Lung Cancer Early Detection, Diagnosis, and Staging

Know the signs and symptoms of lung cancer. Find out how lung cancer is tested for, diagnosed, and staged.

Detection and Diagnosis

Catching cancer early often allows for a higher likelihood of successful treatment. Some early cancers may have signs and symptoms that can be noticed, but that is not always the case.

- Can Lung Cancer Be Found Early?
- Lung Nodules
- Signs and Symptoms of Lung Cancer
- Tests for Lung Cancer
- Understanding Your Pathology Report

Stages and Outlook (Prognosis)

After a cancer diagnosis, staging provides important information about the extent of cancer in the body and anticipated response to treatment.

- Non-Small Cell Lung Cancer Stages
- Small Cell Lung Cancer Stages
- Lung Cancer Survival Rates

Questions to Ask About Lung Cancer

Here are some questions you can ask your cancer care team to help you better understand your cancer diagnosis and treatment options.

- Questions to Ask About Lung Cancer

Can Lung Cancer Be Found Early?

Screening is the use of tests or exams to find a disease in people who don't have symptoms.

- Screening options for lung cancer
- Reasons to screen people at higher risk for lung cancer
- American Cancer Society lung cancer screening guideline
- How screening is done

Screening options for lung cancer

Regular chest x-rays have been studied as a screening test for people at higher risk for lung cancer, but they haven't been shown to help most people live longer, and therefore they aren't recommended for lung cancer screening.

At present, a test known as a **low-dose CT (LDCT) scan is used to screen** people at higher risk (mainly because they smoke or used to smoke) for lung cancer. LDCT scans can help find abnormal areas in the lungs that may be cancer. Research has shown that unlike chest x-rays, yearly LDCT scans to screen people at higher risk of lung cancer can save lives. For these people, getting yearly LDCT scans before symptoms start helps lower the risk of dying from lung cancer.

Reasons to screen people at higher risk for lung cancer

In the United States, lung cancer is the second most common cancer. It's also the leading cause of death from cancer.

If lung cancer is found at an earlier stage, when it is small and before it has spread, it is more likely to be treated successfully. Lung cancer screening is recommended for certain people who smoke or used to smoke, but who don't have any signs or symptoms.

Usually symptoms of lung cancer don't appear until the disease is already at an

advanced stage. Even when lung cancer does cause symptoms, many people may mistake them for other problems, such as an infection or long-term effects from smoking. This may delay the diagnosis. **If you have symptoms that could be from lung cancer, see your doctor right away.** (People who already have symptoms that might be from lung cancer may need tests such as CT scans to find the cause, which in some cases may be cancer. But this kind of testing is for diagnosis and is not the same as screening.)

American Cancer Society lung cancer screening guideline

The American Cancer Society recommends yearly screening for lung cancer with a low-dose CT (LDCT) scan for people ages 50 to 80 years who:

- Smoke or used to smoke

AND

- Have at least a 20 pack-year history of smoking

A pack-year is equal to smoking 1 pack (or about 20 cigarettes) per day for a year. For example, a person could have a 20 pack-year history by smoking 1 pack a day for 20 years, or by smoking 2 packs a day for 10 years.

Before deciding to be screened, people should have a discussion with a health care professional about the purpose of screening and how it is done, as well as the benefits, limits, and possible harms of screening.

People who still smoke should be counseled about quitting and offered interventions and resources to help them.

People should not be screened if they have serious health problems that will likely limit how long they will live, or if they won't be able to or won't want to get treatment if lung cancer is found.

Benefits and possible risks of lung cancer screening

The main benefit of screening is finding the cancer earlier and thus, lowering the chance of dying from lung cancer.

As with any type of screening, it's important to be aware that, not everyone who gets

screened will benefit. Screening with LDCT will not find all lung cancers. Not all of the cancers that are found will be found at an early stage. Some people with lung cancer that is found by screening will still die from that cancer.

LDCT scans can also find things that turn out not to be cancer, but that still have to be checked out with more tests to know what they are. You might need more CT scans, or less often, invasive tests such as a lung biopsy, in which a piece of lung tissue is removed with a needle or during surgery. These tests may lead to serious complications, but they rarely do.

LDCTs also expose people to a small amount of radiation with each test. It is less than the dose from a standard CT, but it is more than the dose from a chest x-ray. Some people who are screened may end up needing further CT scans, which means more radiation exposure.

Other things to consider if you're thinking about screening

If you are at higher risk for lung cancer, your doctor can explain your risk and how lung cancer screening might apply to you. Your doctor can also talk with you about what happens during screening and the best places to get the yearly screening test. Lung cancer screening is covered by Medicare and by many private health insurance plans. Your health care team can help you find out if your insurance will provide coverage.

Screening should only be done at facilities that have the right type of CT scanner and that have experience in LDCT scans for lung cancer screening. The facility should also have a team of specialists that can give patients the appropriate care and follow-up if there are abnormal results on the scans. You might not have the right kind of facility nearby, so you may need to travel some distance to be screened.

If you smoke, you might want to get counseling about stopping. You should be told about your risk of lung cancer and referred to a smoking cessation program. **Screening is not a good alternative to stopping smoking. By quitting, people who smoke can lower their risk of getting and dying from lung cancer.** For help quitting, see How to Quit Using Tobacco[1] or call the American Cancer Society at 1-800-227-2345.

To get the most benefit from screening, people need to be in fairly good health. For example, they need to be healthy enough to have surgery and receive other treatments if lung cancer is found. People who have major health issues that could keep them from having lung surgery might not be good candidates for lung cancer screening. The same is true for people who might have a shortened life expectancy because they already have other serious medical conditions. These people might not benefit enough from screening for it to be worth the risks.

It's important to talk to your doctor about all your health issues when deciding if lung cancer screening is right for you.

How screening is done

Screening for lung cancer is done with a yearly **low-dose CT scan (LDCT)**. For this test, you lie on a thin, flat table that slides back and forth inside the hole in the middle of the CT scanner, which is a large, doughnut-shaped machine.

As the table moves into the opening, an x-ray tube rotates within the scanner, sending out many tiny x-ray beams at precise angles. These beams quickly pass through your body and are detected on the other side of the scanner. A computer then converts these results into detailed images of the lungs.

An LDCT scan is painless and only takes a few minutes, although the entire visit (including getting you ready and into place on the table) can take up to half an hour. You don't need to swallow anything or get any type of injection before this type of CT scan. LDCT does expose you to a small amount of radiation, although it is less than that from a standard CT scan.

To learn more about CT scans and what getting one is like, see CT Scan for Cancer[2].

If something abnormal is found during screening

Sometimes screening tests will show something abnormal in the lungs or nearby areas. Most of these abnormal findings will turn out not to be cancer, but more CT scans or other tests will be needed to be sure. Some of these tests are described in Tests for Lung Cancer.

CT scans of the lungs can also sometimes show problems in other organs near the lungs. Your doctor will discuss any such findings with you if they are found.

Know Your Cancer Risk [3]

Take the ACS CancerRisk360™ assessment to learn more about what you can change to improve your health. By taking 5 minutes to answer a few questions, we will give you a personalized roadmap of actions with helpful resources you can use to lower your risk of cancer.

