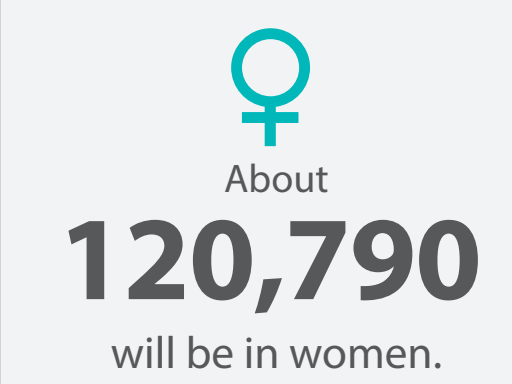
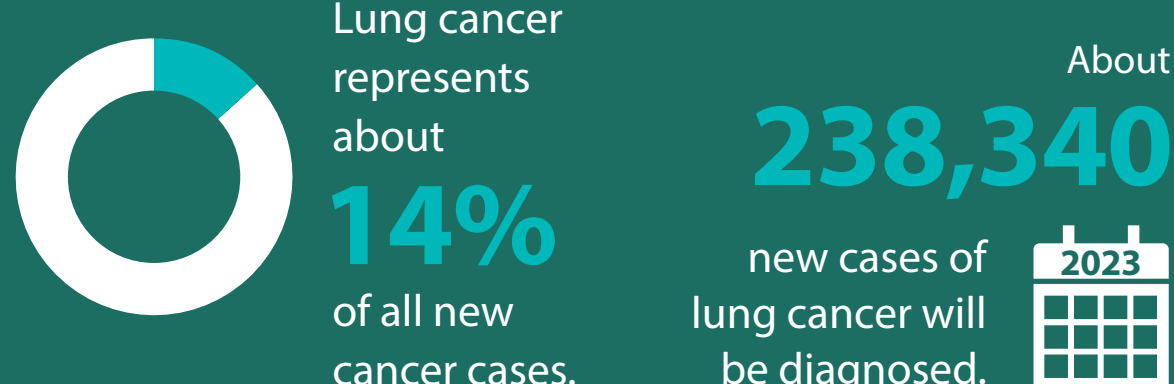


# What You Should Know About LUNG CANCER

Lung cancer is the second most common non-skin cancer among American men and women, after prostate cancer in men and breast cancer in women. It is also the leading cause of cancer-related deaths, causing more deaths than colorectal, breast and prostate cancers combined. Early diagnosis and advances in treatment mean more people can expect to beat the disease.



The **lifetime risk** of developing lung cancer is about:



- ▶ These numbers **include both** smokers and non-smokers.
- ▶ **The risk is much higher for smokers** and lower for non-smokers.

## RISK FACTORS

### SMOKING

Smoking is the leading cause of lung cancer. It causes about **9 out of 10 cases** of lung cancer in men and about 8 out of 10 cases of lung cancer in women.



### SECONDHAND SMOKE

People who inhale secondhand smoke may be exposed to cancer-causing agents, making this a potential contributing risk factor.

### FAMILY HISTORY

People with a first-degree relative (i.e., parent, child or sibling) who has or had lung cancer may be **twice as likely** to develop the disease.



### DIETARY SUPPLEMENTS

Taking **beta carotene** supplements increases lung cancer risk in smokers who smoke one or more packs a day.

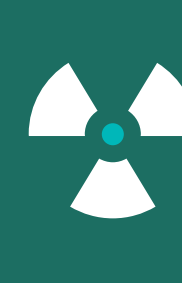
### EXPOSURE TO:



**RADON GAS**  
Radon is a colorless, scentless radioactive gas found in some houses. **Radon exposure is a leading cause of lung cancer.**



**ASBESTOS OR OTHER POLLUTANTS**  
**Carcinogenic chemicals in the workplace** increase lung cancer risk, especially if you smoke.



**RADIATION**  
People who have had extensive radiation to the chest may be at increased risk of lung cancer.

## TREATMENT OPTIONS

Most lung cancers are treated with surgery, chemotherapy or radiation therapy, or a combination of the three. Targeted therapy is an important advancement because it treats the cancer by zeroing in on a specific gene mutation in tumor cells. Immunotherapy drugs, which are designed to trigger the immune system to attack the disease, may also be an option for some patients. A well-rounded treatment plan can include interventional pulmonology procedures for diagnosis, treatment and symptom relief.



