

# **COPD**

## **Management in LTC:**

### **Reducing Symptoms for a better Quality of Life!**

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# **When breathing is a burden: How to help patients with COPD!**

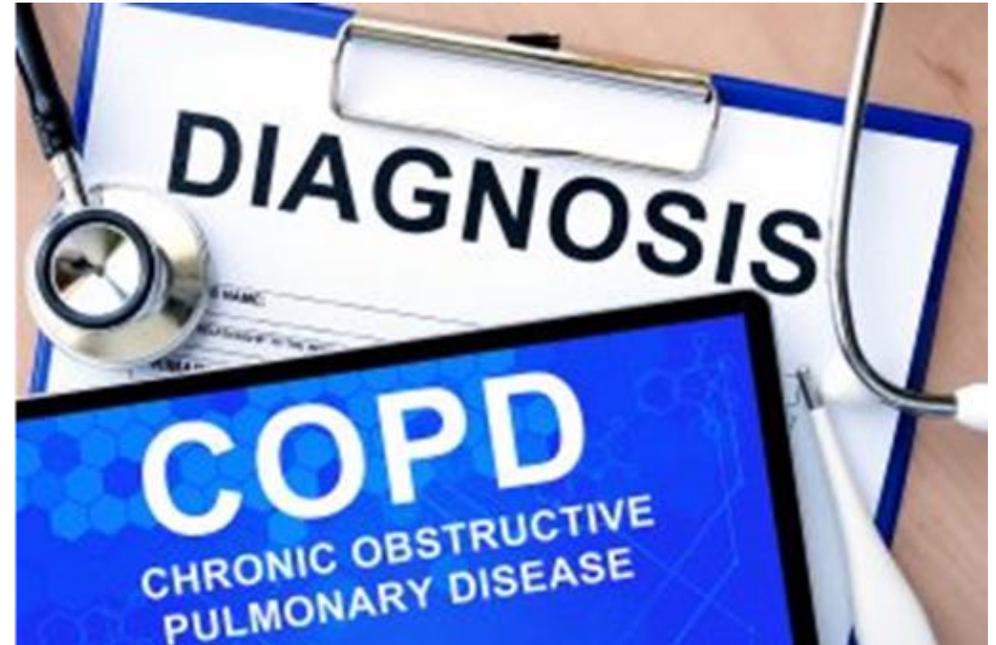
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Seizing Opportunities to Provide Individualized  
Treatment and Device Selection for your COPD  
Residents.



# Prevalence of Diagnosed COPD in Nursing Home Residents Is Rising

- Definition of COPD
- Types of COPD
- Pathophysiology
- Signs and Symptoms
- How COPD is Diagnosed
- Nursing Interventions, Device Selection & Medications



# Hard Facts

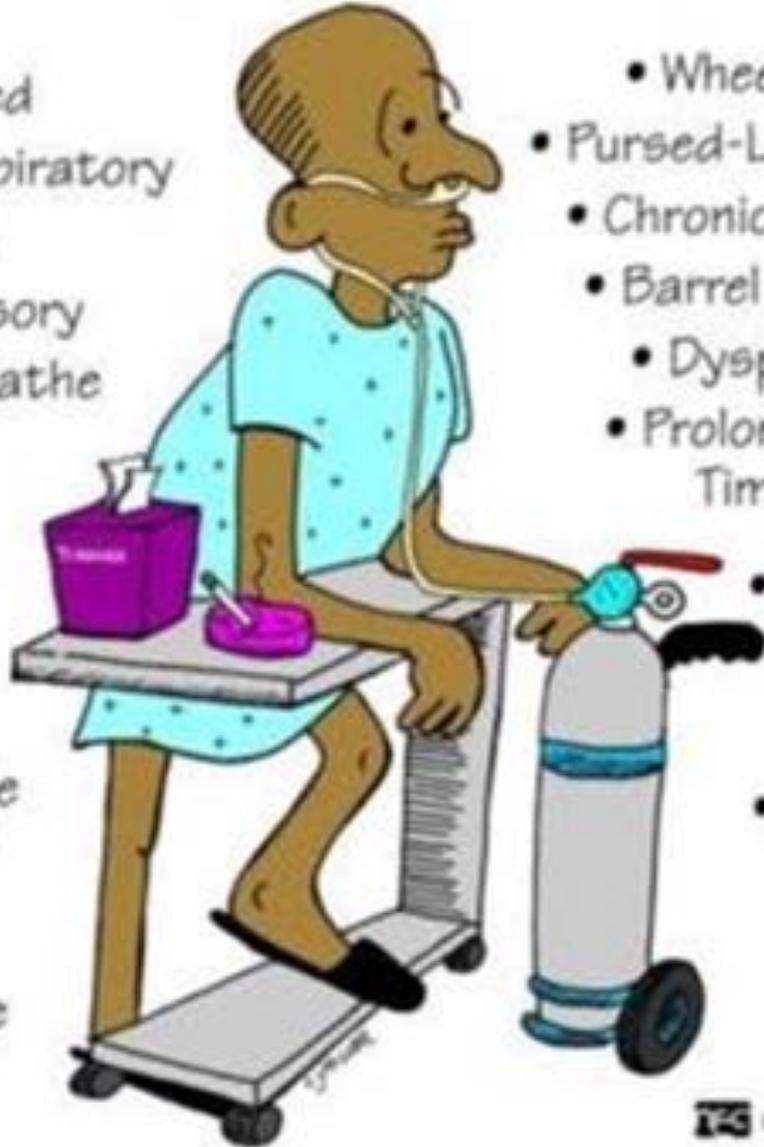
- COPD affects an estimated 30 million individuals in the U.S. Over half of them have symptoms and do not know it. Early screening can identify COPD before major loss of lung function occurs.
- Number of adults with diagnosed chronic bronchitis in the past year: 9.3 million
- Number of adults who have ever been diagnosed with emphysema: 3.5 million
- **Number of visits to emergency departments with COPD: 6.9 million**
- Cause of death rank: 3
- The National Heart, Lung and Blood Institute estimates that 12 million adults have COPD and another 12 million are undiagnosed or developing COPD.
- The World Health Organization estimated 210 million individuals worldwide have COPD and total deaths are expected to increase more than 30% in the next ten years.



# COPD

CHRONIC AIRFLOW LIMITATION  
"EMPHYSEMA AND CHRONIC BRONCHITIS"

- Easily Fatigued
- Frequent Respiratory Infections
- Use of Accessory Muscles to Breathe
- Orthopneic



- Wheezing
- Pursed-Lip Breathing
- Chronic Cough
- Barrel Chest
- Dyspnea
- Prolonged Expiratory Time

• Bronchitis - Increased Sputum

• Digital Clubbing

• Cor Pulmonale  
(Late in Disease)

• Thin in  
Appearance

**Definition:**  
pulmonary disease  
that causes  
chronic obstruction  
of airflow from the  
lungs.



# Key Points for COPD

- **Limited Airflow** (due to thick and swollen bronchioles that have become deformed with excessive sputum production in turn causes narrowing of the airways)
- **Inability to fully exhale** (due to loss of elasticity of the alveoli sacs from damage in turn causing the development of air trapping)
- **Irreversible once developed.** Different stages of disease process: mild, moderate, severe. All managed with lifestyle changes and medications.
- **Happens gradually.** Over time patients with COPD notice signs and symptoms such as: dyspnea, chronic cough, recurrent lung infections, increase in sputum production.
- COPD is a term used as a “catch all” for diseases that limit airflow and cause dyspnea.

