



# Chronic Obstructive Pulmonary Disease

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OVERVIEW



TREATMENT



ETIOLOGY



PROGNOSIS



DIAGNOSIS



CONTRAINDICATIONS



MANIFESTATIONS



MANAGEMENT PLAN




# Overview

- ***Chronic Obstructive Pulmonary Disease*** (COPD) describes a group of conditions characterized by obstructed airflow
- Involves chronic inflammation of the airways
  - Causes destruction of lung tissue
  - Hyperinflation (gas trapped in lungs causing it to inflate)
  - Increased mucus production
- Progressive but varies
  - May develop slowly or rapidly for different individuals



# Etiology

- **SMOKING** is the main cause of COPD
    - 2nd hand smoking increases risk of contracting COPD
  - Worsened by environmental exposures such as:
    - Dust
    - Air pollution
    - Inhalation of fumes and chemicals
    - Genetics
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# Diagnosis

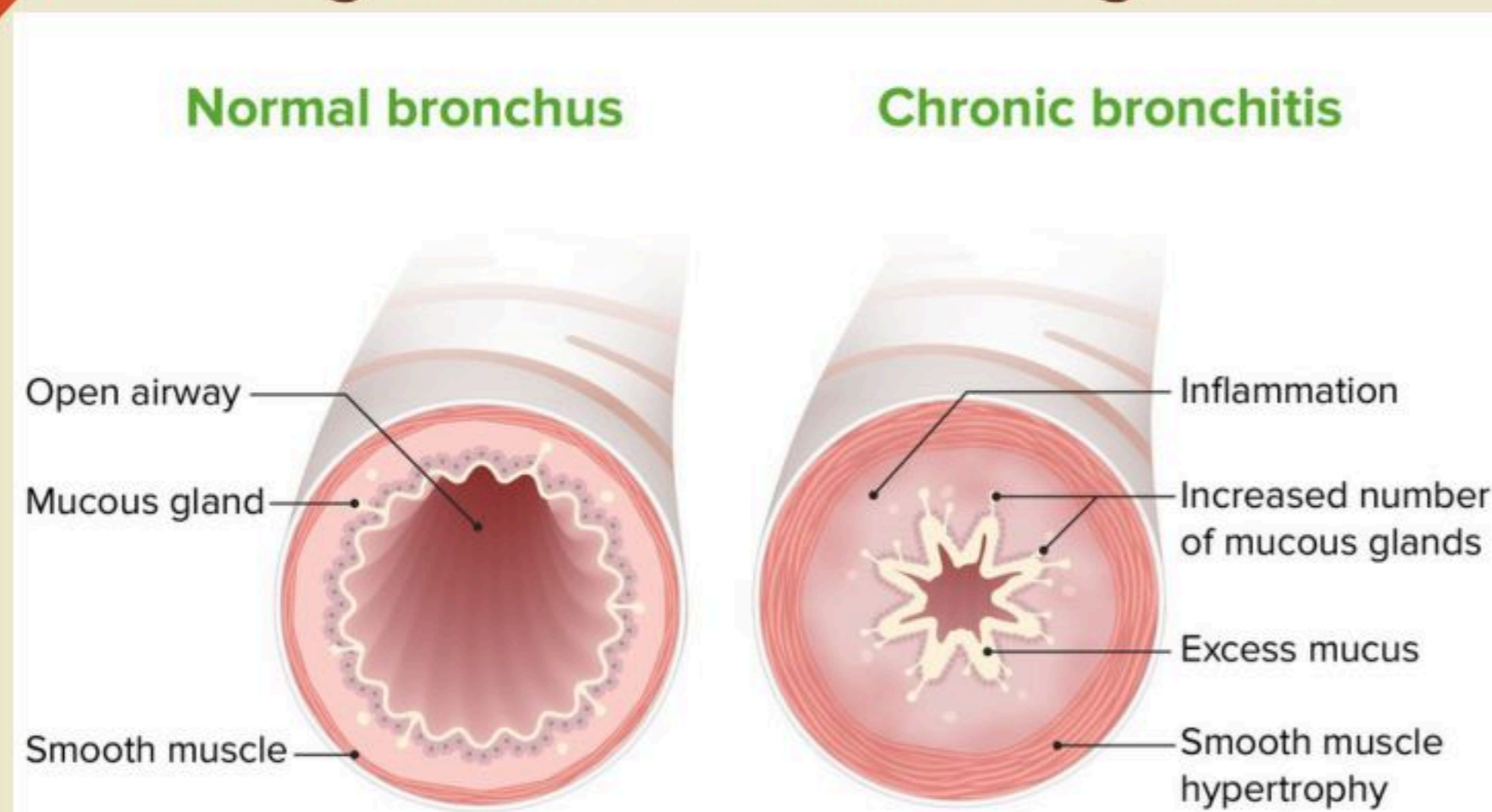
- COPD is commonly **misdiagnosed** and may not be diagnosed until more than 50% of lung function has been lost
- Diagnosis involves a doctor review of symptoms, family and medical history, and exposure to lung irritants
- Tests
  - Pulmonary function tests
  - X-ray
  - CT scan
  - Arterial blood gas analysis
  - Lab tests



