



## *X-Plain*<sup>™</sup> *Lung Cancer*

### Reference Summary

Lung cancer is the number one cancer killer of men and women. Over 165,000 people die of lung cancer every year in the United States. Lung cancer rates among Southeast Asians are 18% higher than among White Americans.

Smoking rates are significantly higher among Southeast Asian populations, like Vietnamese and Cambodian. The tobacco companies target Asian neighborhoods in many U.S. cities, with tobacco advertisements on billboards in higher densities than in other neighborhoods.

Most cases of lung cancer are related to cigarette smoking. Therefore, if you smoke, it is best to stop smoking as soon as possible.

This reference summary will help you to better understand lung cancer and the treatment options that are available.

#### **Anatomy**

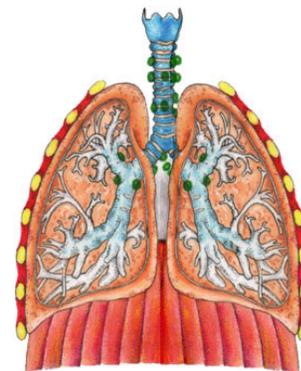
Oxygen is vital for life. Without it, death occurs very rapidly. The lungs allow us to fill our blood with oxygen.

The air we breathe comes in close contact with the blood in the lungs. The blood fills up with oxygen and releases wastes, like carbon dioxide, back out into the air.

When we breathe, the air goes through the mouth and nose. From there, it goes to the air

pipe, known as the trachea. From the trachea the air goes into smaller tubes, called bronchial tubes. Small balloon-like sacs called alveoli are at the end of the tubes.

The walls of the alveoli are very thin. On the other side of the walls small blood vessels exist. The very thin wall of the alveoli allows the oxygen we breathe in to pass to the bloodstream. The thin walls of the alveoli also allow CO<sub>2</sub> to pass from the blood to your lungs, where you breathe out.



The inner lining of the bigger bronchial tubes secrete a special substance called mucus. The mucus helps trap dirt from the air. Mucus is continuously expelled from the lungs. Just like with saliva, mucus is often swallowed, without us needing to think about it.

Very small brushes, known as cilia, continuously push the mucus to the outside. The cilia are like the hairs, or bristles of a

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brush. If the mucus becomes sufficiently big, it is coughed out.

## **Cancer And Its Causes**

The body is made up of billions of small cells. Together, many cells make up an organ, like lung, heart, or bone.

Usually, when cells get old or damaged, they die and are replaced by new cells.

Sometimes, cells continue to grow and divide when they aren't needed, causing an abnormal growth called a tumor.

There are two kinds of tumors. If the tumor does not invade nearby body parts, it is called a benign tumor or non-cancerous growth. Benign tumors are rarely life threatening. Benign tumors are not cancer.

If the tumor does invade and destroy nearby cells, it is called a malignant tumor or cancer. Cancer can be life threatening.

Cancerous cells may also spread to different parts of the body through direct invasion, or through blood and lymph channels.

Lymph is a nearly clear fluid produced by the body that drains waste from cells. It travels through special vessels and bean-shaped structures called lymph nodes.

Cancer treatments aim to kill or control cancerous cells.

Cancers in the body are given names, depending on where it first began. Cancer that begins in the lungs will always be called lung cancer, even if it has spread to another place such as the liver, bones, or brain.

Although doctors can locate where a cancer started, the cause of cancer in a patient cannot

usually be identified. However, experts agree that smoking tobacco, chewing tobacco and being exposed to tobacco smoke all can lead to lung cancer.

Exposure to chemicals or other factors in the environment, like pollution or asbestos (old wall insulation in homes), might increase cancer risk, too.

Some cancer risk can run in families (be inherited), so people with close relatives who have cancer should talk to a doctor about being examined for signs of it.

Cancer is not contagious. You cannot catch it from someone who has it. You cannot get sick if you are near someone with cancer or come into contact with their symptoms.

## **Symptoms And Their Causes**

There are two main types of lung cancer: non-small cell and small cell. Non-small cell lung cancer is more common, slow growing, and does not spread to other organs rapidly. Small cell lung cancer is not as common as non-small cell. But it is fast growing, and spreads very rapidly to other organs.

Cigarette smoking or exposure to second-hand smoke causes the majority of lung cancer cases.

Cigarettes contain over 4000 chemicals; 40 of these chemicals can cause cancer. Smoking filtered or unfiltered cigarettes does not help prevent cancer. Chewing tobacco also causes cancer.

Pipe and cigar smoking increase the risk of lung cancer, although not as severely as cigarette smoking.

Inhaling air pollution or certain products like chemicals or asbestos (old wall insulation in

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homes) also increases the chance of developing lung cancer.

Stopping smoking and avoiding exposure to cancer-causing environments, like chemicals, lowers your risk of developing lung cancer, even after years of smoking.

Some of the symptoms of lung cancer include the following:

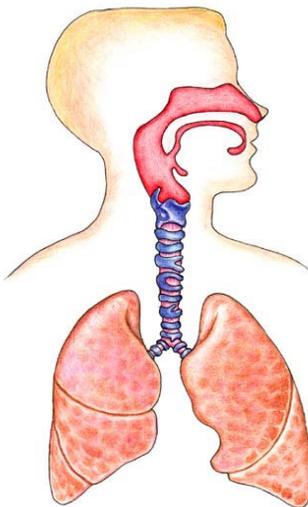
- Chronic cough, or cough w/ bloody sputum.
- Hoarseness
- Shortness of breath, chest pain, or wheezing
- Weight loss or loss of appetite

Other symptoms of lung cancer include:

- Swelling in the face or neck
- Repeated lung infections or bronchitis
- Fever
- General weakness - specifically in shoulder, arm, or hand.

