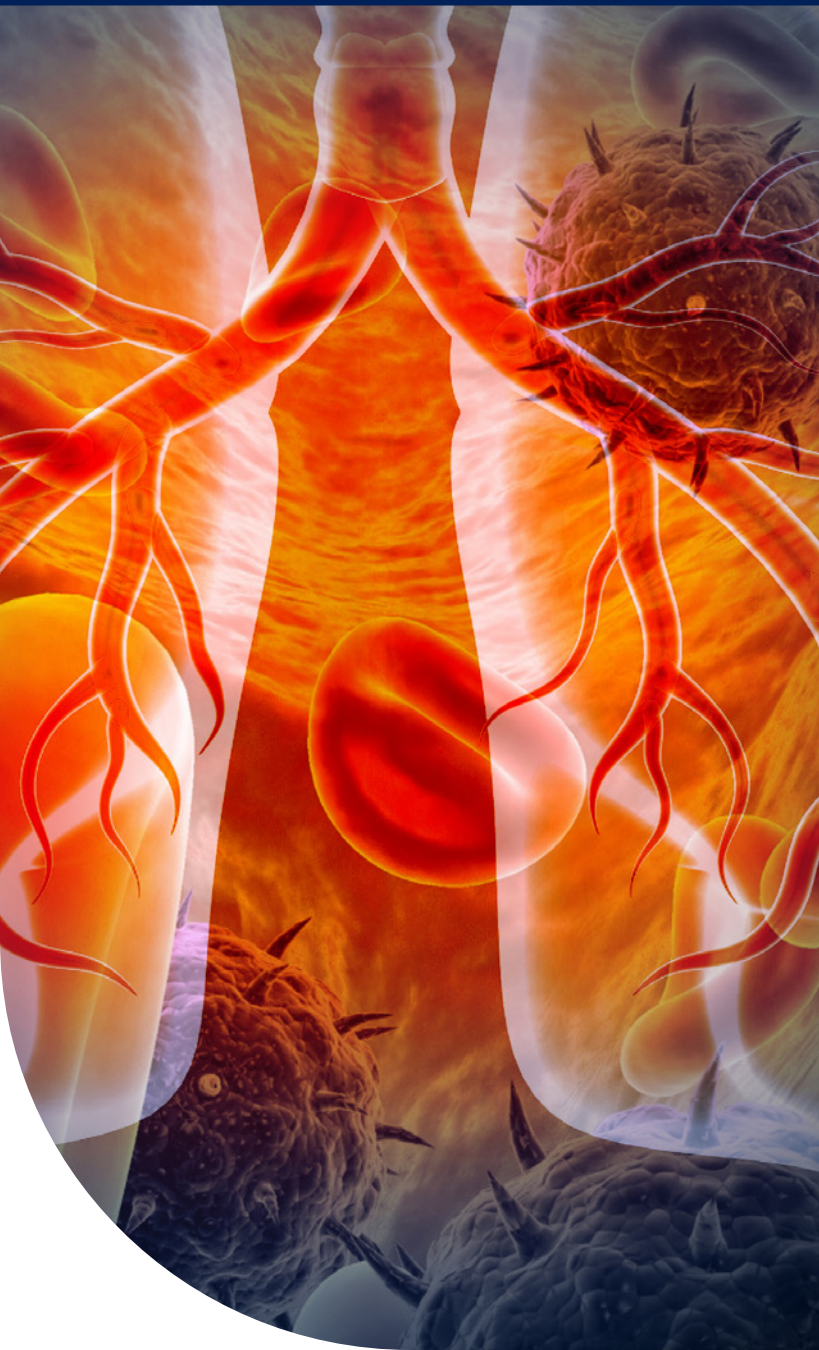


Lung Cancer



**A SELECTION OF
FACT SHEETS FROM THE
ATS PATIENT EDUCATION
INFORMATION SERIES**

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Lung Cancer

If you are thinking about taking part in a lung cancer screening program or have recently been diagnosed with lung cancer you likely have many questions about the disease or what treatment options will be available to you. Lung cancer is a disease that is best treated by a multi-disciplinary healthcare team. This fact sheet provides a general overview of lung cancer. For more about lung cancer prevention, screening, staging and treatment see other ATS fact sheets at www.thoracic.org/patients.



What is lung cancer?

A lung cancer develops when cells in the lung grow abnormally and form a tumor. This can be seen on chest x-rays or CT ("CAT") scans as a nodule or a mass. Lung cancer is far more common in people who have smoked tobacco products. However, it can occur in people who never smoked. Other risk factors for lung cancer include radon, asbestos and second-hand smoke exposure as well as air pollution and genetics (a history of lung cancer in your family).

A diagnosis of lung cancer is serious, but treatments have improved enormously in recent years. In general, people with lung cancer do better if diagnosed in early-stage disease, so recognizing lung cancer symptoms is important. However lung cancer can often be present without symptoms, so lung cancer screening is also an important tool to detect lung cancer early in people who are at high-risk.

What are the symptoms of lung cancer?

Symptoms of lung cancer can vary from person to person. You may have no symptoms at all or you may feel like you have bronchitis or a bad cold that does not get better. Symptoms which should alert you to see your healthcare provider are: a cough that gets worse or does not go away, more trouble breathing (shortness of breath) than usual, coughing up blood, chest pain, hoarse voice, frequent lung infections, feeling tired all the time, weight loss for no known reason, or swelling of your face or arms.

Lung cancer is most likely to be cured when detected at an early stage, when it often causes no lung cancer symptoms (asymptomatic). This is why lung cancer screening is important in people who are high risk. Sometimes lung cancer is found when a person has an imaging study done for an unrelated reason.

What is lung cancer screening?

This is when a healthcare provider looks for lung cancer in people who are at high-risk for lung cancer using a CT scan before symptoms arise. This is similar to programs like breast and bowel cancer screening. A CT scanner takes multiple x-ray pictures of your lungs to create a 3D image. It uses low doses of radiation and shows much more detail than a single chest x-ray. Many research studies have shown these scans detect lung cancer earlier and reduce deaths from lung cancer. Most organizations including the American Thoracic Society (ATS) and the United States Preventive Services Task Force (USPSTF) recommend lung cancer screening for eligible people. To see if you are eligible for lung cancer screening and to learn more see the ATS fact sheet at <https://www.thoracic.org/patients/>

What are the types of lung cancer?

It is important to know what type of lung cancer you have as it is a major factor in the type of treatment you receive. Lung cancers are divided into non-small cell lung cancer (NSCLC) and small cell lung cancer (SCLC). NSCLC is far more common and can be divided into subtypes like squamous cell carcinoma, adenocarcinoma and large cell carcinoma. The names reflect the different types of cells that can be seen in the lung cancer tissue under the microscope. Some patients with NSCLC will also have testing for specific immune markers and DNA changes or "biomarkers" to further define the cancer type. SCLC can be divided into SCLC and combined SCLC. SCLC tends to grow more quickly and spreads earlier to other parts of the body.

What is lung cancer staging?

Lung cancer is staged using the TNM system, which stages the cancer by the size of the tumor in cm (T), whether or not the lymph nodes also have cancer cells (N), and whether or not there is spread of the tumor

beyond the lungs and lymph nodes, called metastasis (M). Each letter then has a number assigned to it, the larger the number the more advanced the cancer is. This is explained in more detail in the ATS Lung Cancer Staging fact sheet at <https://www.thoracic.org/patients/>

What does Stage I(1), II(2), III(3) and IV(4) mean?

The TNM system helps assign your lung cancer to one of these four stages. These stages are very complicated because they all have sub stages depending on how large the tumor is and where it has spread. Ask your healthcare team to describe your lung cancer in both the TNM and Stage I-IV. Read more about your cancer stage at <https://www.thoracic.org/patients/>

How is lung cancer treated?

