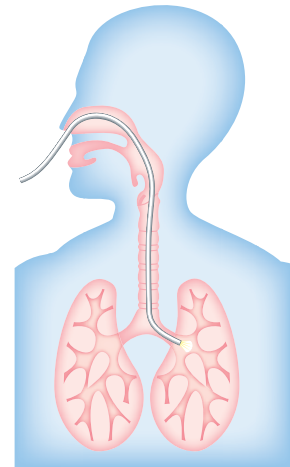


Fiberoptic Bronchoscopy

Fiberoptic bronchoscopy (bron-kos'ko-pi) is a visual exam of the breathing passages of the lungs (called "airways"). This test is done when it is important for your doctor to see inside the airways of your lungs, or to get samples of mucus or tissue from the lungs.

Bronchoscopy involves placing a thin tube-like instrument called a bronchoscope (bron'ko-skōp) through the nose or mouth and down into the airways of the lungs. The tube has a mini-camera at its tip, and is able to carry pictures back to a video screen or camera.



Why do I need a bronchoscopy?

Common reasons why a bronchoscopy is needed include:

- **Infections**—When a patient is suspected of having a serious infection, bronchoscopy is performed to get better samples from a particular area of the lung. These samples can be looked at in a lab to try to find out the exact cause of the infection.
- **Lung spot**—An abnormal finding ("spot") in the lung viewed on an X-ray film or CT scan may be caused by an infection, cancer, or inflammation. Bronchoscopy allows a doctor to take samples from the area. These samples are then looked at in a lab to find out the specific cause of the lung spot.
- **Ongoing lung collapse**—The collapse of a lung or part of a lung (*atelectasis*) is usually caused by something, such as a peanut, a tumor, or thick mucus blocking the airway passage. The bronchoscopy allows the doctor to see the blockage, sample and/or remove the substance; this helps to open up the airway.
- **Bleeding**—When a patient has coughed up blood, bronchoscopy can help the doctor find the cause of the bleeding. For example, if a tumor is causing the bleeding, the doctor will locate the tumor and take samples of tissue (*biopsies*) through the bronchoscope. The samples are then looked at in the lab to identify the type of tumor. Other than tumors, there may be other reasons for the bleeding that the test can help to identify.
- **Noisy Breathing and Airway Narrowing**—A person can have noisy or abnormal breathing sounds that may be caused by a problem with the throat or airways of the lung. There may be shortness of breath, noisy breathing, or labored breathing during sleep. The bronchoscopy allows the doctor to look directly at the throat, vocal cord area, and major airways to identify any problems. Causes of this type of breathing may include vocal cord paralysis or weakness, floppiness in the airways (*bronchomalacia*) or voice box (*laryngomalacia*), or a blood vessel pressing on the outside of the airway (*vascular compression*).

Alternatives to bronchoscopy

Other tests and procedures, such as X-rays, CT scans and suctioning techniques can give the doctor some information about the lungs, but bronchoscopy provides the doctor with more information and allows the doctor to look at the inside of the lungs and obtain very specific samples and remove mucus if necessary. This is why your doctor may schedule bronchoscopy even after you have had X-rays or other tests.

Preparing for bronchoscopy

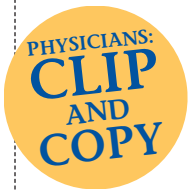
In a critically ill patient who has a breathing tube, feedings are stopped several hours before the procedure to assure that the stomach is empty. The patient is given a small amount of medicine (*a sedative*) that causes sleepiness.

If you are having a bronchoscopy as an outpatient or as a non-critically ill inpatient, you will be told not to eat after midnight the night before (or about 8 hours before) the procedure. You will also receive instructions about taking your regular medicines, smoking and removing any dentures before the procedure.

Before beginning the procedure, you will inhale an aerosol spray of a medicine like Novocain, which numbs the nose and throat area and helps to prevent coughing and gagging during the procedure. After that you will be given a sedative by vein. The sedative will help you to relax, and may make you feel sleepy. The sedative may also help you to forget any unpleasant sensations felt during the test.

What happens during a bronchoscopy?

If you are not a hospital inpatient, or if you are a hospital patient who is awake during the procedure, your doctor will be able to explain step-by-step what is happening. You will probably be lying down with the head of the bed tilted up slightly. The bronchoscope is placed through the nose or mouth, then advanced slowly down the back of the throat, through the vocal cords and into the airways. During this time your vocal cords and air passages will feel numb. Your doctor will be able to see the inside of the



lungs through the mini-camera at the bronchoscope's tip. You may feel like you cannot "catch your breath," but there is enough room to breathe and get enough oxygen.