## Types of COPD

include:

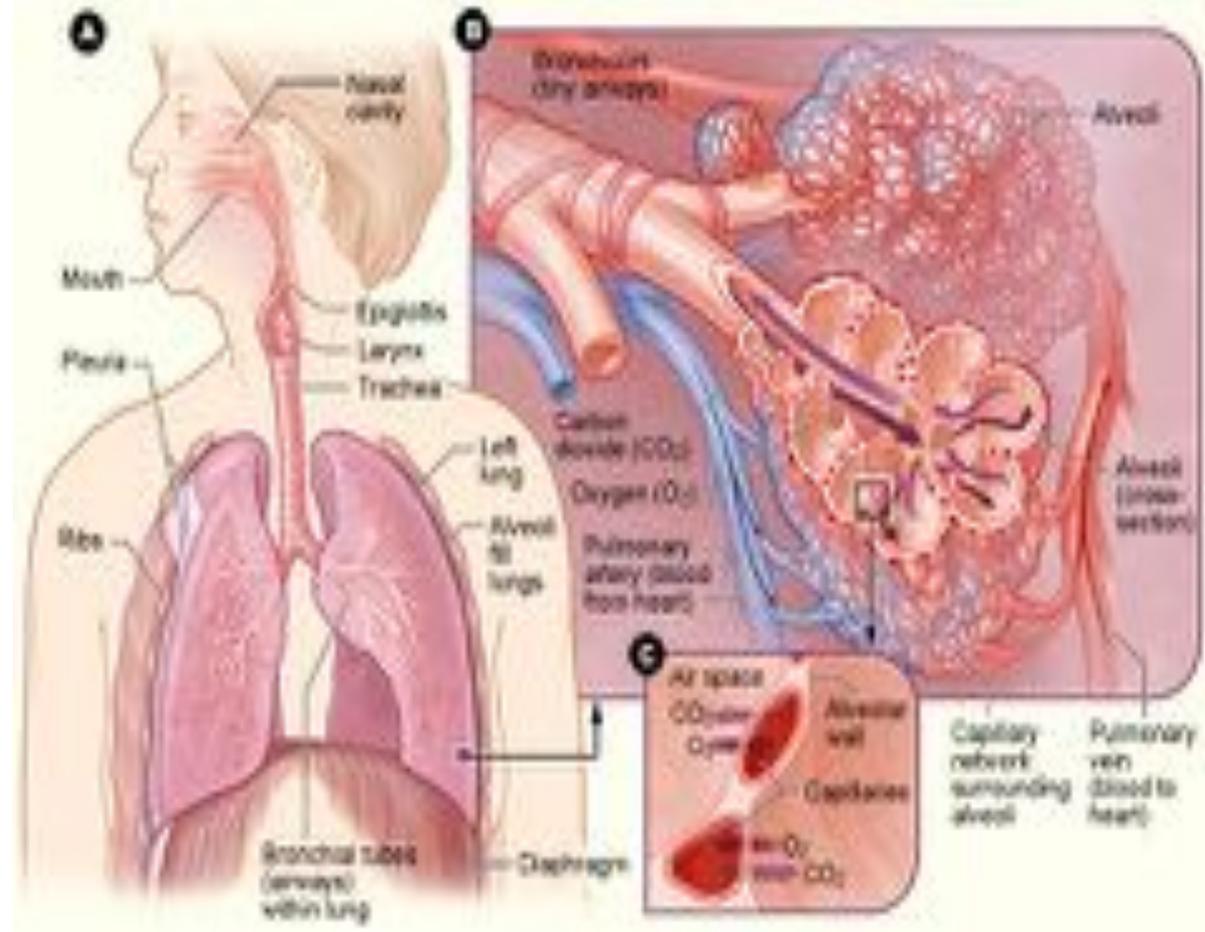
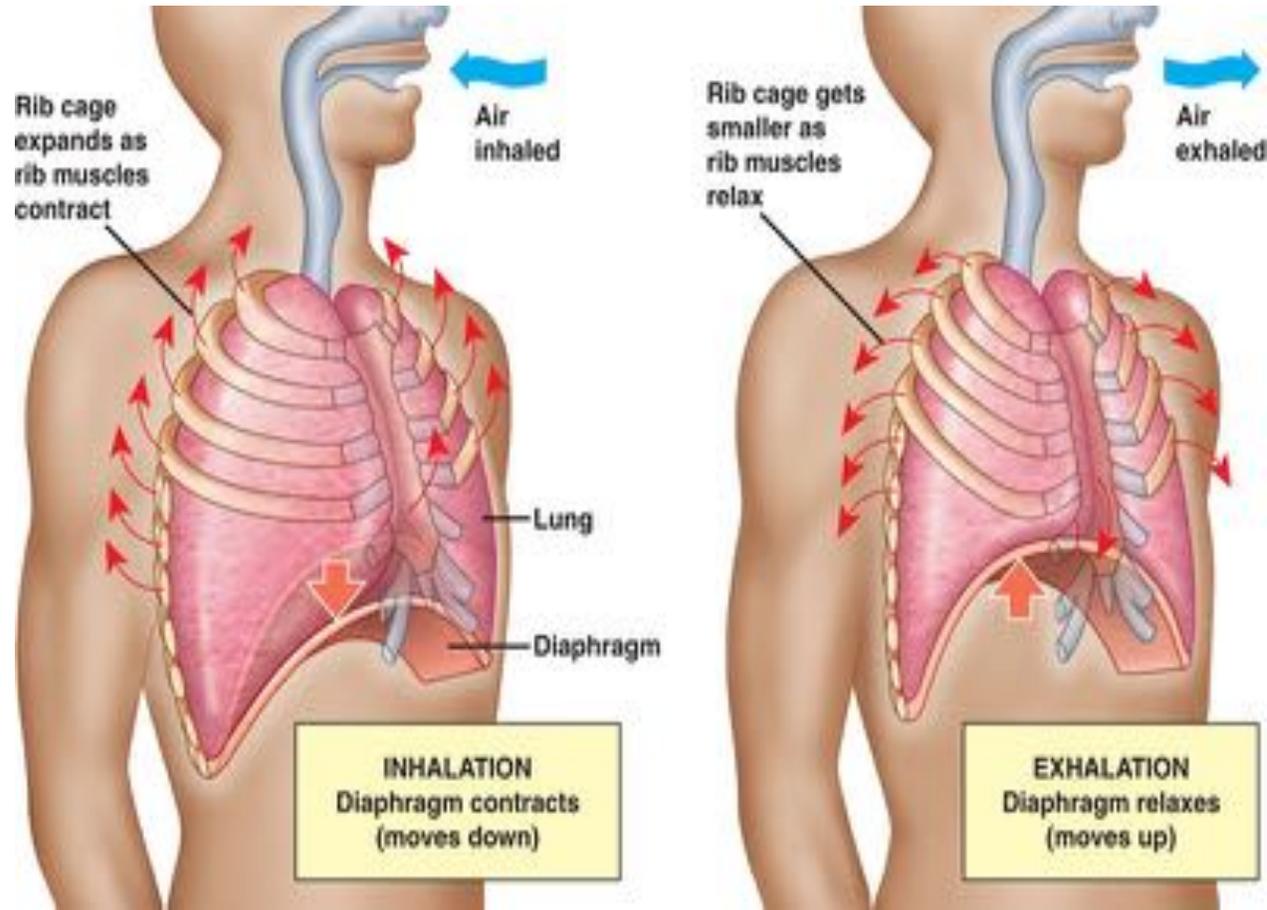
**Emphysema**

**Chronic Bronchitis**



## Normal Respiratory Cycle Simplified:

Inhaled oxygen travels down through the trachea which splits at the carina into bronchial tubes starting with the primary bronchus then into smaller airways called secondary and tertiary bronchi which divide into bronchioles and the oxygen goes into the alveolar sacs where gas exchange happens. As the alveoli inflate and deflate with ease, inhaled oxygen attaches to the red blood cells and carbon dioxide enters the respiratory system to be exhaled.