The treatment options for lung cancer are complex, in part due to how many effective treatments we have for this disease. In general, these options are refined based on the type and stage of your lung cancer, your preferences, and any other health conditions you may have. Many of the treatments are used in combination either at the same time or one after the other.

Lung surgery is offered in people who have early-stage disease where there is a high chance of removing all of the cancer. The cancer, some normal lung tissue and lymph glands (nodes) are removed. This reduces the risk the cancer will come back in the future (recurrence). Sometimes after surgery other treatments are also recommended to reduce this risk.

Radiation uses high energy x-rays to damage the cancer cells and cause the tumor to shrink. It is often used in combination with chemotherapy. A special type of highly focused radiation called stereotactic body radiotherapy (SBRT) can be offered instead of surgery in some people.

Chemotherapy (drugs that kill fast growing cells including the cancer cells) are commonly used in many different treatment plans. These drugs are usually given through the vein.

Immunotherapy (drugs that use your own immune system to kill the cancer) are increasingly being used in a variety of lung cancer subtypes and stages. Biomarker testing will help your healthcare team decide if you are a candidate for this therapy.

Targeted therapy (drugs that kill the cancer cells at the DNA level) can also be used to treat lung cancer. These drugs tend to be more selective for cancer cells and are used after biomarker testing. It is important to ask your healthcare provider if you are eligible for biomarker testing.

Is it too late to stop smoking?

Stopping smoking can improve cancer outcomes at any stage of disease. Stopping smoking may help

you heal better if you need surgery, cut down on side effects from systemic therapies like chemotherapy and radiation, and allow these treatments to work better. Smoking cessation may also help you live longer, improve your quality of life, and lower the risk of cancer coming back or you getting a new cancer. See also the ATS fact sheet 'Smoking Cessation and Cancer' at www.thoracic.org/patients.

Speak to your healthcare provider about taking over the counter and/or prescription medications to help you stop smoking.

Helpful links to stop smoking:

<https://www.cancer.org/healthy/stay-away-from-tobacco/guide-quitting-smoking/nicotine-replacement-therapy.html>

<https://quitnow.net/mve/quitnow>

OR call 1-800-QUITNOW (1-800-784-8669)

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Resources:

American Thoracic Society

- www.thoracic.org/patients
 - Lung Cancer Staging
 - Lung Cancer Screening
 - Treatment of Early-Stage Non-Small Cell Lung Cancer
 - Treatment of Advanced Stage Non-Small Cell Lung Cancer
 - Treatment of Small cell Lung Cancer
 - Smoking Cessation and Cancer
 - Palliative Care for People with Respiratory Disease or Critical Illness
 - Malignant Pleural Effusion

American Cancer Society

- <https://www.cancer.org/cancer/lung-cancer.html>

Go2 Foundation

- <https://go2foundation.org/>

American Lung Association

- <https://www.lung.org/lung-health-diseases/lung-disease-lookup/lung-cancer>

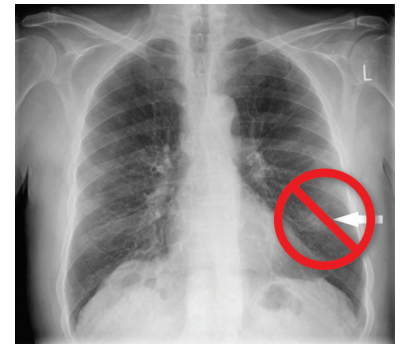
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PATIENT EDUCATION | **INFORMATION SERIES**

Lung Cancer Prevention

What are the chances that I will develop lung cancer?

The #1 cause of lung cancer is exposure to tobacco smoke. Your chances increase with the amount you smoke and the number of years you have smoked. The more you smoke or are exposed to smoke from others (second-hand smoke), the greater your chances of developing lung cancer. People who have never smoked may develop lung cancer, but their chance is much less than people who smoke or who used to smoke.



What can I do to decrease my risk of developing lung cancer?

The best way to lower your risk is to avoid tobacco smoke. It is never too late to stop smoking, but the sooner you stop, the better. Even if you can't quit completely, cutting back on the number of cigarettes you smoke can help, but cutting down is not as good as quitting completely.

There are many ways to stop smoking including counseling, nicotine replacement and medications. It takes most people several tries before they quit for good. So don't be discouraged. If at first you don't succeed, keep trying! For help in stopping smoking go to www.thoracic.org/patients.

Are there other ways to decrease my risk of getting lung cancer or cancer in general?

There are many things that may reduce your risk, but none have been proven. These include:

- eating plenty of fruit
- getting regular exercise
- regular use of aspirin or celecoxib (Brand name Celebrex)
- regular use of inhaled corticosteroids (used for emphysema and asthma)

Eating more fruit and exercising are not likely to harm you, but speak with your healthcare provider before making major changes in your diet and activity. Talk to your healthcare provider before

taking any new medications, including regular use of non-prescription medications or vitamins.

Are there things that increase my chances of getting lung cancer?

There are several things that we know increase your risk of getting lung cancer. There are other things that may increase your risk but we don't have enough information to say for sure. These things increase your risk for lung cancer and should be avoided if possible:

- tobacco smoke.
- exposure to or working with hazardous chemicals such as silica, cadmium, arsenic, beryllium, chromium, diesel fumes, nickel, coal smoke and soot.
- exposure to particle pollution—like exhaust smoke.
- asbestos, a mineral formerly used in building materials that is still in some environments and products like old brake pads.
- radon, a radioactive gas that can be found in the environment. You can have levels checked if you live in a high risk area.
- high doses of supplemental beta-carotene (a pigment found in plants and fruits) above the Recommended Daily Allowance. Risk with high levels is mainly seen in people who used to smoke or currently smoke.

- supplements with high doses of vitamin E (above the Recommended Daily Allowance)
- hormone replacement therapy (estrogen plus progestin)
- heavy alcohol use
- vaping has been shown to cause lung injury, but it is not known if it increases risk of lung cancer.

There are some other risks for lung cancer that you cannot control. You can discuss with your healthcare provider. These include:

- family history of lung cancer
- a personal history of other cancer
- a personal history of COPD or pulmonary fibrosis.

What about screening for lung cancer?

The most effective way to reduce the chance of getting lung cancer is to stop smoking. There is also considerable interest in diagnosing lung cancer at an early stage, before it causes symptoms and when it is most treatable. This is called screening.

Research has found that using CT (“cat”) scans, computerized imaging of the chest or lungs, for screening reduced the number of people who died from lung cancer. As a result, several organizations, including the American Thoracic Society and the United States Preventive Services Task Force now recommend that healthcare providers consider ordering a chest CT for lung cancer screening for adults with a history of cigarette smoking. Talk to your healthcare provider about the risks and benefits of screening for you. There are decision guides that can help you weigh the risks and benefits of having a CT for lung cancer screening. You can find one of these on AHRQ website listed under resources.

For more information about the risks and benefits of CT scan screening for lung cancer, see the section on Lung Cancer Screening beginning on page 9 in this document.

Summary

Lung cancer is a common form of cancer. There are things you can do to lower your risk of lung cancer:

- stop smoking tobacco.
- ask your health care provider for help in quitting, including use of medicines to help with nicotine dependence.
- discuss with your healthcare provider what you are taking or doing to decrease your risk for lung cancer.



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Reviewers: Patrick Belvitch MD, Fady Jamous MD

For More Information

Agency for Healthcare Research and Quality (AHRQ)—US Dept of Health and Human Services—Lung Cancer Screening Tools

- <https://www.uspreventiveservicestaskforce.org/uspstf/recommendation/lung-cancer-screening>

American Lung Association

- www.lungusa.org

American Thoracic Society

- thoracic.org

National Cancer Institute

- <https://www.cancer.gov/cancertopics/tobacco/smoking>
- <https://www.cancer.gov/types/lung/research/nlststudyguidepatientsphysicians.pdf>

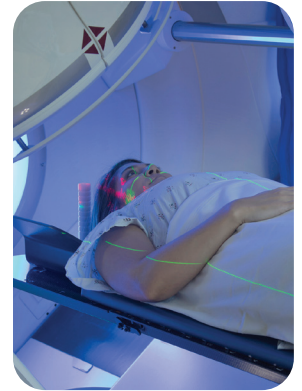
Lung Cancer Research Foundation

- www.freetobreathe.org

Lung Cancer Screening

What is screening and what does it have to do with lung cancer?

