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Pulmonary function tests

Pulmonary function tests are a group of tests that measure how well the lungs take in and release air and how well they move gases such as oxygen from the atmosphere into the body's circulation.

How the Test is Performed

Spirometry measures airflow. By measuring how much air you exhale, and how quickly, spirometry can evaluate a broad range of lung diseases. In a spirometry test, while you are sitting, you breathe into a mouthpiece that is connected to an instrument called a spirometer. The spirometer records the amount and the rate of air that you breathe in and out over a period of time.

For some of the test measurements, you can breathe normally and quietly. Other tests require forced inhalation or exhalation after a deep breath. Sometimes you will be asked to inhale the substance or a medicine to see how it changes your test results.

Lung volume measurement can be done in two ways:

- The most accurate way is to sit in a sealed, clear box that looks like a telephone booth (body plethysmograph) while breathing in and out into a mouthpiece. Changes in pressure inside the box help determine the lung volume.
- Lung volume can also be measured when you breathe nitrogen or helium gas through a tube for a certain period of time. The concentration of the gas in a chamber attached to the tube is measured to estimate the lung volume.

To measure diffusion capacity, you breathe a harmless gas, called a tracer gas, for a very short time, often for only one breath. The concentration of the gas in the air you breathe out is measured. The difference in the amount of gas inhaled and exhaled measures how effectively gas travels from the lungs into the blood. This test allows the doctor to estimate how well the lungs move oxygen from the air into the bloodstream.

How to Prepare for the Test

Do not eat a heavy meal before the test. Do not smoke for 4 - 6 hours before the test. You'll get specific instructions if you need to stop using bronchodilators or inhaler medications. You may have to breathe in medication before or during the test.

How the Test Will Feel

Since the test involves some forced breathing and rapid breathing, you may have some temporary shortness of breath or lightheadedness. You breathe through a tight-fitting mouthpiece, and you'll have nose clips.

Why the Test is Performed

Pulmonary function tests are done to:

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