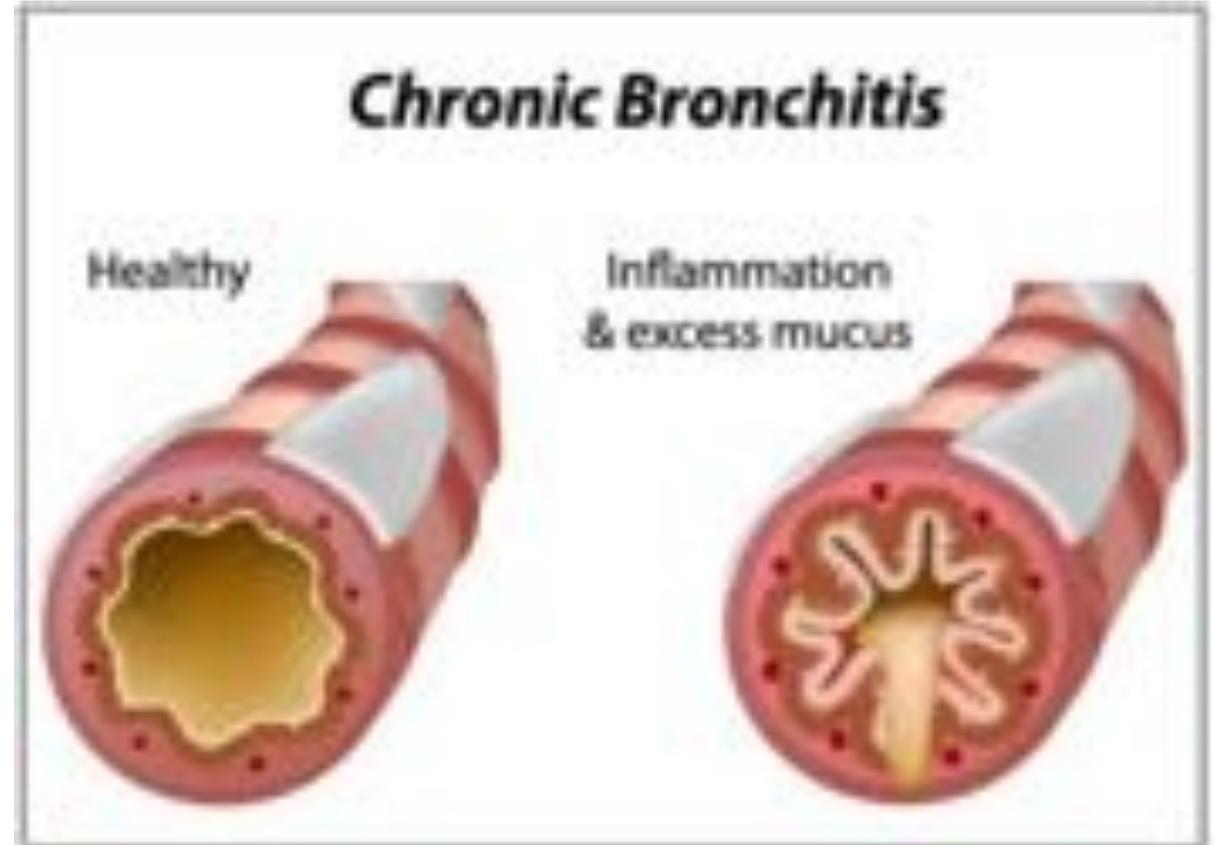


# Chronic Bronchitis

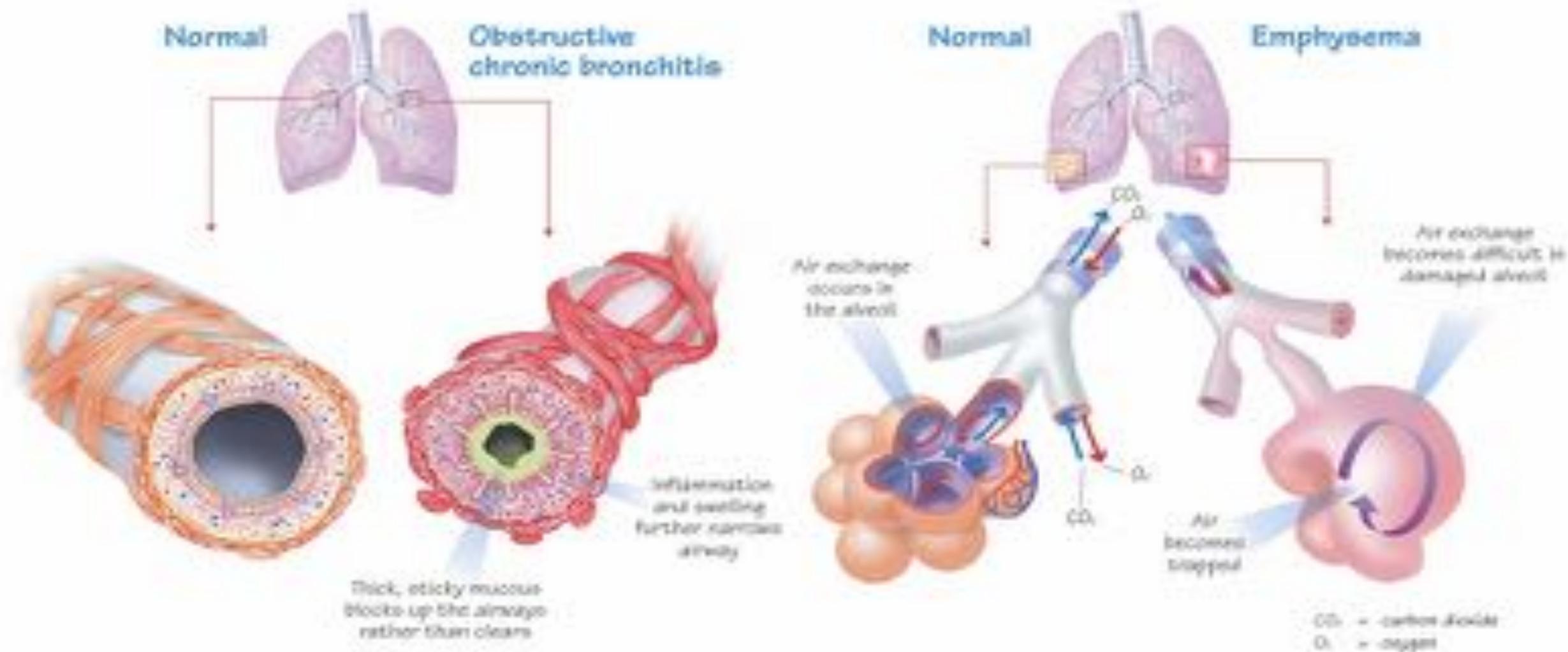
- Cyanosis / Hypoxia
- Edema (effects of the lung disease on the heart which causes right-sided heart failure)
- Hyperinflation (increase in lung volume)

## Breath Cycle with Chronic Bronchitis

1. The bronchioles become damaged, inflamed and swollen, narrowing the path for airflow into the alveoli for gas exchange
2. Sputum production increases; thick sticky mucus blocks the bronchioles which in turn limits the ability to completely exhale the previous breath.
3. The retained volume leads to hyperinflation.
4. Gas exchange is decreased; leading to Hypoxia. (decreased O<sub>2</sub> in blood/ increased CO<sub>2</sub>)-ABG's
5. The body will compensate by increasing RBC and cause blood to shift which increases pressure in the pulmonary artery, leading to pulmonary hypertension which in turn leads to right-sided heart failure. (edema/ bloating in abdomen and legs)