Screening is when a healthcare provider looks for a disease before symptoms arise. Healthcare providers screen for diseases that are easier to treat and potentially cure when detected early. Other cancers for which your healthcare provider may screen you include breast cancer and colon cancer. Lung cancer is a good example of a disease that does not usually cause noticeable symptoms until the disease is advanced. When lung cancer is detected in its earliest stages, it may be curable. However, when discovered in more advanced stages, lung cancer is often incurable and is the #1 cause of cancer related death worldwide.



For decades, healthcare providers and researchers have been trying to identify the best way to diagnose lung cancer before symptoms appear. As part of this effort, a research study called the **National Lung Cancer Screening Trial** was conducted with over 50,000 patients. The study found that yearly chest CT scans (sometimes referred to as “cat scans”) in high risk patients discovered lung cancers early and saved lives.

What is a CT scan and are there harms associated with lung cancer screening?

A CT scanner is a machine that allows healthcare providers to see inside your lungs. It creates a series of chest x-rays that are aligned by a computer to form a 3D image of your lungs. These images show much more detail than a usual chest x-ray. CT scans performed during lung cancer screening use low dose scanning, making them safer with respect to radiation dose. Healthcare providers interpret these scan images and look for patterns that might represent lung cancer. The main findings of concern are pulmonary nodules, or “spots on the lung”. Most pulmonary nodules are not cancer, but rarely they can be early forms of cancer. If a pulmonary nodule is detected, your healthcare provider may recommend a lung biopsy. Although biopsies are safe, all procedures have some risk of complications. Thus, healthcare providers try to perform lung cancer screening and biopsies only on patients with the highest risk of

developing cancer. Key risk factors include older age and a history of heavy cigarette smoking.

Who should undergo lung cancer screening?

Lung cancer screening is not for everyone. You should talk with your healthcare provider about how lung cancer screening might impact you. This process is called “**shared decision making**” and the discussion about whether you undergo screening should involve the following key questions:

- What is your risk of developing lung cancer?
- Would you want to undergo additional diagnostic procedures if a suspicious nodule is identified?
 - Would you want treatment for lung cancer if it is diagnosed?
- Are you healthy enough to undergo other procedures and therapies if you are diagnosed with lung cancer?

You should consider being screened if you have all three of the following risk factors for lung cancer:

- You are between the ages of 50-80.
- You currently smoke cigarettes or have quit smoking within the past 15 years.
- You smoked the equivalent of 1 pack of cigarettes a day for at least 20 years (a term called “pack years”).

What happens after I get my CT scan?

Your healthcare provider will review the results of the scan with you. Typically, the recommendation will be one of the following:

- Repeat CT scan in some time frame (such as 3 months, 6 months, or 12 months).
- A different type of scan called a PET (positron emission tomography) scan. PET scans use an injection of a sugar connected to a safe radioactive tracer to create color imaging of your body's organs and tissues based on their uptake of the tracer sugar. Your healthcare provider can explain how a PET scan differs from CT imaging and when it is helpful.
- Lung biopsy to get a sample from a suspicious looking nodule or area of the lung.

Are there risks to undergoing lung cancer screening?

Yes. There are 3 primary risks associated with lung cancer screening.

1. The risk associated with the low dose CT scan. Doctors will minimize the amount of radiation exposure. This risk is thought to be low when compared to the cancer risk associated with smoking.
2. The risk of undergoing a biopsy if a high-risk or suspicious nodule is identified. The main risks of a biopsy include:
 - ◆ Bleeding—Bleeding is typically very mild and is usually observed. You may need to hold any medications that may increase your risk of bleeding before a biopsy is done.
 - ◆ Collapsed lung—though uncommon, the biopsy needle can cause lung injury (pneumothorax) where air would accumulate around the lung. Typically, the lung can heal itself very quickly without any additional interventions. Sometimes the air needs to be drained to prevent the lung from collapsing. This may require a chest tube to be inserted into your chest.
3. The anxiety associated with discovering nodules that do not represent cancer, but may require a biopsy or more frequent CT scans. To biopsy a nodule, a needle is advanced into the nodule to get a tissue sample to examine its cells. Biopsies are typically done either through bronchoscopy where a small camera is placed through the airways into your lungs to guide a needle into the nodule or by using a CT scanner to guide a needle through your skin and chest wall into the nodule.

Is there anything I can do to reduce my risk of developing lung cancer?

The most important thing you can do to reduce your risk of developing lung cancer is to stop smoking.

There are many effective treatment options for tobacco dependence. Speak to your healthcare provider about the method that might be best for you.

If you stop smoking, your risks of developing lung cancer will drop dramatically, although it will always be higher than someone who never smoked.

There are other environmental exposures that might increase your risk of developing lung cancer as well. These exposures include asbestos and radon. Avoiding exposure to these risks factors is another important way to reduce your risk of developing lung cancer. You can learn more about these risks in the environment at the US Environmental Protection Agency website (<https://www.epa.gov/radon>).

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Reviewers: Hasmeena Kathuria, MD, Howard Li MD, Robert Smyth MD MSc, Marianna Sockrider MD, DrPH

Resources:

American Thoracic Society

- www.thoracic.org/patients
 - Lung cancer
 - Pulmonary nodule
 - Flexible bronchoscopy
 - Chest tube thoracostomy
 - Lung cancer prevention
 - Stopping smoking and vaping
 - Prescription medicines to help you stop smoking
 - OTC medicines to help you stop smoking
 - Smoking Cessation and Cancer

Agency for Health Care Research and Quality

- <https://www.uspreventiveservicestaskforce.org/uspstf/recommendation/lung-cancer-screening>

Environmental Protection Agency

- www.epa.gov

American Cancer Society

- <https://www.cancer.org/cancer/lung-cancer.html>

American Lung Association

- <https://www.lung.org/lung-health-diseases/lung-disease-lookup/lung-cancer>
- <https://www.lung.org/quit-smoking>

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Staging of Lung Cancer

Once you are diagnosed with lung cancer, staging tells you and your healthcare provider about the size of your cancer (tumor) and whether it has spread. The stage of your cancer is based on the results from tests like a CT (“cat”) scan, and biopsies. How your lung cancer stage is described also depends on what type of lung cancer you have.



A biopsy involves removing a piece of tissue (usually from either your lung, lymph nodes or other tissue site), and looking at it under a microscope. The stages of lung cancer are listed as I, II, III, and IV for non small cell lung cancer (NSCLC) and “limited” or “extensive” for small cell lung cancer (SCLC). NSCLC may be further subdivided by letter designations, for example IIIA, IIIB or IIIC. The higher the number (or when the word “extensive” is used) means the bigger the tumor and/or the more the cancer has spread. All stages of lung cancer can be treated.

Once your lung cancer is diagnosed, staging tells you and your healthcare provider about the size of your cancer (tumor) and how far it has spread. The stage of your cancer is based on your symptoms, results from tests like a CT (“cat”) scan, and biopsies. A biopsy involves removing a piece of tissue (usually from your lung or lymph node), and looking at it under a microscope. The stages of lung cancer are listed as I, II, III, and IV for non small cell lung cancer (NSCLC) and “limited” or “extensive” for small cell lung cancer (SCLC). NSCLC may be further subdivided by letter designations, for example IIIA, IIIB or IIIC. The higher the number (or when the word

“extensive” is used) means the bigger the tumor and/or the more the cancer has spread.

Why is it important to know the stage of my lung cancer?

