

COPD



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Shaping Lives...
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By

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INTRODUCTION:

COPD stands for Chronic Obstructive Pulmonary Disease, which is a chronic lung disease that makes it difficult to breathe. It typically develops slowly over time and is often caused by long-term exposure to irritants that damage the lungs.

TYPES:

There are four main forms of COPD are chronic bronchitis, bronchiectasis, Ir-reversible asthma and emphysema.

Chronic bronchitis: Chronic bronchitis is a type of chronic obstructive pulmonary disease (COPD) that causes inflammation and narrowing of the airways in the lungs. It is characterized by a persistent cough that produces excess mucus (sputum), making it difficult to breathe.

Bronchiectasis: Bronchiectasis is a chronic respiratory condition in which the bronchial tubes (airways) in the lungs become permanently damaged and widened, making it difficult to clear mucus from the lungs.

Ir-reversible asthma: Irreversible asthma, also known as severe asthma. It is a type of asthma that is difficult to control and manage with standard medications and treatments. It is characterized by persistent inflammation, excess mucus production and airway obstruction that is not fully reversible.

Emphysema: Emphysema is a chronic lung disease that is characterized by the gradual destruction of the air sacs in the lungs, called alveoli. This damage leads to decreased surface area for gas

exchange, making it difficult for the lungs to get enough oxygen and expel carbon dioxide.

CAUSES/ETIOLOGY: (CHRONIC BRONCHITIS, BRONCHIECTASIS AND IR-REVERSIBLE ASTHMA)

- **Genetics:** Asthma can run in families, and certain genetic factors may increase the risk of developing asthma.
- **Infections:** Both bronchiectasis and chronic bronchitis can be caused by recurring lung infections, such as pneumonia, tuberculosis, or whooping cough.
- **Cystic fibrosis:** This genetic disorder causes thick, sticky mucus to accumulate in the lungs, increasing the risk of bronchiectasis.
- **Immunodeficiency:** People with weakened immune systems, such as those with HIV or autoimmune diseases, are at higher risk for bronchiectasis and chronic bronchitis.
- **Environmental factors:** Exposure to air pollution, cigarette smoke, or other irritants can damage the airways and increase the risk of developing bronchiectasis and chronic bronchitis.
- **Congenital abnormalities:** Some people are born with structural abnormalities in the lungs or bronchi that increase their risk of developing bronchiectasis.
- **Gastroesophageal reflux disease (GERD):** In some cases, chronic acid reflux can lead to chronic bronchitis.
- **Allergens:** Many people with reversible asthma have allergic triggers that can cause inflammation and airway constriction. Common allergens include dust mites, pollen, pet dander, and mold.

- **Respiratory infections:** Viral infections such as the common cold or flu can trigger asthma symptoms and exacerbate inflammation in the airways.
- **Exercise:** Physical activity can cause shortness of breath and other asthma symptoms in some people.
- **Irritants:** Exposure to irritants such as cigarette smoke, air pollution, or strong odors can trigger asthma symptoms.
- **Stress:** Emotional stress can trigger asthma symptoms in some people.

PATHOPHYSIOLOGY: (CHRONIC BRONCHITIS, BRONCHIECTASIS AND IR-REVERSIBLE ASTHMA)

- **Chronic bronchitis, Bronchiectasis and Ir-reversible asthma** are chronic respiratory conditions that develops when the airways in the lungs become inflamed and narrow, making it difficult to breathe.
- **Trigger exposure:** Symptoms can be triggered by a variety of factors, including allergens, irritants, respiratory infections, exercise, and emotional stress etc.
- **Inflammatory response:** When a trigger is encountered, the body's immune system activated and then IgE binds with the mast cell and other immune cell to produce different inflammatory mediators to initiate inflammatory response in the airways, to cause swelling.
- **Excess mucus Production:** Increased mucus production from damaged mucus membrane blocks the airway.
- **Constriction of airways:** The inflammation and excess mucus production can cause the muscles around the airways to constrict, further narrowing the airways, damaging the cilia of the airway and making it difficult to breathe.

