



An Overview of Pulmonary Testing

Your physician requires detailed information to accurately diagnose lung ailments and recommend the appropriate treatment. The following is a list of tests commonly used to evaluate lung performance, one or more of which your physician may require you to take. Talk with your physician if you have any questions about any testing procedure.

PULSE OXIMETRY

What is the test?

- A simple, painless test designed to measure the concentration of oxygen in the blood.

Why is it done?

- This test measures how well your lungs transfer oxygen to the bloodstream.

How is it done?

- A sensor is attached to your finger or ear lobe, which is then attached to a measuring device. This may be done for a few minutes or over a longer period.

How do I prepare?

- You may need to remove any nail polish prior to the test.

How does it feel?

- You should not feel any pain or discomfort during the test.

What are the risks?

- There are no expected risks but you should always discuss with your physician any concerns you may have.

LUNG FUNCTION TESTS

What is the test?

- Lung function tests, also known as pulmonary function tests (PFTs), evaluate how well your lungs work.

Why is it done?

- This test is used to help determine the cause of breathing problems.

How is it done?

- Lung function tests are done in exam rooms with special measuring devices. You will wear a nose clip to make sure that no air passes in or out of your nose during the testing. During the test you will be asked to breathe into a mouthpiece connected to the special measuring device. Testing may take from 5 to 30 minutes, depending on the type and number of tests required.

How do I prepare?

- Tell your physician if you've recently experienced chest pains or a heart attack, if you take medicine for your lung problems, or are allergic to any medicine.
- Do not eat a heavy meal before the test.
- Do not smoke or exercise for 6 hours before the test.
- Wear loose clothing that does not restrict your breathing.
- If you have dentures, wear them during the test to help form a seal around the mouthpiece.



How does it feel?

- Lung function tests are painless, although the nose clip and the mouthpiece may be a little uncomfortable. You also may feel lightheaded or cough because of the required deep breathing. You will be allowed to rest between tests.

What are the risks?

- Lung function tests present little or no risk. If you have concerns, always discuss them with your physician before testing.

CHEST X-RAY

What is the test?

- A chest x-ray is a picture of your lungs, heart, and other internal structures.

Why is it done?

- A chest x-ray is frequently used to determine chest ailments. It can help locate the cause of common symptoms such as cough, shortness of breath, or chest pain.

How is it done?

- You will be asked to stand, sit, or lie in front of an x-ray plate to have the image taken. You should remain still during the x-ray, and may be asked to hold your breath while the image is taken. Typically, x-rays take only a few minutes, although a little more time may be needed if additional images are required.

How do I prepare?

- You will be asked to take off any jewelry or metal that may interfere with the x-ray. You may need to take off all or most of your clothes above the waist.

How does it feel?

- The x-ray is painless, but the room may be cool and the x-ray plate is hard. If you need help changing positions during testing, the x-ray technician will help you.

What are the risks?

- Chest x-rays expose you briefly to a minimum amount of radiation. The chance of damage to your cells or tissue is very low. If you are or think you might be pregnant, please notify your physician and the x-ray technician.

HIGH-RESOLUTION COMPUTED TOMOGRAPHY (HRCT) SCAN

What is the test?

- A scan uses both x-ray and computer technology to create very detailed pictures of the structures inside the body.

Why is it done?

- A chest HRCT looks for problems with the lungs, heart, esophagus, and the major blood vessels or the tissues in the center of the chest.

How is it done?

- During the test, you will lie on a table that is hooked to the CT scanner, which is a large doughnut-shaped machine. The scanner will rotate around you, taking x-ray images that are sent to the scanner's computer. You will hear clicking noises as the machine works and you may be given earplugs. The procedure may take from 1/2-1 1/2 hours.



How do I prepare?

- You may be asked to avoid eating before the test.
- You may need to remove most of your jewelry and all or most of your clothes.
- Tell your physician if you are or might be pregnant, or if you are breast feeding.
- Let your physician know if you have allergic reactions to any medicine, including iodine dyes, because of additional agents your doctor may administer.
- You may need to have someone drive you home after the test.

How does it feel?

- Although the test is painless, some people feel nervous in small spaces. Because you need to remain still during testing, you may be given some medicine to help you relax.

What are the risks?

- An HRCT scan will expose you to x-rays but the risk is small. Talk to your physician about testing and its potential risks if you have any concerns.

