

SPIROMETRY

A spirometer is a vital tool in the measurement of lung functions. It provides important information to help diagnose, manage and treat a patient with any lung disease including asthma, and COPD (chronic obstructive pulmonary disease: emphysema, and chronic bronchitis). Most children by five years of age can perform a spirometry. The cost of owning a spirometer has been decreasing and insurance companies, including Medicare and Medicaid will reimburse the physician for performing the spirometry and the interpretation, so in a short time the spirometer will pay for itself. In the future we will see that a pulmonary function testing will be required to be done for all patients with a diagnosis of cough, bronchitis, wheezing, emphysema, pneumonia or any respiratory disorder.

Diagnosing asthma early at its onset is very important in helping reduce the patient's lung function over time. Asthma is a chronic disease and early treatment can keep a person breathing normal for life, unfortunately poorly controlled asthma can lead to COPD, which is chronic emphysema and chronic bronchitis. Monitoring someone with asthma or COPD with a spirometer can inform a physician on when to increase or even decrease medication.

There are great videos on the internet, including you tube describing how to perform a spirometry, as well as interpreting a spirometry.

Reading and interpreting the spirometry data is simple. The most important pieces of information are the FVC, FEV1, FEV1/FVC ratio, and FEF 25-75 percentages. The data is given in actual measurement of volumes in liters, but one should just focus on the percentages. The percentages reported is comparing your patient to other people with the same age, and height. Normal percentages range from 80-120%, so if someone is at 70% predicted they are somewhat reduced or obstructed.

FVC- is a measurement of a person's overall lung volume. A patient with 60% will have a greater reduction in lung volume than someone with 70%. Lung volume reduction is associated with asthma, and COPD.

FEV1- measures the rate at which air in the lungs is exhaled at 1 second. Eighty percent of the air in our lungs is exhaled in the first one second of expiration, so if there is a decrease in the rate (how fast the air can be blown out of the lungs) then this can be a sign of obstruction. Remember asthma, and COPD are diseases of obstruction, the bronchial walls are thickened or the alveoli (air sacs) are destroyed so air cannot get out of the lungs as quickly. So a patient that has an FEV1 of 70% is less obstructed than a patient with an FEV1 of 60 or 50%.

FEV1/FVC ratio will give us information related to obstruction, so the lower the percentage the more obstructed the person is.

FEF 25-75 gives us the air flow related to the smaller airways. The smaller airways are more vulnerable to the negative affects of asthma and smoking. For a long time this measurement was just used in pediatrics as a sensitive indicator of lung damage, but this measurement is also helpful for adults.

Since we know that asthma is a disease of bronchial constriction and bronchial dilation we can use albuterol along with the spirometer to assess some of our patients with asthma. It is helpful, at times, to provide the patient a bronchodilator (albuterol inhaler or nebulized albuterol) after performing a spirometry to see if any of the percentages change. Typically a 12% change or improvement in FEV1, and/or a change or improvement in the FEF 25-75 proves that the patient demonstrated bronchial dilation, which is also called bronchial reversibility, and that helps make the diagnosis of asthma. One interesting result is when there is a drop or worsening of 12% in either of the FEV1 or FEF 25-75, this correlates to inflammation of the bronchioles and the bronchioles actually constricted due to the irritation from the albuterol, so the patient most likely has asthma since there were some changes of at least 12%. A person may perform a spirometry and be in 100 percentiles on FEV1 and FEF25-75, but after using a bronchodilator they change by 12% the person should receive a diagnosis of asthma. Remember the predicted values are generalizations for the general population, but each individual has their own personal best for lung function.

The CPT codes for: Spirometry: 94010

If you do a pre/post spirometry: 94060 (remember you do not bill for the albuterol or breathing treatment)

If you need a diagnosis code and not sure the patient has asthma you can use chronic cough 786.2.

The diagnosis code for asthma is 493.90

Using a spirometer is easy and important. With time and practice the spirometer will become an integral part of evaluating any patient that presents with a cough, bronchitis, wheezing, or respiratory complaint to a medical practice.

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