Hyperlinks

1. www.cancer.org/cancer/risk-prevention/tobacco/guide-quitting-smoking.html
2. www.cancer.org/cancer/diagnosis-staging/tests/imaging-tests/ct-scan-for-cancer.html
3. acscancerrisk360.cancer.org/
4. thoracicrad.org/

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The American Cancer Society acknowledges the Society of Thoracic Radiology[4] for providing their expert collaboration and the LDCT images used in the development of our animated lung cancer screening content.

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Lung Nodules

A lung nodule is a small (3 cm) abnormal area that is sometimes found during a CT scan of the chest and/or abdomen.

If you have a lung nodule

Frequently, CT scans of the lung and/or abdomen are done that are not related to lung cancer screening or to diagnose lung cancer in patients who already have lung symptoms. These reasons include trauma, heart disease, non-cancer related lung disease, or lung infection. Lung nodules that are found on these scans are called “incidental pulmonary nodules.” In contrast, lung nodules that are found on lung cancer screening scans (i.e., LDCT) are not called incidental pulmonary nodules, and are managed differently.

Most lung nodules seen on CT scans are not cancer. They are more often the result of old infections, scar tissue, or other causes. But tests are often needed to be sure a nodule is not cancer.

Most often, the next step is to get a repeat CT scan to see if the nodule is growing over time. The time between scans might range anywhere from a few months to a year, depending on how likely your doctor thinks that the nodule could be cancer. This is based on the size, shape, and location of the nodule, as well as whether it appears to be solid or hazy. If a repeat scan shows that the nodule has grown, your doctor might also want to get another type of imaging test called a positron emission tomography (PET) scan, which can often help tell if it is cancer.

If later scans show that the nodule has grown, or if the nodule has other concerning features, your doctor will want to get a sample of it to check it for cancer cells. This is called a *biopsy*. This can be done in different ways:

- The doctor might pass a long, thin tube (called a bronchoscope[1]) down your throat and into the airways of your lung to reach the nodule. A small tweezer on the end of the bronchoscope can be used to get a sample of the nodule.
- If the nodule is in the outer part of the lung, the doctor might pass a thin, hollow needle through the skin of the chest wall (with the guidance of a CT scan) and into the nodule to get a sample.

- If there is a higher chance that the nodule is cancer (or if the nodule can't be reached with a needle or bronchoscope), surgery might be done to remove the nodule and some surrounding lung tissue. Sometimes larger parts of the lung might be removed as well.

These types of tests, biopsies, and surgeries are described in more detail in Tests for Lung Cancer.

After the biopsy

After a biopsy is done, the tissue sample will be looked at closely in the lab by a doctor called a *pathologist*. The pathologist will check the biopsy for cancer, infection, scar tissue, and other lung problems. If cancer is found, then special tests will be done to find out what kind of cancer it is. If something other than cancer is found, the next step will depend on the diagnosis. Some nodules will be followed with a repeat CT scan in 6-12 months for a few years to make sure it does not change. If the lung nodule biopsy shows an infection, you might be sent to a specialist called an infectious disease doctor, for further testing and treatment. Your doctor will decide on the next step, depending on the results of the biopsy.

Hyperlinks

1. www.cancer.org/cancer/diagnosis-staging/tests/endoscopy/bronchoscopy.html

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Signs and Symptoms of Lung Cancer

Most lung cancers do not cause any symptoms until they have spread, but some people with early lung cancer do have symptoms.

The most common lung cancer symptoms

The most common symptoms of lung cancer are:

- A cough that does not go away or gets worse
- Coughing up blood or rust-colored sputum (spit or phlegm)
- Chest pain that is often worse with deep breathing, coughing, or laughing
- Hoarseness
- Loss of appetite
- Unexplained weight loss
- Shortness of breath
- Feeling tired or weak
- Infections such as bronchitis and pneumonia that don’t go away or keep coming back
- New onset of wheezing

Signs and symptoms of lung cancer that has spread

If lung cancer spreads to other parts of the body, it may cause:

- Bone pain (like pain in the back or hips)
- Nervous system changes (such as headache, weakness or numbness of an arm or leg, dizziness, balance problems, or seizures), from cancer spread to the brain
- Yellowing of the skin and eyes (jaundice), from cancer spread to the liver
- Swelling of lymph nodes (collection of immune system cells) such as those in the neck or above the collarbone

Syndromes caused by lung cancer

Some lung cancers can cause **syndromes**, which are groups of specific symptoms.

Horner syndrome

Cancers of the upper part of the lungs are sometimes called **Pancoast tumors**. These tumors are more likely to be non-small cell lung cancer (NSCLC) than small cell lung cancer (SCLC).

Pancoast tumors can affect certain nerves to the eye and part of the face, causing a group of symptoms called Horner syndrome:

- Drooping or weakness of one upper eyelid
- A smaller pupil (dark part in the center of the eye) on the same side of the face
- Little or no sweating on the same side of the face

Pancoast tumors can also sometimes cause severe shoulder pain.

Superior vena cava syndrome

The superior vena cava (SVC) is a large vein that carries blood from the head and arms down to the heart. It passes next to the upper part of the right lung and the lymph nodes inside the chest.

- Tumors in this area can press on the SVC, which can cause the blood to back up in the veins.
- This blood backup can lead to swelling in the face, neck, arms, and upper chest (sometimes with a bluish-red skin color), as well as trouble breathing.

- It can also cause headaches, dizziness, and a change in consciousness if it affects the brain.

While SVC syndrome can develop gradually over time, in some cases it can become life-threatening, and needs to be treated right away.

Paraneoplastic syndromes

Some lung cancers may cause problems in distant tissues and organs, even though the cancer has not spread to those places. These problems are called paraneoplastic syndromes. Paraneoplastic syndromes can affect your nervous system (paraneoplastic neurologic syndrome) or your endocrine system (paraneoplastic endocrine syndrome).Sometimes these syndromes may be the first symptoms of lung cancer. Because the symptoms affect other organs, a disease other than lung cancer may first be suspected as causing them.

Paraneoplastic syndromes can happen with any lung cancer but are more often associated with small cell lung cancer (SCLC).

In **paraneoplastic *endocrine* syndrome**, the lung tumor makes hormone-like substances that enter the bloodstream and affect distant organs. Examples include:

- **SIADH (syndrome of inappropriate anti-diuretic hormone):** There are many diseases that can cause SIADH. Cancer is one of them. In this condition, the cancer cells make ADH (anti-diuretic hormone), a hormone that causes the kidneys to keep too much water in the body. This lowers salt levels in the blood. Symptoms of SIADH can include fatigue, loss of appetite, muscle weakness or cramps, nausea, vomiting, restlessness, and confusion. Without treatment, severe cases may lead to seizures and coma.
- **Cushing syndrome:** There are many reasons why a person may develop Cushing syndrome. Cancer is one of them and is called ectopic Cushing syndrome. In this condition, the cancer cells make ACTH (adrenocorticotropic hormone), a hormone that causes the adrenal glands to make cortisol. This can lead to symptoms that include weight gain, easy bruising, weakness, drowsiness, and fluid retention. Cushing syndrome can also cause high blood pressure, high blood sugar levels, or even diabetes.
- **Hypercalcemia:** The tumor can make a hormone called parathyroid hormone-related peptide (PTHrP) that acts on the bones and kidney to increase the level of calcium in the blood. High levels of calcium in the blood (hypercalcemia can cause

frequent urination, thirst, constipation, nausea, vomiting, belly pain, weakness, fatigue, dizziness, and confusion.