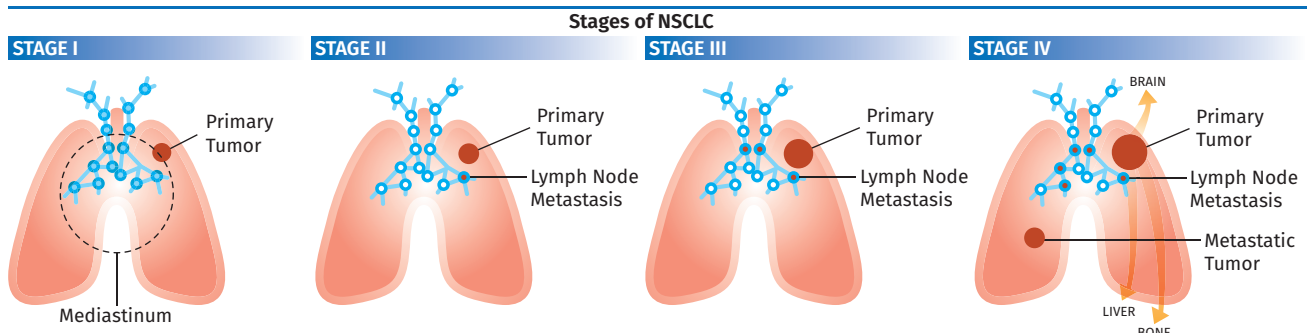
Finding out the stage of your lung cancer is important for two reasons. Staging your lung cancer:

- tells how much your cancer has spread.
- helps decide which therapy (or therapies) could be used.

Knowing the stage of your cancer helps your healthcare team know the risks versus the benefits of different procedures and treatments. Treatments that are good for one stage may not be helpful for another stage, and in fact can be harmful to you. For example, if cancer has spread outside the lung (called metastases), surgery to remove part of the lung may not improve your chance of living longer and may cause unnecessary harm.

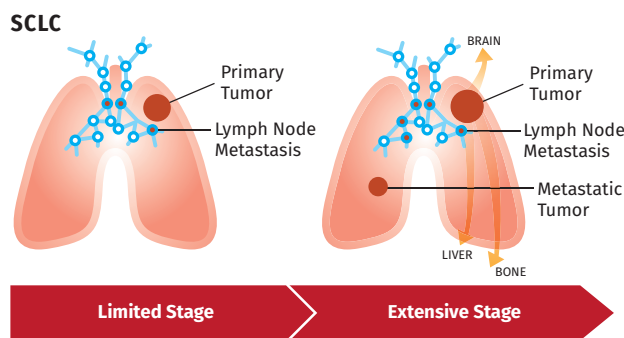
How does staging differ between small cell lung cancer (SCLC) and non-small cell lung cancer (NSCLC)?

Both NSCLC and SCLC are staged by the TNM system. The initials TNM stand for the size and location of the **T**umor, the spread of cancer in the lymph **N**odes



and if and where the cancer has spread (**Metastases**).

- The **T** number increases as the tumor gets bigger and how close it is to major structures in the chest like large airways in the lungs, heart, major blood vessels, or tissues outside the lung.
- The **L** number says whether your cancer has spread to the lymph nodes. Lymph nodes are part of your immune system and cancer cells can spread into the lymph system. Usually, if the cancer has spread, it spreads to the nodes closest to the main tumor and then goes further away. Imaging studies, such as CT or PET scans, are used to find possible lymph nodes affected by the cancer, but a biopsy is the best way to find out if the lymph nodes have cancer. The lymph node is rated as:
 - ♦ N0=no lymph node involvement
 - ♦ N1, N2, N3 = lymph nodes involved at different sites inside or outside the chest
- The **M** says that metastases (spread of cancer) has happened throughout the body and is growing in other tissues or organs. Lung cancer may spread to the brain, bones, adrenal glands, liver or other areas. The **M** stage is based on **if** the cancer has spread and **where** it has spread. Like the lymph node staging, imaging studies may help find out if a cancer has spread, but a biopsy is often a better way to find this out.



SCLC is staged by the TNM system, but treating physicians also commonly describe SCLC as “limited” and “extensive” stages. Limited stage SCLC occurs when the lung cancer is limited to one side of the chest. Extensive stage occurs when the lung cancer has spread to the other side of the chest or to other organs such as the liver or brain.

How will my lung cancer be staged?

Your healthcare provider will ask you about how you are feeling. Changes in how you are feeling may be a sign that your cancer has spread. You will also have tests that can tell if your cancer is bigger or has spread to other areas of your body. Some tests are

non-invasive (you are not cut or poked with a needle for a biopsy) such as a CT scan (to identify anatomy), PET scan (to identify tissues with very active cells), MRI (often used to look at the brain or bones), and/or bone scan (to look at bones where the cancer may be). These tests may be able to give an idea of the stage of your lung cancer but these may not be accurate. Another test, a biopsy, is an invasive test where a piece of tissue is taken and examined. Biopsies of tissue are the best way to stage your cancer.

How do you get biopsies that are used to diagnose and stage lung cancer?

There are several tools that are used to reach the tissue that is to be biopsied. These include: bronchoscopy, CT-guided needle biopsy, mediastinoscopy, surgery or other biopsy procedures. Some of these procedures are done in the operating room under general anesthesia, while others only require medications that make you a little sleepy.

- **Bronchoscopy:** A camera on a long skinny tube (a fiber optic bronchoscope) is put into your mouth or nose, goes into your trachea (windpipe), and into the airways (breathing tubes) of your lungs. The bronchoscope can be used to look at the inside of your airways. Bronchoscopy can be done with or without ultrasound to biopsy the airways, the lung tissue, or lymph nodes. There are newer types of bronchoscopy that may also be offered to you if needed, that can reach further into your lungs.

- **Endoscopic Ultrasound (EUS) or Endobronchial Ultrasound (EBUS):** Like the bronchoscope, an EUS is a long tube that has an ultrasound device and a camera attached. This tube can be put through your mouth, into your trachea (windpipe) or esophagus (food tube). The ultrasound uses sound waves to “see” areas of your lung, mediastinum (the area between your lungs), or areas around your esophagus that are not visible from inside the trachea or esophagus. Seeing these areas helps to guide a needle into the likely cancer tissue, usually a lymph node, to obtain a small biopsy.

- **Mediastinoscopy:** Also like a bronchoscope, a tube with a camera is put into your mediastinum (area between your lungs). To get into this area, a small cut is made just above your sternum (breast bone). This is done so that groups of lymph nodes in the mediastinum can be biopsied.

- **Thoracic Surgery:** Sometimes, the best way to biopsy something in your chest area is to have surgery. Whether you have surgery or not will be

decided by you and your surgeon. Usually, one or more incisions (cuts) are made so that the surgeon can remove the cancerous part of the lung and/or lymph node tissue.

- **Other biopsy procedures:** Depending on your symptoms and test results, other biopsies may be done. Where the biopsy is done depends on where the cancer may be. Common places that are biopsied are your lungs, liver, bones, and brain. These types of biopsies can be done with a needle or through surgery by cutting a piece of tissue out of your body.

How good are these tests at staging lung cancer?

If your biopsy finds cancer cells, this is proof that you have cancer. If cancer is found in biopsies taken from different parts of your body, this means that the cancer has spread. On the other hand, not finding cancer cells (a negative result) can mean two things:

- it can mean that the cancer has not spread or
- the biopsy “missed” the cancer that was really there.

Usually, the bigger the piece of tissue from biopsy, the better the chance to prove that cancer is not there. For example, if a lung biopsy is negative, but the sample was small, another biopsy may be needed to make sure that your cancer did not spread.

Action Steps:

1. If you smoke, it is never too late to get the help you need to quit. Ask your healthcare provider, or call 1-800-QUITNOW.
2. If you notice any of your symptoms getting worse, or any new symptoms, contact your healthcare clinician right away. New symptoms might include:
 - a cough that doesn't go away
 - coughing up blood
 - difficulty swallowing
 - weight loss that cannot be explained
 - bone pain
 - shortness of breath
 - hoarseness that does not go away
 - increasing fatigue
3. Talk to your healthcare provider about what the plan is to stage your cancer and watch for any new spread.