# OBSTRUCTIVE CHRONIC BRONCHITIS AND/OR EMPHYSEMA



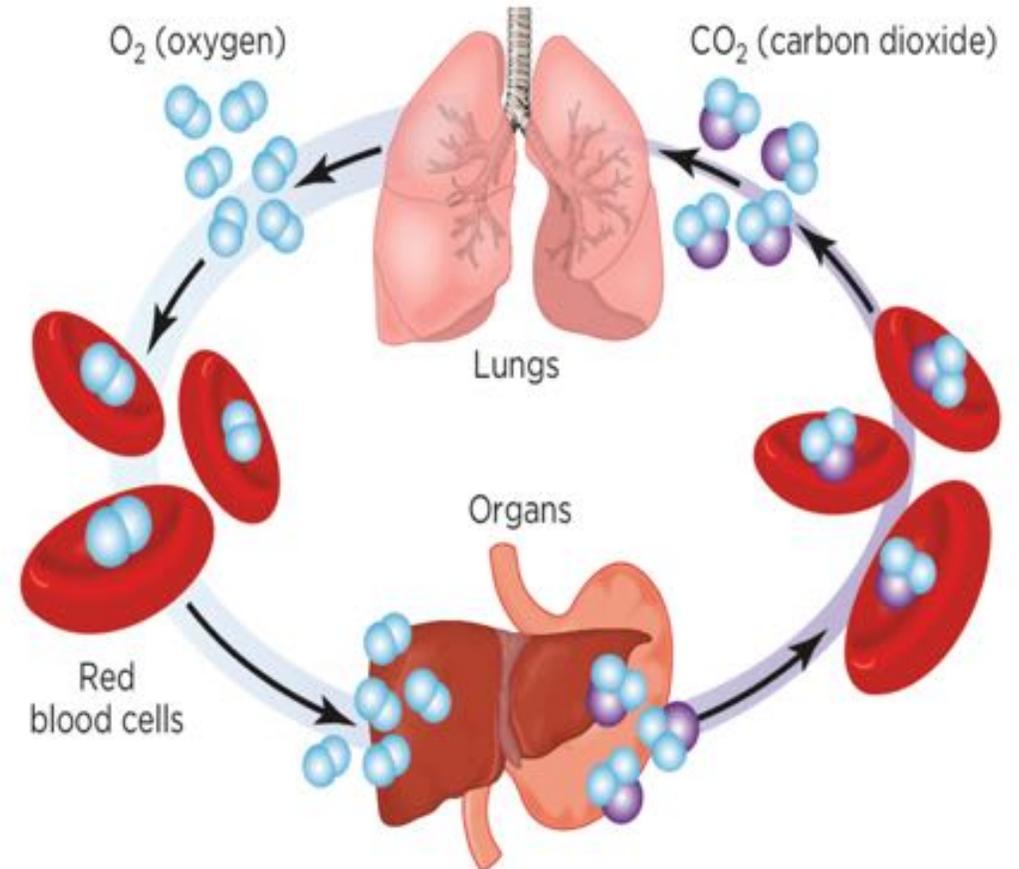
# Emphysema

➤ Hyperventilation (rapid breathing)

## Breath Cycle with Emphysema

1. Alveoli sacs lose their ability to inflate and deflate due to an inflammatory response in the body. (floppy, loss of elasticity)
2. Retained air will accumulate in the Alveoli (air trapping), which will cause hyperinflation of the lungs.
3. The diaphragm will flatten (the diaphragm is responsible for 80% of the respiratory cycle)
4. Leading to hyperventilation, use of accessory muscles to exhale, Increased WOB, barrel chest
5. Damaged alveolar sacs cause increased CO<sub>2</sub> levels in the blood and decreased O<sub>2</sub>, due to poor gas exchange.

Fig 1. Gas exchange in humans



# Applying the Care Process

Following a good care process is critical for COPD management

There are four “phases” to a care process

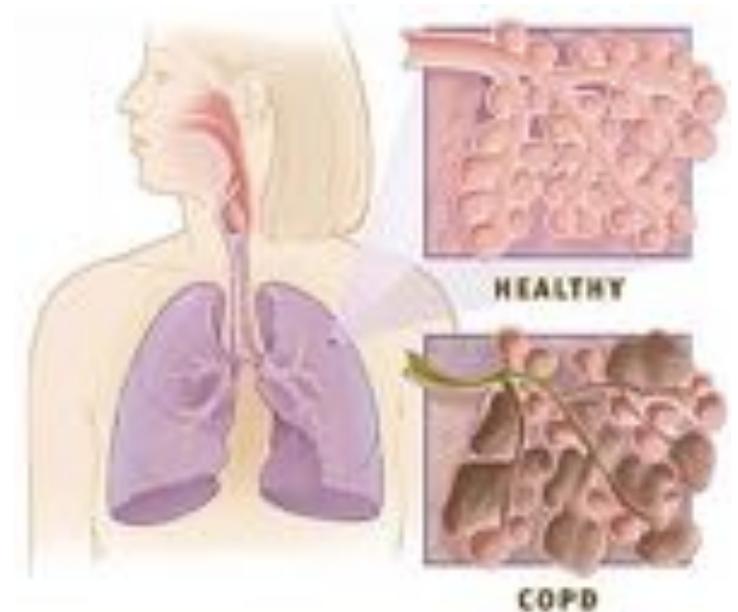
- 1) Recognition
- 2) Assessment
- 3) Treatment
- 4) Monitoring



# Impact of COPD

Depends upon severity of symptoms:

- Breathlessness
- Decreased exercise capacity
- Systemic effects:
  - muscle wasting, altered nutrition, anemia, increased CAD risk, osteoporosis, depression
- Comorbidities cancer, tuberculosis, CHF
- Not just the degree of airflow limitation



# Recognition

Screen the newly admitted patient for COPD and risk factors for COPD

- On admission or during the pre-admission assessment, assess the patient's respiratory status.
- Examine the patient's records for a diagnosis of COPD or for COPD risk factors.
- Review the patient's records for results of any prior tests of pulmonary function or arterial blood gases or pulse oximetry.



# What are the Risk Factors



- Current or past smoker with a 20-pack-year history of smoking, whether or not the patient complains of respiratory symptoms
- Recurrent or chronic respiratory symptoms, including cough and breathlessness on exertion
- History of significant occupational exposure to respiratory irritants
- Family history of pulmonary disease (Alpha-1 antitrypsin deficiency)
- Increased responsiveness to provocative agents (e.g., dust, air pollution, tobacco smoke)
- Childhood factors: low birth weight, frequent respiratory infections, environmental tobacco smoke



# Assess the Severity

- Typically, the disease is classified as mild, moderate or severe
- The 6-minute walk test is a reproducible, practical measure of the level of everyday impairment and exercise tolerance

## Stages of COPD

### COPD Stages I: Mild COPD

#### Stage 1

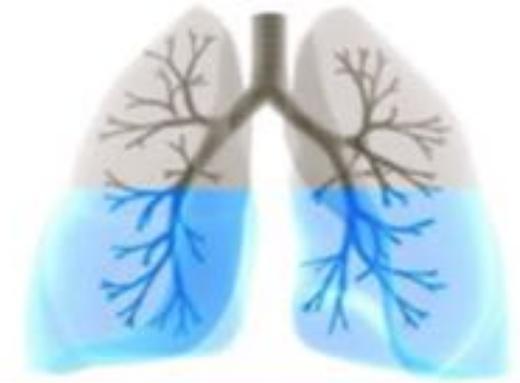
80% Normal Lung Function



### COPD Stages II: Moderate COPD

#### Stage 2

50% - 80% Normal Lung Function

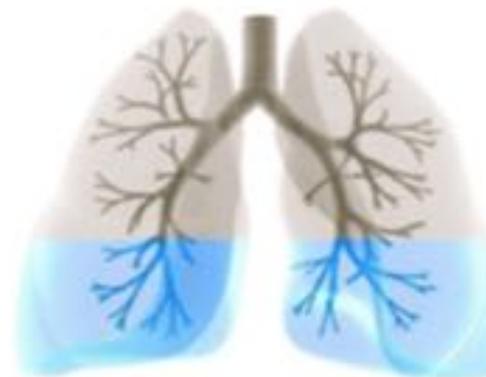


### COPD Stages III: Severe COPD

COPD Stage III typically involves severe restraint of Respiration, tininess of breath and frequently COPD exacerbations.

