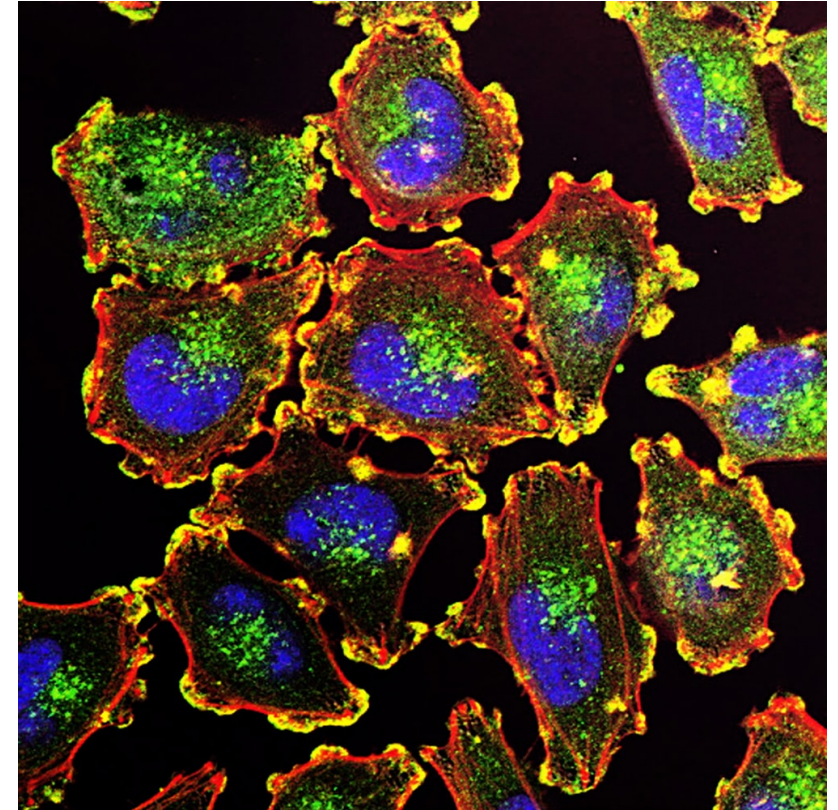


Lung Cancer



What Is Cancer?

- Your body is made up of trillions of cells that over your lifetime normally grow and divide as needed. When cells are abnormal or get old, they usually die.
- Cancer starts when something goes wrong in this process and your cells keep making new cells and the old or abnormal ones don't die when they should.
- As the cancer cells grow out of control, they can crowd out normal cells, making it hard for your body to work the way it should.



Your Lungs

- Your lungs are two sponge-like organs in your chest.
- When you breathe in, air enters through your mouth or nose and goes into your lungs through the trachea (windpipe). The trachea divides into tubes called bronchi, which enter the lungs and divide into smaller bronchi. These divide to form smaller branches called bronchioles. At the end of the bronchioles are tiny air sacs known as alveoli.
- The alveoli absorb oxygen into your blood from the inhaled air and remove carbon dioxide from the blood when you exhale. Taking in oxygen and getting rid of carbon dioxide are your lungs' main functions.

