Objectives

- Define Chronic Obstructive Disease (COPD)
- Diagnosis of COPD
- Review recommended therapies for COPD.
- Teach-Back
- OSA and its impact.
I want to interact with you... Please type in your questions and/or comments on the chat feature.
What was the top 8 leading causes of death in the US in 2016?
Leading causes of death in the US in 2016:

- Heart disease: 633,842.
- Cancer: 595,930.
- Chronic lower respiratory diseases: 155,041.
- (#3-4 debatable)
- Accidents (unintentional injuries): 146,571.
- Stroke (cerebrovascular diseases): 140,323.
- Influenza and Pneumonia: 57,062.
- [https://www.cdc.gov/nchs/fastats/deaths.htm](https://www.cdc.gov/nchs/fastats/deaths.htm)
Definition of COPD

- Chronic obstructive pulmonary disease (COPD) is a chronic inflammatory lung disease that causes obstructed airflow from the lungs. Symptoms include breathing difficulty, cough, mucus (sputum) production and wheezing. It's caused by long-term exposure to irritating gases or particulate matter, most often from cigarette smoke.

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What Disease states are classified as COPD?

- Chronic Bronchitis
- Bronchiectasis
- Cystic Fibrosis
- Emphysema

****COPD is NOT reversible****
Diagnosis
Diagnosis of COPD

- Symptoms:
  - Dyspnea, Chronic Cough, Chronic Sputum production, history of exposure, family history of COPD
  - Spirometry is required for diagnosis of COPD

GOLD 2015
# Classification of Airway Limitation

In patients with FEV1/FVC < 0.70

<table>
<thead>
<tr>
<th>COPD Stage</th>
<th>FEV₁*</th>
<th>Exacerbations /yr</th>
<th>Hospitalizations /yr</th>
<th>3-yr mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>GOLD 1, Mild</td>
<td>≥ 80%</td>
<td>Unknown</td>
<td>Unknown</td>
<td>Unknown</td>
</tr>
<tr>
<td>GOLD 2, Moderate</td>
<td>50-79%</td>
<td>0.7-0.9</td>
<td>0.11-0.2</td>
<td>11%</td>
</tr>
<tr>
<td>GOLD 3, Severe</td>
<td>30-50%</td>
<td>1.1-1.3</td>
<td>0.25-0.3</td>
<td>15%</td>
</tr>
<tr>
<td>GOLD 4, Very Severe</td>
<td>&lt;30%</td>
<td>1.2-2.0</td>
<td>0.4-0.54</td>
<td>24%</td>
</tr>
</tbody>
</table>

Post bronchodilator measurement

Treatment for COPD
Figure 2.3. Assessment Using Symptoms, Breathlessness, Spirometric Classification and Risk of Exacerbations

Adjunct Therapies:
- Theophylline
- PDE4-inhibitor
- Steroids
# Non-pharmacologic Interventions

<table>
<thead>
<tr>
<th>COPD Assessment</th>
<th>Essential</th>
<th>Recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group A</td>
<td>Smoking Cessation ± pharmacologic assistance</td>
<td>Physical Activity Yearly Influenza Vaccine Pneumococcal Vaccine</td>
</tr>
<tr>
<td>Group B - D</td>
<td>Smoking Cessation ± pharmacologic assistance Pulmonary Rehab</td>
<td></td>
</tr>
</tbody>
</table>

Very Severe COPD therapy options:
- Oxygen therapy (>15 hours/day)
- Surgical Interventions
COPD Medications

Maintenance meds

- Long-acting beta$_2$-agonists
  - LABA
- Long-acting anticholinergics
- Inhaled Corticosteroids
  - ICS

- Combo: LABA+ICS
- Methylxanthines (theophylline)
- Systemic Steroids
- PDE4-inhibitor (roflumilast)
Rescue meds

As needed or “Rescue”

- Short-acting beta\_2-agonists
  - SABA
- Short-acting anticholinergic
- Combo: SABA + SA-Anticholinergic
**Respiratory Inhalers At a Glance 2016**

**Short-acting beta-agonist bronchodilators** relax tight muscles in airways and offer quick relief of symptoms such as coughing, wheezing and shortness of breath for 3–6 hours.