CLINICAL MANIFESTATION/SIGN & SYMPTOMS: (CHRONIC BRONCHITIS, BRONCHIECTASIS AND IR- REVERSIBLE ASTHMA)

- Wheezing: A whistling sound when breathing, especially during exhaling.
- Shortness of breath: A feeling of breathlessness or an inability to catch one's breath.
- Chest tightness: A sensation of pressure or tightness in the chest.
- Coughing: A persistent cough, especially at night or early morning.
- Rapid breathing: Breathing faster than normal, especially during physical activity.
- Difficulty breathing: Feeling like you can't catch your breath or like you're suffocating.
- Fatigue: Feeling tired or weak, especially during an asthma attack.
- Excess sweating

DIAGNOSIS: (CHRONIC BRONCHITIS, BRONCHIECTASIS AND IR-REVERSIBLE ASTHMA)

- **Physical examination**
- **Family history & Medical history.**
- **Spirometry:** This test measures how much air you can exhale after taking a deep breath and how fast you can exhale. It can help determine how well your lungs are functioning.
- **Peak flow measurement:** This test involves using a peak flow meter, a handheld device that measures how much air you can

exhale in one breath. It can help monitor your asthma symptoms over time.

- **Chest X-ray or CT scan:** These imaging tests can help rule out other conditions that may cause similar symptoms, such as pneumonia or lung cancer.
- **Allergy testing:** If allergies are suspected as a trigger for asthma, your doctor may recommend skin or blood tests to identify specific allergens that may be causing your symptoms.
- **Bronchoscopy:** This test involves inserting a thin, flexible tube with a camera into the airways to examine the lungs and take tissue samples for analysis. Bronchoscopy is often used to diagnose bronchiectasis.
- **Methacholine challenge test:** This test is used to diagnose asthma by measuring the degree of airway responsiveness to inhaled methacholine, a substance that can trigger asthma symptoms.
- **Arterial blood gas (ABG) test:** This test measures the levels of oxygen and carbon dioxide in the blood and can help to evaluate the severity of chronic bronchitis or asthma.

PHARMACOLOGICAL MANAGEMENT: (CHRONIC BRONCHITIS, BRONCHIECTASIS AND IR-REVERSIBLE ASTHMA)

- **Inhaled corticosteroids:** These medications reduce inflammation in the airways and help prevent asthma symptoms. **Examples include beclomethasone, budesonide, fluticasone, and mometasone.**

- **Long-acting bronchodilators:** These medications relax the muscles in the airways and help prevent asthma symptoms. **Examples include formoterol and salmeterol.**
- **Combination inhalers:** These medications contain both an inhaled corticosteroid and a long-acting bronchodilator. **Examples include fluticasone/salmeterol and budesonide/formoterol.**
- **Leukotriene modifiers:** These medications block the action of leukotrienes, which are chemicals that contribute to inflammation in the airways. **Examples include montelukast and zafirlukast.**
- **Short-acting bronchodilators:** These medications provide quick relief of asthma symptoms by relaxing the muscles in the airways. **Examples include albuterol and levalbuterol.**
- **Immunomodulators:** These medications help regulate the immune system and reduce inflammation in the airways. **Examples include omalizumab and mepolizum.**
- **Mucolytics:** These drugs help to break up and thin out mucus in the lungs, making it easier to cough up. **Examples include acetylcysteine and dornase alfa.**
- **Antibiotics:** In cases of bacterial infection or exacerbation, antibiotics may be prescribed to treat the underlying infection. **Examples include azithromycin, clarithromycin, and amoxicillin.**

**NON PHARMACOLOGICAL MANAGEMENT/PREVENTION:
(CHRONIC BRONCHITIS, BRONCHIECTASIS AND IR-
REVERSIBLE ASTHMA)**

- **Identify and avoid triggers:** Common triggers include allergens (such as pollen, dust mites, and animal dander), air pollution,

tobacco smoke, respiratory infections, and exercise. Try to avoid or minimize exposure to these triggers whenever possible.

- **Take medication as prescribed:** If you have been prescribed medication for asthma, it's important to take it as directed by your healthcare professional, even if you're feeling well.
- **Maintain good air quality:** Use air filters in your home, avoid using harsh cleaning chemicals or perfumes, and keep your home well-ventilated.
- **Manage allergies:** If you have allergies, work with your healthcare professional to manage them effectively, as allergies can exacerbate asthma symptoms.
- **Maintain a healthy lifestyle:** Eating a balanced diet, staying physically active, maintaining a healthy weight, and avoiding smoking can all help reduce the risk of asthma symptoms.
- **Get regular check-ups:** Regular visits with your healthcare professional can help monitor your asthma symptoms and adjust your treatment plan as needed.