### Surgery

The most common surgical treatment for early-stage lung cancer involves removing the tumor, often with minimally invasive incisions performed via robotic and video-assisted procedures. These newer techniques are designed to reduce pain and improve recovery times. A larger incision, performed via thoracotomy, may be required, depending on the tumor size or other factors. The most common lung cancer surgeries are:

- **Lobectomy:** Removal of a lobe from the lung, including the tumor. The right lung has three lobes, and the left lung has two.
- **Wedge resection and segmentectomy:** When appropriate, rather than removing an entire lobe, the surgeon may remove (resect) a smaller amount of tissue.
- **Pneumonectomy:** Removal of the entire right or left lung. This procedure is much less common than a lobectomy.
- **Video-assisted thoracic surgery (VATS):** A minimally invasive technology used to perform a lobectomy or wedge resection without opening up the chest. The surgeon removes cancerous tissues using images from a camera and small surgical instruments inserted into the chest.
- **Pleurodesis:** A minor operation used for more advanced cancers to remove fluid around the lung and lower the risk of recurrence.



### Chemotherapy

Lung cancer chemotherapy treatments are used in three primary ways:

- **Neoadjuvant or primary systemic lung cancer chemotherapy:** Used before surgery to destroy cancer cells.
- **Adjuvant chemotherapy:** Used after surgery or radiation therapy to target cancer cells that were not removed during lung cancer surgery. It helps prevent the cancer from spreading to other parts of the body.
- **Systemic chemotherapy:** The circulation of chemotherapy drugs through the bloodstream to cancer cells through the body. Mainly used to treat locally advanced or metastatic lung cancer.



### Radiation therapy

There are two primary types of radiation therapy for lung cancer:

- **External beam radiation therapy (EBRT):** Delivers high doses of radiation to lung cancer cells from outside the body, using a variety of machine-based technologies.
- **High dose rate (HDR) brachytherapy:** Delivers high doses of radiation from implants placed close to or inside the tumor(s) in the body.

These advanced radiation therapy techniques can target the tumor while sparing healthy tissue. Advanced radiation therapy technologies include the CyberKnife® VSI™ Robotic Radiosurgery System, TomoTherapy® and TrueBeam™.



### Genomic testing

It examines a tumor at the genetic level to identify DNA alterations that are driving the growth of cancer. These findings help oncologists better understand what caused the tumor and tailor treatment options to the patient. Genomic testing is part of the standard care for patients with non-small cell lung cancer.



### Targeted therapy

Attempts to prevent cancer cells from dividing or to destroy cancer cells directly. As an example, Iressa™ (gefitinib) and Tarceva® (erlotinib) are two targeted therapies that help prevent the cancer from spreading to other parts of the body.

The goal of targeted therapy is to interfere with specific molecules involved in tumor growth. Targeted therapy is a type of chemotherapy, but targeted drugs do not affect all cells in the body as chemotherapy does. They are typically used for advanced lung cancers, either with chemotherapy or alone.



### Immunotherapy

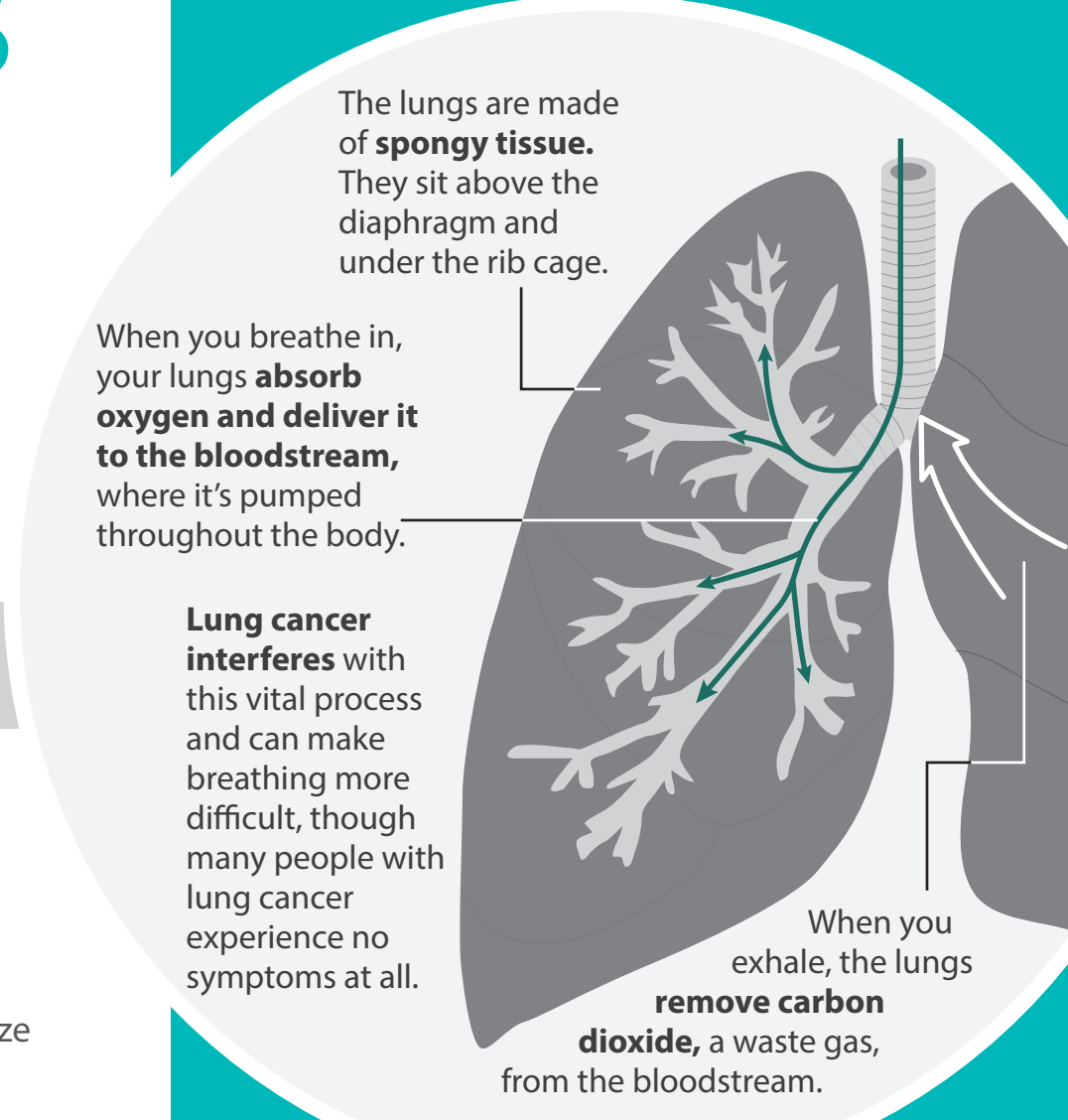
Immunotherapy is a broad category of anti-cancer therapies that use the body's immune system to fight cancer cells. These drugs are designed to alert the immune system to mutated cells that are causing the cancer. Immunotherapies fall into three general categories: checkpoint inhibitors, which disrupt signals that allow cancer cells to hide from an immune attack; cytokines, protein molecules that help regulate and direct the immune system; and cancer vaccines, which are used to both treat and prevent cancer by targeting the immune system.