In **paraneoplastic *neurologic* syndrome**, the tumor can cause the body's immune system to mistakenly attack parts of the nervous system (brain, spinal cord, nerves), rather than the cancer cells. Examples include:

- **Lambert-Eaton syndrome:** In this syndrome, the tumor may cause the immune system to attack the neuromuscular junction, which is the place where nerves communicate with muscle. This can lead to muscle weakness and issues with walking, speaking, and swallowing. One of the first signs may be trouble getting up from a sitting position. Later, muscles around the shoulder may become weak.
- **Paraneoplastic cerebellar degeneration:** This disease can be caused by many different cancers, including small cell lung cancer. The immune system makes antibodies meant to attack the tumor, but instead mistakenly attacks an area of the brain called the cerebellum. This can lead to loss of balance and unsteadiness in arm and leg movement, trouble speaking, trouble swallowing, and changes in vision.
- **Paraneoplastic limbic encephalitis:** The limbic system is a part of the brain that is in charge of storing memory, and controlling emotions and behavior, as well as blood pressure and heart rate. The tumor may cause the immune system to damage the limbic system. This can lead to memory loss, personality changes, mood changes, sleep issues, and seizures.

Many of these symptoms are more likely to be caused by something other than lung cancer. Still, if you have any of these problems, it's important to see your doctor right away so the cause can be found and treated, if needed.

Let your doctor know if you have symptoms

If you go to your doctor when you first notice lung cancer symptoms, your cancer might be diagnosed at an earlier stage, when treatment is more likely to be effective.

Most of these symptoms are more likely to be caused by something other than lung cancer. Still, if you have any of these problems, it's important to see your doctor right away so the cause can be found and treated, if needed.

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Tests for Lung Cancer

Some lung cancers can be found by screening, but most lung cancers are found because they are causing problems. The actual diagnosis of lung cancer is made by looking at a sample of lung cells in the lab. If you have possible signs or symptoms of lung cancer, see your doctor.

- Medical history and physical exam
- Imaging tests to look for lung cancer
- Tests to diagnose lung cancer
- Tests to look for lung cancer
- Lab tests of biopsy and other samples

Medical history and physical exam

Your doctor will ask about your medical history to learn about your symptoms and possible risk factors[1]. They will also examine you to look for signs of lung cancer or other health problems.

If the results of your history and physical exam suggest you might have lung cancer, more tests will be done. These could include imaging tests and/or biopsies of the lung.

Imaging tests to look for lung cancer

Imaging tests use x-rays, magnetic fields, sound waves, or radioactive substances to create pictures of the inside of your body. Imaging tests might be done for a number of reasons both before and after a diagnosis of lung cancer, including:

- To look at suspicious areas that might be cancer
- To learn how far cancer might have spread
- To help determine if treatment is working
- To look for possible signs of cancer coming back after treatment

Chest x-ray

A chest x-ray[2] is often the first test your doctor will do to look for any abnormal areas in the lungs. If something suspicious is seen, your doctor may order more tests.

Computed tomography (CT) scan

A CT scan[3] uses x-rays to make detailed cross-sectional images of your body. Instead of taking 1 or 2 pictures, like a regular x-ray, a CT scanner takes many pictures and a computer then combines them to show a slice of the part of your body being studied.

A CT scan is more likely to find lung tumors than routine chest x-rays. It can also show the size, shape, and position of any lung tumors and can help find enlarged lymph nodes that might contain cancer that has spread. This test can also be used to look for masses in other parts of the body that might be due to the lung cancer spread.

CT-guided needle biopsy: If a suspected area of cancer is deep within your body, a CT scan might be used to guide a biopsy needle into this area to get a tissue sample to check for cancer.

Magnetic resonance imaging (MRI) scan

Like CT scans, MRI scans[4] show detailed images of soft tissues in the body. But MRI scans use radio waves and strong magnets instead of x-rays. MRI scans are most often used to look for possible spread of lung cancer to the brain, spinal cord, or liver.

Positron emission tomography (PET) scan

For a PET scan[5], a slightly radioactive form of sugar (known as fluorodeoxyglucose [FDG]) is injected into the blood and collects mainly in cancer cells. This is because cancer cells tend to take up more sugar (or glucose) than normal cells do.

PET/CT scan: Often a PET scan is combined with a CT scan using a special machine that can do both at the same time. This lets the doctor compare areas of higher radioactivity on the PET scan with a more detailed picture on the CT scan. This is the type of PET scan most often used in patients with cancer. PET/CT scans are used for cancer staging, which is to see if and where the cancer has spread. While they can be used to look at most organs in the body, they are not useful for looking at the brain or spinal cord.

Bone scan

For a bone scan[6], a small amount of low-level radioactive material is injected into the blood and collects mainly in abnormal areas of bone. It can help show if a cancer has spread to the bones.

Tests to diagnose lung cancer

Symptoms and the results of certain tests may strongly suggest that a person has lung cancer, but the actual diagnosis is made by looking at lung cells in the lab.

The cells can be taken from a suspicious area using a needle or surgery (needle biopsy[7]), fluid removed from the area around the lung (thoracentesis), or lung secretions (mucus you cough up from the lungs). The choice of which test(s) to use depends on the situation.

Needle biopsy

Doctors often use a hollow needle to get a small sample from a suspicious area (mass). An advantage of needle biopsies is that they don't require an incision. The drawback is that they remove only a small amount of tissue, and in some cases, the amount of tissue removed might not be enough to both make a diagnosis and to perform more

tests on the cancer cells that can help doctors choose anticancer drugs. The main types of needle biopsies are: fine needle aspiration (FNA) biopsy and core needle biopsy (CNB).

Fine needle aspiration (FNA) biopsy

A syringe with a very thin, hollow needle is used to withdraw (aspirate) cells and small fragments of tissue. FNA biopsy may be done to check for cancer in very small masses or in the lymph nodes located around the lungs. **Transtracheal FNA or transbronchial FNA** is done by passing the needle through the wall of the trachea (windpipe) or bronchi (the large airways leading into the lungs) during a bronchoscopy or endobronchial ultrasound (described below).

In some patients, an FNA biopsy is done during an endoscopic esophageal ultrasound (described below) by passing the needle through the wall of the esophagus.

Core biopsy

A larger needle is used to remove one or more small cores of tissue. Samples from core biopsies are often preferred because they are larger than FNA biopsies.

Core biopsies can be done during many lung procedures and/or surgeries. One example would be during a **Transthoracic needle biopsy**, where the biopsy needle is put through the skin on the chest wall. The doctor guides the needle into the area while looking at the lungs with either fluoroscopy, which is like an x-ray, or a CT scan. A possible complication of this procedure is that air may leak out of the lung at the biopsy site and into the space between the lung and the chest wall. This is called a ***pneumothorax***. It can cause part of the lung to collapse and sometimes cause trouble breathing. If the air leak is small, it often gets better without any treatment. Large air leaks are treated by inserting a chest tube (a small tube into the chest space), which sucks out the air over a day or two, after which it usually heals on its own.

Thoracentesis

If fluid has collected around the lungs (called a **pleural effusion**), doctors can remove some of the fluid to find out if it is caused by cancer spreading to the lining of the lungs (pleura). The buildup might also be caused by other conditions, such as heart failure or an infection.