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Resources:

American Thoracic Society

- www.thoracic.org/patients
 - Flexible Bronchoscopy
 - Lung Cancer
 - Screening for Lung Cancer
 - Treatment of Lung Cancer (SCLC, Early NSCLC, Advanced NSCLC)

American Cancer Society 1-800-227-2345

- <https://www.cancer.org/cancer/types/lung-cancer/detection-diagnosis-staging.html>

National Cancer Institute 1-800-422-6237

- <https://www.cancer.gov/types/lung>
- <https://www.cancer.org/cancer/types/lung-cancer/detection-diagnosis-staging/staging-nsclc.html>
- <https://www.cancer.gov/types/lung/patient/small-cell-lung-treatment-pdq>

Lungevity

- <https://www.lungevity.org>

American Lung Association Lung Force

- <https://www.lung.org/lung-force>

National Lung Cancer Partnership 1-608-233-7905

- <https://www.cancer.gov/types/lung/patient/small-cell-lung-treatment-pdq>

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What is a Lung Nodule?

Commonly called a “spot on the lung” or a “shadow,” a nodule is a round area that is more dense than normal lung tissue. It shows up as a white spot on a CT scan. Lung nodules are usually caused by scar tissue, a healed infection that may never have made you sick, or some irritant in the air. Sometimes, a nodule can be an early lung cancer.



Why have I been given this handout?

One or more lung nodules were seen on your recent chest x-ray or CT (“CAT”) scan.

How common are lung nodules?

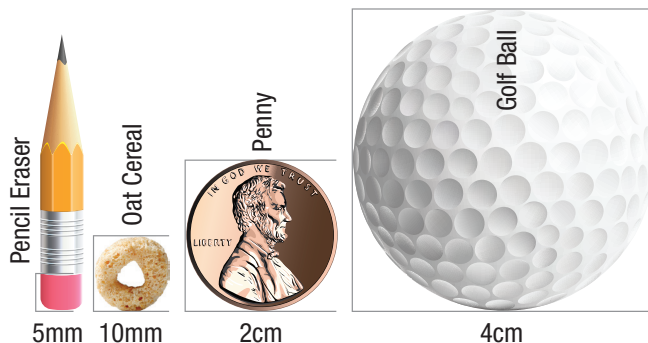
Nodules are found in up to half of adults who get a chest x-ray or CT scan.

Do nodules cause any symptoms?

In general, small nodules don’t cause any noticeable problems. They’re too small to cause pain or breathing problems.

How big is the nodule?

Your healthcare team can tell you the exact size of your nodule. Most nodules are less than 10 millimeters (about a ½ inch). Here are the sizes of some common items for comparison.



Should I worry that I have a nodule?

Most nodules are not cancer, but for a small number of people the nodule may turn out to be an early cancer. Your doctor can tell if your nodule is lung cancer by:

1. Seeing how it looks on the CT scan.
2. Seeing whether it grows over time. A nodule that grows larger over time is a sign that it could be a cancer.
3. Taking a sample of the nodule with a needle or surgery. **Most people with a nodule will NOT need to have this test.**

Did you just say “lung cancer”?

Hearing the words “lung cancer” can be very stressful. It is normal to be worried and anxious when there is even a small chance you might have lung cancer. Please talk with your healthcare team about any worries or concerns that you have.

What is the chance that the nodule is an early lung cancer?

Fewer than 5% of all nodules turn out to be cancer.

Cancer is more likely in patients who:

- are older.
- have a larger nodule.
- smoked or still smoke cigarettes.
- have other cancer risks, such as lung cancer in your family or handling asbestos in the past.

For example, a small nodule in a young person who never smoked is less likely to be cancer than a larger nodule in an older person who recently quit smoking. **However, even in the person with a high risk of lung cancer, most small nodules are not lung cancer.**

Some people would like an estimate of how likely their nodule is to be lung cancer. If knowing that number would help you, please contact your healthcare provider.

What if my nodule is lung cancer?

Even if a nodule turns out to be lung cancer, it is likely to be an early stage lung cancer. People with early stage lung cancer that is treated are less likely to die than people who are diagnosed at a later stage when the cancer has started to cause symptoms.

Your healthcare team will be with you every step of the way.

Please discuss any concerns you have about lung cancer with your healthcare team.

What will happen next?

Your healthcare team will probably recommend getting more CT scans to keep a close eye on the nodule to see if it changes. We call this “active surveillance.”

- If a nodule is not cancer, it usually won’t grow. If the nodule doesn’t grow over a 2-year period, it is very unlikely to be cancer. Most of the time, it is safe to stop watching nodules if there is no growth over a 2-year period.
- On the other hand, if the nodule is getting bigger, it should be looked at more closely to see if it is lung cancer. Nodules can be viewed more closely using different radiology studies or by biopsy (using a needle or surgery to take a sample of the nodule to look at under a microscope). Your healthcare team will determine which is best for you. You should let your healthcare team know if you have strong preferences about having specific tests related to your nodule.

What if I’ve had a chest x-ray or CT in the past?

Let your healthcare provider know if you’ve ever had a chest x-ray or CT. It is very reassuring if your nodule is the same size as it was on past imaging.

Why shouldn't I get a biopsy now?

- A biopsy means removing a piece of your lung in order to look at it under a microscope. Biopsies are usually not recommended when nodules are small because it is very difficult to biopsy them safely.
- Doing a biopsy when a nodule is small can cause harm such as collapse of the lung, bleeding, or infection.
- Biopsies and other studies (for example, a "PET" scan) are sometimes done for nodules that are 9 mm or larger. If you want more information on biopsies, see ATS patient handout "Staging of Lung Cancer" for additional information.

What about other imaging studies besides a CT scan?

You may have heard about PET scans or MRI scans. Unfortunately, these scans aren't very useful for small nodules. PET scans can't "see" nodules less than about a centimeter, but can be helpful for larger nodules, both to tell if the nodule is cancer and also to see if there are any signs of cancer in other parts of your body. MRI scans can't see lung nodules very well.

Is it really safe to wait for the next CT scan?

Most cancers grow fairly slowly, and it takes several months for them to get bigger. So even if the nodule is lung cancer, it will likely still be small in a few months.

Even if the nodule is lung cancer that is growing, there is a very good chance that surgery or radiation will cure you. Waiting a few months for the next CT scan is very safe and should not affect the treatment you receive or your chances for cure if the nodule turns out to be cancer.

How does my clinician decide when to do the next CT scan?

There are several guidelines for how to decide when to get the next CT scan. These guidelines are based on the chance the nodule is lung cancer and how big the nodule might be at the time of the next scan.

Your healthcare provider will determine the best time for your next CT scan based on these guidelines. Your healthcare provider may choose to discuss the CT results with other specialists to determine the best plan for you.

You should be involved in the decision for when to get the next CT scan. Some people feel worried while waiting several months for your next CT scan. Call your healthcare provider if you have questions or concerns about the recommended date.

How long will I get CT scans?

Some people will only need one repeat CT scan a year after the first. Most people will get a few CT scans over a period of two years after the first. This decision is also based on how likely the nodule is to be lung cancer.

Write the date of when your next CT scan is due to be scheduled here:

Call your healthcare provider if you haven't had the scan by then.

Can all these extra CT scans be dangerous?

CT scans use radiation to take pictures of the body. Though radiation in high doses can cause cancer, the chance that a few CT scans will cause cancer is extremely low.

What if I'm still smoking?

Quitting now will decrease your chance of getting lung cancer in the future, as well as many other serious health problems like emphysema and heart disease.

Some people think that if they already have lung cancer, they might as well keep smoking. **THAT IS WRONG.**

Your healthcare team will help you quit by prescribing medicines and offering counseling.