### Interventional pulmonology

Used to diagnose lung cancer, treat tumors and relieve symptoms that limit breathing or cause pain. It addresses four primary areas:

- **Central airway obstruction:** Advanced techniques are used to locate and clear central airway obstructions.
- **Advanced airway diagnostics:** Imaging technology is used to identify the cause of symptoms such as wheezing, coughing and labored breathing.
- **Pleural effusion:** Minimally invasive techniques are used to remove excess fluid buildup and restore more comfortable breathing.
- **Treatment-related side effects:** Procedures are used to treat symptoms, and to distinguish between a side effect of treatment and the progression of the cancer.



## UNDERSTANDING THE DISEASE

There are two main types of lung cancer: small cell lung cancer (SCLC) and non-small cell lung cancer (NSCLC). Both are classified according to cell size and type. Treatment options will differ based on the type of lung cancer.

### SMALL CELL LUNG CANCER

Tends to be more aggressive and spread more rapidly than NSCLC. There are two stages of small cell lung cancer: limited and extensive.

The stage of small cell lung cancer will be determined during the testing and staging process.

### NON-SMALL CELL LUNG CANCER

Accounts for nearly **9 out of every 10** cases. There are three main types NSCLC:

- **Squamous cell:** It accounts for about 30 percent of all non-small cell lung cancers and is generally linked to smoking.
- **Adenocarcinoma:** It's the most common form of lung cancer, accounting for 30-35 percent of all lung cancers and about half of all non-small cell lung cancers.
- **Large-cell undifferentiated carcinoma:** It grows and spreads quickly, and usually accounts for 10-15 percent of all cases.

### CARCINOID LUNG TUMOR

A less common form of lung cancer, this disease is more slow-growing than SCLC or NSCLC. Made of neuroendocrine cells, carcinoid tumors are typically treated with surgery.

### Common lung cancer signs and symptoms:

- No symptoms in the early stages
- A persistent cough that doesn't go away or changes to a chronic "smokers' cough" with more coughing and pain
- Coughing up blood
- Shortness of breath, wheezing or noisy breathing
- Loss of appetite
- Fatigue
- Recurring infections, such as bronchitis or pneumonia

## PREVENTION AND SCREENING GUIDELINES

### PREVENTION

#### BE SMOKE-FREE

Don't smoke. Damaged lung tissue gradually repairs itself after smokers quit.



#### REDUCE RADON EXPOSURE

Have your home tested and, if needed, treated.



### SCREENING

**Low-dose CT scans** are recommended for current and former smokers ages 55-74 and who have a smoking history of at least 30 pack-years. (One pack a day for 30 years, two packs a day for 15 years, etc.) Current and former smokers ages 50 and older who have a smoking history of at least 20 pack-years are also urged to be screened.