For a thoracentesis, the skin is numbed and a hollow needle is inserted between the ribs to drain the fluid. The fluid is checked in the lab for cancer cells. Other tests of the

fluid are also sometimes useful in telling a malignant (cancerous) pleural effusion from one that is not.

If a malignant pleural effusion has been diagnosed and is causing trouble breathing, a thoracentesis may be repeated to remove more fluid which may help a person breathe better.

Sputum cytology

A sample of sputum (mucus you cough up from the lungs) is looked at in the lab to see if it has cancer cells. The best way to do this is to get early-morning samples 3 days in a row. This test is more likely to help find cancers that start in the major airways of the lung, such as squamous cell lung cancers. It might not be as helpful for finding other types of lung cancer. If your doctor suspects lung cancer, further testing will be done even if no cancer cells are found in the sputum. This form of testing is not usually used unless the other methods are felt to be too dangerous for the patient.

Tests to look for lung cancer

If lung cancer has been found, it's often important to know if it has spread to the lymph nodes in the space between the lungs (mediastinum) or other nearby areas. This is especially important for a person with early-stage lung cancer, and can affect their treatment options. Several types of tests can be used to look for this cancer spread.

Bronchoscopy

Bronchoscopy[8] can help the doctor find tumors or blockages in the airways of the lungs, which can often be biopsied during the procedure.

Electromagnetic navigation bronchoscopy uses a bronchoscope to biopsy a tumor in the outer part of the lung. First, CT scans are used to create a virtual bronchoscopy. The abnormal area is identified, and a computer helps guide a bronchoscope to the area so that it can be biopsied. The bronchoscope used has some special attachments that allow it to reach farther than a regular bronchoscope. This takes special equipment and training.

Endobronchial ultrasound

An endobronchial ultrasound[9] can be used to see the lymph nodes and other structures in the area between the lungs if biopsies need to be taken in those areas.

Endoscopic esophageal ultrasound

An endoscopic esophageal ultrasound[10] goes down into the esophagus, where it can show the nearby lymph nodes which may contain lung cancer cells. Biopsies of the abnormal lymph nodes can be taken at the same time as the procedure.

Mediastinoscopy and mediastinotomy

These procedures may be done to look more directly at and get samples from the structures in the mediastinum (the area between the lungs). The main difference between the two is in the location and size of the incision.

A mediastinoscopy[11] is a procedure that uses a lighted tube inserted behind the sternum (breast bone) and in front of the windpipe to look at and take tissue samples from the lymph nodes along the windpipe and the major bronchial tube areas. If some lymph nodes can't be reached by mediastinoscopy, a mediastinotomy may be done so the surgeon can directly remove the biopsy sample. For this procedure, a slightly larger incision (usually about 2 inches long) between the left second and third ribs next to the breastbone is needed.

Thoracoscopy

Thoracoscopy[12] can be done to find out if cancer has spread to the spaces between the lungs and the chest wall, or to the linings of these spaces. It can also be used to sample tumors on the outer parts of the lungs, as well as nearby lymph nodes and fluid, and to assess whether a tumor is growing into nearby tissues or organs. This procedure is not often done just to diagnose lung cancer, unless other tests such as needle biopsies are unable to get enough samples for the diagnosis. Thoracoscopy can also be used as part of the treatment to remove part of a lung in some early-stage lung cancers. This type of operation, known as **video-assisted thoracic surgery (VATS)**, is described in Surgery for Non-Small Cell Lung Cancer[13].

Lung function tests

Lung (or pulmonary) function tests (PFTs) are often done after lung cancer is diagnosed to see how well your lungs are working. This is especially important if surgery might be an option in treating the cancer. Surgery to remove lung cancer may mean removing part or most of a lung, so it's important to know how well your lungs are working beforehand. Some people with poor lung function (like those with lung damage from smoking) don't have enough healthy lung to withstand removing even part of a lung. These tests can give the surgeon an idea of whether surgery is a good option, and if so,

how much lung can safely be removed.

There are different types of PFTs, but they all basically have you breathe in and out through a tube that is connected to a machine that measures airflow.

Sometimes PFTs are coupled with a test called an **arterial blood gas**. In this test, blood is removed from an artery (instead of from a vein, like most other blood tests) so the amount of oxygen and carbon dioxide can be measured.

Lab tests of biopsy and other samples

Samples that have been collected during biopsies or other tests are sent to a pathology lab. A pathologist will look at the samples and may do other special tests to diagnose and better classify the cancer. (Cancers from other organs also can spread to the lungs. It's very important to find out where the cancer started, because treatment is different depending on the origin of the cancer.)

The results of these tests are described in a pathology report, which is usually available within a week. If you have any questions about your pathology results or any diagnostic tests, talk to your doctor. If needed, you can get a second opinion of your pathology report by having your tissue samples sent to a pathologist at another lab.

For more information, see Understanding Your Pathology Report[14].

Molecular testing (genomic testing) of lung tumor

In some cases, especially for non-small cell lung cancer (NSCLC), doctors may test for specificgene changes in the cancer cells[15], which could mean certain targeted drugs[16] might help treat the cancer. For example:

- About 20% to 25% of NSCLCs have changes in the ***KRAS*** gene that cause them to make an abnormal KRAS protein, which helps the cancer cells grow and spread. NSCLCs with this mutation are often adenocarcinomas, resistant to other drugs such as EGFR inhibitors, and are most often found in people with a smoking history.
- **EGFR** is a protein that appears in high amounts on the surface of 10% to 20% of NSCLC cells and helps them grow. Some drugs that target EGFR can be used to treat NSCLC with changes in the *EGFR* gene*,* which are more common in certain groups, such as those who don't smoke, women, and Asians. But these drugs don't seem to be as helpful in patients whose cancer cells have changes in the *KRAS*

gene.

- About 5% of NSCLCs have a change in the ***ALK*** gene. This change is most often seen in people who don't smoke (or who smoke lightly) and have the adenocarcinoma subtype of NSCLC. Doctors may test cancers for changes in the *ALK* gene to see if drugs that target this change may help them.
- About 1% to 2% of NSCLCs have a rearrangement in the ***ROS1*** gene, which might make the tumor respond to certain targeted drugs.
- A small percentage of NSCLCs have changes in the ***RET*** gene. Certain drugs that target cells with *RET* gene changes might be options for treating these tumors.
- About 5% of NSCLCs have changes in the ***BRAF*** gene. Certain drugs that target cells with *BRAF* gene changes might be an option for treating these tumors.
- A small percentage of NSCLCs have certain changes in the ***MET*** gene that make them more likely to respond to some targeted drugs.
- In a small percentage of NSCLCs, the cancer cells have certain changes in the ***HER2*** gene that make them more likely to respond to a targeted drug.
- A small number of NSCLCs have changes in one of the ***NTRK*** genes that make them more likely to respond to some targeted drugs.

These genetic tests can be done on tissue taken during a biopsy or surgery for lung cancer. If the biopsy sample is too small and all the studies cannot be done, the testing may also be done on blood that is taken from a vein just like a regular blood draw. This blood contains the DNA from dead tumor cells found in the bloodstream of people with advanced lung cancer. Obtaining the tumor DNA through a blood draw is called a **liquid biopsy. Liquid biopsies are done in cases where a tissue biopsy is not possible or if a tissue biopsy is felt to be too dangerous for the patient.**

PD-L1 testing on tumor cells

Patients diagnosed with non-small cell lung carcinoma (NSCLC) will have the lung tumor cells tested for PD-L1. PD-L1 is a protein (program death ligand 1) on cancer cells. A score is calculated depending on "if" and "how much" PD-L1 protein the tumor is making. This score will guide decisions about whether the patient would benefit from certain immunotherapy drugs[17].