If you are already a patient in the ICU with a breathing tube, the procedure will be relatively quick, around 15 to 30 minutes. If you are an outpatient, the bronchoscopy could take anywhere from 30 minutes to an hour, depending on how long it takes for the medicine to take effect, and the reason for the procedure.

Risks of bronchoscopy

Bronchoscopy is a safe procedure. Serious risks from bronchoscopy, such as an air leak or serious bleeding, are uncommon—less than 5%. The risks associated with the procedure are as follows:

- **Discomfort and Coughing**—While the bronchoscope is passed through your nose or throat into the lungs, it may cause some discomfort. It may also tickle your airways, causing a cough. You will be given medicine that is sprayed into the nose or throat (*local anesthetics*), as well as medicine (*sedatives*) by vein to lessen any coughing, gagging, or unpleasant sensations felt during the procedure.
- **Reduced oxygen**—The level of oxygen in the blood may fall during the procedure for several reasons. The bronchoscope may block the flow of air into the airway, or small amounts of liquid used during the test may be left behind, causing the oxygen level to drop. This drop is usually mild, and the level usually returns to normal without treatment. If the oxygen level remains low, the doctor will give extra oxygen or stop the test to allow for recovery. Your oxygen level will be continuously monitored during the procedure through a sensor clip placed on your finger; this device is called a pulse oximeter.
- **Lung Leak or Collapse**—The airway may be injured by the bronchoscope, particularly if the lung is already very inflamed or diseased. If the lung is punctured, it may cause an air leak (*pneumothorax*) around the lungs, which can cause the lung to collapse. This complication is not common, and is more likely if a biopsy is taken during bronchoscopy. If there is a large or ongoing air leak, it may need to be drained with a chest tube.
- **Bleeding**—Bleeding can occur after the doctor performs a biopsy or if the bronchoscope injures a tumor in the airways. Bleeding is more likely if the airway is already inflamed or damaged by disease. Usually bleeding is minor and stops without treatment. Sometimes a medication can be given through the bronchoscope to stop bleeding. Rarely, bleeding can lead to severe breathing problems or death.

What happens after the procedure?

Patients vary in their wake-up times. If you are in the intensive care unit on a ventilator (*respirator; breathing ma-*

chine), you probably won't be fully awakened following the procedure. You will, however, continue to receive medicines to keep you comfortable on the ventilator. If you are an outpatient or a non-critically ill inpatient, you will need to stay in the recovery area for an hour or more before the sedative has worn off. You will also need to wait 30–60 minutes, or until the numbness wears off, before drinking any liquids. If you are an outpatient, it is recommended that you bring someone along to drive you home.

It is unlikely that you will experience any problems after the test other than a mild sore throat, hoarseness, cough, or muscle aches. If you feel chest pain or increased shortness of breath or cough up more than a few tablespoons of blood once you leave the hospital, contact your doctor immediately.

Your doctor can tell you how your airways look right away. Lab results take more time, usually 1–4 days or more depending on the specific test that is being done.

Source: Manthous, C., Tobin, MJ. A Primer on Critical Care for Patients and Their Families, ATS Website: www.thoracic.org/assemblies/cc/ccprimer/mainframe2.html

Additional Lung Health Information

American Thoracic Society:

www.thoracic.org

ATS Patient Advisory Roundtable:

www.thoracic.org/aboutats/par/par.asp

National Heart Lung & Blood Institute:

www.nhlbi.nih.gov/index.htm

Centers for Disease Control & Prevention:

www.cdc.gov/



You are scheduled to have a bronchoscopy, a procedure that your doctor performs to examine your airways or take samples from your lungs.

- ✓ Do not eat or drink after midnight the day before the procedure.
- ✓ Review your medication schedule and smoking activity with your doctor.
- ✓ After the procedure, do not drink for ½ to 1 hour or until the numbness completely wears off.
- ✓ Do not drive home by yourself after the procedure; arrange for a family member or friend to take you home.
- ✓ Contact your doctor immediately if you have shortness of breath or chest pain, or you cough up more than a few tablespoons of blood at home.

Doctor's Office Telephone:
