

# Breath of Fresh Air

Spring 2025

Information, news and advice for improving asthma well-being

Wishing you good breathing!

## Peak Flow Measurements: Help or Hassle?

MOST often, we judge our health by how we are feeling. We know with certainty when we are feeling well and when we are not. So too, with asthma, most of the time we can tell when our breathing feels normal (no cough, wheeze, shortness of breath or tightness in the chest) and when we are having difficulty (for example, when we feel short of breath climbing up a flight of stairs or walking up a small hill). However, sometimes it can be tricky to be sure: are we coughing due to asthma or an irritating post-nasal drip? Are we feeling congested in the chest because of a head and chest cold or is it a flare of asthma?

Wouldn't it be nice at those times of uncertainty to be able to measure how one's asthma is doing? Just as it is helpful at times to measure one's temperature to see if one has a fever or not; and if there is a fever, how high it is. It would certainly be helpful when you communicate with your healthcare provider to be able to offer specifics. Just as it matters, when you have a fever, whether your temperature is 100.2 or 104.5, so too a measurement of your breathing can help your medical provider know what the best course of action is. Enter the peak flow meter for measuring how far off from normal your asthma might be.

As you know, asthma is a disease of the breath-

ing ("bronchial") tubes. It is because of this narrowing of the airways in the lungs that symptoms like cough, wheeze, and shortness of breath develop. If you would like to know how narrow or wide open the breathing tubes are, the best test is to try to blow air out through those tubes as

fast as one can. Wide open tubes allow the air to flow quickly; narrow tubes cause the air to flow out more slowly, no matter how hard one tries. A peak flow meter

measures the fastest speed ("peak flow") that air can exit your lungs, at the very beginning of an exhalation. The higher the peak flow, the faster the air flows out through your breathing tubes, and the better your asthma is doing.

**How.** Set the indicator on the peak flow meter to zero. Take a deep breath in, filling your lungs as much as possible. With lips tightly around the mouthpiece of the peak flow meter, blow out as hard and as rapidly as you can, quick from the start. The test is complete in the first second or so; no need to exhale completely. The indicator on the mechanical peak flow meter will be moved by your breath; you can read the number on the scale opposite



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the indicator. The numbers represent the speed of air coming out of your lungs in liters per minute. Next, push the indicator back to zero and repeat the test one or two more times. The best number out of all 2-3 tries is considered your peak flow. Electronic peak flow meters are available that will display your results digitally on a small screen, with the option to display and save the results on your smartphone as well. Most persons 5 years and older will have no difficulty making accurate measurements.



*Sample electronic peak flow meter.*

**Interpreting the results.** Is that a good number for your peak flow or not? You can determine what a normal peak flow for you should be in two ways. Best is to compare the number that you just recorded with peak flow measurements that you made when feeling well. Your peak flow measured when feeling “as good as it gets” is considered your *personal best*, and it is the most useful value against which to compare the measurement that you make at any other time. Alternatively, you can compare your measured peak flow with the *average* normal peak flow of a person of your same sex, age, and height. Peak flow calculators are available on-line, such as at: <https://www.mdapp.co/peak-flow-calculator-76/>. It is important to remember that there will be considerable variability in “normal” even among persons of the same sex, age, and height. As a general rule, any value within four-fifths (80%) of your personal best peak flow or estimated normal peak flow is a safe value. A result between half (50%) and 80% of personal best or estimated normal represents a mild-to-moderate asthma exacerbation. A value less than half (less than 50%) of your personal best or estimated normal peak flow is trouble — a severe flare-up of your asthma needing immediate attention.

**Help or hassle?** Daily recording of your peak flow, morning and evening, before and after medications, for any period of time — definitely hassle. Occasional measurement of peak flow when symptoms make you think that your asthma is acting up, for peace of mind or call to action, and to be sure that you are not in an emergency situation — likely a big help to you or your child and to your healthcare provider.

## ***Breath of Fresh Air***

**Editor:** Christopher Fanta, M.D.

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Email your comments, suggestions, and personal asthma stories to us at **[asthma@mgb.org](mailto:asthma@mgb.org)**.

View the latest issue of *Breath of Fresh Air* and other useful asthma information on-line at **[www.massgeneralbrigham/asthma](http://www.massgeneralbrigham/asthma)**, click on **Patient Resources**.

## What Is Type-2 Asthma Anyway?

It has been known for a long time that not all asthma is alike. In some people with asthma, allergies are an important part of their disease; in others, not. Some have their asthma begin at a young age, with many other family members also having asthma, whereas in others asthma begins in mid-life and no one else in the family has asthma. Doctors and medical scientists have long tried to come up with a system for categorizing different types of asthma.

