

WHPP EARLY LUNG CANCER DETECTION PROGRAM

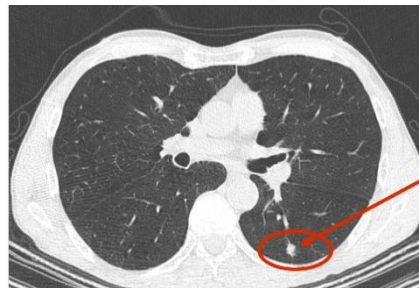
LUNG CANCER SCREENING USING LOW-DOSE CT

What is cancer screening?

Screening is the use of tests or examinations to detect a disease in people without symptoms of that disease. For example, colonoscopy is used for colon cancer screening. **Screening for cancers is important because it can help the doctor discover cancer early and treat it successfully.** Because lung cancer usually spreads beyond the lungs before causing any symptoms, an effective screening program for early detection of lung cancer has the potential to save many lives.

Studies of the use of chest X-rays for lung cancer screening in the 1970's and 1980's concluded that chest x-rays could not find many lung cancers early enough to improve a patient's chance for a cure. For this reason, lung cancer screening was not a routine practice for the general public or even for people at increased risk, such as smokers.

In the past decade or so, low-dose CT (computerized tomography) scans of the chest have been successful in detecting early lung cancers in smokers and former smokers. Because this test is useful among people at high risk for lung cancer, the Worker Health Protection Program (WHPP) offers annual low dose CT scans to program participants aged 50 to 85 who have a history of smoking and occupational exposure to known lung cancer risk factors, such as asbestos, radiation and beryllium. WHPP participants aged 50 to 85 are also eligible if the medical screening chest X-ray results show scarring of the lung related to asbestos or silica, or the participant has chronic beryllium disease.



Early lung cancer detected on a low-dose CT scan.

Why is screening for lung cancer in a high risk population so important?

Lung cancer is the leading cause of cancer death for both men and women. About 130,000 people in the United States will die of lung cancer each year. Without screening, over 50 percent of lung cancers are found at a late stage and the overall five-year survival rate for lung cancer is currently 20 percent, meaning only 20 of every 100 people survive at least five years. By contrast, if lung cancer is found early and treated by surgery, before it has spread to lymph nodes or other organs, the five-year survival rate increases dramatically – to 70 percent or higher. This means that at least 70 out of 100 of these patients are likely to survive for at least five years.

Why is screening for lung cancer in a high risk population so important? (Continued)

Studies have shown that low-dose CT screening detects many lung tumors at early stages. For example, a 1999 Early Lung Cancer Action Program (ELCAP) study of 1,000 smokers and former smokers, low-dose chest CT found 27 tumors while conventional chest X-rays detected only 7 cancers; 23 of the 27 CT-detected tumors (85 percent) were in the early stages. The X-rays only found 4 early tumors.

After the ELCAP study, several large, randomized clinical studies in the U.S. and Europe confirmed the effectiveness of low-dose CT. One of the largest was the 2011 National Cancer Institute (NCI)'s National Lung Screening Trial (NLST) that showed a 20 percent reduction in deaths from lung cancer among current and former smokers who underwent annual low-dose chest CT screenings for 3 to 5 years, compared to a similar group who underwent chest X-ray screenings.

What is spiral, low-dose CT?

Low-dose spiral CT is a simple procedure in which a special imaging machine rotates rapidly around the body taking over 100 pictures in sequence. This information is processed by a computer to produce a cross-section of a specific area. The low-dose CT scan uses less radiation than a standard CT and yet is sensitive enough to detect abnormalities that are too small to be seen on a conventional set of chest X-rays.

How is the low-dose CT procedure done?

Throughout the low-dose CT scanning procedure, the patient lies very still on a table. The patient passes through the x-ray machine, which is shaped like a doughnut with a large hole. The machine rotates around the patient and a computer creates images from the scan that can be reconstructed into a 3-dimensional model of the lungs. When the picture is taken, you will be asked to hold your breath for approximately 10 seconds. The amount of radiation (an estimated average of 1.2 mSv or 120 mrem for most people) is significantly less than that absorbed during a diagnostic CT scan of the chest (an estimated average of 7 mSv or 700 mrem). As further comparison, the estimated average annual exposure from natural sources in soil and air is 3.1 mSv or 310 mrem per year.

