



# Intro to the Respiratory System

And when it goes wrong!

Dr. Chantal Chris

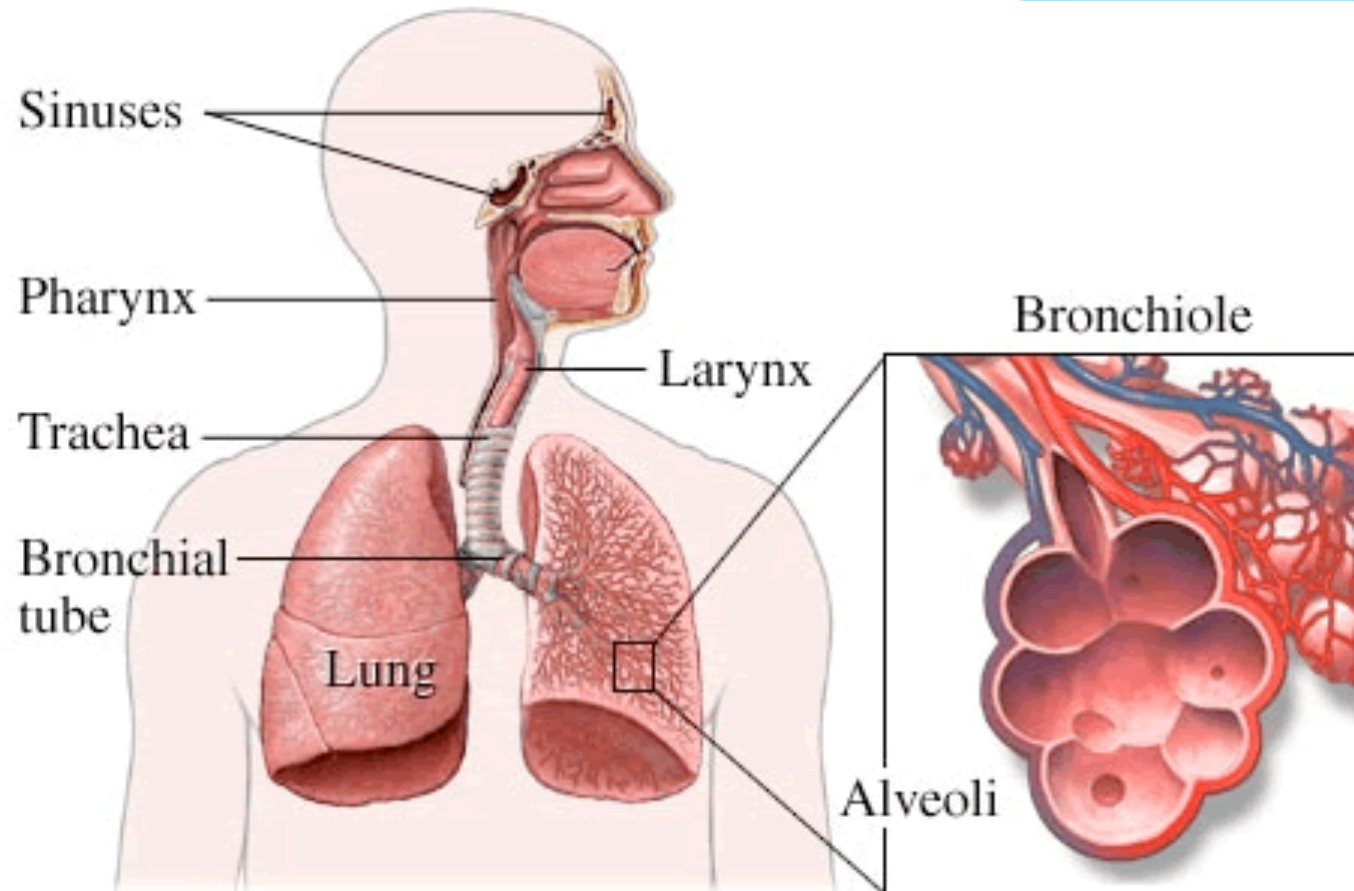
# Overview

- \* Anatomy and physiology of the Respiratory System
- \* Pathology
  - \* Infection: (viral vs bacterial)
    - \* Pharyngitis/Laryngitis
    - \* Bronchitis
    - \* Pneumonia
  - \* Asthma
  - \* Chronic Obstructive Pulmonary Disease (COPD)
  - \* Lung Cancer

