CT Lung Cancer Screening

As a Comprehensive Cancer Center as accredited by American College of Surgery our mission is to educate patient and the community about cancer. The following summary is trusted information from the National Cancer Institute (NCI).

What is screening?

Screening is looking for cancer before a person has any symptoms. This can help find cancer at an early stage. When abnormal tissue or cancer is found early, it may be easier to treat. By the time symptoms appear, cancer may have begun to spread.

Scientists are trying to better understand which people are more likely to get certain types of cancer. They also study the things we do and the things around us to see if they cause cancer. This information helps doctors recommend who should be screened for cancer, which screening tests should be used, and how often the tests should be done.

It is important to remember that your doctor does not necessarily think you have cancer if he or she suggests a screening test. Screening tests are given when you have no cancer symptoms.

If a screening test result is abnormal, you may need to have more tests done to find out if you have cancer. These are called diagnostic tests.

General Information about Lung Cancer

Lung cancer is a disease in which malignant (cancer) cells form in the tissues of the lung.

The lungs are a pair of cone-shaped breathing organs inside the chest. The lungs bring oxygen into the body when breathing in and send carbon dioxide out of the body when breathing out. Each lung has sections called lobes. The left lung has two lobes. The right lung, which is slightly larger, has three. A thin membrane called the pleura surrounds the lungs. Two tubes called bronchi lead from the trachea (windpipe) to the right and left lungs. The bronchi are sometimes involved in lung cancer. Small tubes called bronchioles and tiny air sacs called alveoli make up the inside of the lungs. Anatomy of the respiratory system, showing the trachea and both lungs and their lobes and airways. Lymph nodes and the diaphragm are also shown. Oxygen is inhaled into the lungs and passes through the thin membranes of the alveoli and into the bloodstream (see inset).

There are two types of lung cancer: small cell lung cancer and non-small cell lung cancer.

See the following PDQ summaries for more information about lung cancer:

- Lung Cancer Prevention
- Non-Small Cell Lung Cancer Treatment
- Small Cell Lung Cancer Treatment
Lung cancer is the leading cause of cancer death in the United States.

Lung cancer is the third most common type of non-skin cancer in the United States. Lung cancer is the leading cause of cancer death in men and in women.

Different factors increase or decrease the risk of lung cancer.

Anything that increases your chance of getting a disease is called a risk factor. Anything that decreases your chance of getting a disease is called a protective factor.

For information about risk factors and protective factors for lung cancer, see the PDQ summary on Lung Cancer Prevention.

**Lung Cancer Screening**

Tests are used to screen for different types of cancer.

Some screening tests are used because they have been shown to be helpful both in finding cancers early and decreasing the chance of dying from these cancers. Other tests are used because they have been shown to find cancer in some people; however, it has not been proven in clinical trials that use of these tests will decrease the risk of dying from cancer.

Scientists study screening tests to find those with the fewest risks and most benefits. Cancer screening trials also are meant to show whether early detection (finding cancer before it causes symptoms) decreases a person's chance of dying from the disease. For some types of cancer, finding and treating the disease at an early stage may result in a better chance of recovery.

Clinical trials that study cancer screening methods are taking place in many parts of the country. Information about ongoing clinical trials is available from the NCI Web site.

Three screening tests have been studied to see if they decrease the risk of dying from lung cancer.

The following screening tests have been studied to see if they decrease the risk of dying from lung cancer:

- Low-dose spiral CT scan (LDCT scan): A procedure that uses low-dose radiation to make a series of very detailed pictures of areas inside the body. It uses an x-ray machine that scans the body in a spiral path. The pictures are made by a computer linked to the x-ray machine. This procedure is also called a low-dose helical CT scan.

- Chest x-ray: An x-ray of the organs and bones inside the chest. An x-ray is a type of energy beam that can go through the body and onto film, making a picture of areas inside the body.

- Sputum cytology: Sputum cytology is a procedure in which a sample of sputum (mucus that is coughed up from the lungs) is viewed under a microscope to check for cancer cells.

Screening with low-dose spiral CT scans has been shown to decrease the risk of dying from lung cancer in heavy smokers.

The National Lung Screening Trial studied people aged 55 years to 74 years who had smoked at least 1 pack of cigarettes per day for 30 years or more. Heavy smokers who had quit smoking within the past 15 years were also studied. The trial used chest x-rays or low-dose spiral CT scans (LDCT) scans to check for signs of lung cancer.

LDCT scans were better than chest x-rays at finding early-stage lung cancer. Screening with LDCT also decreased the risk of dying from lung cancer in current and former heavy smokers.
A Guide is available for patients and doctors to learn more about the benefits and harms of low-dose helical CT screening for lung cancer.

Screening with chest x-rays and/or sputum cytology does not decrease the risk of dying from lung cancer.

Chest x-ray and sputum cytology are two screening tests that have been used to check for signs of lung cancer. Screening with chest x-ray, sputum cytology, or both of these tests does not decrease the risk of dying from lung cancer.

**Risks of Lung Cancer Screening**

Screening tests have risks.

Decisions about screening tests can be difficult. Not all screening tests are helpful and most have risks. Before having any screening test, you may want to discuss the test with your doctor. It is important to know the risks of the test and whether it has been proven to reduce the risk of dying from cancer.

The risks of lung cancer screening tests include the following:

Finding lung cancer may not improve health or help you live longer.

Screening may not improve your health or help you live longer if you have lung cancer that has already spread to other places in your body.

When a screening test result leads to the diagnosis and treatment of a disease that may never have caused symptoms or become life-threatening, it is called over diagnosis. It is not known if treatment of these cancers would help you live longer than if no treatment were given, and treatments for cancer may have serious side effects. Harms of treatment may happen more often in people who have medical problems caused by heavy or long-term smoking.

**False-negative test results can occur.**

Screening test results may appear to be normal even though lung cancer is present. A person who receives a false-negative test result (one that shows there is no cancer when there really is) may delay seeking medical care even if there are symptoms.

**False-positive test results can occur.**

Screening test results may appear to be abnormal even though no cancer is present. A false-positive test result (one that shows there is cancer when there really isn't) can cause anxiety and is usually followed by more tests (such as biopsy), which also have risks. A biopsy to diagnose lung cancer can cause part of the lung to collapse. Sometimes surgery is needed to reinflate the lung. Harms of diagnostic tests may happen more often in patients who have medical problems caused by heavy or long-term smoking.

Chest x-rays and low-dose spiral CT scans expose the chest to radiation.

Radiation exposure from chest x-rays and low-dose spiral CT scans may increase the risk of cancer. Younger people and people at low risk for lung cancer are more likely to develop lung cancer caused by radiation exposure.

Talk to your doctor about your risk for lung cancer and your need for screening tests.