# Manifestations of COPD

## Chronic Bronchitis

- The **bronchi** or **bronchial tubes** (large air passages of the lungs) become inflamed or scarred
- Leads to chronic cough with sputum with abnormal enlargement of the mucus glands



## Emphysema

- A permanent enlargement and damage of the **alveoli** (tiny air sacs of the lungs) caused by the **over inflation** and **destruction** in the alveolar walls
- Air is trapped in the lungs causing hyper inflation

# Manifestations of COPD

## Advanced COPD

- Airway obstruction may lead to hypoxemia or decreased levels of oxygen in the blood which may cause...
  - Little supply of oxygen to the brain
  - Hypercapnia (build up of carbon dioxide)
  - Polycythemia (build of red blood cells)
    - Phlebotomy is performed for when polycythemia is severe


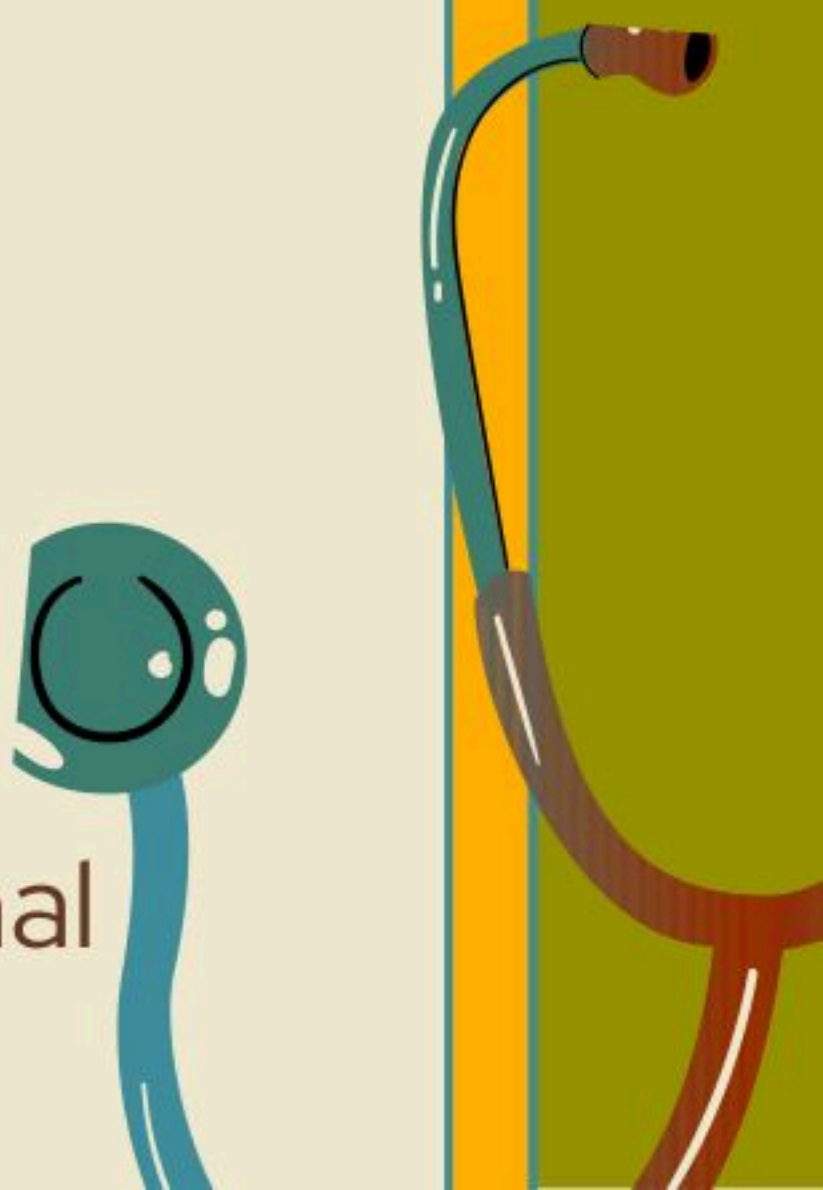
## Advanced COPD

- Individuals may experience increased...
  - Difficulty in coughing out phlegm
  - Shortness of breath
  - Vulnerability to pulmonary infections
    - Can be **life threatening**
  - Capillaries are constricted causing high pressure of blood leading to the right side of the heart to fail
    - Causes edema (swelling) in other parts of the body