# Review Definitions

- \* Anatomy: a study of the **structure** or internal workings of living organisms
- \* Physiology: the way in which a living organism or bodily part **functions**.
- \* Pathology: the typical behavior (causes and effects) of a **disease**.

# Anatomy of the Respiratory System



# Physiology of the Respiratory System



# Infection: Pharyngitis/Laryngitis

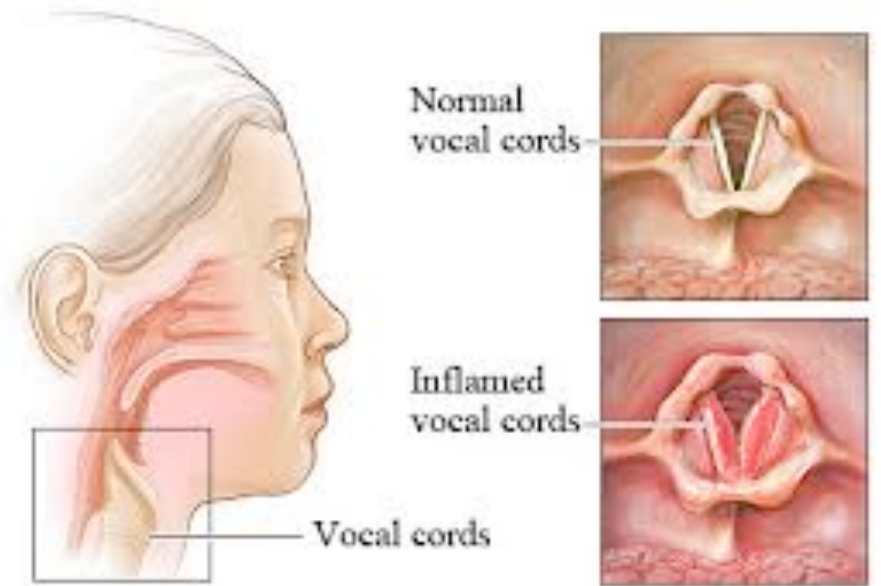
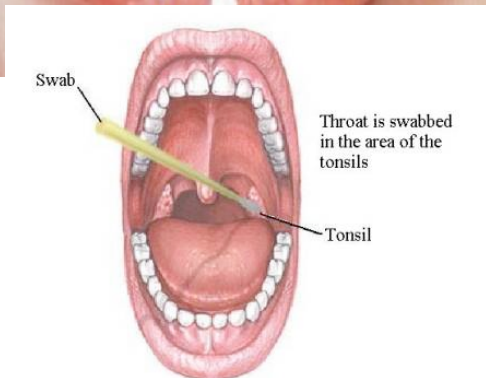
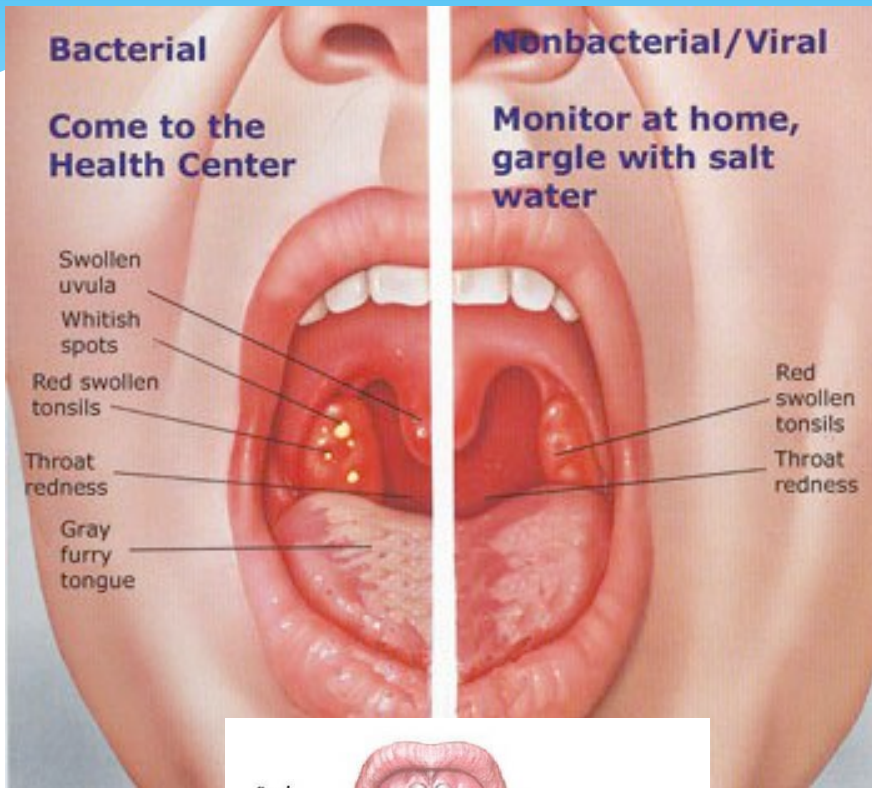
- \* Pharyngitis-

