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V-Discover

THE STUDENTS DIGITAL MAGAZINE

Theme : LUNG CARE

VIVEKANANDHA EDUCATIONAL INSTITUTIONS FOR WOMEN ★ 1992 ★ WOMEN EMPOWERMENT

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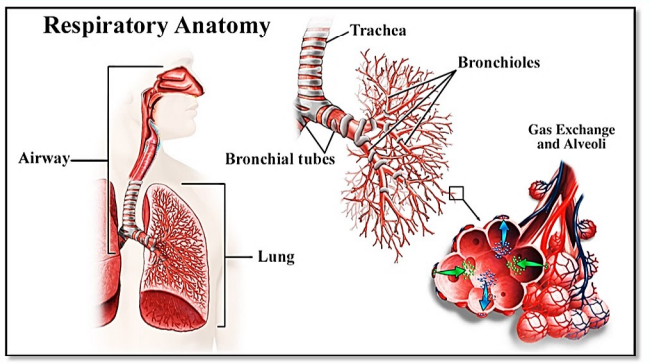
Lung Care

INTRODUCTION...

The lungs arethe central organs of the respiratory system in humans and mostother animals, including some snails and a small number of fish. The term Lungs are referred to as pulmonarius in Latin as in pulmonology, or with pneumo as in pneumonia. In mammals and most other vertebrates, two lungs are located near the backbone on either side of the heart. Their function in the respiratory system is to extract oxygen from the air and transfer it into the bloodstream, and to release carbon dioxide from the bloodstream into the atmosphere, in a process of gas exchange. The pleurae, which are thin, smooth, and moist, serve to reduce friction between the lungs and chest wall during breathing, allowing for easy and effortless movements of the lungs.

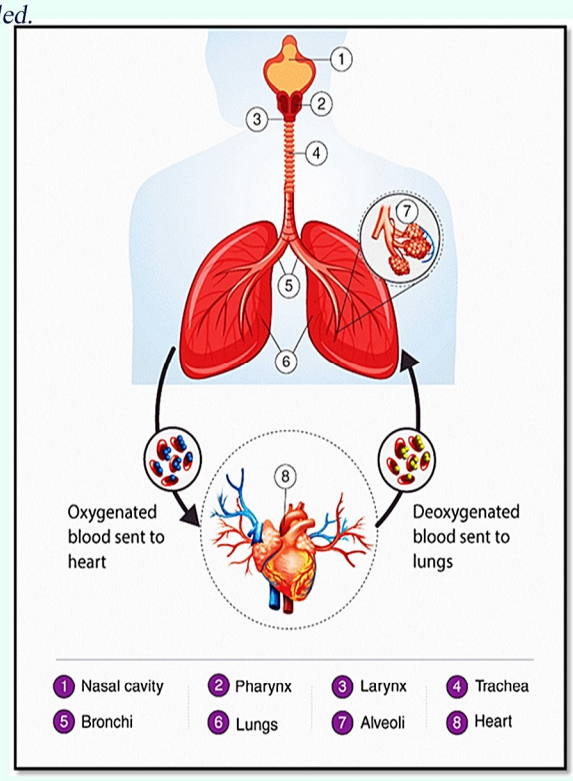
HUMAN LUNGS

Humans have two lungs, one on the left and one on the right. They are situated within the thoracic cavity of the chest. Human lungs,in total, weigh between 1,100 and 1,300grams. The right lung is generally heavier and larger, weighing around 620 grams, while the left lung weighs about 560 grams. This difference is due due to the lung being slightly smaller to accommodate the heart. Various factors such as age, sex, body size, and overall health can influence lung weight.The lungs are roughly cone shaped, with an apex, base, three surfaces and three borders. The left lung is slightly smaller than the right - this is due to the presence of the heart.



How does lungs Work???

The human lungs are an extraordinary pair of organs that play a vital role in sustaining life by facilitating the exchange of gases between our body and the environment. This process, known as respiration which is fundamental to our survival, as it ensures that oxygen is delivered to tissues and carbon dioxide, a metabolic waste product, is expelled.