You can also call 1-800-QUIT NOW

(1-800-784-8669) for individualized counseling and follow-up calls from trained counselors in English (for Spanish call 1-855-335-3569) to help you quit.

What are my "take away" messages?

- Most small nodules are not lung cancer.
- Most people with small nodules will need additional CT scans during the next year or two.
 - ♦ Let your healthcare provider know if you have had a chest x-ray or CT scan in the past so they can check whether the nodule was there before.
- Biopsies of small nodules can cause more harm than good.
- If you are still smoking, quitting is the most important thing you can do to improve your health.
- It is normal to be worried when there is even a small chance of lung cancer.
- Please share your concerns with your healthcare team.

Authors: Christopher G. Slatore MD MS, Renda Soylemez Wiener MD MPH, Amber D. Laing BS RN, Donald Sullivan, MD, MA, MCR
Reviewer: Marianna Sockrider, MD, DrPH



Rx Action Steps

Contact your clinician if you:

- ✓ Have had a chest x-ray or CT scan in the past.
- ✓ Have a change or increase in cough, or cough up blood.
- ✓ Develop new shortness of breath, chest pain, fevers, or chills.
- ✓ Experience unintended weight loss of 10 pounds or more.
- ✓ Have worry and anxiety about the nodule.
- ✓ Want more information.

Healthcare Provider's Contact Number:

Resources:

US National Library of Medicine

<https://www.nlm.nih.gov/medlineplus/ency/article/000071.htm>

Smokefree.gov

American Thoracic Society

www.thoracic.org/patients

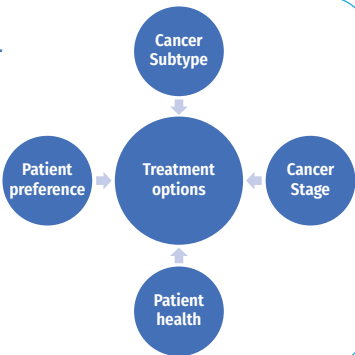
- Lung Cancer (introduction, prevention, treatment, staging)
- Lung Cancer Screening Guide

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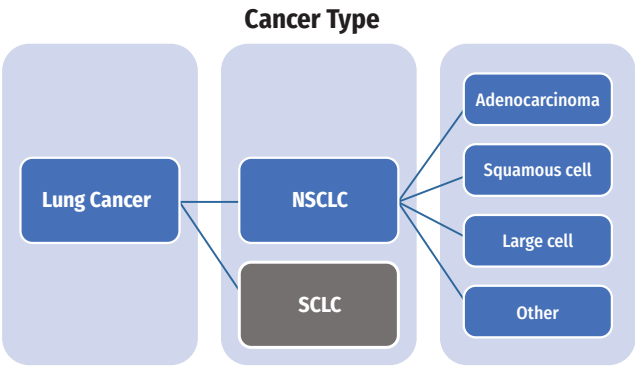
The American Thoracic Society acknowledges the VHA National Center for Health Promotion and Disease Prevention for part of the content of this publication.

Treatment of Advanced-Stage Non-Small Cell Lung Cancer

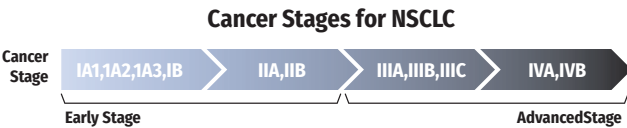
There are several types of treatment for advanced-stage non-small cell lung cancer (NSCLC). You and your healthcare team will discuss which choice is best for you based on the type and stage of lung cancer you have, symptoms, your preferences and any other health problems you may have. Lung cancer treatments continue to improve as new discoveries are being made, so it is important to discuss all your possible options with your healthcare team. This fact sheet focuses on the treatment of advanced-stage non-small cell lung cancer. For other information about lung cancer, see the other sections of this document.



There are two main types of lung cancer: Non-Small Cell Lung Cancer (NSCLC) and Small Cell Lung Cancer (SCLC) (see ATS Patient Information Series Fact Sheet Lung Cancer at www.thoracic.org/patients). NSCLC is the most common and the main sub-types of NSCLC are adenocarcinoma, squamous cell, and large cell lung cancer. Treatment is different depending on the type or sub-type of lung cancer you have.



The treatment approach for SCLC is different and is not included here. See ATS Patient Information Series fact sheet “Treatment of Small cell Lung Cancer” for more information on this topic.



How does the stage of my cancer determine the treatment I receive?

Staging is a process for defining how much cancer is within your body (see ATS Patient Information Series fact sheet “What is Lung Cancer Staging?” at www.thoracic.org/patients). Usually, cancers that are limited to a small area

of the chest are considered early-stage lung cancer (Stage 1, Stage 2, and Stage IIIA) and are best treated with a local treatment to remove or kill the entire tumor (see ATS Patient Information Series fact sheet “Treatment of Early-Stage Non-Small Cell Lung Cancer”).

Advanced-stage lung cancer is defined as Stage IIIB to Stage IVB. If the cancer is at an advanced-stage, it is usually not possible to remove all the cancer and the goal of treatment is to control your cancer, minimize symptoms, and extend and improve quality of life.

This is usually done with a combination of therapies given separately or in combination. Radiation (high energy x-rays), chemotherapy (drugs that kill fast growing cells including the cancer cells), immunotherapy (drugs that use your own immune system to kill the cancer) and/or targeted therapy (drugs that kill the cancer cells at the DNA level) can be used to kill cancer cells throughout your body.

Which treatments are used for advanced-stage NSCLC?

The following table lists the range of possible treatment options, either recommended in guidelines and/or clinical trials, for advanced-stage NSCLC. Each person with lung cancer has different factors that need to be considered for a treatment plan, so what may be the best for one person may not be best for you.

| NSCLC Advanced-Stage | Treatment (often in combination) |
|----------------------|---|
| IIIB, IIIC | Surgery (only rarely) Chemotherapy Radiation Immunotherapy Targeted therapy |
| IVA, IVB | Chemotherapy Immunotherapy Radiation (for symptom relief) Targeted therapy |

How will my healthcare team decide what treatments to recommend for advanced-stage NSCLC?

The treatment approach to advanced-stage lung cancer is changing rapidly as we learn more about the disease. Your healthcare team will use the stage and sub-type of your cancer, but will also possibly test for specific immune markers and DNA changes or biomarkers. If you are a patient with Stage IV disease it is recommended to check for these biomarkers to ensure you get the right treatment. Sometimes a second biopsy will be needed or a blood sample will be taken or a “liquid biopsy” to look for these changes.

They will then review your other symptoms and health problems to make sure you can safely tolerate the treatment. You and your healthcare team should discuss the risks and benefits of all the options presented to you. For more information on biomarker testing in lung cancer please read <https://www.lung.org/lung-health-diseases/lung-disease-lookup/lung-cancer/symptoms-diagnosis/biomarker-testing>.

How will I find out about possible side effects of lung cancer treatment and how to manage them?

Your healthcare team will discuss the specific side effects of each therapy you receive. Many of the side effects of systemic therapies depend on the type of therapy, the individual patient and the doses used. Be sure to talk to your healthcare providers about what to expect and medications that can help to reduce or relieve your symptoms. Palliative care is an important approach for patients with lung cancer. The goal of palliative care is to improve your quality of life and help you and your family deal with the challenges of a serious illness. Palliative care can help to minimize side effects and any related psychological, social, and spiritual problems you may be experiencing. Procedures to alleviate lung cancer symptoms are also an option. Your pulmonologist can help you figure out if a procedure will help improve your quality of life.

For more detailed information on these topics please see helpful links in the ‘Resources’ section.

What about research centers or clinical trials?