- \* sore throat, no coughing, painful to swallow, voice is ok
- \* 15-30% bacterial in kids, 5-15% bacterial in adults (Group A streptococcus)
- \* **70-85% of the time viral in kids**
- \* **85-95% of the time viral in adults**

- \* Laryngitis-

- \* sore throat, lose your voice
- \* Croup in babies
- \* **Almost always viral (or strain)**

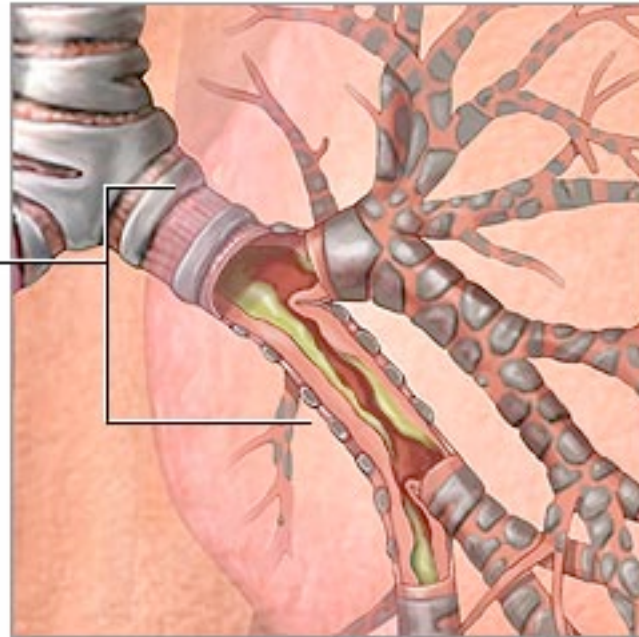
# Infection: Pharyngitis/Laryngitis



# Infection: Bronchitis



Inflamed  
primary and  
secondary  
bronchi

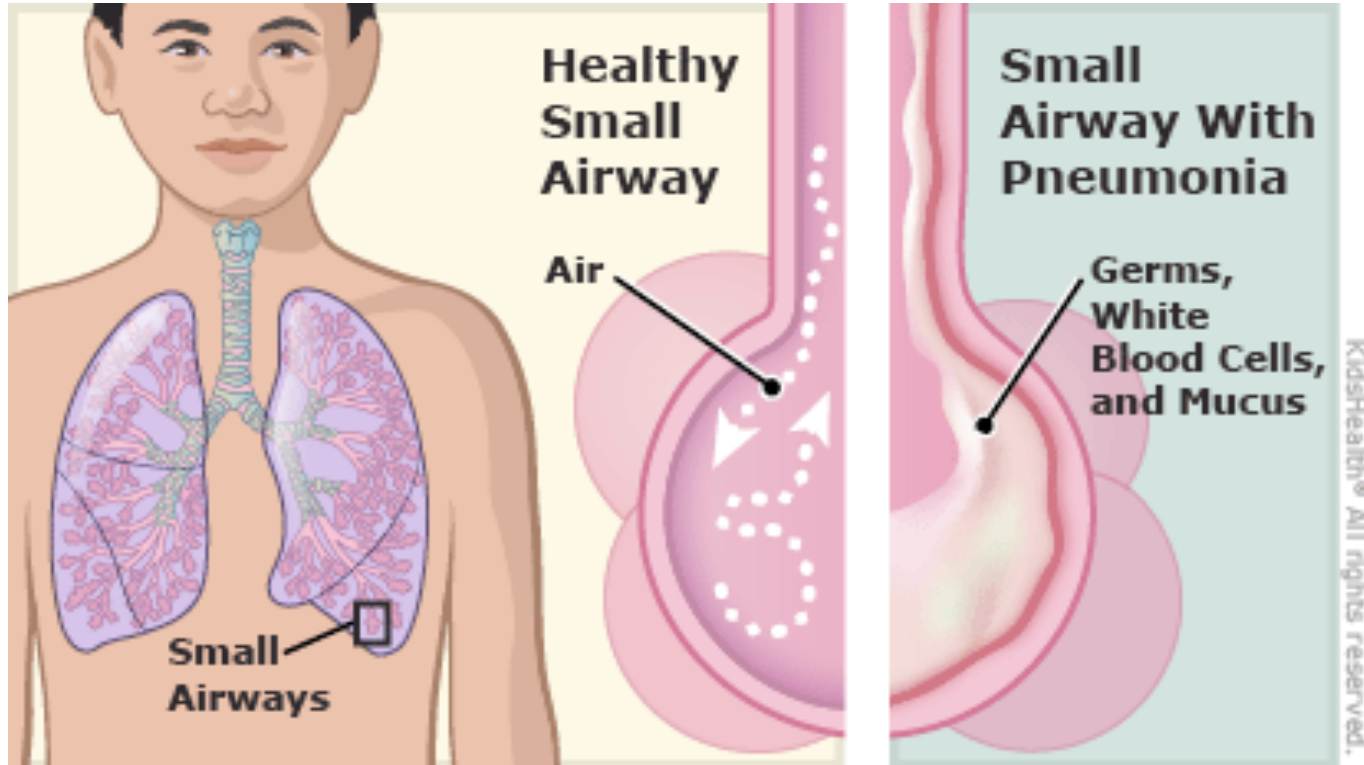


- \* 95% viral cause
- \* Antibiotics should not be prescribed