SIX-MINUTE WALK TEST

What is the test?

- This is a timed-distance walking test.

Why is it done?

- The 6-minute walk test determines how much exercise you're able to complete, and provides information on how well your lungs are functioning.

How is it done?

- For a period of 6 minutes, you will be asked to walk as far as you can on a flat surface, such as the hallway in a medical building or hospital.

How do I prepare?

- Wear comfortable clothing and shoes suitable for walking.
- If needed, you may use a cane or walker.
- Take your medicine as you would normally.
- Eat a light meal.

How does it feel?

- You may slow down, stop, or rest as much as necessary.
- You may feel tired and out of breath during part of the test.

What are the risks?

- Tell your physician if you have, or have had, any type of heart condition or high blood pressure.



BRONCHOSCOPY

What is the test?

- A bronchoscopy is a procedure that allows your physician to look into your airway.

Why is it done?

- This test can help identify the cause of your respiratory problems, take tissue samples, and help diagnose lung diseases.

How is it done?

- There are two types of bronchoscopy: flexible and rigid.
- The flexible bronchoscope is a long, thin, lighted tube inserted into your airway through the mouth or nose. This is the more common of the two procedures, and typically takes place in your physician's office. You may be given a sedative to help you relax. You will be asked to sit in a reclining chair or lie on your back. A local anesthetic is sprayed into your nose and mouth. You will be awake for the procedure. Your physician may use a small needle to remove a sample of lung tissue during the procedure.
- The rigid bronchoscope is usually performed under general anesthesia in a hospital. A straight, hollow metal tube is inserted into your airway. You will be asleep and your neck will be positioned to allow the physician to insert the bronchoscope through your mouth and into your windpipe. Your physician may take small lung tissue samples or wash your airway with a salt solution that will be saved and later tested.

How do I prepare?

- You may be given some medicine before the procedure to dry your mouth and airways.
- You may be asked to remove: dentures, eyeglasses, contact lenses, hearing aids, wigs, makeup, jewelry, and most of your clothes.
- You should not eat or drink anything for several hours before the procedure.
- You should arrange to have someone drive you home after the procedure.

How does it feel?

- For the flexible bronchoscope, you may feel pressure in your airway. Let your physician know if you are uncomfortable.
- For the rigid bronchoscope, you will be asleep and will feel nothing during the procedure.
- Following either procedure, you may have a sore throat and your mouth may feel dry for several hours. You also may have a hoarse voice.

What are the risks?

- Bronchoscopy is generally considered a safe procedure and complications are rare. Your physician will discuss with you the potential risks, including: spasms of the bronchia tubes that may impair breathing, irregular heart rhythms, infections, ongoing hoarseness, bubbles under the skin that crack and pop when pressed, and bleeding caused by the needle used to collect tissue samples.



VIDEO-ASSISTED THORACIC SURGERY (VATS) LUNG BIOPSY

What is the test?

- A medical instrument, called a scope, is passed through a small incision in your chest to remove a lung tissue sample.

Why is it done?

- The lung biopsy is used to obtain tissue samples from your lung, which can then be viewed under a microscope to help diagnose your lung condition.

How is it done?

- A chest surgeon will perform the procedure. You will be given a sedative and will be asleep during the test. A small incision will be made between your ribs and a tube inserted to help you breathe during the procedure. The scope is then inserted and lung tissue samples removed. If more tissue is needed, a larger incision will be made. At the end of the procedure, the incision will be closed and bandaged. The entire procedure usually takes about an hour.

How do I prepare?

- Tell your physician which medicines you are taking, any drug allergies you may have, and if you are pregnant or believe you may be.
- Your physician may request certain blood tests before the procedure.
- Do not eat or drink for 8-10 hours before the procedure.
- You will need to arrange to have someone drive you home.

How does it feel?

- The sedative will relax you. You will be given anesthesia and will remain asleep during the procedure.
- Following the procedure, you may be tired and have sore muscles for a few days. The breathing tube inserted during the procedure may also cause your throat to be sore.
- You will need to keep the incision and bandages dry for about two days.

What are the risks?

- Your physician will discuss with you the potential risks prior to the biopsy. In general, you may have some difficulty breathing after the biopsy. Complications are rare, but include: bleeding, infection, or a collapsed lung.