

## HOW TO USE A PEAK FLOW MONITOR

### Introduction

The management of asthma relies on a patient's ability to monitor their asthma regularly. Self-monitoring includes assessing the frequency and severity of symptoms (such as wheezing and shortness of breath) and measurement of lung function with tests such as a peak expiratory flow rate (PEFR).

PEFR provides a number that correlates to how open the lung's airways are; as asthma worsens and the airways narrow, the PEFR decreases. Monitoring can help a patient and their healthcare provider determine the most appropriate asthma treatment plan.

A number of topic reviews about asthma are available. For children, see "Patient information: Symptoms and diagnosis of asthma in children" and see "Patient information: Metered dose inhaler techniques in children" and see "Patient information: Trigger avoidance in asthma". For adults, see "Patient information: Asthma treatment in adolescents and adults" and see "Patient information: How to use a peak flow meter" and see "Patient information: Metered dose inhaler techniques in adults" and see "Patient information: Pregnancy and asthma".

### Asthma Monitoring Recommendations

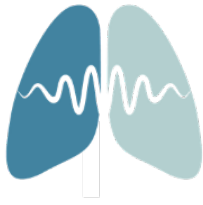
The National Asthma Education and Prevention Program (NAEPP) recommends that people with moderate to severe persistent asthma have a peak flow meter at home and know how to use it <sup>[1]</sup>. A peak flow meter is small, inexpensive, and easy for most patients to use. The NAEPP recommend that patients use a peak flow meter to:

- Regularly monitor lung function and response to treatment over the short- and long-term
- Determine the severity of an asthma attack
- Assess response to treatment during an attack

Patients should use an asthma diary to record their daily peak flow meter readings, exposure to potential asthma triggers, asthma medication use, and asthma symptoms. This can help to show a cause-and-effect relationship between exposure to triggers and decreases in peak flow. The asthma diary can be reviewed with a healthcare provider to make decisions about asthma treatment.

### How To Use A Peak Flow Meter

PEFR monitoring should be performed on a regular basis, even when asthma symptoms are not present. PEFR should also be checked if symptoms of coughing, wheezing, or shortness of breath develops. Patients should demonstrate PEFR measurement with their healthcare provider to verify that their technique is accurate. Different brands of peak flow meters have unique features; however, these general instructions can be adapted to an individual's peak flow meter.



### **Getting the best readings**

Several steps are important to make sure the peak flow meter records an accurate value:

- The peak flow meter should read zero or its lowest reading when not in use
- Use the peak flow meter while standing up straight
- Take in as deep a breath as possible
- Place the peak flow meter in the mouth, with the tongue under the mouthpiece
- Close the lips tightly around the mouthpiece
- Blow out as hard and fast as possible; do not throw the head forward while blowing out
- Breathe a few normal breaths and then repeat the process two more times. Write down the highest number obtained. Do not average the numbers.

Note: The test should be repeated if the tongue partially blocks the mouthpiece or if the patient coughs or spits during the test. Most peak flow meters need to be cleaned periodically; cleaning instructions should be available when the unit is purchased.

### **Establishing a baseline measurement**

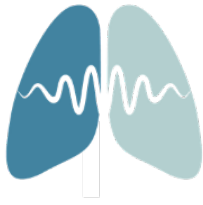
Unlike a blood pressure reading or a cholesterol test, there is no PEFR that is normal for everyone. For this reason, it is important to determine what PEFR value is normal for you. To determine your normal PEFR, you should measure their PEFR when you have no asthma symptoms. Three PEFR measurements should be done with the same peak flow meter two to four times daily for two to three weeks. You should note the highest PEFR measure achieved; this is the "personal best" PEFR. This number is used to determine if future PEFR readings are normal or low, and is also used to create a normal PEFR range (between 80 and 100 percent of the personal best PEFR). Readings below the normal range are a sign of airway narrowing in the lungs. A low PEFR can occur before asthma symptoms such as wheezing or shortness of breath develop. A personal best PEFR value should be remeasured once per year to account for growth (in children) or changes in the disease (in both children and adults). In addition, home PEFR measurements should be verified with readings taken with equipment in a healthcare provider's office since this equipment is more sensitive. For long term management, most clinicians will recommend PEFR testing once per day, usually in the morning.

### **Emergency Care**

Patients with asthma who fail to improve or worsen despite treatment require emergency medical services. Severe asthma attacks can be fatal if not treated promptly. In most areas of the United States, 911 can be called for emergency medical assistance. Patients should not attempt to drive to a hospital or clinician's office on their own.

### **Where To Get More Information**

Your healthcare provider is the best source of information for questions and concerns related to your medical problem. Because no two patients are exactly alike and recommendations can vary from one person to another, it is important to seek guidance from a provider who is familiar with your individual situation. This discussion will be updated as needed every four months on our web site ([www.uptodate.com/patients](http://www.uptodate.com/patients)). Additional topics as well as selected discussions written for healthcare professionals are also available for those who would like more detailed information. A number of web sites have information about medical problems and treatments, although it can be difficult to know which sites are reputable. Information provided by the National Institutes of Health, national medical societies and some other well-established organizations are often reliable sources of information, although the frequency with which they are updated is variable. National Library of Medicine



## Melbourne Respiratory & Sleep Services

9459 0555 ☎ 9455 0786 📠  
reception@mrss1.com.au ✉  
www.melbournerespiratoryandsleep.com.au 🌐  
226 Burgundy Street Heidelberg VIC 3084 📍

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([www.nlm.nih.gov/medlineplus/healthtopics.html](http://www.nlm.nih.gov/medlineplus/healthtopics.html)); National Heart, Lung, and Blood Institute ([www.nhlbi.nih.gov/](http://www.nhlbi.nih.gov/)); National Lung Health Education Program ([www.nlhep.org](http://www.nlhep.org)); American Lung Association ([www.lungusa.org](http://www.lungusa.org)); American Academy of Allergy, Asthma, and Immunology ([www.aaaai.org/patients.stm](http://www.aaaai.org/patients.stm)); American College of Allergy, Asthma, and Immunology ([www.acaai.org/public/](http://www.acaai.org/public/))