

### The Lungs

The lungs are organs that are situated in the chest cavity, one on each side of the heart, and protected by the rib cage. The right lung is usually larger than the left one. A fine layer of membrane called pleura covers both; and the ribs are covered by another membrane. The two membranes slide against each other when we breathe, which allows the lungs to expand and contract.

In their interior, the lungs look like a sponge and are formed by a mass of fine tubes, the smallest of which are air bags called alveoli, whose walls are covered with tiny blood vessels.

#### Lungs and Breathing

The function of the fibers of the lungs is to absorb the oxygen in the air and to transfer it to the blood so that it circulates throughout the body. Whenever you inhale, the air is transported from the nose or throat downward, to the windpipe and two smaller tubes called bronchi. One goes to the left lung and the other to the right. The air is distributed by smaller conduits called bronchioles until it reaches the alveoli. Within the alveoli, oxygen moves to the blood vessels that form the walls and there it's captured by red blood cells ready to be transported throughout the body. At the same time, the waste product carbon dioxide moves in the opposite direction, traveling from the blood to the alveoli and then passing through the lungs to be exhaled.

#### Lung Disease

Symptoms including coughing, difficulty breathing, coughing blood or mucus or pain in the lungs are signs that there is a problem in the lungs. Like everybody else, people with HIV can catch colds or the flu, which affect the chest and cause symptoms such as cough mucus. These symptoms usually go away after a few days and do not cause damage. Nevertheless, some pulmonary problems that are observed more frequently among people with HIV can be very serious. Although anybody can have a bronchial infection, pleuritis (inflammation of the membrane that surrounds the lungs) and bronchitis, these illnesses can be more serious in people with HIV and can happen more frequently, especially if you have a weak immune system.

Pneumonia due to *Pneumocystis Carinii* (PCP) is an illness distinctive to AIDS that affects the lungs and is normally only seen in people with counts of CD4 below 200. It is less frequent in countries with access to modern health care. Nevertheless, in recent years the profile of the patient with tuberculosis has changed radically. At this time, nearly half of the people infected in Spain are immigrants and among people with HIV there is an increase in tuberculosis that one can contract at any time during the HIV infection. On a global scale, it is one of the main causes of disease and death among people with HIV. The distinctive AIDS-related cancers

such as Kaposi's sarcoma and Hodgkin's disease can also affect the lungs. As with certain germs or pathogens, tobacco is a common cause of lung problems.

#### Tests

If you have respiratory problems, your doctor will listen to your chest with a stethoscope to evaluate whether your lungs are working correctly. Other common tests to see if there are infections or abnormalities include x-rays of the thorax and induced sputum tests, in which a salt-water steam is inhaled to 'induce' the patient to cough up spittle from the lungs. A bronchoscope may be performed, where a small camera is inserted through the nose. A transbronchial biopsy consists of taking small samples from the lung tissue to be evaluated. Alternatively a small piece of pleura through the wall of the chest may be extracted; this is called a pleura biopsy. The correct functioning of the lungs may be tested, to measure the capacity to transfer oxygen and the inflation of the lungs. In order to observe infections or cancers a scan of the body may be used.

#### Treatments

Antibiotics can be used to treat and to prevent bacterial pulmonary infections like pneumonia and can also be useful against PCP and tuberculosis (TB). If your doctor thinks that you run the risk of developing these infections, he/she may prescribe preventive antibiotics. Another form of preventing these diseases is to take anti-HIV treatment. Chemotherapy, x-ray and surgery are used to deal with lung cancers.

#### Keep your lungs healthy

Tobacco is responsible for many lung diseases, therefore not smoking or quitting smoking will improve the health of your lungs. Regular exercise until the point of being out of breath improves the effectiveness of the lungs. It is important to make sure that you have regular check-ups at your HIV center, keeping the disease under control and where you will receive treatment for any lung problem related to HIV. In addition a diet rich in fresh fruit and vegetables will help to improve your general state of health.