Decades ago the terms “extrinsic” vs “intrinsic” asthma were used to distinguish a type of asthma driven by external factors, like allergies, as opposed to internal stimuli, somehow emanating from the body’s own immune system. Over the years these terms came to be replaced by the more direct terms, “allergic” and “non-allergic” asthma. One could tell which type of asthma one had based on one’s symptoms (whether triggered by typical allergens such as cats, dogs, and pollens, or not), or by allergy testing, such as allergy skin tests. For the most part, however, treatment of allergic and non-allergic asthma was the same.

This brings us to the modern era, where medical science has begun to identify the cells and molecules important in causing the inflammation of the bronchial tubes that is characteristic of asthma. And it seems that there are different patterns of activated cells and their chemical products that distinguish some people with asthma from others. Perhaps not surprisingly, these cellular and molecular pathways broadly fall along the lines of typical of allergic and non-allergic inflammation. Type-2 inflammation is typical of persons with evidence for allergic asthma. Type-1 inflammation, also called type-2

-low inflammation, is a pattern seen in a variety of non-allergic inflammatory diseases and is — as you might expect — found in persons with non-allergic asthma.

**What’s in a name?** Is there more here than new names for old categories of asthma? The answer is “yes,” because knowing the cells and chemicals important in a particular type of asthma gives medical professionals the opportunity to develop new treatments specifically designed to block those molecules and so inhibit the inflammation of asthma. And it has already happened.

Type-2 asthma is so-called because important immune cells called type-2 helper lymphocytes become active. They orchestrate bronchial inflammation in a number of ways. They direct the body to make proteins important in recognizing common allergens (called immunoglobulin E antibodies or IgE). They also release chemicals called interleukins [in-ter-LOO-kins] that attract other inflammatory cells, particularly eosinophils [E-oh-SIN-oh-fills] and cause bronchial muscle twitchiness and mucus production.

As a result of these discoveries into the type-2 pattern of asthmatic inflammation have come novel therapies to block the action of IgE and the interleukins. These medicines are man-made proteins called monoclonal antibodies, commonly referred to as “biologics.” You may already know them by their names, either generic or brand names. A medicine to interfere with the action of your “allergy protein,” IgE, is called omalizumab (*Xolair*®). Other biologics block the action of key interleukins (interleukins no. 4, 5, and 13), helping to inhibit the at-

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traction of eosinophils into the breathing tubes and thereby to reduce asthmatic inflammation and the risk of asthma attacks. This latter group of biologics includes benralizumab (*Fasenra*®), dupilumab (*Dupixent*®), mepolizumab (*Nucala*®), and reslizumab (*Cinqair*®). For many people with severe asthma and type-2 inflammation, these biologics — and one other, called tezepelumab (*Tezspire*®) — have been magnificently effective in controlling their asthma and in preventing asthmatic flare-ups.

**Diagnosing type-2 asthma.** How can you tell if you have type-2 asthma? There are 3 tests that your medical provider can use to test for type-2 asthma. 1) Measure the amount of IgE protein in your blood. 2) Measure the number of eosinophils in your blood. 3) Using a special breathing test, measure the amount of a gas called nitric oxide in your breath (increased in type-2 asthma).

Less is known about type-1 asthma and fewer novel medications are available for its treatment. However, active research, including at Mass General Brigham Asthma Center, is working to change that, with more options for treating type-1 asthma likely available in the years ahead.

## News About Asthma

### Inhaler Price Caps

For some people the cost of their asthma inhalers can exceed several thousand dollars per year and can be a major disincentive to regular medication use. This past year 3 major pharmaceutical companies announced their intention to put a cap on the out-of-pocket cost of the inhaled medications that they manufacture when purchased by people with private insurance or with no insurance (not applicable to those insured by Medicare or Medicaid). AstraZeneca and Boehringer-Ingelheim capped the out-of-pocket cost of inhalers at \$35/inhaler per month, and GlaxoSmithKline announced its intention to do the same in 2025. Their announcement came following a decision by the U.S. Senate's Committee on Health, Education, labor and Pensions to investigate the high cost of inhalers. The inhalers included in this arrangement are listed below (by their brand names):

Astra Zeneca	Boehringer-Ingelheim	GlaxoSmithKline
AirSupra	Atrovent	Advair
Bevespi*	Combivent	Anoro*
Breztri*	Spiriva	Arnuity
Symbicort	Stiolto*	Breo
	Striverdi*	Incruse*
		Trelegy
		Ventolin

\*Used primarily to treat chronic obstructive pulmonary disease (COPD)