General Information
on Respiratory Disorders

Upper Respiratory Infections

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What is respiration?
Respiration is the act of breathing:
- inhaling (inspiration) - taking in oxygen
- exhaling (expiration) - giving off carbon dioxide

What makes up the respiratory system?
The respiratory system is made up of the organs involved in the interchanges of gases, and consists of the:
- nose
- pharynx
- larynx
- trachea
- bronchi
- lungs

The upper respiratory tract includes the:
- nose
- nasal cavity
The lower respiratory tract includes the:

- lungs
- bronchi
- alveoli

**What is the function of the lungs?**

The lungs take in oxygen, which cells need to live and carry out their normal functions. The lungs also get rid of carbon dioxide, a waste product of the body's cells.

The lungs are a pair of cone-shaped organs made up of spongy, pinkish-gray tissue. They take up most of the space in the chest, or the thorax (the part of the body between the base of the neck and diaphragm).

The lungs are enveloped in a membrane called the **pleura**.

The lungs are separated from each other by the **mediastinum**, an area that contains the following:

- heart and its large vessels
- trachea (windpipe)
- esophagus
- thymus
- lymph nodes

The right lung has three sections, called **lobes**. The left lung has two lobes. When you breathe, the air:

- enters the body through the nose or the mouth
- travels down the throat through the **larynx** (voice box) and **trachea** (windpipe)
- goes into the lungs through tubes called main-stem **bronchi**
  - one main-stem bronchus leads to the right lung and one to the left lung
  - in the lungs, the main-stem bronchi divide into **smaller bronchi**
  - and then into even smaller tubes called **bronchioles**
  - bronchioles end in tiny air sacs called **alveoli**
General Information on Respiratory Disorders

Lung diseases are conditions that occur within the lungs. They include disorders such as asthma, pneumonia, tuberculosis, lung cancer, and many others. According to the American Lung Association:

- every year nearly 335,000 Americans die of lung disease.
- lung disease is the number three killer in America, responsible for one in seven deaths.
- lung disease and other breathing problems are the number one killer of babies younger than one year old.
- today, more than 30 million Americans are living with chronic obstructive pulmonary disease such as asthma, emphysema and chronic bronchitis.

Lung disease can affect people of all ages, both genders, and all incomes, but affects a disproportionate share of minority populations -- particularly African-Americans.

Anatomy of the Respiratory System

Signs of Respiratory Distress

Spirometers

Inhalers and Nebulizers

Glossary
There are several upper respiratory infections that require clinical care by a physician or other healthcare professional. Listed in the directory below are some of the conditions, for which we have provided a brief overview.

**Common Cold**

**Influenza**

**Pharyngitis / Tonsillitis**

**Sinusitis**
There are many types of lung problems that require clinical care by a physician or other healthcare professional. Listed in the directory below are some of the conditions, for which we have provided a brief overview.

- **Chronic Obstructive Pulmonary Disease (COPD)**
- **Acute Bronchitis**
- **Cystic Fibrosis**
- **Interstitial Lung Diseases / Pulmonary Fibrosis**
- **Occupational Lung Diseases**
- **Pneumonia**
- **Primary Pulmonary Hypertension**
- **Pulmonary Embolism**
- **Pulmonary Sarcoidosis**
- **Tuberculosis**
What is lung cancer?
Lung cancer is cancer that usually starts in the lining of the bronchi, but can also begin in other areas of the respiratory system, including the trachea, bronchioles, or alveoli.

Lung cancers are believed to develop over a period of many years.

Nearly all lung cancers are carcinomas, a cancer that begins in the lining or covering tissues of an organ. The tumor cells of each type of lung cancer grow and spread differently, and each type requires different treatment. More than 95 percent of lung cancers belong to the group called bronchogenic carcinoma.

Lung cancers are generally divided into two types:

- **Nonsmall cell lung cancer** is more common than small cell lung cancer. The three main kinds of nonsmall cell lung cancer are named for the type of cells in the tumor:
  - Squamous cell carcinoma, also called epidermoid carcinoma, is the most common type of lung cancer in men. It often begins in the bronchi and usually does not spread as quickly as other types of lung cancer.
  - Adenocarcinoma usually begins along the outer edges of the lungs and under the lining of the bronchi. It is the most common type of lung cancer in women and in people who have never smoked.
  - Large cell carcinomas are a group of cancers with large, abnormal-looking cells. These tumors usually begin along the outer edges of the lungs.

- **Small cell lung cancer**, sometimes called oat cell cancer because the cancer cells may look like oats when viewed under a microscope, grows rapidly and quickly spreads to other organs. It is important to find out what kind of lung cancer a person has. The different types of carcinomas, involving different regions of the lung, may cause different symptoms and are treated differently.
What are the symptoms of lung cancer?
The following are the most common symptoms for lung cancer. However, each individual may experience symptoms differently.