Many of the treatments available for lung cancer patients today are the direct result of studies in which other people with cancer volunteered to take part in clinical trials. These research studies assess new treatments or new ways to deliver treatments. They allow healthcare providers to learn the very best treatment options for people and at times can benefit the people taking part in the studies. Often, many of the newest treatment options are available only by taking part in a clinical trial. Speak with your healthcare team about what research is being done to treat your type of cancer and whether you would be a good candidate to enroll in a clinical trial. You can search for clinical trials in your area through the National Cancer Institute website (<https://www.cancer.gov/research/participate/clinical-trials>).

How does stopping smoking improve lung cancer outcomes?

Stopping smoking can improve cancer outcomes at any stage of disease. Stopping smoking may help you heal better

if you need surgery, cut down on side effects from systemic therapies like chemotherapy and radiation, and allow these treatments to work better. Smoking cessation may also help you live longer, improve your quality of life, and lower the risk of cancer coming back or you getting a new cancer.

Speak to your healthcare provider about taking over-the-counter and/or prescription medications to help you stop smoking.

Helpful links to stop smoking:

<https://www.cancer.org/healthy/stay-away-from-tobacco/guide-quitting-smoking/nicotine-replacement-therapy.html>

<https://quitnow.net/mve/quitnow>

OR call 1-800-QUITNOW (1-800-784-8669)

Healthcare Provider's Contact Number:

Authors: Yaron Gesthalter MD, Robert Smyth MD, MSc, Donald Sullivan, MD, MA, MCR

Reviewers: Hasmeena Kathuria MD, Marianna Sockrider MD, DrPH

Resources:

American Thoracic Society

- www.thoracic.org/patients
 - Lung Cancer
 - Lung Cancer Staging
 - Treatment of Early-Stage Non-Small Cell Lung Cancer
 - Smoking Cessation and Cancer
 - Palliative Care for People with Respiratory Disease or Critical Illness
 - Malignant Pleural Effusion

American Lung Association

- lung.org/lung-force

American Society of Clinical Oncology

- <https://www.asco.org>

American Society for Radiation Oncology

- <https://www.rtanswers.org/Cancer-Types/Lung-Cancer>

Go2 Foundation

- <https://go2foundation.org/treatments-and-side-effects/side-effect-management/>

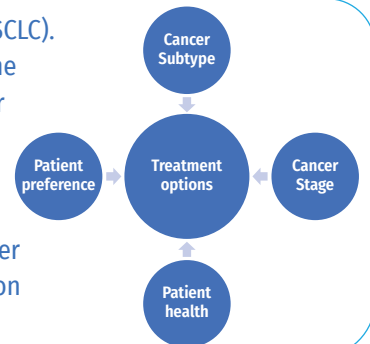
Lungevity

- <https://www.lungevity.org>

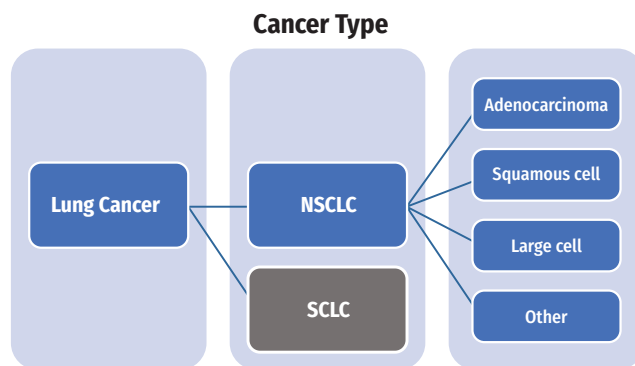
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Treatment of Early-Stage Non-Small Cell Lung Cancer

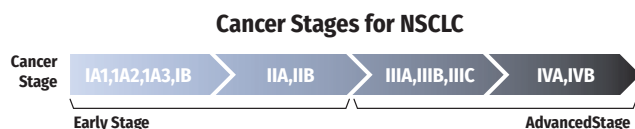
There are several types of treatment for early-stage non-small cell lung cancer (NSCLC). You and your healthcare team will discuss which choice is best for you based on the type and stage of lung cancer you have, symptoms, your preferences and any other health problems you may have. Lung cancer treatments continue to improve as new discoveries are being made so it is important to discuss all your possible options with your healthcare team. This fact sheet focuses on the treatment of early-stage non-small cell lung cancer. For additional information about lung cancer including treatment of advanced-stage NSCLC, see our other ATS Patient Information Series fact sheets in the 'For More Information' section at the end of this leaflet.



There are two main types of lung cancer: Non-Small Cell Lung Cancer (NSCLC) and Small Cell Lung Cancer (SCLC) (see ATS Patient Information Series Fact Sheet Lung Cancer at www.thoracic.org/patients). NSCLC is the most common and the main sub-types of NSCLC are adenocarcinoma, squamous cell, and large cell lung cancer. Treatment is different depending on the type or sub-type of lung cancer you have.



The treatment approach for SCLC is different and is not included here. See ATS Patient Information Series fact sheet "Treatment of Small Cell Lung Cancer" for more information on this topic.



How does the stage of my cancer determine the treatment I receive?

Staging is a process for defining how much cancer is within your body (see ATS Patient Information Series fact sheet "What is Lung Cancer Staging?" in this document). Usually, cancers that are limited to a small area of the chest are best treated with a local treatment to remove or kill the entire tumor. Surgery and stereotactic

body radiation therapy (SBRT) also known as stereotactic ablative radiotherapy (SABR) are forms of local treatment. Surgery is generally more effective than SBRT in removing all the cancer, but as discussed below, not everyone can safely tolerate surgery, or some individuals may opt for a non-surgical approach.

Other options include chemotherapy (drugs that kill fast growing cells including the cancer cells), radiation therapy (high energy x-rays), immunotherapy (drugs that use your own immune system to kill the cancer) and targeted therapies (drugs that kill the cancer cells at the DNA level). These treatments, also known as systemic therapies, can be used to reduce the chance of the cancer returning after surgery (known as adjuvant therapies) or as the main treatment in patients who *don't* have surgery. If systemic therapies are given before surgery this is known as "neo-adjuvant".

Which treatments are used for early-stage NSCLC?

The following table lists the *range of possible treatment options* for the early-stages of NSCLC. Each person with lung cancer has different factors that need to be considered for a treatment plan, so what may be the best for one person may not be best for you.

| NSCLC Early-Stage | Treatment |
|-------------------|--|
| IA1, IA2, IA3 | Surgery SBRT (if a person doesn't have surgery) |
| IB | Surgery SBRT (if a person doesn't have surgery) |
| IIA or IIB | Surgery SBRT (if a person doesn't have surgery) Chemotherapy Radiation Targeted therapy |
| IIIA | Surgery when possible Chemotherapy Radiation Immunotherapy Targeted therapy |

How will my healthcare team decide if I should have surgery for early-stage NSCLC?

The stage and location of your cancer helps determine if surgery may be useful. Next, your healthcare team will help you decide if you are “fit” enough for surgery. Surgery is stressful on the body and can be risky for some people, such as those who have poor nutrition, or other lung and/or heart diseases. This might make lung cancer surgery impossible to perform safely for you. You and your healthcare team will need to discuss the risks and the benefits of having surgery.

For those being considered for surgery, other tests may be needed to check your lungs and heart to find out if you can safely tolerate the surgery. These tests often include breathing and/or exercise tests, a study looking at blood flow to the lungs known as a ventilation-perfusion scan (V/Q scan), and a stress test of the heart and/or an ultrasound of your heart (echocardiogram).

Can I manage them?

Your healthcare team will discuss the specific side effects of each therapy you receive. In general, the complications of surgery include infections, damage to areas near the surgical site, bleeding, and shortness of breath. Other risks include heart attack, stroke or a blood clot to the lungs.

Many of the side effects of systemic therapies depend on the individual patient and the doses used. Be sure to talk to your healthcare providers about what to expect and medications that can help to alleviate your symptoms.

Palliative care is an important approach for patients with lung cancer. The goal of palliative care is to improve your quality of life and help you and your family deal with the challenges of a serious illness. Palliative care attempts to minimize side effects and any related psychological, social, and spiritual problems you may be experiencing.