Acute bronchitis usually results from an infection such as a cold or flu

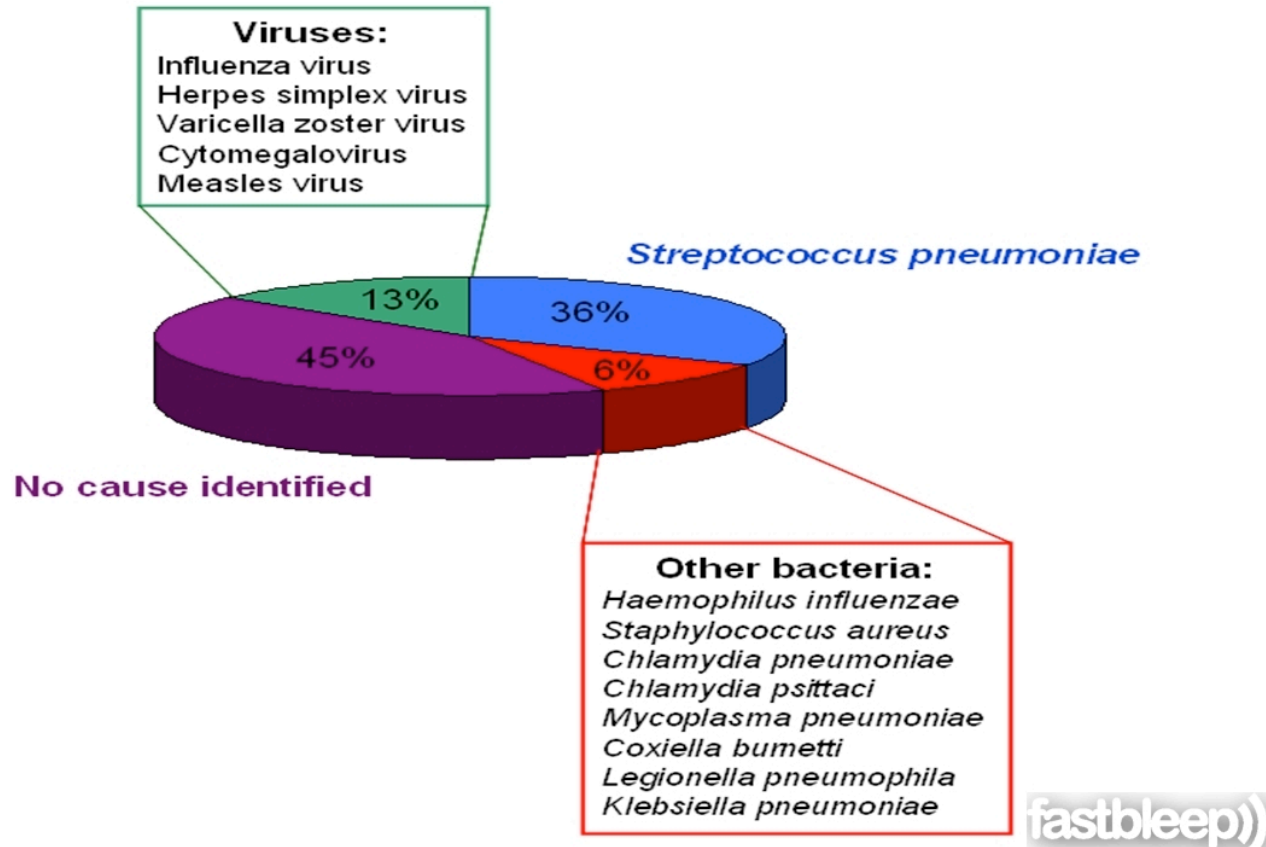


# Infection: Pneumonia

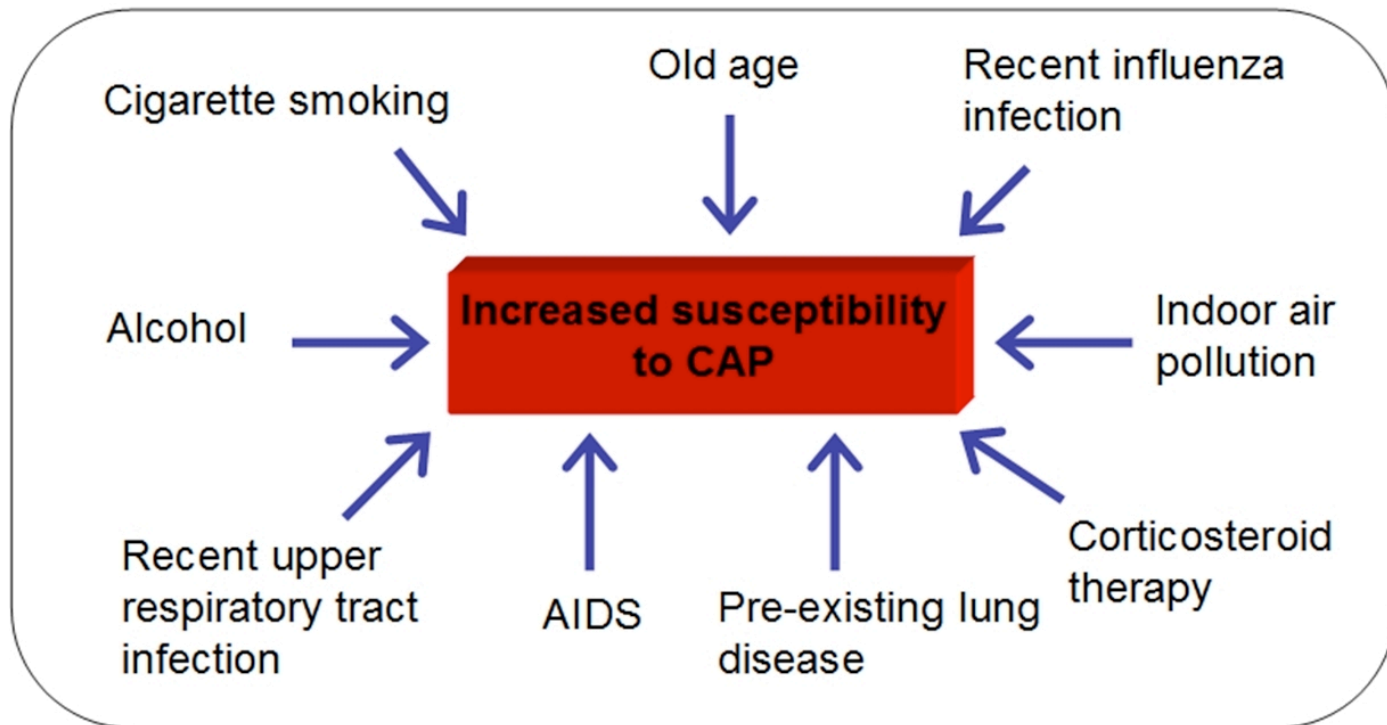


# Infection: Pneumonia

Figure 2: Aetiological agents of community acquired pneumonia.

