

Peak Flow Meters

If you are one of the millions of Americans with asthma, you may know that there is an array of medications that are very effective for keeping your symptoms under control. But did you know that you can also become a partner with your doctor in monitoring your asthma?

A peak flow meter measures how well your lungs are able to expel air. You can learn to use this simple device to monitor your asthma and head off attacks before they occur. This article will tell you how. **How Does a Peak Flow Meter Work?** Peak flow meters come in a number of shapes and sizes, but they all work in the same way. The device consists of a plastic tube with a mouthpiece on one end. Inside is a mechanism that moves a small pointer along a scale when air is blown into the tube. The scale shows the amount of force with which air is blown out of the lungs. This force is measured in liters per minute (L/min) and is called the peak expiratory flow (PEF). During an asthma attack, the muscles of the upper airways contract. This makes it harder for the lungs to take in and release air. It is this narrowing of the airways that causes the characteristic wheezing sound of an asthma episode. However, this narrowing does not occur suddenly and all at once, but rather builds up gradually over time. In other words, your airways may have begun to narrow before you feel the first symptoms of asthma—hours or even days before. **How Can a Peak Flow Meter Help Me Manage My Asthma?** The peak flow meter can detect airway narrowing when it first begins, possibly before you actually feel any symptoms. A drop in your normal PEF can signal the need for you to take asthma medication in order to prevent an asthma episode. By taking medication before symptoms appear, you may be able to avoid a severe episode. A peak flow meter can also help both you and your doctor:

- Learn what makes your asthma worse
 - Decide whether your treatment plan is working well
 - Decide whether to adjust your medication dose or to add other medications to your treatment regimen
 - Decide when you should seek emergency care
- How Do I Use My Peak Flow Meter?** Peak flow meters are most helpful for asthma patients who take asthma medication on a daily basis. They can be used by anyone, including children ages 5 and older. To use your peak flow meter:
- Slide the pointer all the way down to the bottom of the scale.
 - Stand up.
 - Take a deep breath.
 - Place your lips over the mouthpiece, taking care not to allow any gaps. Do not put your tongue inside the hole.
 - Blow as quickly and as forcefully as you can in a single blow. The idea is not to see how long you can blow out, but rather how fast and hard you can push the air out of your lungs. Once you have blown out, take the meter out of your mouth and note the number next to the pointer. If you cough or make a mistake, do not write down that number. Take two more readings in this manner, and then record the highest of the three blows. Record this number in a notebook or on a chart each time you take a peak flow reading.
- Finding Your "Personal Best" Peak Flow Reading** When you first start using a peak flow meter, you must first find your personal best peak flow reading. This is the number on the peak flow meter scale that is the highest you can achieve when your asthma is under good control. "Good control" means that you feel good and are not having any asthma symptoms. For 2-3 weeks, you should take PEF readings at least twice a day. Measure your peak flow: (1) in the morning and in the evening, (2) after every time you take your short-acting inhaled quick-relief medication to relieve symptoms, and (3) any other time your doctor suggests. Write down the readings you get each time you measure your PEF. At the end of the 2-3 weeks, look over the numbers and pick out the highest reading. This number is your personal best peak flow reading. Each asthma patient's case is different, so your personal best reading is likely to be different from someone else's, even if that person is the same age, weight and height. This is why it is important to find your own personal best reading. Once you have found your personal best reading, your doctor can tell you how to use it to manage your asthma on a daily basis. Three numbers are calculated from the personal best reading and are used to set up three "zones," somewhat like the three colors of a traffic light. These zones are based on percentages of your personal best number and are only guidelines and must be individualized: **Green zone:** More than 80 percent of your personal best number. This signals that your asthma is under good control. You should take your asthma medications as you usually do. **Yellow zone:** 50 percent to 80 percent of your personal best. This indicates—caution! Some airway narrowing is present. You should take your short-acting quick-relief medication right away to prevent asthma symptoms. Ask your doctor if you need to change or increase your daily medicines. **Red zone:** Less than 50 percent of your personal best reading signals a medical alert. Significant airway narrowing is present, and you must take your quick-relief medication right away. Call your doctor or the emergency room of your hospital and ask what to do, or go directly to the emergency room. The above zones are found by calculating percentages of your personal best reading. For instance, perhaps your personal best reading is 440 L/min. Your "green zone" would be 80 percent of 440, or 352 L/min. As long as your peak flow reading is at or above 352, you are in the green zone and do not need to take additional action to control your asthma. If your peak flow reading increases 20 percent or more when measured before and after taking a short-acting inhaled quick-relief medicine, talk to your doctor about adding more medicine to control your asthma better. **If You Have Questions** Talk to your doctor. The guidelines given here may be slightly different from your doctor's advice, which is based on your personal case. Always follow your doctor's directions. Together you can work as a team to keep your asthma under control.