#### Stage 3

30% - 50% Normal Lung Function



### COPD Stages IV: Very Severe COPD

COPD Stage IV become very severe and risky, and, Thus decreases the life quality with vital COPD Exacerbations.

Lung function FEV1 levels might lower that than 30%.

#### Stage 4

Less Than 30% Normal Lung Function



# Assessment

- Assess the stability of the patient's COPD
- Assess on admission and frequently during the course of care
- Obtain Hx. of the frequency and severity of prior exacerbations and knowledge of precipitating events



COUGHING



FATIGUE



WHEEZING



SHORTNESS  
OF BREATH



# Assessment

Obtain input from all members of the interdisciplinary team

- ❑ The assessment of the patient should take into consideration the individual's physical, cognitive, emotional, and spiritual functioning, associated comorbidities, and expectations

Assess the patient's functional status

Should be done at:

- ✓ Baseline
- ✓ Annually
- ✓ Following an acute exacerbation, or when comorbid disease is present



# Summarize the patient's condition

Written summary of the patient's medical condition should:

- Describe the patient's medical conditions and stability, including control of COPD and severity of associated complications.
- Assess the impact of COPD on the patient's functioning and quality of life.
- Where relevant, provide reasons why other suspected diagnoses were not pursued (e.g., patient too frail, terminal, unwilling to undergo further interventions.)
- List applicable treatments for the patient's COPD and coexisting medical conditions. Give reasons for recommending the use or non-use of identified treatment options in this patient, considering his or her overall state of health, advance directives, and preferences.



# Treatment

Develop an individualized care plan and define treatment goals

- Treatment goals appropriate for most patients with COPD:
  - Stop cigarette smoking
  - Relieve any reversible airway obstruction
  - Control cough and secretions
  - Eliminate and prevent infection
  - Address complications (heart failure, severe hypoxemia)
  - Avoid aggravating factors (bronchial irritants, harmful medications)
  - Relieve depression and anxiety
  - Maximize exercise tolerance
  - Avoid unnecessary, disabling, or expensive therapy



# Treatment

Implement facility-wide programs and policies to encourage smoking cessation

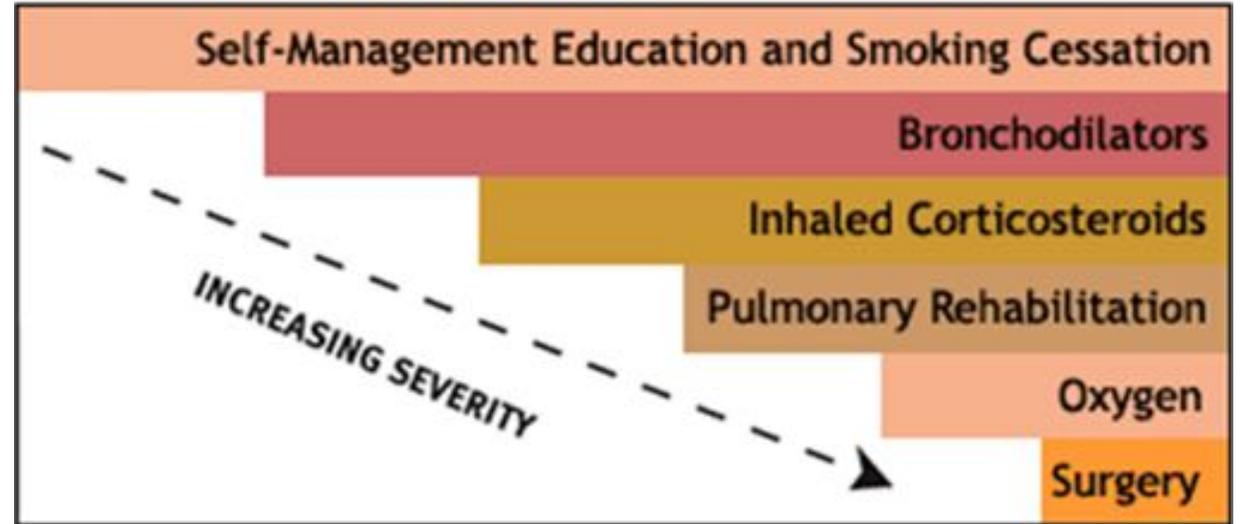
- Smoking cessation, with continued abstinence, is the single most effective way to improve outcomes for patients at all stages of COPD, from asymptomatic to severe
- Smoking cessation substantially benefits lung function, slowing the decline of FEV1



# Management of Stable COPD

- Individualize care
- Education
- Exercise (pulmonary rehabilitation)
- Medications
- No medication can modify the long-term decline of the disease (trajectory)
- Bronchodilators – Central to the management
- Corticosteroids
- Influenza and pneumococcal vaccines
- Oxygen (2-5 liters/min)

## TREATMENT OPTIONS FOR COPD



# Treatment

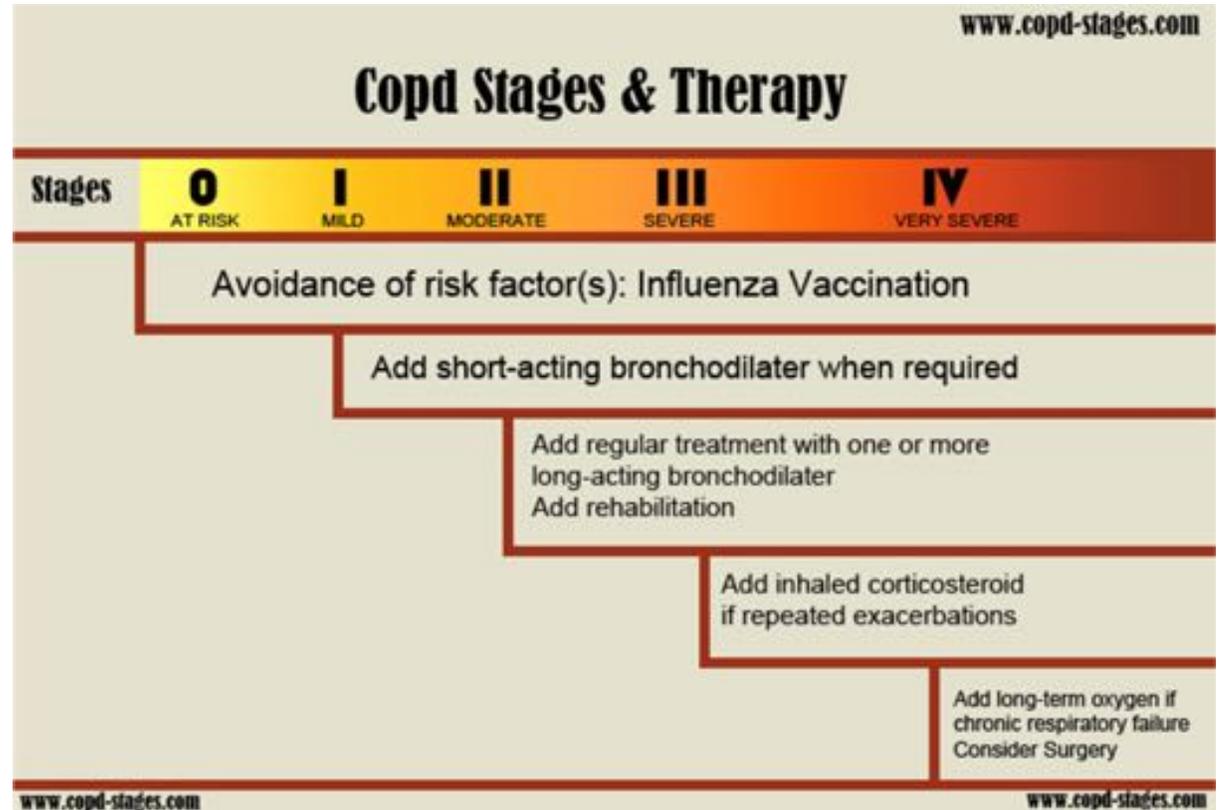
## Prescribe supplemental oxygen therapy if appropriate