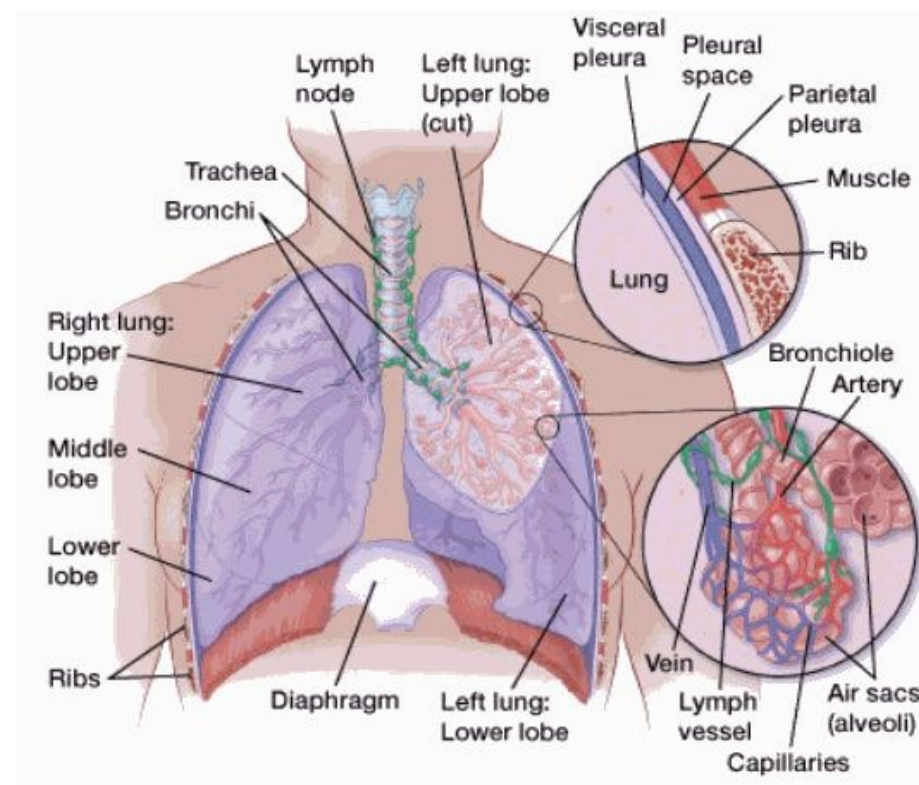


Image Source: American Cancer Society

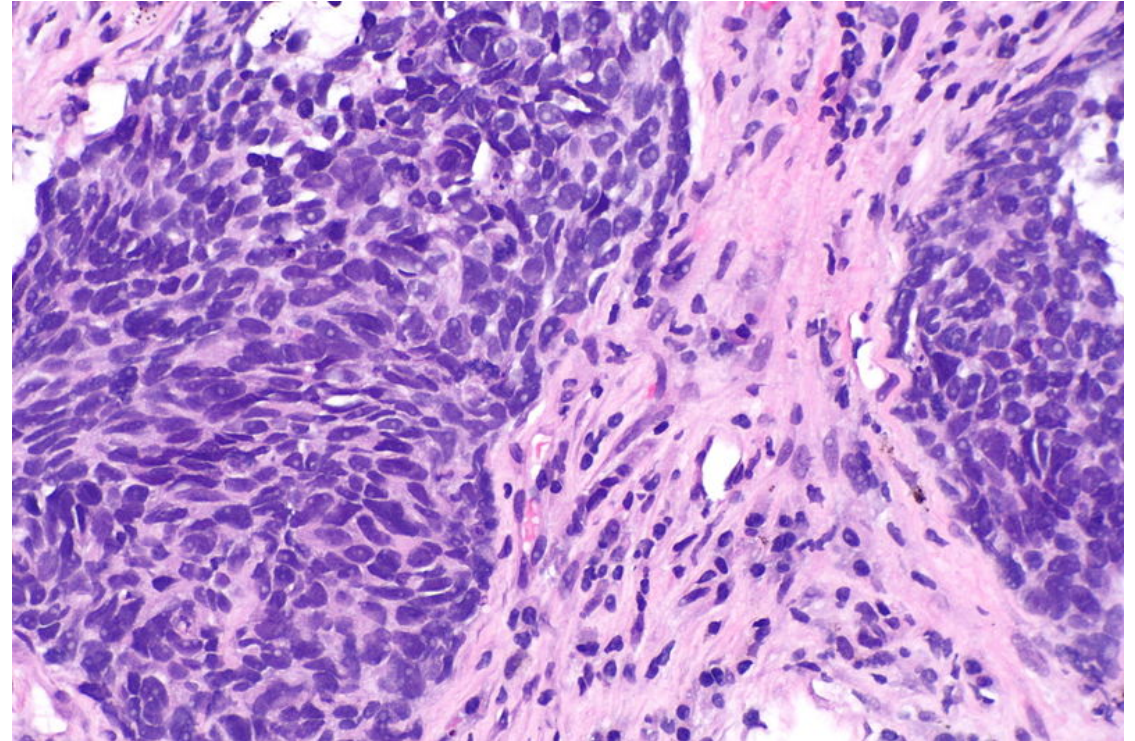
What Is Lung Cancer?

- Lung cancer is a type of cancer that starts in the lungs.
- Lung cancers typically start in the cells lining the bronchi and parts of the lung such as the bronchioles or alveoli.
- There are two main types of lung cancer: non-small cell lung cancer (NSCLC) and small cell lung cancer (SCLC)



Non-Small Cell Lung Cancer (NSCLC)

- Approximately 80% to 85% of lung cancers are NSCLC.
- The main subtypes of NSCLC are *adenocarcinoma*, *squamous cell carcinoma*, and *large cell carcinoma*.
- These subtypes, which start from different types of lung cells are grouped together as NSCLC because their treatment and prognoses (outlook) are often similar.