Hyperlinks

1. www.cancer.org/cancer/types/lung-cancer/causes-risks-prevention/risk-factors.html
2. www.cancer.org/cancer/diagnosis-staging/tests/imaging-tests/x-rays-and-other-radiographic-tests.html
3. www.cancer.org/cancer/diagnosis-staging/tests/imaging-tests/ct-scan-for-cancer.html
4. www.cancer.org/cancer/diagnosis-staging/tests/imaging-tests/mri-for-cancer.html
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6. www.cancer.org/cancer/diagnosis-staging/tests/imaging-tests/nuclear-medicine-scans-for-cancer.html
7. www.cancer.org/cancer/diagnosis-staging/tests/testing-biopsy-and-cytology-specimens-for-cancer/biopsy-types.html
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11. www.cancer.org/cancer/diagnosis-staging/tests/endoscopy/mediastinoscopy.html
12. www.cancer.org/cancer/diagnosis-staging/tests/endoscopy/thoracoscopy.html
13. www.cancer.org/cancer/types/lung-cancer/treating-non-small-cell/surgery.html
14. www.cancer.org/cancer/diagnosis-staging/tests/understanding-your-pathology-report/lung-pathology.html
15. www.cancer.org/cancer/managing-cancer/treatment-types/precision-medicine.html
16. www.cancer.org/cancer/types/lung-cancer/treating-non-small-cell/targeted-therapies.html
17. www.cancer.org/cancer/types/lung-cancer/treating-non-small-cell/immunotherapy.html

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Non-Small Cell Lung Cancer Stages

After someone is diagnosed with non-small cell lung cancer (NSCLC), doctors will try to figure out if it has spread, and if so, how far. This is called **staging** or finding the cancer's **stage.**

How is the stage determined?

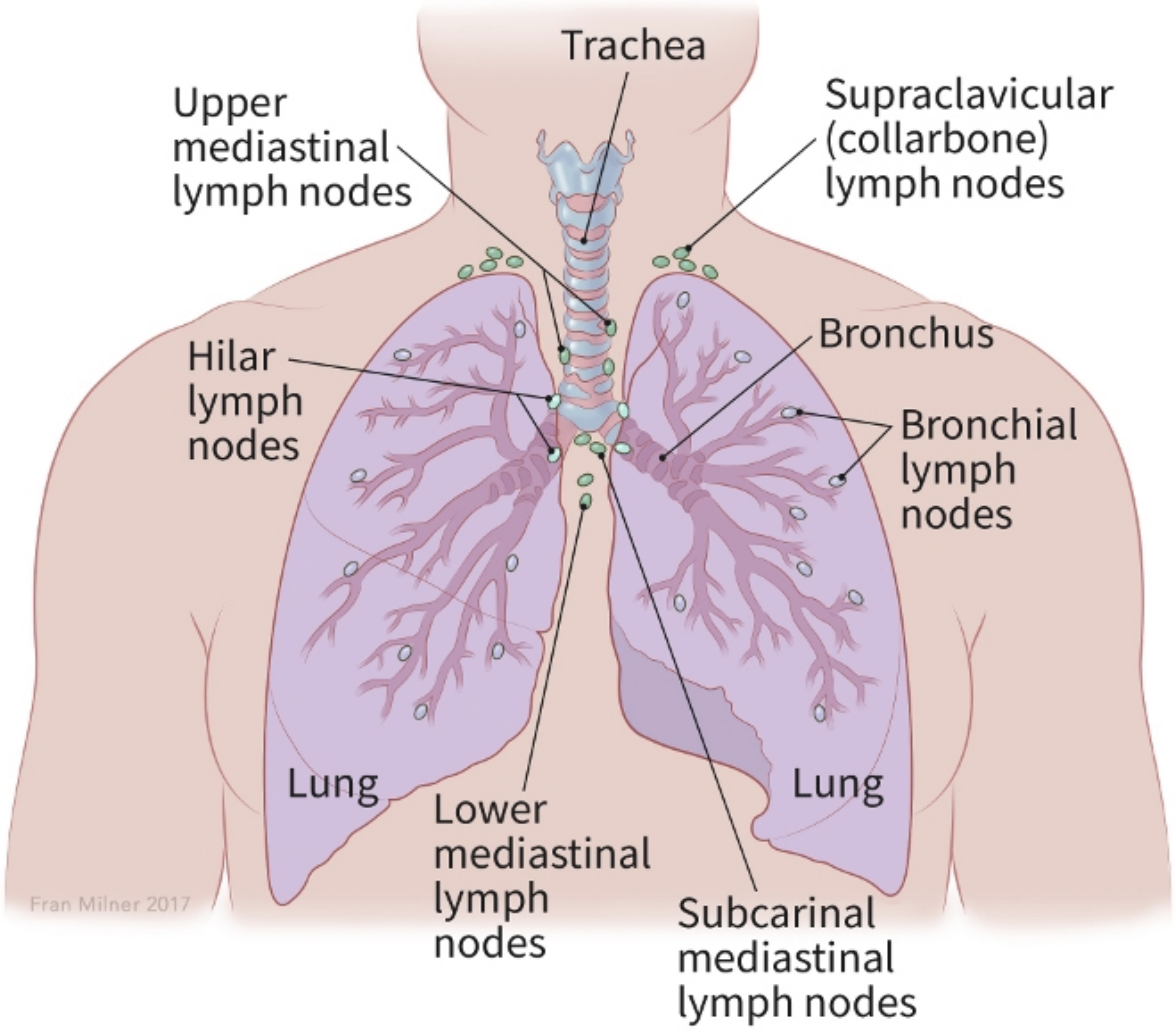
This process is called staging. The stage of a cancer describes how much and where the cancer is in the body. It helps determine how best to treat[1] it. Doctors also use a cancer’s stage when talking about survival statistics.

The earliest stage of NSCLC is stage 0 (also called carcinoma in situ, or CIS). Other stages range from I (1) through IV (4). As a rule, the lower the number, the less the cancer has spread. A higher number, such as stage IV, means cancer has spread more. And within a stage, an earlier letter (or number) means a lower stage. Although each person’s cancer experience is unique, cancers with similar stages tend to have a similar outlook and are often treated in much the same way.

The staging system most often used for NSCLC is the American Joint Committee on Cancer (AJCC) **TNM** system, which is based on 3 key pieces of information:

- The size and extent of the main **tumor (T):** How large is the tumor? Has it grown into nearby structures or organs?

- The spread to nearby lymph **nodes (N):** Has the cancer spread to nearby lymph nodes? (See image.)
- The spread **(metastasis)** to distant sites **(M):** Has the cancer spread to distant organs, such as the brain, bones, adrenal glands, liver, the pleural fluid, or the other lung?



Numbers or letters after T, N, and M provide more details about each of these factors. Higher numbers mean the cancer is more advanced. Once a person's T, N, and M categories have been determined, this information is combined in a process called **stage grouping** to assign an overall stage. For more information, see Cancer Staging[2].