For more detailed information on these topics please see helpful links in our ‘For More Information’ section.

What about research centers or clinical trials?

Many of the treatments available for lung cancer patients today are the direct result of studies in which other people with cancer volunteered to take part in clinical trials. These research studies assess new treatments or new ways to deliver treatments. They allow healthcare providers to learn the very best treatment options for people and at times can benefit the people taking part in the studies. Often, many of the newest treatment options are available only by taking part in a clinical trial. Speak with your healthcare team about what research is being done to treat your type of cancer and whether you would be a good candidate to enroll in a clinical trial. The National Cancer Institute also allows you to search for clinical trials in your area through its website (<https://www.cancer.gov/research/participate/clinical-trials>).

How does stopping smoking improve lung cancer outcomes?

Stopping smoking can improve cancer outcomes at any stage of disease. Stopping smoking may help you heal better if you need surgery, cut down on side effects from systemic therapies like chemotherapy and radiation, and allow these treatments to work better. Smoking cessation may also help you live longer, improve your quality of life, and lower the risk of cancer coming back or you getting a new cancer.

Speak to your healthcare provider about taking over the counter and/or prescription medications to help you stop smoking.

Helpful links to stop smoking:

<https://www.cancer.org/healthy/stay-away-from-tobacco/guide-quitting-smoking/nicotine-replacement-therapy.html>

<https://quitnow.net/mve/quitnow>

OR call 1-800-QUITNOW (1-800-784-8669)

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Reviewers: Hasmeena Kathuria MD, Marianna Sockrider MD, DrPH

Resources:

American Thoracic Society

- www.thoracic.org/patients
 - Lung Cancer
 - Treatment of Advanced-Stage Non-Small Cell Lung Cancer
 - Smoking Cessation and Cancer 2021
 - Palliative Care for People with Respiratory Disease or Critical Illness

American College of Surgeons

- <https://www.sts.org/sites/default/files/lungbooklet.pdf>

American Society of Clinical Oncology

- <https://www.asco.org/>
- <https://www.rtanswers.org/Cancer-Types/Lung-Cancer/Treatment-Types>

Go2 Foundation

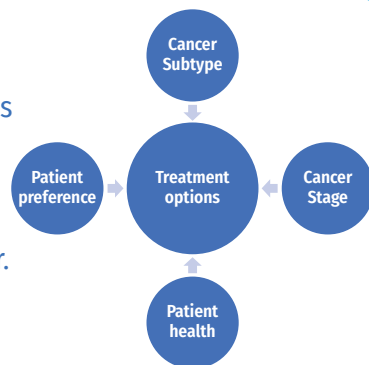
- <https://go2foundation.org/treatments-and-side-effects/side-effect-management/>

Lungevity

- <https://www.lungevity.org>

Treatment of Small Cell Lung Cancer

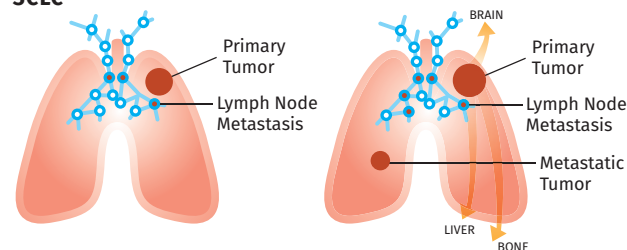
There are several types of treatment for Small Cell Lung Cancer (SCLC). You and your healthcare team will discuss which choice is best for you based on the stage of lung cancer you have, symptoms, your preferences and any other health problems you may have. Lung cancer treatments continue to improve as new discoveries are being made, so it is important to discuss all your possible options with your healthcare team. This fact sheet focuses on the treatment of small cell lung cancer. For additional information about lung cancer, see our other ATS Patient Information Series fact sheets listed under the 'Resources' section.



There are two main types of lung cancer: Non-Small Cell Lung Cancer (NSCLC) and Small Cell Lung Cancer (SCLC). NSCLC is more common than SCLC. Treatment is different depending on the type or sub-type of lung cancer you have.

The treatment approach for SCLC is discussed here. For more information on NSCLC see ATS Patient Information Series fact sheets on the treatment of early and advanced stage NSCLC (see the sections on NSCLC in this document).

SCLC



Limited Stage

Extensive Stage

How does the stage of my cancer determine the treatment I receive?

Staging is a process for defining how much cancer is within your body (see the section on Lung Cancer Staging in this document). SCLC is divided into "limited" and "extensive" stages. Limited stage SCLC occurs when the lung cancer is limited to one lung with or without spread to nearby lymph nodes. Extensive stage occurs when the cancer has spread to the other side of the chest or to other organs such as the liver, bone, and/

or brain. In addition to other scans of the body, a CT or MRI of your brain is performed to help your healthcare team determine the stage of your cancer.

Only rarely is surgery an option for people who have limited stage disease. Surgery is only recommended for people where the cancer is found to be in a small area of the lung. If the person does not have surgery with limited stage disease in a small area, then a special type of radiotherapy, stereotactic body radiation therapy (SBRT) may be an option.

A combination of chemotherapy (drugs that kill fast growing cells including the cancer cells) and radiation therapy (high energy x-rays) are used in both limited and extensive stage disease. Immunotherapy (drugs that use your own immune system to kill the cancer) can also be used in extensive stage disease.

Which treatments are used for SCLC?

The following table lists the range of possible treatment options for SCLC. Each person with lung cancer has different factors that need to be considered for a treatment plan, so what may be the best for one person may not be best for you.

| SCLC | Treatment |
|-----------------|--|
| Limited Stage | Surgery or SBRT (only rarely) Chemotherapy Radiation Palliative care |
| Extensive Stage | Chemotherapy Radiation (for symptom relief) Immunotherapy Palliative care |

How will my healthcare team decide what treatments to recommend for SCLC?

The treatment approach to small cell lung cancer is gradually changing as we learn more about the disease. Your healthcare team will mostly focus on the stage of the cancer to determine treatment recommendations. They will also review your other symptoms and health problems to make sure you can safely tolerate the treatments they offer. Often these different treatments are offered in combination. You and your healthcare team should discuss the risks and benefits of all the options presented to you.

Are there side effects of lung cancer treatments, how can I manage them?

Your healthcare team will discuss the specific side effects of each therapy you receive. Many of the side effects of systemic therapies depend on the type of therapy, the individual patient and the doses used. Be sure to talk to your healthcare providers about what to expect and medications that can help to alleviate your symptoms. Palliative care is an important approach for patients with lung cancer. The goal of palliative care is to improve your quality of life and help you and your family deal with the challenges of a serious illness. Palliative care can help minimize side effects and any related psychological, social, and spiritual problems you may be experiencing. For more detailed information on these topics please see helpful links in the 'Resources' section.

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How does stopping smoking improve lung cancer outcomes?

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radiation, and allow these treatments to work better. Smoking cessation may also help you live longer, improve your quality of life, and lower the risk of cancer coming back or you getting a new cancer.

Speak to your healthcare provider about taking over-the-counter and/or prescription medications to help you stop smoking.

Helpful links to stop smoking:

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Resources:

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- www.thoracic.org/patients
 - Lung Cancer
 - Lung Cancer Staging
 - Non-Small Cell Lung Cancer Treatment (Early)
 - Non-Small Cell Lung Cancer Treatment (Advanced)
 - Smoking Cessation and Cancer
 - Palliative Care for People with Respiratory Disease or Critical Illness

American Society of Clinical Oncology

- <https://www.asco.org>

American Society for Radiation Oncology

- <https://www.rtanswers.org/Cancer-Types/Lung-Cancer>

Go2 Foundation

- <https://go2foundation.org/treatments-and-side-effects/side-effect-management/>

National Cancer Institute

- <https://www.cancer.gov/types/lung/patient/small-cell-lung-treatment-pdq>

Lungevity

- <https://www.lungevity.org>

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