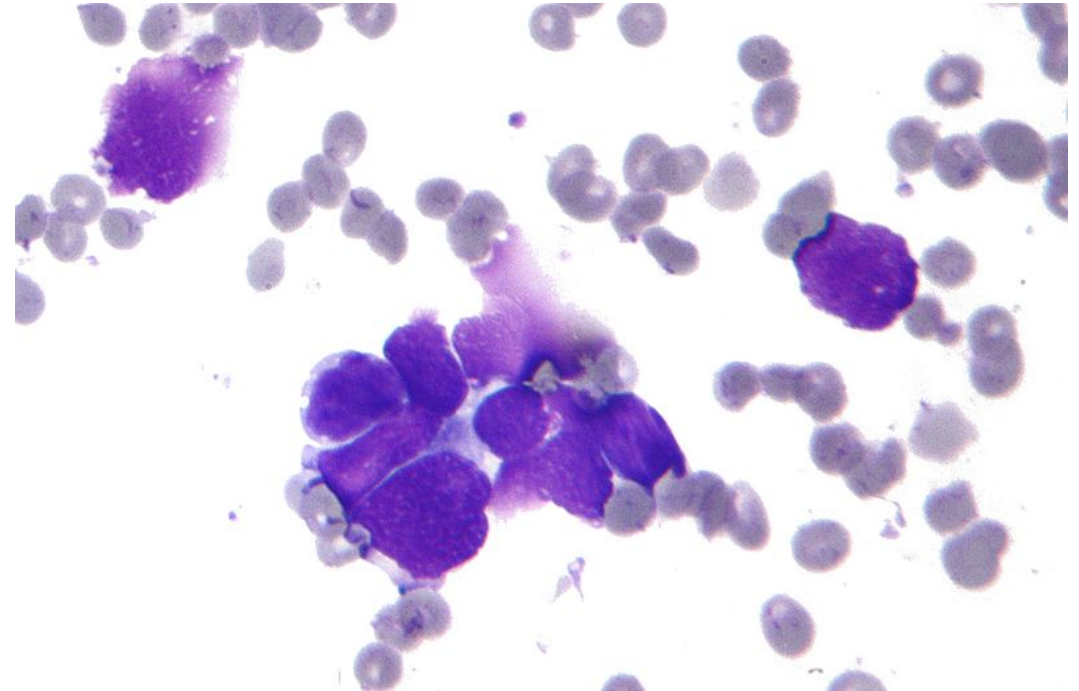


Non-Small Cell Lung Cancer (NSCLC)

- **Adenocarcinomas** start in the cells that would normally secrete substances such as mucus.
 - This type of lung cancer occurs mainly in people who currently smoke or formerly smoked, but it is also the most common type of lung cancer seen in people who don't smoke. It is more common in women than in men, and it is more likely to occur in younger people than other types of lung cancer.
- **Squamous cell carcinomas** start in squamous cells, which are flat cells that line the inside of the airways in the lungs.
 - They are often linked to a history of smoking and tend to be found in the central part of the lungs, near a main airway (bronchus).
- **Large cell carcinoma** can appear in any part of the lung.
 - It tends to grow and spread quickly, which can make it harder to treat.

Small Cell Lung Cancer (SCLC)

- Approximately 10% to 15% of all lung cancers are SCLC.
- This type of lung cancer tends to grow and spread faster than NSCLC.
- Since this cancer grows quickly, it tends to respond well to chemotherapy and radiation therapy. Unfortunately, for most people, the cancer will return at some point.



How Common Is Lung Cancer?

- Lung cancer (both small cell and non-small cell) is the second most common cancer in both men and women.
 - Globally, 2.21 million new cases of lung cancer were diagnosed in 2020.
 - In 2020, 1.80 million deaths were attributed to lung cancer worldwide.
- Lung cancer primarily occurs in older people, with the average age of diagnosis at 70.
- Overall, the chance that a man will develop lung cancer in his lifetime is about 1 in 15; for a woman, the risk is about 1 in 17.
 - These numbers include both people who smoke and those who don't smoke. For people who smoke the risk is much higher, while for those who don't, the risk is lower.

Lung Cancer Symptoms

- Different people have different symptoms for lung cancer. Some people have symptoms related to the lungs, while others just have general symptoms of not feeling well.
- Most people with lung cancer don't have symptoms until the cancer is advanced.
- Lung cancer symptoms may include:
 - Coughing that gets worse or doesn't go away.
 - Chest pain.
 - Shortness of breath.
 - Wheezing.
 - Coughing up blood.
 - Feeling very tired all the time.
 - Weight loss with no known cause.