The Respiratory Process: The two respiratory processes include:

Inhalation When you breathe in, the diaphragm contracts and moves downward, enlarging the thoracic cavity. Simultaneously, the intercostal muscles between the ribs contract, lifting the ribcage.

Exhalation To exhale, the diaphragm and intercostal muscles relax, reducing the volume of the thoracic cavity and increasing the pressure, which pushes air out of the lungs. This process expels carbon dioxide-rich air from the body, completing the respiratory cycle

RESPIRATORY PATHWAY

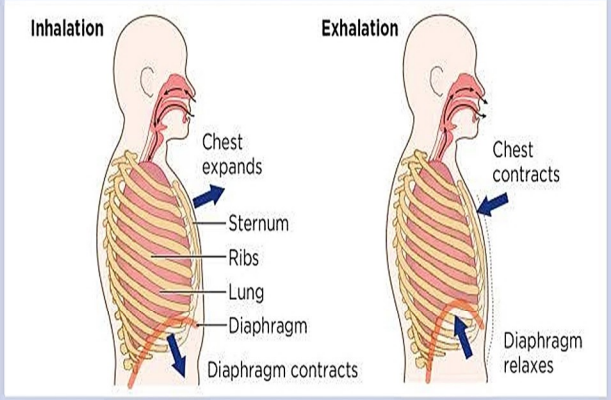
Nose/mouth → Pharynx → Larynx → Trachea → Bronchi → Bronchioles → Alveoli

- Air from the nose passes to the throat or the pharynx, the cone-shaped passageway from the mouth and nose to the larynx or voice box
- Larynx is a hollow tube linked with the apex of the windpipe
- This air canal enables in speaking and prevents food from entering the lowering the respiratory tract
- From the larynx, air travels through the windpipe or trachea
- The air in the trachea is moistened and cleansed before it enters the lungs
- Clean air passes deep into the tissues of the lungs,where exchange of gasses occur

NORMAL RESPIRATORY RATE BY AGE

AGE	BREATHS PER MIN
NEWBORNS	44
INFANTS	20-40
PRESCHOOL CHILDREN	20-30
OLDER CHILDREN	16-25
ADULTS	12-20
ADULTS EXERCISING	35-45

Chest movements with inhalation and exhalation



Lung diseases can occur when there are problems with any part of the lungs' complex system of expanding and relaxing to exchange oxygen and carbon dioxide or due to microorganisms entering.

Airway Diseases

These conditions make it difficult for people to breathe in regards to airflow in and out of the lungs using the airways.

Lung Tissue Diseases

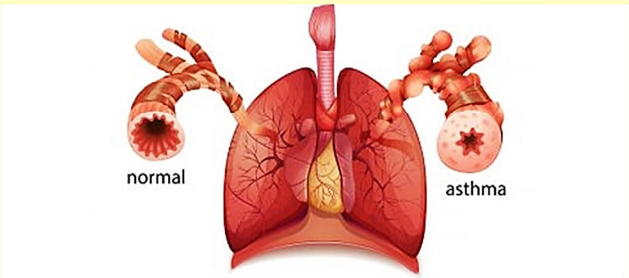
These conditions make it difficult for the lungs to work properly and diffuse oxygen from the airways into the bloodstream.

Lung Circulation Diseases

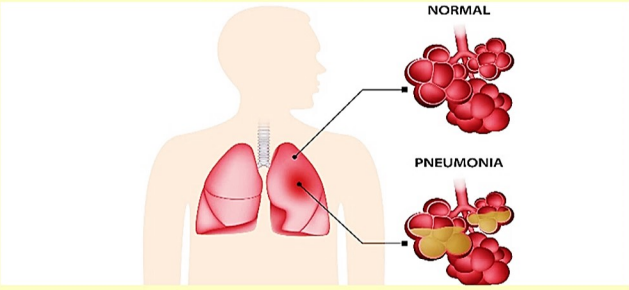
These conditions affect the way blood flows from the heart to the rest of the body in order to deliver oxygen to the organs and tissues.

