

Pulmonary Function Tests: Spirometry

What is spirometry?

Pulmonary function tests (PFTs) measure how well your lungs are working. There are several different tests. For example:

- **Spirometry** measures how much and how fast air can move out of your lungs. It is the most commonly used pulmonary function test.
- **Diffusing capacity tests** show how well your lungs can move oxygen from the air into the bloodstream.

Why are these tests done?

Pulmonary function tests help:

- Diagnose lung diseases such as asthma, chronic bronchitis, and emphysema
- Find the cause of shortness of breath
- Measure the effects of exposure to cigarette smoke, chemicals, coal dust, and other toxins that can damage lung function
- Find the best treatment plan for you
- Measure how much better the lungs are working when you are given medicines for narrowed airways

These tests can help find lung disease at an early stage, before you have symptoms. If your lungs are damaged, these tests may help you know how much they are damaged. The tests can also help see if your breathing problems are reversible--that is, likely to get better with the use of medicines that open up the airways.

How do I prepare for these tests?

Eat a light meal and do not smoke for 4 to 6 hours before your test. If you have asthma, ask your healthcare provider if you need to stop using asthma medicine before the test.

How are the tests done?

- **Spirometry:** You will breathe into a mouthpiece that is connected to an instrument called a spirometer. The spirometer measures how much air you can blow out in 1 second. You will be asked to hold the tube of the spirometer in your mouth, breathe in as much air as possible, and then blow out as hard as you can into the spirometer until your lungs feel completely empty. The amount of air you can force out is called your forced expiratory volume, or FEV1.
- **Diffusing capacity:** You will breathe carbon monoxide (CO) for 1 or more breaths. Then you will breathe out and the concentration of CO in the air you exhale will be measured. The difference in the amounts of CO inhaled and

exhaled shows how well gas, like oxygen, can travel from your lungs into the blood.

These tests are not painful, and you will have time to rest between the different tests. The tests may be repeated 2 or more times.

Ask your healthcare provider when and how you will get your test results.

What do the test results mean?

The test results can help you know if your lungs are normal. If your test results are not normal, the tests can help you know what kind of lung disease you may have and how severe it is. For example, if you have COPD or asthma, you will have trouble breathing out, but your lung volume will be normal. If you have a disease like asbestosis or sarcoidosis, your lung volume will be lower than normal, but you will be able breathe out with no problem.

What if my test results are not normal?

Test results are only one part of a larger picture that takes into account your medical history and current health. Sometimes a test needs to be repeated to check the first result. Talk to your healthcare provider about your result and ask questions, such as:

- If you need more tests
- What kind of treatment you might need
- What lifestyle, diet, or other changes you might need to make

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