- Oxygen may be administered as long-term continuous therapy, during exercise, or as needed to relieve acute dyspnea
- The primary goals of oxygen therapy are to increase baseline arterial oxygen pressure (PaO<sub>2</sub>) to at least 60 mm Hg at rest (at sea level) and/or obtain arterial oxygen saturation (SaO<sub>2</sub>) of at least 90 percent



# Treatment

- ✓ Ensure that the patient is protected against respiratory tract infections
- ✓ Patients with COPD are at risk for increased morbidity and mortality from respiratory tract infections
- ✓ Pneumococcal and influenza vaccinations, both alone and in combination, have been shown to reduce hospitalization and mortality



# Treatment

Implement appropriate pharmacologic interventions

- Goals are to:
  - prevent or control symptoms
  - reduce the frequency and severity of exacerbations
  - Improve health status
  - improve exercise tolerance

None of the existing medications for COPD have been shown conclusively to modify the long-term decline in lung function



# Inhaled Bronchodilators are KEY in the Management of COPD Symptoms

## Goals for treatment of stable COPD

- Relieve symptoms
- Improve health status
- Prevent exacerbations
- Prevent disease progression
- May be used PRN in mild cases
- Long-acting agents - more effective/convenient
- Two different agents may improve efficacy/decrease side effects
- Spacers and nebulizers are very beneficial and recommended for inhaled agents



# COPD MEDICATIONS

## Short-Acting Bronchodilators

### SAMA

Short-Acting Muscarinic Antagonist  
USE REGULARLY **4-7PM**



**Atrane<sup>®</sup> MD**  
anticholinergic agonist  
20 mcg/actuation  
Dose: 4-7 PM  
Company: B&B  
\*Water and green both outside

### SABA

Short-Acting Beta2-Agonist  
USE REGULARLY **4-7PM**  
\*WATER WASHDOWN



**Atrane<sup>®</sup> MD**  
anticholinergic agonist  
20 mcg/actuation  
Dose: 4-7 PM  
Company: B&B



**Bricanyl<sup>®</sup> Turbuhale<sup>®</sup>**  
beta2-agonist  
2.5 mcg/actuation  
Dose: 4-7 PM  
Company: B&B



**Ventolin<sup>®</sup> Diskus<sup>®</sup>**  
beta2-agonist  
20 mcg/actuation  
Dose: 4-7 PM  
Company: C&A



**Ventolin<sup>®</sup> MD**  
beta2-agonist  
20 mcg/actuation  
Dose: 4-7 PM  
Company: C&A  
\*Water and green both outside

Company key:  
A - AstraZeneca Canada Inc.  
B - Boehringer Ingelheim (Canada) Ltd.  
C - Canadian Health Inc.  
N - Novartis Pharmaceuticals Canada Inc.  
T - Teva Pharmaceuticals  
W - Watson Laboratories

Dose is also inhalation  
MDI or Metered Dose Inhaler

\*Remember drug delivery is dependent on effective use of your inhaler. For more information, visit us at [www.long.ca/inhalers](http://www.long.ca/inhalers)  
\*Product information based on [www.astrazeneca.com](http://www.astrazeneca.com)  
\*Detailed information on the drugs can be found in the Canada Product Database at [www.health-products-canada.ca/eng/medications-eng.asp](http://www.health-products-canada.ca/eng/medications-eng.asp)  
\*Additional COPD medications and their correct electronic devices available at [www.long.ca/inhalation-resistance](http://www.long.ca/inhalation-resistance)  
\*Note: always use a complete set of DPIR medication.

## Long-Acting Bronchodilators

### LAMA

Long-Acting Muscarinic Antagonist  
USE REGULARLY



**Atrane<sup>®</sup> MD**  
anticholinergic agonist  
20 mcg/actuation  
Dose: 20  
Company: B&B



**Sedre<sup>®</sup> Brexhale<sup>®</sup>**  
long-acting muscarinic antagonist  
2 mcg/actuation  
Dose: 20  
Company: B&B



**Spiriva<sup>®</sup> Handihaler<sup>®</sup>**  
long-acting muscarinic antagonist  
2 mcg/actuation  
Dose: 20  
Company: B



**Spiriva<sup>®</sup> Respimat<sup>®</sup>**  
long-acting muscarinic antagonist  
2.5 mcg/actuation  
Dose: 20  
Company: B



**Tobira<sup>®</sup> Lenoir<sup>®</sup>**  
anticholinergic agonist  
80 mcg/actuation  
Dose: 20  
Company: C

### LABA

Long-Acting Beta2-Agonist  
USE REGULARLY



**Formil<sup>®</sup> Berhale<sup>®</sup>**  
beta2-agonist  
12 mcg/actuation  
Dose: 20  
Company: B&B



**Dibrex<sup>®</sup> Brexhale<sup>®</sup>**  
beta2-agonist  
7.5 mcg/actuation  
Dose: 20  
Company: B&B



**Serevent<sup>®</sup> Diskus<sup>®</sup>**  
beta2-agonist  
20 mcg/actuation  
Dose: 20  
Company: C&A



**Dibrex<sup>®</sup> Respimat<sup>®</sup>**  
beta2-agonist  
2.5 mcg/actuation  
Dose: 20  
Company: B  
\*Spray in both directions on way of inhalation

### ICS/LABA

Inhaled Corticosteroid/Long-Acting Beta2-Agonist  
USE REGULARLY  
\*Dose and spit after each use



**Astra<sup>®</sup> Maken<sup>®</sup>**  
beta2-agonist/steroid  
1000/2500/2500 mcg/actuation  
Dose: 20  
Company: C&A  
\*Water and spit after each use



**Breez<sup>®</sup> Ellipta<sup>®</sup>**  
beta2-agonist/steroid  
1000/2500 mcg/actuation  
Dose: 20  
Company: C&A



**Symbicort<sup>®</sup> Turbuhale<sup>®</sup>**  
beta2-agonist/steroid  
1000/2500/2500 mcg/actuation  
Dose: 20  
Company: B

### Additional Medications

**Oral Corticosteroid (OCC):**  
Prednisone, Methylprednisolone, Dexamethasone, etc.

**Mucolytics:**  
e.g. Acetylcysteine, Carbocysteine, etc.

**Phosphodiesterase-4 inhibitor:**  
Roflumilast (Lumacaftor)

### SAMA and SABA

USE REGULARLY



**Combivent<sup>®</sup> Respimat<sup>®</sup>**  
beta2-agonist/anticholinergic agonist  
20/20 mcg/actuation  
Dose: 4-7 PM  
Company: B  
\*Water and spit after each use

### LAMA and LABA

USE REGULARLY



**Atrane<sup>®</sup> MD**  
anticholinergic muscarinic antagonist  
20/20 mcg/actuation  
Dose: 20  
Company: C&A



**Duoair<sup>®</sup> Lenoir<sup>®</sup>**  
beta2-agonist/anticholinergic agonist  
80/20 mcg/actuation  
Dose: 20  
Company: C



**Inspirax<sup>®</sup> Respimat<sup>®</sup>**  
beta2-agonist/anticholinergic agonist  
2.5/20 mcg/actuation  
Dose: 20  
Company: B



**Dibrex<sup>®</sup> Brexhale<sup>®</sup>**  
beta2-agonist/anticholinergic agonist  
7.5/20 mcg/actuation  
Dose: 20  
Company: B&B

# Education is Key!

- Train patients and caregivers in the proper administration of inhaled medications.
- Carefully assess the patient's response to therapy and adjust treatment accordingly.
- Tailor the medication delivery system to the patient's needs.