## Diagnosis

Chest x-rays are very useful in determining whether there are any abnormalities in the lungs. Abnormal spots found during x-rays are called lesions.



A CAT scan of the lung, a more detailed x-ray of the lungs, helps determine the exact location of any lesions found on a chest x-ray.

A biopsy of the lung lesion is used to confirm a diagnosis. This biopsy is a procedure where a small piece of the lesion is removed to be checked. The result can determine if the patient has cancer or not.

The biopsy can be done one of two ways. One kind of biopsy is to insert a small needle in the lung from the outside of the body, using CAT scan images as a guide. The other way to do a lung biopsy is from the inside of the body, using a scope that the doctor inserts through the mouth.

If the lesion is found to be cancerous, the doctor will need more tests to see if the cancer has spread to other parts of the body, and to find out what stage the cancer is in. The further a cancer has spread, the higher the stage.

Stage 1 - Early cancer

Stage 2

Stage 3 - Advanced cancer

If it appears that the cancer has spread, further tests may be performed to determine exact locations of the cancer. Your doctor may recommend a bone scan, a special X-ray, to see if the cancer has spread to the bones.

Your doctor may recommend a CAT scan to check for cancer that may have spread to the abdomen and pelvis areas.

They may also recommend you get an MRI of the head to check for cancer that may have spread to your brain.

Blood tests may be necessary to check for anemia, liver, or kidney problems.

Lung lesions may not turn out to be cancerous, however. A lung lesion may indicate an old or new infection in the lungs. Lung lesions may also indicate benign tumors. Benign tumors do not have cancer cells in them.

### **Treatment**

The treatment of lung cancer depends on how advanced the cancer is.

If the lung cancer has not spread and is relatively small, surgery may be necessary to take the cancer out.



Radiation therapy and chemotherapy may also be necessary to either try to cure the cancer or, at least, to slow its growth.

### **Summary**

Lung cancer is not a rare disease.

Prevention of lung cancer is the most effective way to fight it.

Quitting smoking and avoiding tobacco smoke are the most important things you can do to avoid lung cancer.

### **Quitting Smoking**

When you want to quit smoking, the benefits for your health, finances and confidence can

motivate you to stop and stay stopped. Family members, friends, colleagues and associates who don't smoke also benefit when you stop. Within just 20 minutes of quitting the healing process begins. After 20 minutes, blood pressure and pulse return to normal.

After 8 hours of quitting, the nicotine level in the blood is reduced by half, and oxygen levels return to normal.

After 24 hours, lungs start to clear out mucous and other smoking debris.

After 48 hours, there is no nicotine left in the body. Your ability to taste and smell is greatly improved.

72 hours after you quit, breathing becomes easier. Bronchial tubes begin to relax and energy levels increase.

Between 2 and 12 weeks after you quit, circulation of your blood improves.

Between 3 and 9 months, coughs, wheezing and breathing problems improve.

5 yrs after you quit, your risk of heart attack falls to about half the risk of a smoker.

10 yrs after you quit, your risk of lung cancer falls to about half that of a smoker. Your risk of heart attack is the same as someone who has never smoked.

Even quitting late in life can have positive effects: Giving up smoking at age 65 can reduce smoker's risk of dying of smoking related disease by 50%.

Quitting smoking is important for more reasons than just for preventing lung cancer.

Quitting smoking is a challenge. Once you have quit, you will know you can succeed at

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difficult tasks and take more control of your life. Quitting helps you believe in yourself.

Smoking makes it harder to exercise. Smokers have more coughs and colds than non-smokers and take longer to feel well again.

In a way, giving up smoking is like getting a pay raise, as much as \$1800 a year if you smoke 20 cigarettes a day.

Smoking affects your physical appearance, too. Skin starved of oxygen by smoking becomes dry and grey. Wrinkles around the eyes and mouth develop much earlier and the tar stains your teeth and fingers.

Smoking impacts fertility and complicates childbirth. Men who smoke may suffer impotence due to damage to the blood vessels in the penis. Sperm quality and density can also be affected by smoking. Smokers may produce less sperm and their sperm may have more abnormalities.

Women who smoke take longer to conceive and are more likely to have a miscarriage. Babies born to mothers who smoked in pregnancy are more likely to be premature, stillborn or die shortly after birth. A baby exposed to tobacco smoke has a higher risk of dying from Sudden Infant Death Syndrome (SIDS)

Finally, it is important to understand that children whose parents smoke are more likely to get pneumonia and bronchitis in their first year of life, to suffer from more frequent and more severe asthma attacks and to become regular smokers themselves.

These days, there are many options available to help smokers quit. Some people quit smoking on their own. Others join a support group with other people who are also trying to quit. Some people choose to use products like

the nicotine patch or gum. To learn more about help that is available to you for quitting smoking, talk to your doctor or nurse. For some people, quitting smoking takes more than one try. Don't give up trying – the challenge to quit is big but the rewards of being smoke-free are even greater!