These symptoms can happen with other illnesses, too. If you have some of these symptoms, talk to your doctor, who can help find the cause.

Risk Factors You Can Control

- **Tobacco smoke** – Smoking is by far the leading risk factor for lung cancer. About 80% of lung cancer deaths are thought to result from smoking and this number is probably even higher for small cell lung cancer (SCLC).
 - The risk of lung cancer for people who smoke is many times higher than for people who don't smoke. The longer you smoke and the more packs a day you smoke, the greater your risk.
- **Secondhand smoke** – If you smoke, breathing in the smoke of others (called secondhand smoke or environmental tobacco smoke) can increase your risk of developing lung cancer.
 - Nonsmokers have a 20 to 30 percent greater chance of developing lung cancer if they are exposed to secondhand smoke at home or work.
- **Radon exposure** – Radon is a naturally occurring radioactive gas that results from the breakdown of uranium in soil and rocks. You can't see, taste, or smell it. Breathing it in exposes your lungs to small amounts of radiation, which may increase a person's risk of lung cancer.
 - According to the US Environmental Protection Agency (EPA), radon is the second leading cause of lung cancer in the U.S. and is the leading cause among non-smokers.

Risk Factors You Can Control

- **Asbestos exposure** – People who work with asbestos (such as in mines, mills, textile plants, places where insulation is used, and shipyards) are several times more likely to die of lung cancer.
 - Lung cancer risk is much greater in workers exposed to asbestos who also smoke.
- **Exposure to other carcinogens** – Other carcinogens (cancer-causing agents) found in some workplaces can increase lung cancer risk, including radioactive ores such as uranium, certain inhaled chemicals (e.g., arsenic, beryllium, cadmium, silica, vinyl chloride, nickel compounds, chromium compounds, coal products, mustard gas, chloromethyl ethers), and diesel exhaust.
- **Diet** – Scientists are studying many different foods and dietary supplements to see whether they change the risk of getting lung cancer. There is still much to learn, but we do know smokers who take beta-carotene supplements have increased risk of lung cancer. Also, arsenic in drinking water (primarily from private wells) can increase the risk of lung cancer.

Risk Factors You Cannot Control

- **Previous radiation therapy to the lungs** – People who have had radiation therapy to the chest for other cancers (e.g., Hodgkin disease, breast cancer) are at higher risk for lung cancer, particularly if they smoke.
- **Air pollution** – In cities, air pollution (especially near heavily trafficked roads) appears to raise the risk of lung cancer slightly. This risk is far less than the risk caused by smoking, but some researchers estimate approximately 5% of all deaths from lung cancer worldwide may be due to outdoor air pollution.
- **Personal or family history of lung cancer** – If you have had lung cancer, you have a higher risk of developing another lung cancer. Siblings and children of people who have had lung cancer may have a slightly higher risk of lung cancer themselves, especially if the relative was diagnosed at a younger age.
 - It's not clear how much of this risk might be due to shared genes among family members and how much might be from shared household exposures (such as tobacco smoke or radon). Researchers have found that genetics seems to play a role in some families with a strong history of lung cancer.

Lowering Your Risk

Not all lung cancers can be prevented. But there are things you can do that might lower your risk:

- **Stay away from tobacco** – The best way to reduce your risk of lung cancer is not to smoke and to avoid breathing in other people's smoke.
 - If you stop smoking before a cancer develops, your damaged lung tissue gradually starts to repair itself. No matter what your age or how long you've smoked, quitting may lower your risk of lung cancer and help you live longer.
- **Avoid radon exposure** – You can reduce your exposure to radon by having your home tested and treated, if needed.
- **Avoid or limit exposure to cancer-causing agents** – Avoiding exposure to known carcinogens, in the workplace and elsewhere, may be helpful. When people work where these exposures are common, they should be kept to a minimum.
- **Eat a healthy diet** – Some evidence suggests eating a diet rich in fruits and vegetables may help protect people who smoke and those who don't against lung cancer.
 - But any positive effect of fruits and vegetables on lung cancer risk would be much less than the increased risk from smoking.

