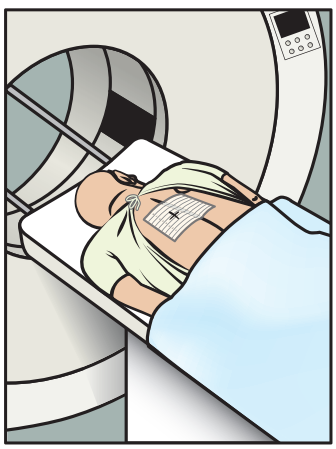
Transthoracic Needle Biopsy

Transthoracic needle biopsy is a medical procedure to obtain a sample of tissue from the lung. Usually, this is done when one or more nodules are seen on chest imaging, such as a CT scan ("cat-scan"). We also call lung nodules "spots" or "shadows." These "spots" can be caused by scar, inflammation, infection, or cancer. When the cause of these nodules is unclear, performing a biopsy of the "spot" can help your healthcare team figure out what it is and what to do about it. For more information on Pulmonary Nodules, see the ATS Patient Education Series fact sheet 'What is a Lung Nodule' at www.thoracic.org/patients.



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Why do I need a transthoracic needle biopsy?

If you have a CT scan and it shows a lung nodule, based on its appearance and your medical history, your healthcare team may suggest one of several things:

1. Repeat a CT scan after a few weeks or months to see if it changes
2. Get a different type of chest image, such as a PET scan
3. Get a biopsy to have a pathologist examine the tissue

If a biopsy is performed, the sample will be sent to a lab to be reviewed by a pathologist who looks at the tissue under a microscope to determine what it is. There are many different ways to take a biopsy and your healthcare team will talk to you about which approach is best for you.

What happens when I get a transthoracic needle biopsy?

"Transthoracic" means the biopsy is taken by placing a needle in your chest. Other names for this procedure are "percutaneous needle biopsy," "CT-guided needle biopsy," or "ultrasound- guided needle biopsy." When you go for a transthoracic needle biopsy, the doctor places a needle through the skin on your chest, between the ribs and into the lung.

This procedure is usually performed by a radiologist and takes about one hour to complete.

Usually you remain awake during a transthoracic needle biopsy. However, sometimes a medicine that causes relaxation and sleepiness (a sedative) can be given to help you get through the procedure. The doctor doing the biopsy first cleans the skin, then gives local anesthetic medicine to numb the area. Then the doctor inserts the needle into the lung using ultrasound or CT scans to guide the needle to the nodule. Once the needle is in the right place, the biopsy sample is taken, and the needle is removed. An imaging study such as an ultrasound, chest x-ray, or CT scan is then done to see if there have been any complications. If everything looks OK, then the insertion site wound is covered with a bandage and the wound closes without need for stitches.

What are the risks of a transthoracic needle biopsy?

Your healthcare team will explain the risks for you when you give consent for the procedure. Some of the possible risks for the procedure include:

- **Collapsed lung**—To take a sample from a lung nodule, the needle has to puncture the lung. This makes a small hole in the lung and air can leak out into the space around the lung. The hole usually

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will seal on its own, but if a lot of air leaks out, it can cause the lung to collapse. This is called a pneumothorax. This happens in about one in four people. If this is small, it usually goes away on its own, but your doctor will monitor you closely. If this is large, the doctor can place a tube through the chest (a chest tube) to remove the air that is leaking. (See the ATS Patient Information Series fact sheet Chest Tube Thoracostomy at www.thoracic.org/patients)

- **Pain during procedure**—Inserting the needle can cause pain. Medicine used to numb the skin (called local anesthetic) helps reduce this pain. The pain is usually mild and goes away once the procedure is complete.
- **Bleeding**—Sometimes the needle can injure a blood vessel in the skin, chest wall, or lung and cause bleeding. Bleeding is usually minor and stops on its own, and only rarely requires another procedure to stop it. This bleeding can cause a bruise on the chest. You may also cough up a little blood after the procedure. Typically, this stops by itself and is not a serious problem.
- **Missing the nodule**—Sometimes the doctor doing the biopsy may miss the nodule or not get enough tissue. This can be because the nodule is small, in a difficult to reach location, or due to a complication when doing the biopsy. Your healthcare team will talk to you about the next steps if they don't get enough tissue from the biopsy.

Getting ready for a transthoracic needle biopsy

Your healthcare team will provide you with instructions about how you can prepare for the biopsy. Importantly, this information will include any medications you should stop taking (such as blood-thinners) and for how long before the procedure.

Typically, patients go home a few hours after the procedure. However, if there is a complication your healthcare provider may have you stay in the hospital for observation.

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Rx *Action Steps*

- ✔ Talk to your healthcare provider about why a biopsy is needed and the risks
- ✔ Ask the doctor performing the biopsy about the use of numbing medicine (anesthetic) or medicine that causes relaxation and sleepiness (sedative) before the procedure
- ✔ Check to see if you need to stop any of your current medications before or after the procedure
- ✔ After the biopsy, call your healthcare provider if you have:
  - New, sudden difficulty breathing
  - Chest pain, especially with deep breaths
  - A cough that produces more than a tablespoon of blood or lasts more than 24 hours
  - Bleeding or swelling at the needle insertion site

Healthcare Provider's Contact Number:

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For More Information

American Thoracic Society

- www.thoracic.org/patients/
  - – Lung Nodule
  - – Thoracostomy (Chest tube)

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