Lung cancer usually does not cause symptoms when it first develops, but they often become present after the tumor begins growing. A cough is the most common symptom of lung cancer. Other symptoms include:

- constant chest pain
- shortness of breath
- wheezing
- recurring lung infections, such as pneumonia or bronchitis
- bloody or rust colored sputum
- hoarseness
- a tumor that presses on large blood vessels near the lung can cause swelling of the neck and face
- a tumor that presses on certain nerves near the lung causing pain and weakness in the shoulder, arm, or hand
- fever for unknown reason

Like all cancers, lung cancer can cause:

- fatigue
- loss of appetite
- loss of weight
- headache
- pain in other parts of the body not affected by the cancer
- bone fractures

Other symptoms can be caused by substances made by lung cancer cells – referred to as a paraneoplastic syndrome. Certain lung cancer cells produce a substance that causes a sharp drop in the level of sodium in the blood, which can cause many symptoms, including confusion and sometimes even coma.

None of these symptoms is a sure sign of lung cancer. Only a physician can tell whether a patient's symptoms are caused by cancer or by another problem. Consult your physician for a diagnosis.

What are the risk factors for lung cancer?
A risk factor is anything that increases a person's chance of getting a disease such as cancer. Different cancers have different risk factors. Several risk factors make a person more likely to develop lung cancer:

- Smoking is the leading cause of lung cancer, with more than 90 percent of lung cancers thought to be a result of smoking.

Additional risk factors include:
secondhand smoke - breathing in the smoke of others

- smoking marijuana cigarettes, which:
  - contain more tar than tobacco cigarettes.
  - are inhaled very deeply.
  - are smoked all the way to the end where tar content is the highest.

Because marijuana is an illegal substance, it is not possible to control whether it contains fungi, pesticides, and other additives.

- recurring inflammation, such as from tuberculosis and some types of pneumonia
- asbestos exposure
- talcum powder
  While no increased risk of lung cancer has been found from the use of cosmetic talcum powder, some studies of talc miners and millers suggest a higher risk of lung cancer and other respiratory diseases from their exposure to industrial grade talc. Talcum powder is made from talc, a mineral which, in its natural form, may contain asbestos, although, by law, all home-use talcum products (baby, body, and facial powders) have been asbestos-free.

- cancer-causing agents in the workplace, including:
  - radioactive ores such as uranium
  - arsenic
  - vinyl chloride
  - nickel chromates
  - coal products
  - mustard gas
  - chloromethyl ethers
- radon - a radioactive gas that cannot been seen, tasted, or smelled. It is produced by the natural breakdown of uranium.
- family history
- personal history of lung cancer
- vitamin A deficiency
  People who do not get enough vitamin A are at increased risk of lung cancer. Taking too much vitamin A may also increase lung cancer risk.
- air pollution
  In some cities, air pollution may slightly increase the risk of lung cancer.

**How is lung cancer diagnosed?**

In addition to a complete medical history to check for risk factors and symptoms, and a physical examination to provide other information about signs of lung cancer and other health problems, procedures used to diagnose lung cancer may include:

- **chest x-ray** - to look for any mass or spot on the lungs. Other special x-rays - a diagnostic test which uses invisible electromagnetic energy beams to produce images of internal tissues, bones, and organs onto film; can provide more precise information about the size, shape, and position of a tumor.
- **computerized tomography scan (Also called a CT or CAT scan)** - a
diagnostic imaging procedure that uses a combination of x-rays and computer technology to produce cross-sectional images (often called “slices”), both horizontally and vertically, of the body. A CT scan shows detailed images of any part of the body, including the bones, muscles, fat, and organs. CT scans are more detailed than general x-rays.

- **sputum cytology** - a study of phlegm (spit) cells under a microscope.
- **needle biopsy** - a needle is guided into the mass while the lungs are being viewed on a CT scan and a sample of the mass is removed and evaluated in the pathology laboratory under a microscope.
- **bronchoscopy** - the examination of the bronchi (the main airways of the lungs) using a flexible tube (bronchoscope). Bronchoscopy helps to evaluate and diagnose lung problems, assess blockages, obtain samples of tissue and/or fluid, and/or to help remove a foreign body.
- **mediastinoscopy** - a process in which a small cut is made in the neck so that a tissue sample can be taken from the lymph nodes (mediastinal nodes) along the windpipe and the major bronchial tube areas to evaluate under a microscope.
- **x-rays and scans of the brain, liver, bone, and adrenal glands** - to determine if the cancer has spread from where it started into other areas of the body.

Other tests and procedures may be used as well.