Lung Cancer Screening

- Screening for individuals at high risk has the potential to dramatically improve lung cancer survival rates by finding the disease at an earlier stage when it is more likely to be curable.
- The only recommended screening test for lung cancer is low-dose computed tomography (also called a low-dose CT scan, or LDCT).
- During an LDCT scan, you lie on a table and an X-ray machine uses a low dose of radiation to make detailed images of your lungs. The scan only takes a few minutes and is not painful.
- For higher risk people, getting yearly LDCT scans before symptoms start helps lower the risk of dying from lung cancer.
- Early detection by low-dose CT screening can decrease lung cancer mortality by 14 to 20 percent among high-risk populations.



Who Should Be Screened?

The U.S. Preventive Services Task Force (USPSTF) recommends yearly lung cancer screening with LDCT for people who:

- Have a 20 pack-year or more smoking history, **and**
- Smoke now or have quit within the past 15 years, **and**
- Are between 50 and 80 years old.

A pack-year is smoking an average of one pack of cigarettes per day for one year. For example, a person could have a 20 pack-year history by smoking one pack a day for 20 years or two packs a day for 10 years.



If you meet the criteria to be considered at risk for lung cancer and/or are experiencing lung cancer symptoms, talk to your healthcare provider to discuss if screening is appropriate for you.

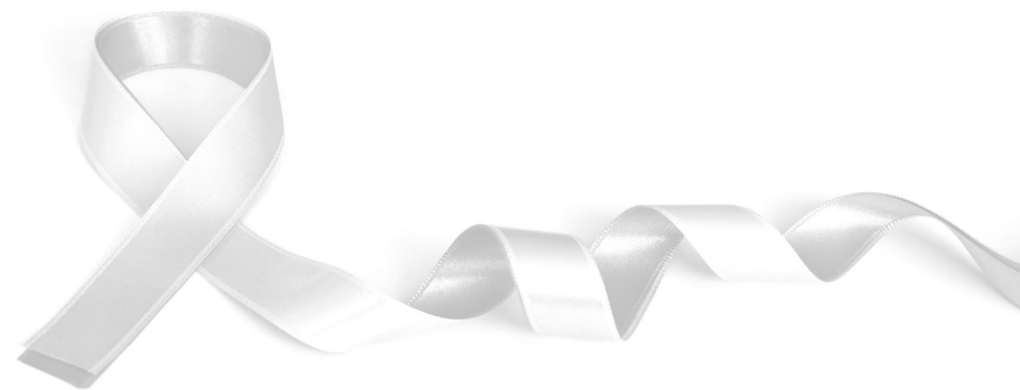
Diagnosing Lung Cancer

- 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 lung cancer is diagnosed, other tests are done to find out how far it has spread through the lungs, lymph nodes, and the rest of the body through a process called *staging*. The type and stage of lung cancer will determine the best course of treatment.
- The five-year survival rate for lung cancer is 56 percent for cases detected when the disease is still localized (within the lungs). However, only 16 percent of lung cancer cases are diagnosed at an early stage. For distant tumors (spread to other organs), the five-year survival rate is only 5 percent.



Treating Lung Cancer

- Lung cancer is treated in several ways, depending on the type of lung cancer and how far it has spread.
- People with NSCLC can be treated with surgery, chemotherapy, radiation therapy, targeted therapy, or a combination of these treatments.
- People with SCLC are usually treated with radiation therapy and chemotherapy.
- Some people, especially if the cancer is advanced, might not want to be treated at all.
 - If someone chooses not to treat the cancer, supportive care is still available to help with pain or other symptoms.



Caterpillar Employee Assistance Program (EAP)

- If you or someone you care about has been impacted by lung cancer, the Caterpillar Employee Assistance Program (EAP) may be able to help.
- The EAP is a global, voluntary, and completely confidential service provided to employees and their eligible family members to help meet many challenges at home and work, including stress and grief related to health issues.
- Access information and global helplines can be found online at CaterpillarEAP.com.
- The EAP can also help employees and their eligible family members struggling with nicotine addiction and offers assistance to quit smoking.
 - In the U.S., active employees and family members who are enrolled in the Caterpillar healthcare plan are eligible to receive tobacco cessation benefits, which include 4 sessions of counseling, 90 days of all FDA-approved smoking cessation medications, 2 quit attempts per year, and no out-of-pocket costs for plan participants using in-network providers in accordance with plan rules. For more information, visit TotalHealth.cat.com > Benefits and Programs.

Sources

- American Cancer Society (cancer.org)
- American Lung Association (lung.org)
- Centers for Disease Control and Prevention (cdc.gov)
- World Health Organization (who.int)

Total health



Emotional



Financial



Physical



Purpose



Social