The system described below is the most recent version of the AJCC system, effective as of January 2018.

NSCLC is typically given a **clinical stage** based on the results of a physical exam, biopsy, and imaging tests (as described in Tests forLung Cancer). If surgery is done, the **pathologic stage** (also called the **surgical stage**) is determined by examining tissue removed during the operation.

Staging for NSCLC can be complex, so ask your doctor to explain it to you in a way you understand.

Stages of non-small cell lung cancer

AJCC Stage	Stage grouping	Stage description*
Occult (hidden) cancer	**TX** **N0** **M0**	The main tumor can't be assessed for some reason, or cancer cells are seen in a sample of sputum or other lung fluids, but the cancer isn't found with other tests, so its location can't be determined (TX). The cancer is not thought to have spread to nearby lymph nodes (N0) or to distant parts of the body (M0).
0	**Tis** **N0** **M0**	The tumor is found only in the top layers of cells lining the air passages, but it has not invaded deeper into other lung tissues (Tis). The cancer has not spread to nearby lymph nodes (N0) or to distant parts of the body (M0).
IA1	**T1mi** **N0** **M0**	The cancer is a **minimally invasive adenocarcinoma**. The tumor is no larger than 3 centimeters (cm) across, and the part that has invaded into deeper lung tissues is no more than ½ cm across. The cancer has not spread to nearby lymph nodes (N0) or to distant parts of the body (M0).
	OR	
	T1a **N0** **M0**	The tumor is no larger than 1 cm across, it has not reached the membranes that surround the lungs, and it does not affect the main branches of the bronchi (T1a). The cancer has not spread to nearby lymph nodes (N0) or to distant parts of the body (M0).
IA2	**T1b** **N0** **M0**	The tumor is larger than 1 cm but no larger than 2 cm across. It has not reached the membranes that surround the lungs, and it does not affect the main branches of the bronchi (T1b). The cancer has not spread to nearby lymph nodes (N0) or to distant parts of the body (M0).

IA3	**T1c** **N0** **M0**	The tumor is larger than 2 cm but no larger than 3 cm across. It has not reached the membranes that surround the lungs, and it does not affect the main branches of the bronchi (T1c). The cancer has not spread to nearby lymph nodes (N0) or to distant parts of the body (M0).
IB	**T2a** **N0** **M0**	The tumor has one or more of the following features (T2a): • It is larger than 3 cm but not larger than 4 cm across. • It has grown into a main bronchus, but not the carina (the point where the windpipe splits into the left and right main bronchi) and it is not larger than 4 cm across. • It has grown into the visceral pleura (the membranes surrounding the lungs) and is not larger than 4 cm across. • It is partially clogging the airways (and is not larger than 4 cm across). The cancer has not spread to nearby lymph nodes (N0) or to distant parts of the body (M0).
IIA	**T2b** **N0** **M0**	The tumor has one or more of the following features (T2b): • It is larger than 4 cm but not larger than 5 cm across. • It has grown into a main bronchus, but not the carina (the point where the windpipe splits into the left and right main bronchi) and it is larger than 4 cm but not larger than 5 cm across. • The tumor has grown into the visceral pleura (the membranes surrounding the lungs) and is larger than 4 cm but not larger than 5 cm across. • The tumor is partially clogging the airways (and is larger than 4 cm but not larger than 5 cm across). The cancer has not spread to nearby lymph nodes (N0) or to distant parts of the body (M0).
	T1a/T1b/T1c **N1** **M0**	The tumor is no larger than 3 cm across, has not grown into the membranes that surround the lungs, and does not affect the main branches of the bronchi (T1). It has spread to lymph nodes within the lung and/or around the area where the bronchus enters the lung (peribronchial, hilar, or

		intrapulmonary lymph nodes). These lymph nodes are on the same side as the cancer (N1). The cancer has not spread to distant parts of the body (M0).
	OR	
	T2a/T2b **N1** **M0**	The tumor has one or more of the following features (T2): • It is larger than 3 cm but not larger than 5 cm across. • It has grown into a main bronchus, but not the carina (the point where the windpipe splits into the left and right main bronchi) and it is not larger than 5 cm across. • It has grown into the visceral pleura (the membranes surrounding the lungs) and is not larger than 5 cm. • It is partially clogging the airways (and is not larger than 5 cm). The cancer has also spread to lymph nodes within the lung and/or around the area where the bronchus enters the lung (peribronchial, hilar, or intrapulmonary lymph nodes). These lymph nodes are on the same side as the cancer (N1). The cancer has not spread to distant parts of the body (M0).
	OR	
IIB	**T3** **N0** **M0**	The tumor has one or more of the following features (T3): • It is larger than 5 cm but not larger than 7 cm across. • It has grown into the chest wall, the inner lining of the chest wall (parietal pleura), the phrenic nerve, or membranes of the sac surrounding the heart (parietal pericardium). • There are 2 or more separate tumor nodules in the same lobe of a lung. The cancer has not spread to nearby lymph nodes (N0) or distant parts of the body (M0).
	T1a/T1b/T1c	The cancer is no larger than 3 cm across, has not grown into the membranes that surround the lungs, and does not affect

IIIA	**N2** **M0**	the main branches of the bronchi (T1). The cancer has spread to lymph nodes below the carina (the point where the windpipe splits into the left and right bronchi) or in the space between the lungs (mediastinum). These lymph nodes are on the same side as the main lung tumor (N2). The cancer has not spread to distant parts of the body (M0).
	OR	
	T2a/T2b **N2** **M0**	The tumor has one or more of the following features (T2): • It is larger than 3 cm but not larger than 5 cm across. • It has grown into a main bronchus, but not the carina (the point where the windpipe splits into the left and right main bronchi) and it is not larger than 5 cm across. • It has grown into the visceral pleura (the membranes surrounding the lungs) and is not larger than 5 cm. • It is partially clogging the airways (and is not larger than 5 cm). The cancer has spread to lymph nodes below the carina (the point where the windpipe splits into the left and right bronchi) or in the space between the lungs (mediastinum). These lymph nodes are on the same side as the main lung tumor (N2). The cancer has not spread to distant parts of the body (M0).
	OR	
	T3 **N1** **M0**	The tumor has one or more of the following features (T3): • It is larger than 5 cm but not larger than 7 cm across. • It has grown into the chest wall, the inner lining of the chest wall (parietal pleura), the phrenic nerve, or membranes of the sac surrounding the heart (parietal pericardium). • There are 2 or more separate tumor nodules in the same lobe of a lung. The cancer has also spread to lymph nodes within the lung and/or around the area where the bronchus enters the lung (peribronchial, hilar, and intrapulmonary lymph nodes). These

		lymph nodes are on the same side as the cancer (N1). The cancer has not spread to distant parts of the body (M0).
	OR	
	T4 **N0 or N1** **M0**	The tumor has one or more of the following features (T4): • It is larger than 7 cm across. • It has grown into the space between the lungs (mediastinum), the heart, the large blood vessels near the heart (such as the aorta), the windpipe (trachea), the tube connecting the throat to the stomach (esophagus), the thin muscle separating the chest from the abdomen (diaphragm), the backbone, or the carina. • There are 2 or more separate tumor nodules in different lobes of the same side of the lung. The cancer may or may not have spread to lymph nodes within the lung and/or around the area where the bronchus enters the lung (peribronchial, hilar, or intrapulmonary lymph nodes). Any affected lymph nodes are on the same side as the cancer (N0 or N1). The cancer has not spread to distant parts of the body (M0).
	T1a/T1b/T1c **N3** **M0**	The cancer is no larger than 3 cm across, has not grown into the membranes that surround the lungs, and does not affect the main branches of the bronchi (T1). The cancer has spread to lymph nodes above the collarbone on either side of the body, and/or has spread to hilar or mediastinal lymph nodes on the other side of the body from the main tumor (N3). The cancer has not spread to distant parts of the body (M0).
	OR	
	T2a/T2b **N3** **M0**	The tumor has one or more of the following features (T2): • It is larger than 3 cm but not larger than 5 cm across. • It has grown into a main bronchus, but not the carina (the point where the windpipe splits into the left and right main bronchi) and it is not larger than 5 cm across. • It has grown into the visceral pleura (the membranes surrounding the lungs) and is not larger than 5 cm.