MAJOR DISEASES (DISEASE IN LUNGS)

Asthma occurs when genetic predisposition and environmental triggers cause the airways to become inflamed, swollen, and produce extra mucus. This results in the tightening of muscles around the airways, leading to symptoms like wheezing, coughing, shortness of breath, and chest tightness.

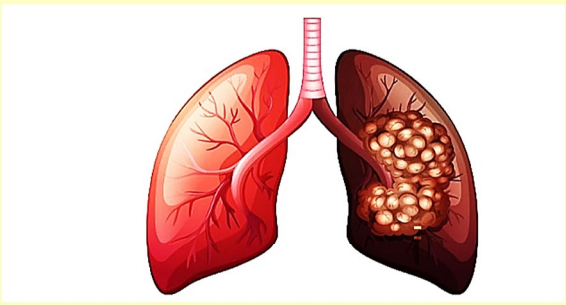


Pneumonia is a lung infection that causes inflammation in the air sacs, making breathing difficult. It can be caused by bacteria, viruses, or fungi and characterized by symptoms like cough, fever, chest pain, and difficulty breathing. Pneumonia primarily affects the alveoli, the small air sacs in the lungs where oxygen is exchanged.

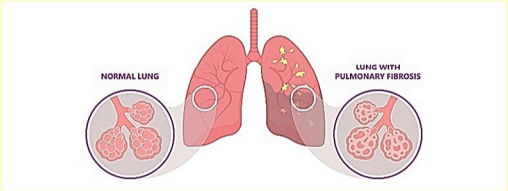


Lung cancer occurs when cells in the lungs undergo abnormal changes, often due to exposure to carcinogens like smoking or pollution, leading to uncontrolled cell growth and tumor formation and it can affect different parts of the lungs, including the bronchi (airway tubes), bronchioles (smaller airways), and alveoli (air sacs).

Changes in lungs after lung cancer: The lungs may show changes such as tumor growth, inflammation, scarring, and reduced lung function. Treatment can also lead to side effects like fibrosis or pneumonitis.



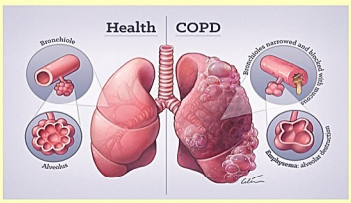
Pulmonary fibrosis is a lung disease characterized by scarring of lung tissue, leading to progressive difficulty in breathing. It affects the interstitium, the lung's supporting tissue, causing scarring and stiffness that hinders normal lung function.

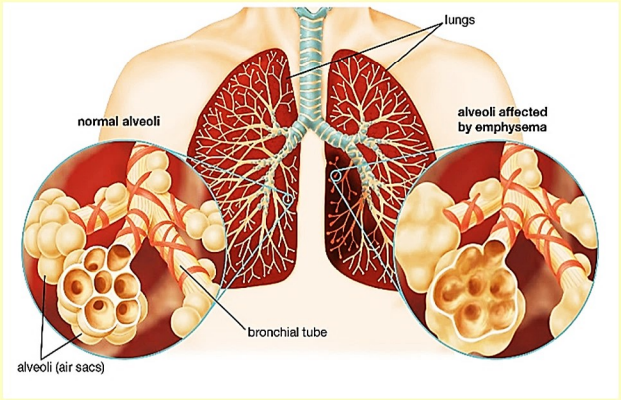


Chronic obstructive pulmonary disease (COPD) usually develops due to long-term exposure to irritants like cigarette smoke, air pollution, or industrial chemicals. Over time, these irritants damage the lungs, leading to inflammation, narrowing of airways, and loss of lung function, which characterizes COPD. It primarily affects the bronchial tubes (airways) and air sacs (alveoli) in the lungs, causing inflammation, mucus production, and obstruction that make breathing difficult.

Changes in lungs after COPD:

In COPD, the lungs undergo changes such as inflammation, narrowing of airways, excess mucus production, destruction of lung tissue (emphysema), and reduced elasticity of air sacs (alveoli), leading to breathing difficulties and reduced lung function.