<table>
<thead>
<tr>
<th>ProAir® HFA</th>
<th>ProAir® RespicerClick</th>
<th>Proventil® HFA</th>
<th>Ventolin® HFA</th>
<th>Xopenex HFA</th>
</tr>
</thead>
<tbody>
<tr>
<td>albuterol</td>
<td>albuterol succinate</td>
<td>albuterol</td>
<td>levalbuterol</td>
<td>levalbuterol tartrate</td>
</tr>
<tr>
<td>succinate</td>
<td>succinate</td>
<td>succinate</td>
<td>succinate</td>
<td>succinate</td>
</tr>
</tbody>
</table>

**Long-acting beta-agonist bronchodilators** relax tight muscles in airways and offer lasting relief of symptoms such as coughing, wheezing and shortness of breath for at least 12 hours.

<table>
<thead>
<tr>
<th>Arcapta® Neohaler</th>
<th>Serve® Diskus</th>
<th>Strivler® Respinat</th>
</tr>
</thead>
<tbody>
<tr>
<td>indacaterol</td>
<td>salmeterol</td>
<td>cilomilast</td>
</tr>
<tr>
<td>HFA inhalation powder</td>
<td>tinosulfate inhalation powder</td>
<td>hydrochloride</td>
</tr>
</tbody>
</table>

**Inhaled corticosteroids** reduce and prevent swelling of airway tissue; they do not relieve sudden symptoms of coughing, wheezing or shortness of breath.

<table>
<thead>
<tr>
<th>Aerospan®</th>
<th>Alvesco® HFA</th>
<th>Arnuvi® Ellipta®</th>
<th>Asmanex® HFA</th>
<th>Asmanex® Twishtaler®</th>
<th>Flovent® Diskus®</th>
<th>Flovent® HFA</th>
<th>Pulmicort Flexhaler®</th>
<th>QVAR® (HFA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>80 mcg flunisolide</td>
<td>60 mcg, 160 mcg fluticasone furoate inhalation powder</td>
<td>100 mcg, 200 mcg fluticasone furoate inhalation powder</td>
<td>mometasone furoate inhalation powder</td>
<td>50 mcg, 100 mcg, 250 mcg fluticasone furoate inhalation powder</td>
<td>44 mcg, 119 mcg, 220 mcg fluticasone propionate inhalation powder</td>
<td>90 mcg, 180 mcg budesonide inhalation powder</td>
<td>40 mcg, 80 mcg beclomethasone dipropionate</td>
<td></td>
</tr>
</tbody>
</table>

**Combination medications** contain both inhaled corticosteroid and long-acting beta-agonist (LABA).

<table>
<thead>
<tr>
<th>Advair Diskus®</th>
<th>Advair® HFA</th>
<th>Breo® Ellipta®</th>
<th>Dulera® (HFA)</th>
<th>Symbicort® (HFA)</th>
<th>Anoro® Ellipta®</th>
<th>Stiolto Respimat®</th>
<th>Utibron® Noohaler®</th>
</tr>
</thead>
<tbody>
<tr>
<td>100/50, 250/50, 500/50 fluticasone propionate and salmeterol xinafloate</td>
<td>45/21, 115/21, 239/21 fluticasone propionate and salmeterol xinafloate</td>
<td>100/25, 200/25 fluticasone furoate and vilanterol inhalation powder</td>
<td>104/5, 160/4.5 budesonide and formoterol fumarate inhalation powder</td>
<td>umeclidinium and vilanterol inhalation powder</td>
<td>umeclidinium and vilanterol fumarate inhalation powder</td>
<td>glycocorionate and indacaterol inhalation powder</td>
<td></td>
</tr>
</tbody>
</table>

**Muscarnic antagonist (anticholinergic) bronchodilators** relieve cough, sputum production, wheeze and chest tightness associated with chronic lung diseases.

<table>
<thead>
<tr>
<th>Atrovent® HFA</th>
<th>Incruse® Ellipta®</th>
<th>Spiriva® HandiHaler®</th>
<th>Spiriva® Respimat®</th>
<th>Tudorza® Pressair®</th>
<th>Combivent® Respimat®</th>
</tr>
</thead>
<tbody>
<tr>
<td>ipratropium bromide</td>
<td>ipratropium bromide and vilanterol</td>
<td>ipratropium bromide inhalation powder</td>
<td>25/75, 75 mcg ipratropium bromide</td>
<td>ipratropium bromide and indacaterol</td>
<td>ipratropium bromide and albuterol</td>
</tr>
</tbody>
</table>

**Combination** anticholinesterase and beta-agonist.

**Short-acting**
Use of Valved Holding Chambers

- Unless you’ve got the reflexes of a NASCAR driver or compulsive video gamer, catching that fleeting premeasured dose in a slow, deep inhalation is almost impossible.
Why is it important to use a spacer or valved holding chamber with your inhaler?