What will happen if the CT scan shows an abnormality in my lung?

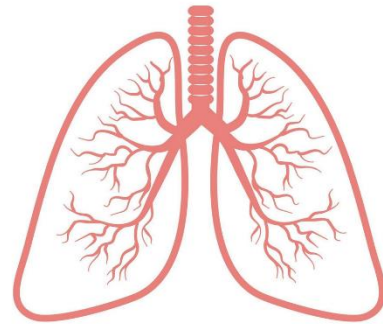
If an abnormality is detected on the CT scan, it may or may not be cancer. If there is suspicion of a lung cancer, you will be notified within 10 working days of the screening. At that time, we will advise you to see your personal physician, who may recommend diagnostic testing. We do not pay for any such diagnostic testing or any treatment that may follow. Those expenses are normally covered by health insurance including Medicaid and Medicare. Sometimes the doctor can tell from the CT scan that the lung nodule is not cancerous. In this case, or if the CT scan shows no nodule at all, you will be notified within four weeks of the screening, and no follow-up will be needed.

LUNG CANCER FACTS

What is lung cancer?

Cancer is a disease marked by the uncontrolled growth of abnormal cells. The abnormal cells no longer act like normal cells, and they crowd out and destroy healthy tissue. Most types of cancer cells form a lump or mass called a tumor. Another word for cancerous is malignant, so a cancerous tumor is referred to as malignant.

Lung cancer begins in the lungs. Many lung cancers start in the lining of the air tubes (bronchi) but they can also begin in other areas such as the smaller branches of the air tubes (bronchioles) or the air sacs at the ends of these smaller branches (alveoli.) Cells from a tumor can break away and travel to other parts of the body where they take root and grow. This spreading process is called metastasis.



Lung cancer is a life-threatening disease because it often spreads in this way before it causes symptoms.

What causes lung cancer?

A risk factor is something that increases a person's chance of getting a disease. The two most significant risk factors associated with lung cancer are:

- **Cigarettes:** Smoking cigarettes can cause lung cancer. Harmful substances, called carcinogens, in tobacco damage the cells in the lungs. Over time, the damaged cells may become cancerous. The more a person smokes and the longer the person smokes, the greater the risk of developing lung cancer.
- **Occupational exposures:** Certain toxic substances (such as asbestos, nickel compounds and beryllium) and radiation increase the risk of lung cancer for workers. Occupational exposures and cigarette smoking often work together to increase the risk of lung cancer.

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What are the signs and symptoms of lung cancer?

Although most lung cancers do not cause any symptoms until they have spread, symptoms can occur in some patients with early lung cancer. You should report any of the following symptoms to your doctor right away. If lung cancer is found, prompt treatment can lead to a cure for some people and extend the life of others.

- a persistent cough that gets worse over time
- constant chest pain
- weight loss and /or decreased appetite
- coughing up blood
- shortness of breath or wheezing
- hoarseness
- recurring infections, such as bronchitis and pneumonia
- fatigue

The best time to diagnose lung cancer is **before** there are symptoms, when it is easier to treat.

What are the chances of surviving lung cancer?

When lung cancer is diagnosed following the development of symptoms, just 20 out of 100 people diagnosed will, on average, survive at least five years. When lung cancers are **detected in the early stages** (before they have spread outside of the lung where they began), the survival rate increases dramatically to 70% or higher. In other words, at least 70 of every 100 people diagnosed at an early stage can expect to survive for at least five years.

An annual low dose CT scan of the chest is the key to early detection of lung cancer. Large randomized, clinical studies of low dose CT scans in the U.S. and Europe have demonstrated at least a 20 percent reduction in deaths from lung cancer among current and former smokers who underwent annual low-dose chest CT screenings for 3 to 5 years, compared to a similar group who underwent chest X-ray screenings.

You should be aware that false-positive CT scan findings sometimes occur and may lead to unnecessary anxiety, testing, and surgery.

The Worker Health Protection Program is pleased to be able to offer low-dose, spiral CT scans to both hourly and salaried workers. The attached factsheet explains how spiral CT can help to detect lung cancer in the early stages when it is most likely to be treatable. Your decision to participate in the program is entirely voluntary.