**Treatment for lung cancer:**
Specific treatment will be determined by your physician based on:
- your age, overall health, and medical history
- extent of the disease
- your tolerance for specific medications, procedures, or therapies
- expectations for the course of the disease
- your opinion or preference

Surgery, radiation therapy, and chemotherapy may be used in the treatment of lung cancer.

- **surgery**

  Three main types of surgery are most often used in lung cancer treatment. The choice depends on the size and location of the tumor, the extent of the cancer, the general health of the patient, and other factors.
  - **segmental or wedge resection** - to remove only a small part of the lung
  - **lobectomy** - removal of an entire lobe of the lung
  - **pneumonectomy** - removal of an entire lung

- **radiation therapy (also called radiotherapy)** - the use of high-energy rays to damage cancer cells and stop them from growing and dividing.

- **chemotherapy** - the use of drugs to kill cancer cells.

**Smoking and Respiratory Diseases**
What is pulmonary rehabilitation?
Pulmonary rehabilitation is a program for persons with chronic lung diseases such as emphysema, chronic bronchitis, asthma, bronchiectasis, or interstitial lung disease. Most pulmonary rehabilitation programs will include medical management, education, emotional support, exercise, breathing retraining, and nutritional counseling.

Goals of a pulmonary rehabilitation program:
The purpose of pulmonary rehabilitation is to help people lead a full, satisfying life; to restore them to their highest possible functional capacity; and to help them live a more comfortable and enjoyable life. These goal are often met by:

- decreasing respiratory symptoms and complications.
- encouraging independence through self-management and control over daily functioning.
- improving physical conditioning and exercise performance.
- improving emotional well-being.
- reducing hospitalizations.

The pulmonary rehabilitation team:
Pulmonary rehabilitation programs can be conducted while a person is a hospital inpatient, or on an outpatient basis. Many skilled professionals are part of the pulmonary rehabilitation team. In addition to physicians, the team may include:

- respiratory therapists
- dietitians
- educators
- physical therapists
- social workers
- nurses
- psychologists
- occupational therapists
- other allied health professionals

The pulmonary rehabilitation program:
A typical rehabilitation program includes:

- breathing exercises
- exercise reconditioning
- progressive relaxation training
- stress and panic control techniques
● smoking cessation

● educational programs to provide information on:
  ○ medication
  ○ diet
  ○ exercises
  ○ caring for and operating respiratory therapy equipment

● exercise programs that may include:
  ○ calisthenics or stretching exercises to increase flexibility
  ○ weight training to increase exercise endurance and conditioning
  ○ specific exercises on stationary bicycles, treadmills, and other miscellaneous exercise machines
Overview of Sleep Problems

Why is sleep important?
Sleep is not just resting or taking a break from busy routines – it is essential to physical and emotional health. Adequate sleep may also play a role in helping the body recover from illness and injury.

But, the emotional and mental benefits of sleep are also significant. Even occasional sleeping problems can make daily life feel more stressful and less productive. And, some people with chronic insomnia are more likely to develop psychiatric problems. In a recent survey, those who said they had trouble getting enough sleep reported impaired ability to perform tasks involving:

- memory
- learning
- logical reasoning
- mathematical calculation

Facts about Sleep Disorders:
Loss of sleep is believed to contribute to strained relationships at home, and unfulfilled potential on the job, and can also be dangerous, leading to serious or even fatal accidents. Consider these facts from the National Sleep Foundation, the National Commission of Sleep Disorders Research, and the National Transportation Safety Board:

- The direct costs of sleepiness and lost productivity in the workplace is estimated at $15.9 billion.
- Drowsy drivers take the blame for at least 100,000 police-reported crashes in the US annually.
- Forty million Americans suffer debilitating sleep disorders; the majority of them are undiagnosed.
- Sleep-related accidents cost the American government and business an estimated $50 billion to $100 billion each year.
- Nearly 29 percent of fatal-to-the-driver commercial truck crashes are caused by drowsiness.

How much sleep is needed?
Although sleep needs vary from person to person, generally, most healthy adults need an average of 7 to 9 hours of sleep a night. If you have some of the following
problems, you may need more sleep than you are getting:

● trouble staying alert during boring or monotonous activities tendency to be unreasonably irritable with co-workers, family, or friends
● difficulty concentrating or remembering facts

What are the different types of sleep problems?
There are many types of sleep problems – some estimates say at least 84 disorders of sleeping and waking interfere with quality of life and personal health, and endanger public health. These problems range from staying awake or staying with a regular sleep/wake cycle, sleepwalking, bedwetting, nightmares, insomnia, restless legs syndrome, snoring, and sleep apnea syndrome.

Insomnia

Glossary

Respiratory Disorders

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