UNIVERSITY OF MICHIGAN HEALTH
MICHIGAN MEDICINE

Peak Flow Monitoring and Airway Stenosis

What is a peak flow meter?

A **peak flow meter** is a device that measures how quickly air moves out of your lungs. Peak flow meters were developed for monitoring conditions such as asthma, but they are also useful in monitoring **upper airway stenosis** (the narrowing of the airway), including subglottic and tracheal stenosis.

- **Subglottic stenosis** is a narrowing of the airway in the part of the voice box below the vocal cords (called the **glottis**).
- **Tracheal stenosis** is a narrowing of the **trachea** (windpipe) that is caused by an injury or birth defect.

As the upper airway narrows, air moves more slowly, which decreases the peak flow reading (measurement) on the peak flow meter. The peak flow meter can show changes in your airway over time. By checking your peak flow regularly, it is possible to catch narrowing in your upper airway early. You might notice it before you're even experiencing any symptoms, such as **stridor** (noisy breathing caused by airflow through a narrowed airway).

Where do I get a peak flow meter?

There are many different peak flow meter devices. The cost and accuracy of the device's readings can vary based on the pharmacy and brand. Your doctor can often give one to you at a clinic visit.

How do I use a peak flow meter?

1. Move the indicator (the line or disc) to the bottom of the numbered scale.
2. Take a deep breath in, filling your lungs completely with air.

3. While holding your breath, place the mouthpiece in your mouth and close your lips around it. Do not put your tongue inside the hole.
4. Blow as **hard** and as **fast** as you can in a single quick blow.
5. Write down the highest number you get (the highest number the indicator moves to). If you cough or make a mistake, don't write down the number. Do it over again.
6. Repeat the steps above 2 more times, and record the highest number of the 3 blows. This is your peak flow reading for that day.

When should I measure my peak flows during the day?

Your peak flow readings will be different throughout the day. They tend to be lowest in the morning and increase as the day goes on. The time of day is not important for peak flow measurements for airway stenosis. **However, performing the test at a similar time each day will make your readings more consistent and reliable.**

How often should I measure my peak flows?

There is no standard of how often to do peak flow measurements for airway stenosis. We measure airway stenosis over months, or sometimes years. Your measurements will change over time, and we are trying to understand overall trends. **In general, most patients measure peak flows 1 or 2 times per week.**

When should I call the doctor?

It is helpful to do peak flow measurements in the first several weeks after a **dilation procedure** (a surgical procedure that dilates, or opens, the narrowing in your airway) to get your baseline during "good breathing." Because peak flow measurements are very different from person to person, there is no single number that is "good" or "bad." However, if you are consistently getting peak flows of 250 or less, or peak flows that are less than half of your "best" peak flow (from your “good breathing” baseline), please contact your airway doctor.

Authors: Jamie Lock, BSN RN, Norman Hogikyan, MD, Robert Morrison, MD, Robbi Kupfer, MD
Edited by: Amy McAlister, MSA, Brittany Batell, MPH MSW