# Treatments

- **COPD has no cure**
- **Bronchodilators** (help relax the airways) to relieve dyspnea
- **Vaccinations** to strengthen immunity to pulmonary infections
- **Breathing techniques** that focus on abdominal breathing
- **Chest physiotherapy** (remove drainage from lungs)
- **Resistive breathing device** (to increase breathing capacity)

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- **Avoidance of pulmonary irritants** such as tobacco
  - **Oxygen therapy**
    - Oxygen is administered from a tank
  - **Lung-volume reduction surgery**
    - Parts of hyper inflated lungs are cut out
  - **Lung transplant**
  - **Pulmonary Rehabilitation**
    - Breathing exercises
    - Physical conditioning
    - Physiotherapy
    - Psychological and vocational Interventions
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# Smoking Cessation and Lifestyle Modification as a Treatment

- Management begins with **quitting smoking**
  - The most difficult step
- Behavioral techniques, support groups, nicotine supplements, and other medications can be used to assist smoking cessation
- Daily exercise



# Prognosis



## Many people will live into their 70s, 80s, and 90s with COPD

However, this is only true for mild cases and those with no underlying health conditions such as heart disease or diabetes. Those who develop complications such as pneumonia die earlier.

## Life expectancy varies on COPD severity

A classification system called the Global Initiative on Obstructive Lung Disease (GOLD) system determines COPD severity. Based on how much air one can blow in a spirometer. Also called Forced Expiratory Volume (FEV1) test.

- GOLD 1: Mild COPD (FEV1 of 80% or more)
- GOLD 2: [Moderate COPD](#) (FEV1 50%-79%)
- GOLD 3: Severe [emphysema/chronic bronchitis](#) (FEV1 30%-49%)
- GOLD 4: [Very severe COPD](#) (FEV1 less than 30%)



# Contraindications

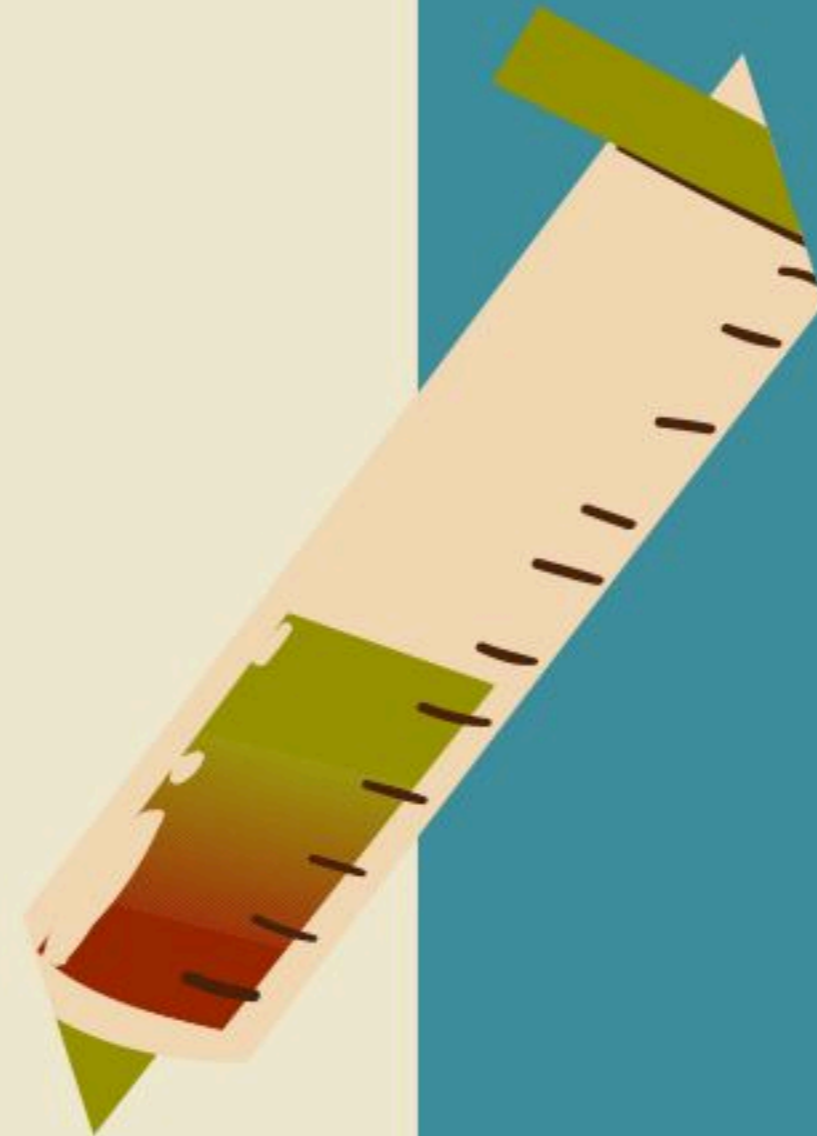
- **Regular Exercise** should be stopped if you experience...
  - Nausea
  - Dizziness
  - Weakness
  - Shortness of breath
  - Pain
  - Irregular heart beat