# Challenges When Administering Medications

- Use of inhalers
- Cognitively impaired residents
- Spacers
- Incorrect cleaning and storages of MDIs and spacers
- Communication with physicians



# Airway Clearance Devices

PEP (Positive Expiratory Pressure) devices

## Vibratory PEP

Acapella®, Flutter Valve™, Quake®

## HFCWO (High Frequency Chest Wall Oscillation)

Vest Systems

## Cough Assist®

## IPV® (Intrapulmonary Percussive Ventilation)

## Aerosol therapy to loosen thick secretions or to treat infections

Mucolytics, Hypertonic Saline, Inhaled Antibiotics

Palm Cups®, percussive vibrators

positioning beds, tables, wedges or pillows



# ACAPELLA

- Acapella combines the benefits of both PEP therapy and airway vibrations to mobilize pulmonary secretions and can be used in virtually any position allowing patients to move freely and sit, stand or recline.
- It improves clearance of secretions, is easier to tolerate than Chest Physical Therapy (CPT), takes less than half the time of conventional CPT sessions\*
- facilitates opening of airways in patients with lung diseases with secretory problems such as COPD, asthma and Cystic Fibrosis.
- Color-coded units (green for high-flow, blue for low) help customize treatment for each patient based on their clinical needs.
- Can adjust the Acapella frequency and flow resistance simply by turning an adjustment dial.



acapella choice

acapella DH



acapella DM

- Moves secretions in patients with Cystic fibrosis & chronic bronchitis
- Prevent or reverse atelectasis
- Reduces air trapping in patients with asthma or COPD
- Optimizes delivery of bronchodilators

The image displays three Acapella nebulizer units: a green one labeled "acapella choice", a blue one labeled "acapella DM", and a green one labeled "acapella DH". A central photograph shows a patient in a hospital bed using the "acapella DH" device. A list of clinical benefits is provided to the right of the patient image.

# Trilogy 100

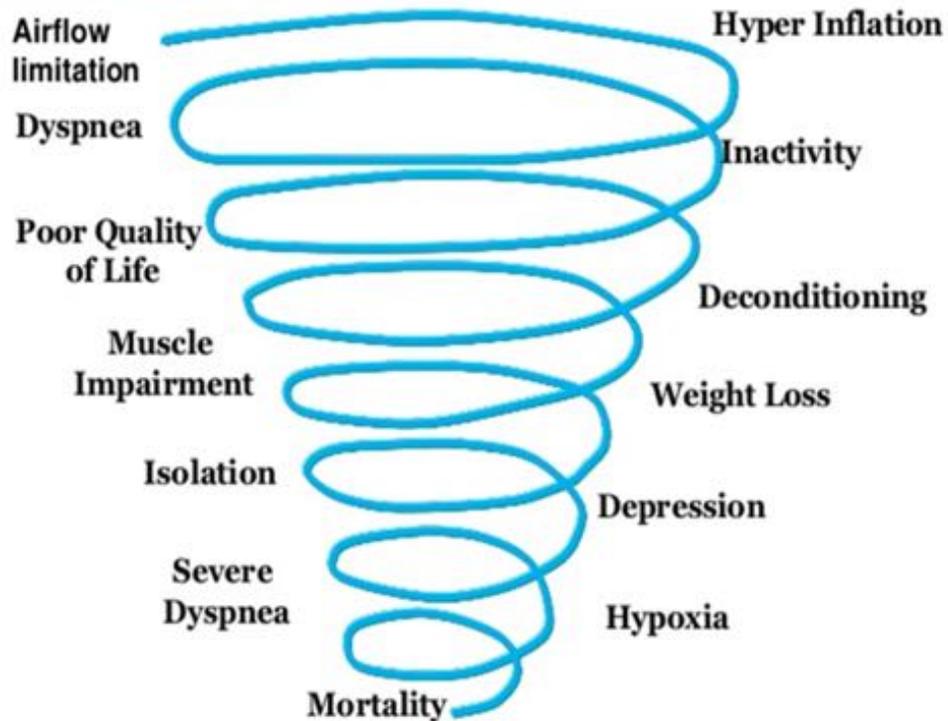


# CPAP & BiPAP



# Treatment

## “ The Downward Spiral ”



- Treat acute exacerbations of COPD promptly
- Recognize and report the acute exacerbation
- Implement initial treatment of the acute exacerbation, assess the severity of the episode, and contact the practitioner
- Initiate treatment
- Decide whether the patient with an acute exacerbation of COPD should be hospitalized
- When the acute exacerbation resolves, taper or discontinue medications prescribed to treat it



# Prevention of COPD Symptoms

The characteristic symptoms of COPD are chronic and progressive dyspnea, cough, and sputum production that can be variable from day-to-day.

- Dyspnea: Progressive, persistent and characteristically worse with exercise.
- Chronic cough: May be intermittent and may be unproductive.
- Chronic sputum production: COPD patients commonly cough up sputum.



# Acute Exacerbations Risk Factors

- Active or passive smoking
- Adverse drug effect (sedatives, hypnotics, beta-blockers, etc.)
- Delayed diagnosis of COPD
- Diabetes mellitus
- Electrolyte disturbances
- Episode of CHF
- Exposure to air pollution
- Failure to use oxygen therapy
- Inappropriate use of bronchodilators
- Mouth infections, lack of dental care
- Pneumonia
- Pulmonary thromboembolism
- Recurrent gastroesophageal reflux
- Renal failure
- Viral or bacterial respiratory tract infection



# Signs and Symptoms of an Acute Exacerbation

Change from baseline in

- breath sounds
- cognitive status
- sputum color
- sputum production

Increase from baseline in

- anxiety
- heart rate
- respiratory rate
- shortness of breath
- wheezing

- Delirium
- Lethargy



# Managing Acute COPD Exacerbations

- The most common causes of COPD exacerbations are viral upper respiratory tract infections and infection of the tracheobronchial tree.
- Diagnosis relies exclusively on the clinical presentation of the patient complaining of an acute change of symptoms that is beyond normal day-to-day variation.
- The goal of treatment is to minimize the impact of the current exacerbation and to prevent the development of subsequent exacerbations.
- Short-acting inhaled beta2-agonists with or without short-acting anticholinergics are usually the preferred bronchodilators for treatment of an exacerbation.
- Systemic corticosteroids and antibiotics can shorten recovery time, improve lung function (FEV1) and arterial hypoxemia (PaO<sub>2</sub>), and reduce the risk of early relapse, treatment failure, and length of hospital stay.
- COPD exacerbations can often be prevented.



# Treatment

- When the acute exacerbation resolves taper or discontinue medications prescribed to treat it
- Intervene as appropriate to minimize comorbidities and complications
- Determine when the patient's condition should be considered end-stage



# Manage Comorbidities

- Cardiovascular disease (including ischemic heart disease, heart failure, atrial fibrillation, and hypertension) is a major comorbidity in COPD and probably both the most frequent and most important disease coexisting with COPD.
- Osteoporosis and anxiety/depression: often underdiagnosed and associated with poor health status and prognosis.
- Lung cancer: frequent in patients with COPD; the most frequent cause of death in patients with mild COPD.
- Serious infections: respiratory infections are especially frequent.
- Metabolic syndrome and manifest diabetes: more frequent in COPD and the latter is likely to impact on prognosis.