LUNG DISEASE EVEN CAUSES DEATH

According to the Centers for Disease Control Trusted Source, the five leading causes of death in the U.S. in 2019 included:

Cancer - 599,601 deaths

Accidents -173,040 deaths

Chronic lower respiratory diseases, which includes asthma and COPD -156,979 deaths

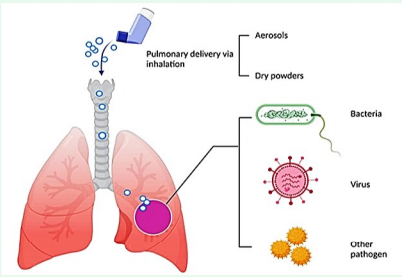
Stroke -150,005

Lung disease is a leading cause of death worldwide.

In 2008, lung infections, lung cancer, and COPD accounted for 9.5 million deaths worldwide.

TREATMENT FOR LUNG DISEASES

A roadmap to pulmonary delivery strategies for the treatment of infectious lung diseases



Medications

Treatments for lung disease can vary depending on the condition and its severity.They include

Bronchodilators: *Used for conditions like asthma and COPD, they relax muscles around the airways.*
Steroids: *Reduce inflammation in the airways for conditions such as asthma and COPD.*
Antifibrotic agents: *Used in idiopathic pulmonary fibrosis to slow disease progression. Antiviral medications: Treat viral infections like influenza and COVID-19.*

Oxygen Therapy:

Oxygen therapy is a treatment that delivers oxygen for you to breathe. You can receive oxygen therapy from tubes resting in your nose, a face mask, or a tube placed in your trachea. Oxygen therapy can be given for a short or long period of time in the hospital, in another medical setting, or at home. Oxygen therapy is generally safe. Used in conditions like COPD, pulmonary fibrosis, and severe asthma to ensure the body gets enough oxygen.

Pulmonary Rehabilitation:

A program of exercise, education, and support to help patients improve lung function and overall well-being. Pulmonary rehabilitation can help you gain strength, reduce symptoms of anxiety or depression, and make it easier to manage routine activities, work, and outings or social activities that you enjoy

Lifestyle Changes:

Smoking cessation: Critical for preventing and managing lung diseases.

Healthy diet and regular exercise: Improve overall lung function and health.

Surgical Interventions:

Lobectomy: Removal of a lobe of the lung, often for lung cancer.

Pneumonectomy: Removal of an entire lung, typically for severe cases of lung cancer.

Lung Transplant: Replacing a diseased lung with a healthy donor lung in end-stage lung disease.

Non-Surgical Procedures:

Bronchoscopy: A procedure to view the inside of the lungs and air passages, sometimes used to remove blockages or take biopsies.

Thoracentesis: Removal of fluid from the pleural space in cases of pleural effusion.

Immunizations:

Vaccinations for influenza, pneumonia, and COVID-19 to prevent infections that can worsen lung disease.

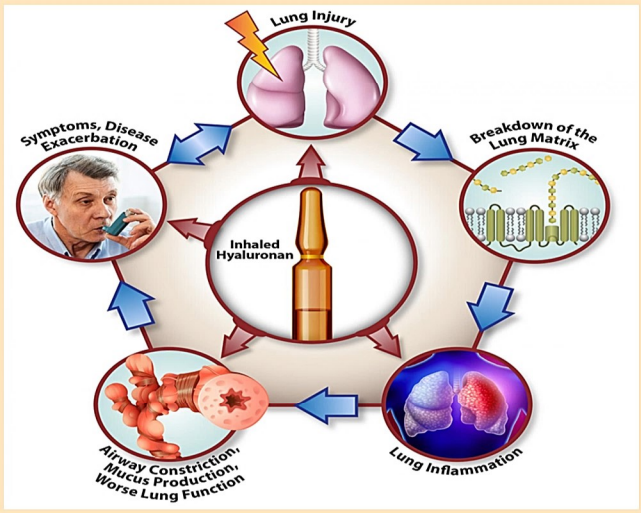
Respiratory Therapies:

Inhalationtherapies: Use of nebulizers or inhalers to deliver medication directly to the lungs.