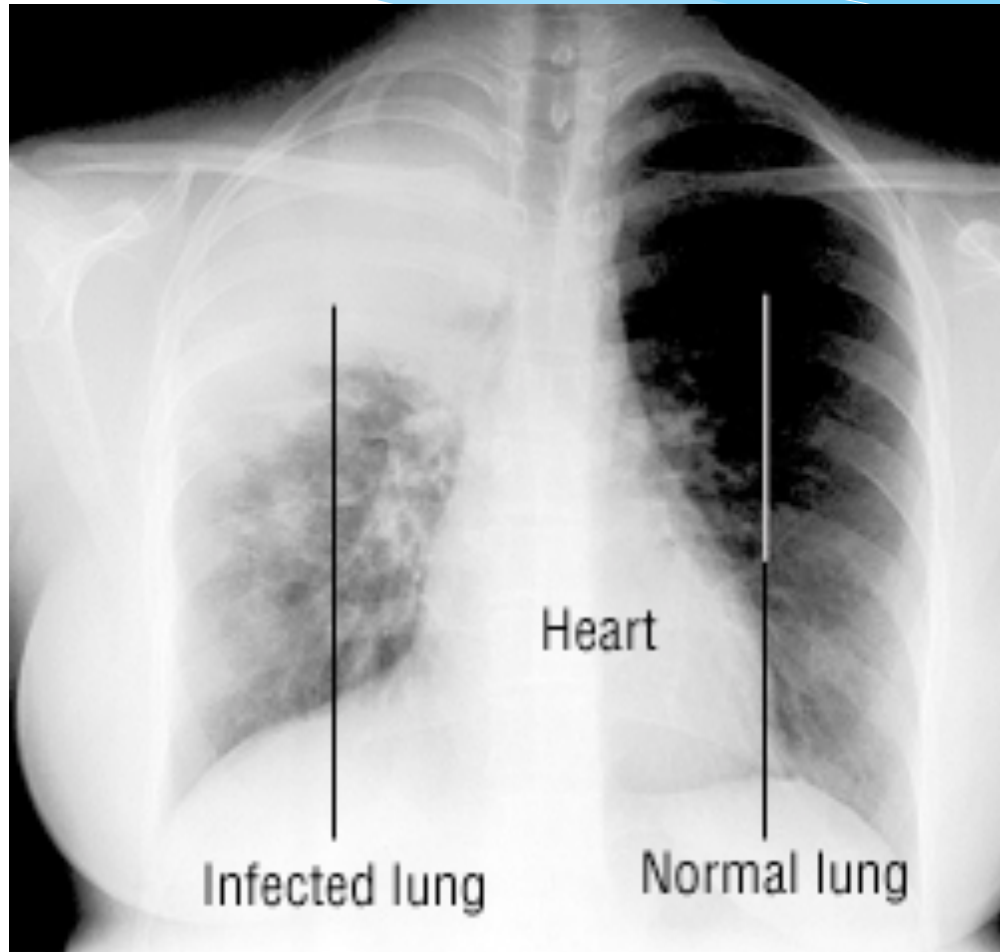


# Infection: Pneumonia



**Figure 3: Risk factors for community acquired pneumonia (CAP)**

# Infection: Pneumonia



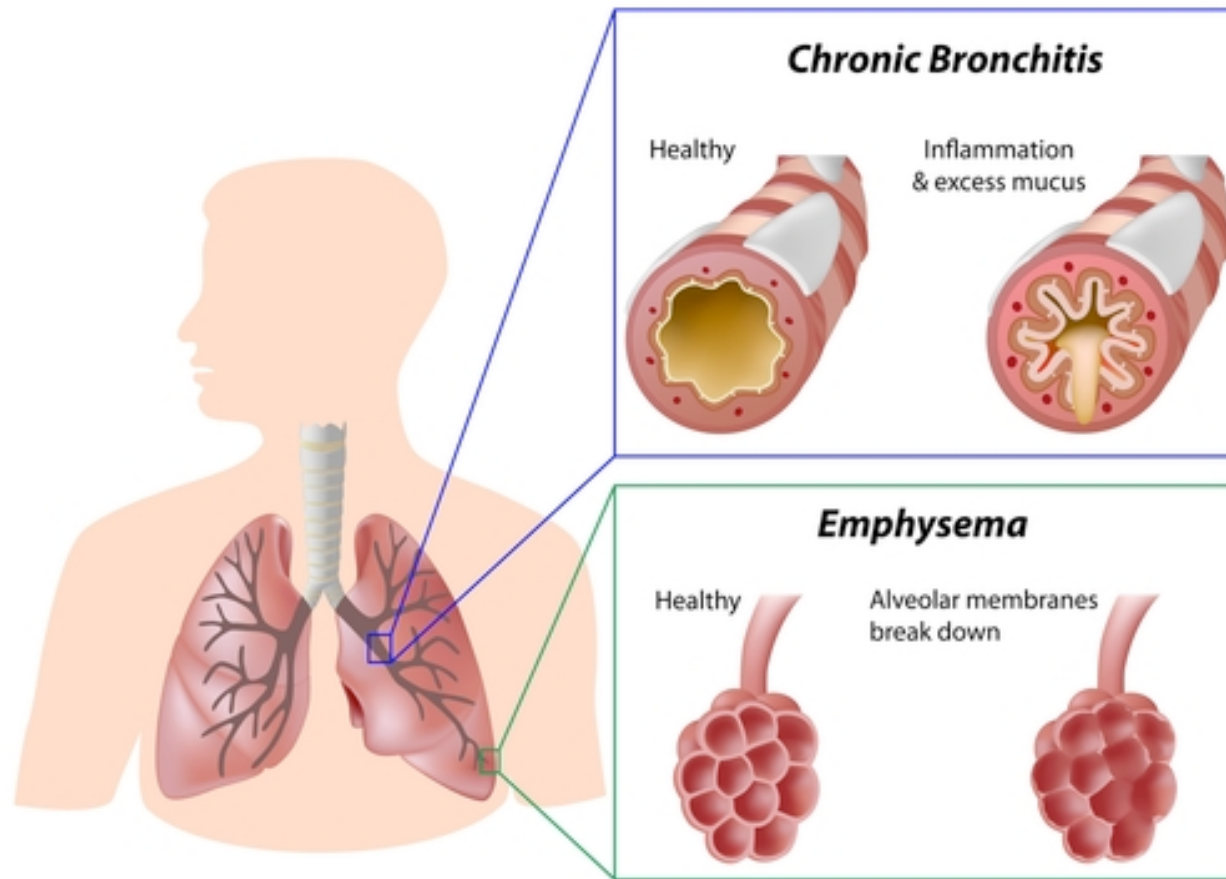
# Asthma



# Chronic Obstructive Pulmonary Disease (COPD)

(also called Chronic Bronchitis and Emphysema)

## Chronic Obstructive Pulmonary Disease (COPD)



# COPD



# Lung Cancer

Lung Cancer starts in the lungs as a growth of abnormal cells and often metastasizes, spreading to other organs in the body. It is the leading cause of cancer-related deaths. Here are the main risk factors, types, detection methods and treatments.

## LUNG CANCER MOST COMMONLY SPREADS TO:

- Brain
- Lymph nodes/lymphatic system
- Adrenal glands
- Liver
- Bones

## MAIN ENVIRONMENTAL/EXTERNAL RISK FACTORS

Common risk factors for lung cancer may include a cumulative combination of exposures to tobacco smoke, asbestos, radon or other air pollutants.



# Lung Cancer

## SMALL CELL LUNG CANCER

- 13% of cases
- Spreads quickly

### STAGES

- ▶ **Limited stage:** Only occurs in one lung.