# Indicators for Palliative or Hospice Care in Pulmonary Disease

- Disabling shortness of breath at rest
- Progressive respiratory decline
- Increased emergency room visits or hospitalizations
- Low oxygenation at rest (PaO<sub>2</sub> <55 mm Hg or SaO<sub>2</sub> <88%)
- Progressive weight loss greater than 10% in last 6 months
- Resting heart rate >100 beats/minute



**COPD Final Stage**

# Resident Care Planning

- The care plan should be individualized, but may include the following:
  - Education of resident and family
  - Stop cigarette smoking and avoid aggravating factors
  - Reduce symptoms and complications associated with COPD
  - Maximize exercise tolerance
  - Reduce acute exacerbations
  - Prevent and treat any infections
  - Use evidence-based treatment options to optimize drug therapy
  - Avoid or minimize therapy-related adverse events

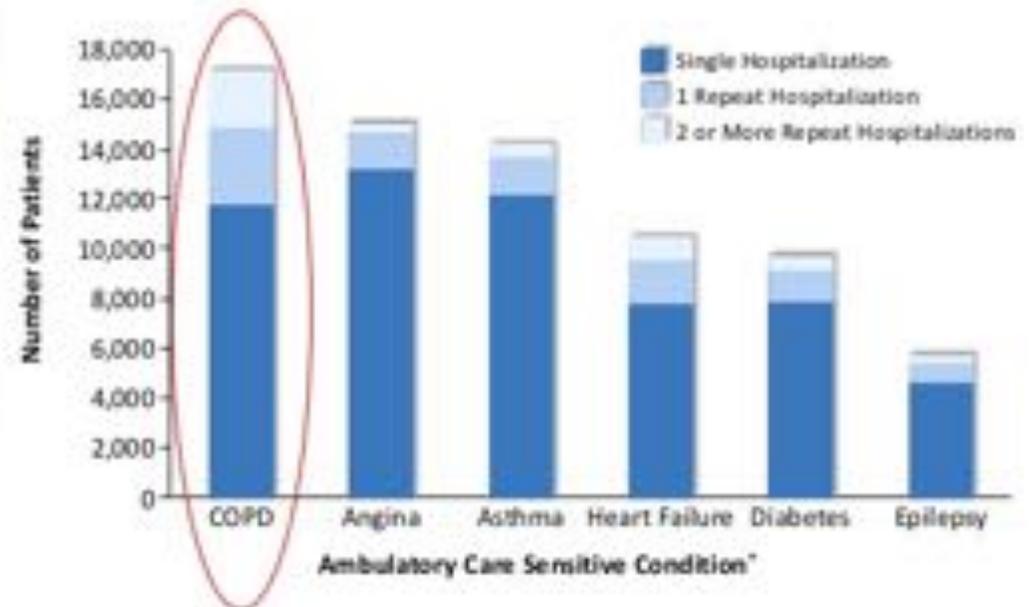


**Table 1 Discharge Criteria for COPD**

- Able to use long-acting bronchodilators, either beta2-agonists and anticholinergics with or without inhaled corticosteroids.
- Inhaled short-acting beta2-agonist therapy is required no more frequently than every 4 hours.
- Patient, if previously ambulatory, is able to walk across room.
- Patient is able to eat and sleep without frequent awakening by dyspnea.
- Patient has been clinically stable for 12-24 hours.
- Patient (or home caregiver) fully understands correct use of medications.
- Follow-up and home care arrangements have been completed (eg, visiting nurse, oxygen delivery, meal provisions).
- Patient, family, and physician are confident that the patient can manage successfully at home.
- Consider pulmonary rehabilitation.

Source: Adapted from: Global Initiative for Chronic Obstructive Lung Disease (GOLD) Executive Summary. Updated 2013. Available at: [www.goldcopd.org/uploads/users/files/GOLD\\_Report\\_2013\\_Feb20.pdf](http://www.goldcopd.org/uploads/users/files/GOLD_Report_2013_Feb20.pdf).

## COPD: The Leading Cause of Hospital Admissions Today



\*An ambulatory care sensitive condition is a condition that is normally manageable on an outpatient basis. Data are for the Canadian population, including Quebec. Canadian Institute for Health Information. Health Indicators 2008. Ottawa: CPHI; 2008.





# WOMEN AND COPD

COPD, or Chronic Obstructive Pulmonary Disease, is an umbrella term used to describe progressive lung diseases including emphysema, chronic bronchitis, refractory (non-reversible) asthma, and some forms of bronchiectasis. This disease is characterized by increasing breathlessness.

## COPD MORTALITY MEN vs WOMEN



## COPD RELATED HOSPITALIZATIONS

There were **1.4 MILLION** Emergency Room Visits



WOMEN ARE 2X LIKELY TO BE DIAGNOSED WITH CHRONIC BRONCHITIS THAN MEN



WOMEN WHO SMOKE ARE **13X** AS LIKELY TO DIE FROM COPD

### SYMPTOMS

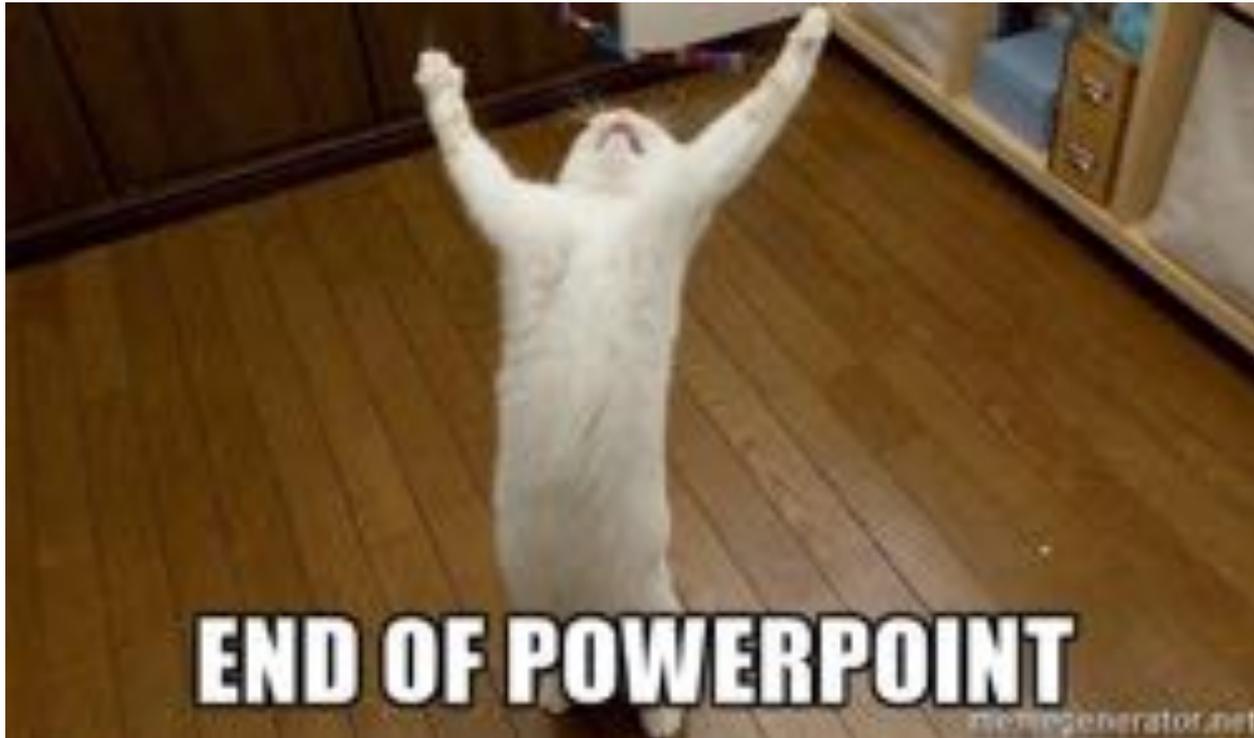
- SHORTNESS OF BREATH
- CHRONIC COUGH
- CHEST TIGHTNESS
- FATIGUE
- MUCUS

**6%** OF U.S. WOMEN HAVE COPD vs 4% OF MEN





Questions?  
Thank You!



Jessica Denney

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