- **Helps reduce the risk of inhaler side effects**\(^1, 2, 3, 4, 5, 6, 7\). Aerosol medicine comes out of the inhaler very quickly so it is often very difficult to use an inhaler correctly because the canister needs to be pressed at the same time as you breathe in\(^8, 9\)

- **Enhances your treatment**. Medicine often ends up in your mouth, throat and stomach when using an inhaler on its own. A valved holding chamber may improve drug delivery to the lungs where it is needed by as much as up to 4 times\(^10\)
Why does the hospital change the patient’s meds while they are in the hospital??
Answer for Previous Slide:

- GOLD Standards
- Patient affordability
- Patient ability to inhale meds
- Patient’s cognitive ability to do the prescribed meds.
In-check Dial

The DIAL can be adjusted to accurately simulate the resistance of popular inhaler devices which include MDI’s and DPI’s such as Turbuhaler®, Flexhaler®, Twisthaler®, Aerolizer®, Handihaler® and Diskus® among others. The In Check DIAL enables clinicians to train patients to the proper inspiratory technique considering force and flow rate to achieve optimal deposition of the medication being inhaled into the lungs.

2015
Alliance Tech Medical, Inc
Teach Back

“The main problem with communication is the assumption that it has occurred.”

George Bernard Shaw
Health Literacy Strategies

- Are you speaking clearly and listening carefully?
- Is the information appropriate for the user?
- Is the information easy to use?
- Use a medically trained interpreter for language barriers
- Adapt for learning ability
- Check for understanding frequently
Oxygen Therapy

- It is important that the patients understand the significance of leaving their Oxygen on the prescribed amount due to the potential for CO2 retention and hypoxia.
- Oxygen is a drug and is prescribed in precise dosing.
Obstructive Sleep Apnea
Consequences of diseases associated with OSA

- Diabetes
- High Blood Pressure
- Heart Attack
- Heart Failure/Enlarged Heart
- Pulmonary Hypertension
- Irregular Heart Beats
- Cardiac Death
Continued Consequences

- Stroke
- Auto Accidents
- Memory Deficits
- Impaired Concentration
- Depression

“Divorce” 😊
Clinical Intelligence 30 Day Condition Specific Readmission for COPD 2016 & 2017

<table>
<thead>
<tr>
<th>COPD</th>
<th>Total Readmissions</th>
<th>COPD Readmissions</th>
<th>% Readmissions</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>440</td>
<td>65</td>
<td>14.77%</td>
</tr>
<tr>
<td>2017</td>
<td>449</td>
<td>50</td>
<td>11.14%</td>
</tr>
</tbody>
</table>

On closer inspection many readmissions were coded as COPD when patients did not have a PFT on file, PFT showed Restrictive Lungs Disease, the patient had never had a COPD diagnosis (even had a 2 year old was coded under COPD readmissions)
Reducing COPD readmissions is not the sole responsibility of inpatient care providers. To be successful, it must involve all providers across the entire continuum of care — from the hospital to the home. Furthermore, efforts must be patient-centric; and sustained patient engagement is vital for continued success. For these reasons, follow-up care and continued education on the fundamentals of COPD and continued adherence with evidence-based maintenance therapy must be provided and encouraged by home care RTs, personnel in skilled nursing and residential care facilities, and all clinic staff."
You are walking through the waiting room of your clinic and you see a 70 year old male patient that has a barrel chest, who is bent over trying to get his breath. What is his most probable diagnosis?

How would you confirm this diagnosis?

How would you treat him immediately? And long term?
Case Scenario #2

You are at your child’s baseball game and the 35 year old mom sitting beside you tells you that she is having increased shortness of breath (SOB) with exertion. She is smoking a cigarette as she talks to you.

Does she have COPD?

What more information would you need to determine her diagnosis?
You are instructing a patient in the clinic to do his Ventolin Inhaler PRN as the doctor has ordered. He tells you that it probably won’t work, so he is not going to fill the prescription. What should you do?
Questions??

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  charlene.raley@avera.org
  605-322-8612
References

- **GOLD 2015**