Chest physiotherapy: Techniques to help clear mucus from the lungs.

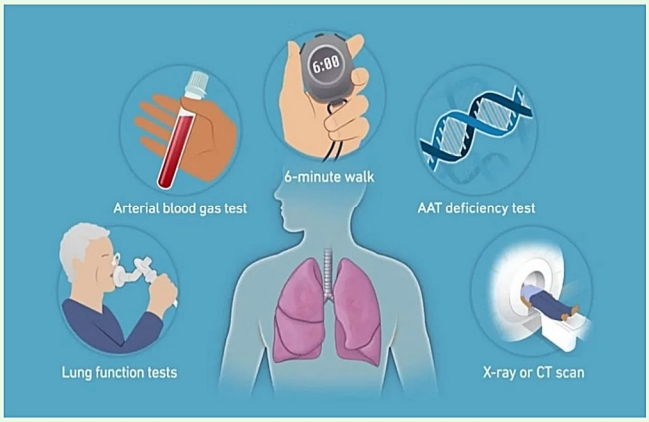
Biological therapies:

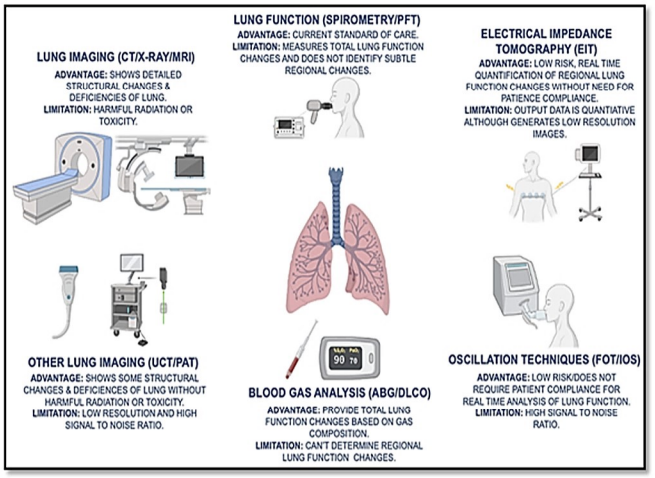
Monoclonal antibodies and other biologics use used in conditions like severe asthma and certain types of lung cancer to target specific pathways involved in the disease.



LATEST DIAGNOSIS FOR LUNG DISEASE

The latest advancements in lung disease diagnosis, particularly for ***Chronic Obstructive Pulmonary Disease (COPD) and Interstitial Lung Disease (ILD)***





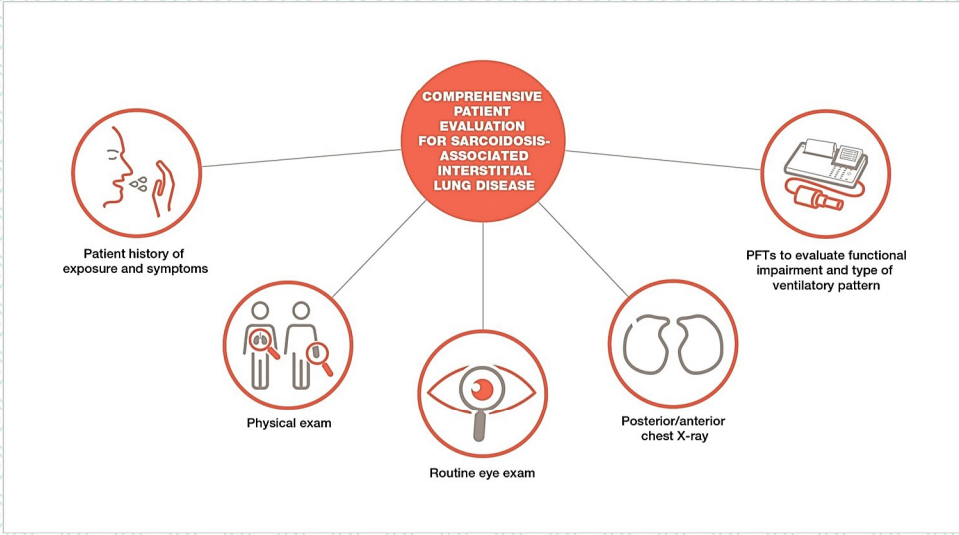
ILD DIAGNOSIS EMERGING TECHNOLOGIES

At the CHEST 2023 conference, experts discussed the latest diagnostic technologies and treatment strategies for ILD, including post-COVID-19 ILD and its prognosis.