- ▶ **Extensive stage:** Has metastasized outside lung tissue or in distant organs.

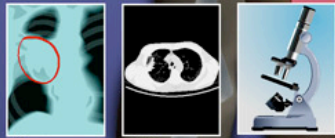
## NON-SMALL CELL LUNG CANCER

- 87% of cases
- Spreads slowly

### STAGES

- ▶ **Occult:** Cancer cells in sputum but no tumors in lung.
- ▶ **Stage 0:** Cancer cells in innermost lining of lung.
- ▶ **Stages IA/IB:** Tumor is isolated in the lung, or cancer has spread to the lung's main airways or inner lining.
- ▶ **Stages IIA/IIB:** Cancer has spread to nearby lymph nodes, chest wall, diaphragm, membrane around the heart, lining between the lungs or the main airway.
- ▶ **Stages IIIA/IIIB:** Cancer has spread to additional lymph nodes, further spread to chest wall, diaphragm, membrane around the heart, lining between the lungs or the main airway. It may have spread to the aorta, heart, trachea, sternum or esophagus for the first time, or lung may have collapsed or become inflamed.
- ▶ **Stage IV:** Malignant growths in more than one lobe of one lung, in both lungs, or cancer has spread to other organs.

## SCREENING



• X-ray • CT-Scan • Diagnosis

Potential tumors can be detected by taking pictures of the lungs with X-rays or CT scans. Diagnosis happens when a doctor looks at lung tissues or fluids under a microscope and sees cancerous cells.

## TREATMENTS

Treatment depends on the type and stage, and could include any of these therapies, or a combination. Some patients choose to take part in clinical trials to test new drugs or other treatments.

**Radiation**  
Radiation beams can target a specific area of the lung, killing the cancer cells

**Chemotherapy**  
Chemotherapy drugs kill cancer cells

**Surgery**  
Surgery entails cutting out part or all of the lung

**Targeted therapy**  
Targeted therapy involves drugs that block the growth and spread of cancer cells

SOURCES: National Cancer Institute; American Cancer Society; lungcancer.org; Principal Health News; Centers for Disease Control and Prevention

## LUNG CANCER FACTS

• Lung cancer is the #1 cause of cancer-related deaths in the U.S.

• U.S. estimated lung-cancer deaths in 2009: **159,390**

• Most lung cancer deaths are men



• Two-thirds of people diagnosed are 65 or older



# Lung Cancer