IIIB		• It is partially clogging the airways (and is not larger than 5 cm). The cancer has spread to lymph nodes above the collarbone on either side of the body, and/or has spread to hilar or mediastinal lymph nodes on the other side of the body from the main tumor (N3). The cancer has not spread to distant parts of the body (M0).
	OR	
	T3 **N2** **M0**	The tumor has one or more of the following features (T3): • It is larger than 5 cm but not larger than 7 cm across. • It has grown into the chest wall, the inner lining of the chest wall (parietal pleura), the phrenic nerve, or membranes of the sac surrounding the heart (parietal pericardium). • There are 2 or more separate tumor nodules in the same lobe of a lung. The cancer has spread to lymph nodes below the carina (the point where the windpipe splits into the left and right bronchi) or in the space between the lungs (mediastinum). These lymph nodes are on the same side as the main lung tumor (N2). The cancer has not spread to distant parts of the body (M0).
	OR	
	T4 **N2** **M0**	The tumor has one or more of the following features (T4): • It is larger than 7 cm across. • It has grown into the space between the lungs (mediastinum), the heart, the large blood vessels near the heart (such as the aorta), the windpipe (trachea), the tube connecting the throat to the stomach (esophagus), the thin muscle separating the chest from the abdomen (diaphragm), the backbone, or the carina (the point where the windpipe splits into the left and right main bronchi). • There are 2 or more separate tumor nodules in different

		lobes of the same side of the lung. The cancer has spread to lymph nodes below the carina (the point where the windpipe splits into the left and right bronchi) or in the space between the lungs (mediastinum). These lymph nodes are on the same side as the main lung tumor (N2). The cancer has not spread to distant parts of the body (M0).
IIIC	**T3** **N3** **M0**	The tumor has one or more of the following features (T3): • It is larger than 5 cm but not larger than 7 cm across. • It has grown into the chest wall, the inner lining of the chest wall (parietal pleura), the phrenic nerve, or membranes of the sac surrounding the heart (parietal pericardium). • There are 2 or more separate tumor nodules in the same lobe of a lung. The cancer has spread to lymph nodes above the collarbone on either side of the body, and/or has spread to hilar or mediastinal lymph nodes on the other side of the body from the main tumor (N3). The cancer has not spread to distant parts of the body (M0).
	OR	
	T4 **N3** **M0**	The tumor has one or more of the following features (T4): • It is larger than 7 cm across. • It has grown into the space between the lungs (mediastinum), the heart, the large blood vessels near the heart (such as the aorta), the windpipe (trachea), the tube connecting the throat to the stomach (esophagus), the thin muscle separating the chest from the abdomen (diaphragm), the backbone (spine), or the carina (the point where the windpipe splits into the left and right main bronchi). • There are 2 or more separate tumor nodules in different lobes of the same side of the lung.

		The cancer has spread to lymph nodes above the collarbone on either side of the body, and/or has spread to hilar or mediastinal lymph nodes on the other side of the body from the main tumor (N3). The cancer has not spread to distant parts of the body (M0).
IVA	**Any T** **Any N** **M1a**	The cancer can be any size and may or may not have grown into nearby structures (any T). It may or may not have reached nearby lymph nodes (any N). In addition, any of the following is true (M1a): • The cancer has spread to the other lung. • The cancer has spread to either the pleura (lining around the lungs) or pericardium (lining around the heart). • Cancer cells are found in the fluid around the lung (called a **malignant pleural effusion**). • Cancer cells are found in the fluid around the heart (called a **malignant pericardial effusion**).
	OR	
	Any T **Any N** **M1b**	The cancer can be any size and may or may not have grown into nearby structures (any T). It may or may not have reached nearby lymph nodes (any N). It has spread as a single tumor outside of the chest, such as to a distant lymph node or an organ such as the liver, bones, or brain (M1b).
IVB	**Any T** **Any N** **M1c**	The cancer can be any size and may or may not have grown into nearby structures (any T). It may or may not have reached nearby lymph nodes (any N). It has spread as more than one tumor outside the chest, such as to distant lymph nodes and/or to other organs such as the liver, bones, or brain (M1c).

*The following additional categories are not listed in the table above:

- **T0:** There is no evidence of a primary tumor.
- **NX:** Nearby lymph nodes cannot be assessed due to lack of information.

Hyperlinks

1. www.cancer.org/cancer/types/lung-cancer/treating-non-small-cell.html
2. www.cancer.org/cancer/diagnosis-staging/staging.html

References

American Joint Committee on Cancer. Lung. In: *AJCC Cancer Staging Manual*. 8th ed. New York, NY: Springer; 2017: 431-456.

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Small Cell Lung Cancer Stages

After someone is diagnosed with small cell lung cancer (SCLC), doctors will try to figure out if it has spread, and if so, how far. This process is called **staging**. The stage of a cancer describes where the cancer is in the body. It helps determine how best to treat it. Doctors also use a cancer's stage when talking about survival statistics.

How is the stage determined?

The stage of SCLC is based on the results of physical exams, biopsies, imaging tests, and any other tests that have been done (as described in Tests for Lung Cancer).

Limited versus extensive stage

For treatment purposes, most doctors use a 2-stage system that divides SCLC into limited stage and extensive stage. For limited-stage cancer, a person might benefit from more aggressive treatments such as chemotherapy[1] combined with radiation therapy[2] to try to cure the cancer. For extensive-stage disease, chemotherapy in combination with

immunotherapy is likely to be a better option to control (not cure) the cancer.

Limited stage

This means that the cancer is only on one side of the chest and can be treated with a single radiation field. This generally includes cancers that are only in one lung, and that might also have reached the lymph nodes on the same side of the chest.

Cancer in lymph nodes above the collarbone (called **supraclavicular nodes**) might still be considered limited stage as long as they are on the same side of the chest as the cancer. Some doctors also include lymph nodes at the center of the chest (**mediastinal lymph nodes**) even when they are closer to the other side of the chest.

What is important is that the cancer is confined to an area that is small enough to be treated with radiation therapy in one treatment area. Only about 1 out of 3 people with SCLC have limited-stage cancer when it is first found.

Extensive stage

This describes cancers that have spread widely throughout the lung, to the other lung, or to other parts of the body (including the bone marrow). Many doctors consider SCLC that has spread to the fluid around the lung and/or heart to be extensive stage as well. About 2 out of 3 people with SCLC have extensive disease when their cancer is first found.