The sessions highlighted the importance of early and accurate diagnosis using advanced imaging and biomarker analysis.

Post-COVID ILD: There's a growing body of research on interstitial lung abnormalities following COVID-19.

Although most patients do not progress to severe disease, ongoing studies aim to clarify the long-term outcomes and management strategies for these patients.



DRUGS CAN BE PRESCRIBED FOR LUNG DISEASE

Drugs can be prescribed for various types oflung diseases

Pneumonia:

Antibiotics: Amoxicillin, Azithromycin, Levofloxacin (depending on the bacterial cause)

Antivirals: Oseltamivir (for viral pneumonia caused by influenza)

Pulmonary Hypertension:

Endothelin Receptor Antagonists: Bosentan, Ambrisentan

Phosphodiesterase-5-5 Inhibitors: Sildenafil, Tadalafil

Prostacyclin Analogues: Epoprostenol, Treprostinil

Interstitial Lung Disease (including Pulmonary Fibrosis):

Antifibrotic Agents: Pirfenidone,

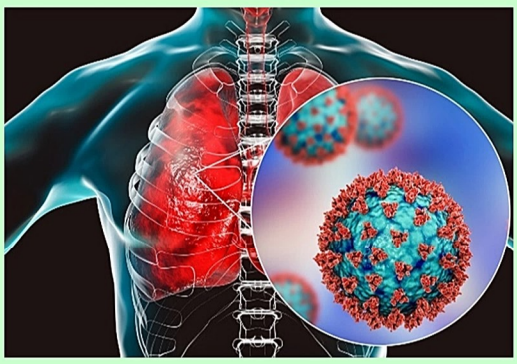
Nintedanib Corticosteroids: Prednisone (in certain cases)

Tuberculosis:

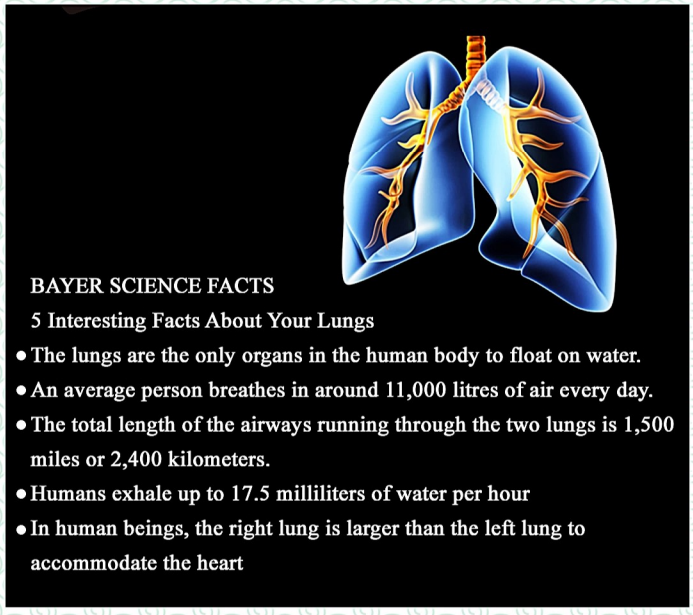
Antibiotics: Isoniazid, Rifampin, Ethambutol, Pyrazinamide.

What Does COVID-19 have greatest in Lungs???

COVID19 is a respiratory disease cause a range of breathing problems from mild to critical, which is caused by severe acute respiratory syndrome, coronavirus 2 (SARS-CoV-2). Older adults and people who have other health conditions like heart disease, cancer, and diabetes may lead to difficulties with breathing and pneumonia.



Amazing fact!!!!



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