmental allergies and severe asthma.

How to Manage Asthma Attacks

You should always have a plan in place, in case you have an asthma attack.

This involves creating an asthma action plan with your physician.

You should always carry your rescue inhaler and use it at the first sign of trouble – using it early can prevent an emergency situation.

However, if your symptoms worsen, do not hesitate to seek emergency medical attention. Symptoms of a serious attack include:

- Severe breathlessness, especially at night
- An inability to speak, or only be able to say short phrases
- Having to use the accessory muscles to breathe (the sides of your chest)
- Having no improvement with the use of your rescue inhaler
- Having low peak flow readings

Can You Prevent Asthma?

Unfortunately, you cannot prevent asthma. As with many other chronic conditions, many factors may predispose you to asthma – and many of these are not preventable.

What you can do is take your medications as prescribed. You can avoid your triggers to the best of your abilities. You can keep your appointments with your physician so that she can treat your asthma. You can keep a log of your symptoms.

If you've read all of this, you know from experience that asthma can be a tough disease to control – but it doesn't have to control you.