The TNM staging system

A more formal system to describe the growth and spread of lung cancer is the American Joint Committee on Cancer (AJCC) **TNM** staging system, which is based on 3 key pieces of information:

- The size and extent of the main **tumor (T):** How large is the tumor? Has it grown into nearby structures or organs?
- The spread to nearby (regional) lymph **nodes (N):** Has the cancer spread to nearby lymph nodes?
- The spread **(metastasis) (M)** to other organs of the body: Has the cancer spread to distant organs such as the brain, bones, adrenal glands, liver, or the other lung?

Numbers or letters appear after T, N, and M to provide more details about each of these factors. Higher numbers mean the cancer is more advanced. Once the T, N, and M

categories have been determined, this information is combined in a process called **stage grouping**, to assign an overall stage. For more information, see Cancer Staging[3].

In the TNM system, the earliest stage is stage 0 (also called **carcinoma in situ**, or CIS). The other main stages range from I (1) through IV (4). Some of these stages are broken down further with letters or numbers. As a rule, the lower the stage number, the less the cancer has spread. A higher number, such as stage IV, means cancer has spread more. And within a stage, an earlier letter (or number) means a lower stage.

The same TNM staging system is used for both SCLC and non-small cell lung cancer (NSCLC), although it's generally not as important for SCLC. For more detailed information about this system, see Non-Small Cell Lung Cancer Stages. Staging with the TNM system can be complex, so if your health care team is using it, ask them to explain it to you in a way you understand.

Hyperlinks

1. www.cancer.org/cancer/types/lung-cancer/treating-small-cell/chemotherapy.html
2. www.cancer.org/cancer/types/lung-cancer/treating-small-cell/radiation-therapy.html
3. www.cancer.org/cancer/diagnosis-staging/staging.html

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Lung Cancer Survival Rates

Survival rates can give you an idea of what percentage of people with the same type and stage of cancer are still alive a certain amount of time (usually 5 years) after they were diagnosed.

How do the numbers apply to you?

Survival rates can't tell you how long you will live, but they may help give you a better understanding of how likely it is that your treatment will be successful.

Keep in mind that survival rates are estimates and are often based on previous outcomes of large numbers of people who had a specific cancer, but they can't predict what will happen in any particular person's case. These statistics can be confusing and may lead you to have more questions. Ask your doctor, who is familiar with your situation, how these numbers may apply to you.

What is a 5-year relative survival rate?

A **relative survival rate** compares people with the same type and stage of cancer to people in the overall population. For example, if the **5-year relative survival rate** for a specific stage of lung cancer is 60%, it means that people who have that cancer are, on average, about 60% as likely as people who don't have that cancer to live for at least 5 years after being diagnosed.

Where do these numbers come from?

The American Cancer Society relies on information from the Surveillance, Epidemiology, and End Results (SEER) database, maintained by the National Cancer Institute (NCI), to provide survival statistics for different types of cancer.

The SEER database tracks 5-year relative survival rates for non-small cell lung cancer

(NSCLC) and small cell lung cancer (SCLC) in the United States, based on how far the cancer has spread. The SEER database, however, does not group cancers by AJCC TNM stages (stage 1, stage 2, stage 3, etc.). Instead, it groups cancers into localized, regional, and distant stages:

- **Localized:** There is no sign that the cancer has spread outside of the lung.
- **Regional:** The cancer has spread outside the lung to nearby structures or lymph nodes.
- **Distant:** The cancer has spread to distant parts of the body, such as the brain, bones, liver, or the other lung.

5-year relative survival rates for non-small cell lung cancer

These numbers are based on people diagnosed with NSCLC between 2012 and 2018.

SEER stage	5-year relative survival rate
Localized	65%
Regional	37%
Distant	9%
All SEER stages combined	28%

5-year relative survival rates for small cell lung cancer

These numbers are based on people diagnosed with SCLC between 2012 and 2018.

SEER stage	5-year relative survival rate
Localized	30%
Regional	18%
Distant	3%
All SEER stages combined	7%

Understanding the numbers

- **These numbers apply only to the stage of the cancer when it is first diagnosed.** They do not apply later on if the cancer grows, spreads, or comes back after treatment.
- **These numbers don't take everything into account.** Survival rates are grouped based on how far the cancer has spread. But other factors, such as the subtype of NSCLC[1], gene changes in the cancer cells, your age and overall health, and how well the cancer responds to treatment, can also affect your outlook.
- **People now being diagnosed with NSCLC or SCLC may have a better outlook than these numbers show.** Treatments have improved over time, and these numbers are based on people who were diagnosed and treated at least 5 years earlier.

Hyperlinks

1. www.cancer.org/cancer/types/lung-cancer/about/what-is.html

References

SEER*Explorer: An interactive website for SEER cancer statistics [Internet]. Surveillance Research Program, National Cancer Institute. Accessed at https://seer.cancer.gov/explorer/ on Jan 23, 2024.

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Questions to Ask About Lung Cancer

It's important to have honest, open discussions with your cancer care team.

When you're told you have lung cancer

The cancer care team wants to answer all your questions, so that you can make informed treatment and life decisions. For instance, consider these questions:

- What kind of lung cancer do I have?
- Where exactly is the cancer? Has it spread beyond where it started?
- What is the stage of my cancer, and what does that mean in my case?
- Will I need any other tests before we can decide on treatment?
- Has the cancer been checked for gene changes that could help you choose my treatment options?
- Do I need to see any other doctors or health professionals?
- If I'm concerned about the costs and insurance coverage for my diagnosis and treatment, who can help me?

When deciding on a treatment plan

- How much experience do you have treating this type of cancer?
- What are my treatment choices?
- What do you recommend and why?
- What is the goal of treatment?
- Should I get a second opinion? How do I do that? Can you recommend someone?
- What are the chances my cancer can be cured with these treatment options?
- How quickly do I need to decide on treatment?
- What should I do to be ready for treatment?
- How long will my treatment last? What will treatment be like? Where will my treatment be done?

- What are the risks and side effects with the treatments you suggest? How long are they likely to last?
- Will treatment affect my daily activities?
- What would my options be if the treatment doesn't work or if the cancer comes back (recur) after treatment?

During treatment

Once treatment begins, you'll need to know what to expect and what to look for. Not all of these questions may apply to you, but asking the ones that do may be helpful.

- How will we know if the treatment is working?
- Is there anything I can do to help manage side effects?
- What symptoms or side effects should I tell you about right away?
- How can I reach you on nights, holidays, or weekends?
- Do I need to change what I eat during treatment?
- Are there any limits on what I can do?
- Can you suggest a mental health professional I can see if I start to feel overwhelmed, depressed, or distressed?

After treatment

- Are there any limits on what I can do?
- What symptoms should I watch for?
- What kind of exercise should I do now?
- What type of follow-up will I need after treatment?
- How often will I need to have follow-up exams and imaging tests?
- Will I need any blood tests?
- How will we know if the cancer has come back? What should I watch for?
- What will my options be if the cancer comes back?

Along with these sample questions, be sure to write down some of your own. For instance, you might want more information about recovery times. Or you might want to ask if you qualify for a clinical trial.

Doctors aren't the only ones who can give you information. Other health care

professionals, such as nurses and social workers, can also answer some of your questions. You can find out more about speaking with your health care team in The Doctor-Patient Relationship.