# Management Plan

## Functional

- Develop a healthy lifestyle by partaking in pulmonary rehabilitation (depending on COPD severity)
  - Helps individuals build endurance
  - Learn skills to cope psychologically and physically

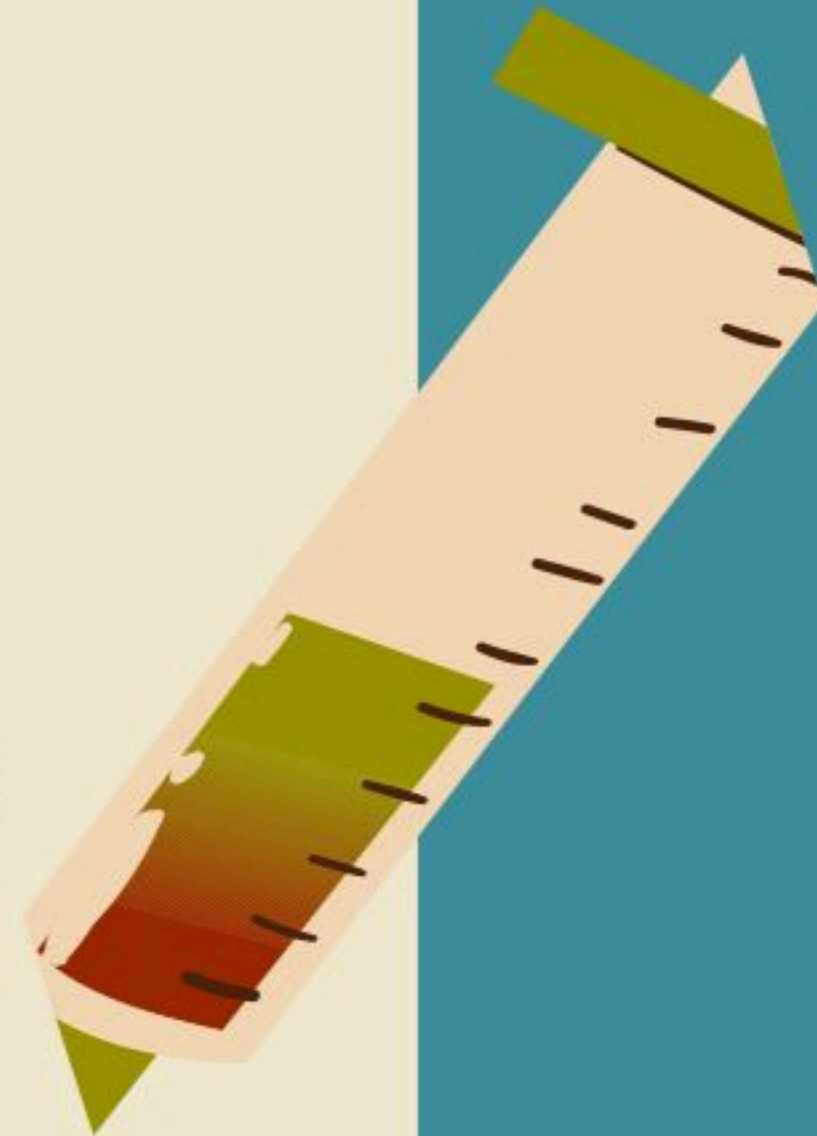
- Balance of physical activity and rest
- Environmental temperature should be kept cool
- Use heaters with air filters and regularly clean humidifiers
- Avoid air pollution
- Stop smoking



# Management Plan

## Psychosocial

- Psychological therapy to adapt to anxieties caused by COPD
- Speaking with family members about expectations
- Discussing sexual issues with romantic partners provides reassurance and confidence



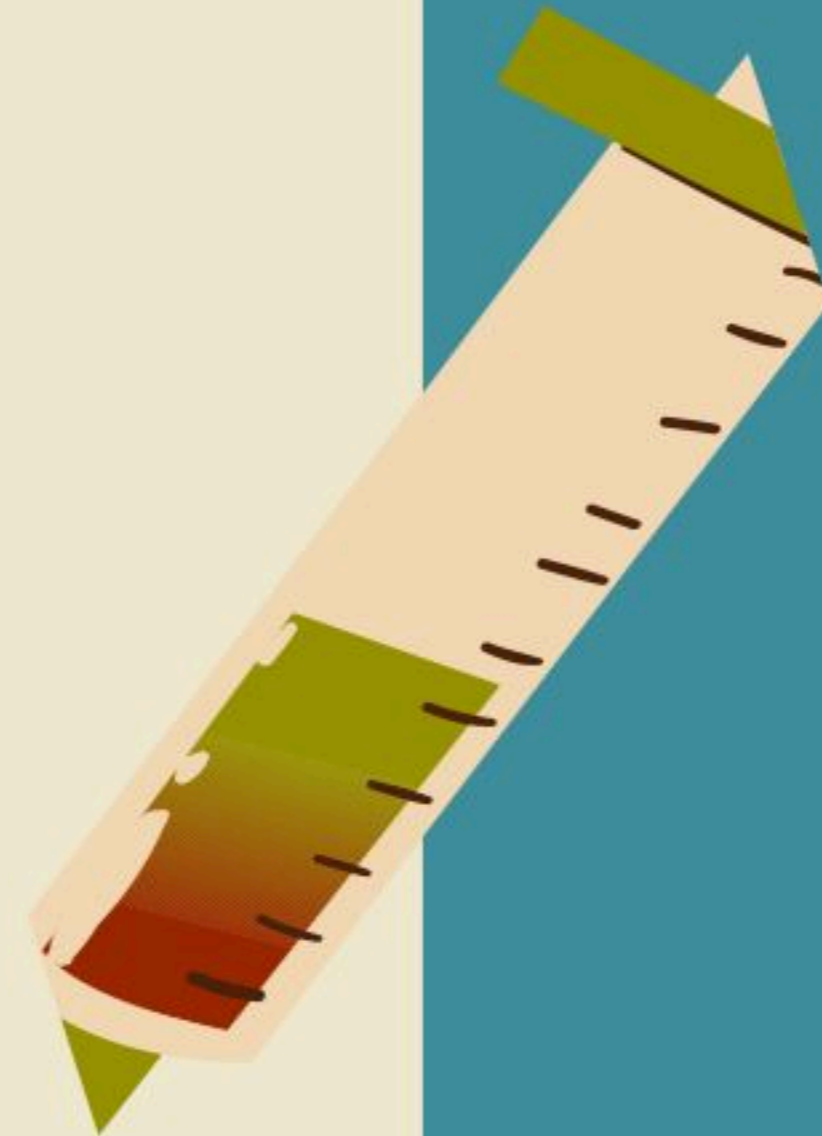
- Partaking in counseling and support groups to increase self-esteem



# Management Plan

## Vocational

- Change methods of performing energy consuming activities to manage dyspnea
- Stress management by considering ailment when partaking in job tasks
- Sitting down to work as much as possible




- Conserve energy by driving to work or riding a vehicle
- Prioritize tasks by breaking down difficult tasks and distributing them throughout the day
- Keep workplace environment clean and free of dust and allergens that may irritate airways





# Conclusion

- **Chronic Obstructive Pulmonary Disease (COPD)** describes a group of conditions characterized by obstructed airflow
  - **SMOKING** is the main cause of COPD
  - **Smoking cessation** is the first step to COPD management
  - Commonly **misdiagnosed** and may not be diagnosed until it has advanced
  - **COPD has no cure** and can only be managed with medications and pulmonary rehabilitation
  - Many people with **mild COPD live long lives**
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