Learning Objectives

1. Define the diagnostic criteria for COPD.
2. Classify patients with COPD into groups using the 2023 GOLD guidelines.
3. Based on GOLD group, identify initial and step-up inhaler therapy for patients with COPD.
4. Categorize benefits of non-pharmacologic therapies for COPD.
5. Employ an evidence-based approach to identifying and treating COPD exacerbations.

Teaching Guide:

Plan to spend at least 20 minutes preparing for this talk by using the interactive board for learning/preparing, clicking through the graphic, and becoming familiar with the order of the content that appears on the graphic. The teaching script below details how to walk through the talk. Every interactive or “clickable” element is denoted with a rounded box and cursor icon.

Anticipated time to deliver the talk with and without cases or other features: without cases 20-25 minutes. The cases may take an additional 10-15 min.

The talk can be presented in two ways:

1. Project the “interactive Board for Presentation” OR

2. Reproduce your own drawing of the presentation on a whiteboard.

With either method, print out copies of the Learner’s Summary Handout so they may have this for reference after the discussion.

**Objective 1: Define the diagnostic criteria for COPD.**

Ask the group: “What are three criteria for diagnosing COPD?”

Click through the “Criteria for Diagnosis” on the left half of the slide to highlight the common risk factors for COPD (age, tobacco use, other environmental exposures), the most common symptoms (chronic, progressive, productive cough and dyspnea), and the key diagnostic testing (spirometry).

*BONUS*: There is no absolute threshold for the duration of smoking that will result in COPD. In the absence of other environmental/genetic factors, <10-15 pack-years of smoking is generally unlikely to result in COPD. On the other hand, 40 pack-year smoking history is a good predictor of who will have airflow obstruction on spirometry.

Progress through the spirometry portion at the bottom of the slide. Ask learners what findings on spirometry are diagnostic of COPD (answer: post-bronchodilator measurement of FEV1/FVC <70). Point out other features on PFTs that support a diagnosis of COPD:

* Increased TLC, decreased RV – related to air trapping
* Decreased DLCO – related to parenchymal changes with emphysema
* Scooped flow-volume curve – related to airway obstruction
* Note that the decrement in post-bronchodilator FEV1 is used to classify severity.

*BONUS*: GOLD defines COPD in an international context and attempts to have diagnostic criteria that apply in both resource-rich and resource-poor settings. There is increasing debate over how best to use PFTs and imaging to characterize COPD, partly because spirometry does not always correlate well to clinical symptoms. However, some studies suggest CT findings do correlate with symptoms and pulmonary function (1, 2). Some argue that CT imaging should be used to help identify early COPD in patients that may have normal spirometry and not otherwise qualify for treatment.

Now, click through “initial evaluation” to highlight the additional history-taking and testing recommended for those with suspected or diagnosed COPD.

* Aside from tobacco use history, ask about other possible environmental exposures: smoke in the home growing up, occupational exposures to dusts, chemical agents, fumes, use of cigars or THC, history of severe childhood respiratory infections.
* Alpha-1 antitypsin testing is recommended once in all patients with COPD, but especially if young <45 or panlobular basal emphysema (or suggestive family history).
* CXR is not necessary or particularly useful to diagnose COPD but may exclude other diagnoses. CT scan is advised with severe decrease in FEV1, symptoms out of proportion to lung function on spirometry, or those with need for lung cancer screening.

**Objective 2: Categorize patients with COPD using the 2023 GOLD guidelines.**

This slide highlights a change in the system used to classify patients with COPD (from GOLD 2023). First, click on the mMRC and CAT buttons to show these two scales of symptom severity. These can be used as a reference for the rest of the slide.

Then, click to reveal and define the new categories of COPD: Group A, Group B, and Group E.

This new classification focuses on whether a patient is prone to exacerbations (which changes management recommendations, in particular related to the use of an inhaled corticosteroid or ICS).

**Objective 3: Based on GOLD group, identify initial and step-up inhaler therapy for patients with COPD.**

Click on Group A to show that LAMA or LABA are now recommended as first-line therapy (rather than short-acting bronchodilators) except in those patients with very rare symptoms. Continue to click through to show that a LABA-LAMA is recommended if dyspnea persists.

* If persistent dyspnea while taking LABA-LAMA, consider pulm referral for additional therapies.
* If exacerbations are an ongoing issue, next step is again a LABA-LAMA, and then consider adding ICS for patients whose eosinophil count is above 100.

Continue to click through for Groups B and E. Highlight that LABA-LAMA is first-line therapy for BOTH groups B and E, but ICS is generally only added in patients with exacerbations and serum eos >100. Emphasize that, if frequent pneumonias occur while taking an ICS, guidelines recommend de-escalating back to a LABA-LAMA.

Finally, note that LABA-ICS combination inhalers – though still used quite commonly – do not have a clear place in this schema.

A few additional notes on inhalers:

* LABA is helpful for symptom reduction but less helpful for exacerbations. LAMA > LABA for reducing exacerbations.
* ICS helps reduce exacerbations if elevated eosinophils, but comes with risks (specifically pneumonia).
* Reminder learners that inhaler efficacy relies on excellent inhaler teaching and adherence to therapy!

**Objective 4: Categorize benefits of non-pharmacologic therapies for COPD.**

Click through the “efficacy” slide, which explains the benefits (or lack thereof) of different non-pharmacologic COPD therapies. Smoking cessation is key in COPD management. It offers benefits for all domains targeted with COPD therapy. Supplemental oxygen in patients with resting hypoxemia, defined as PaO2 of <88% or PaO2 <55mmhg, provides reduced symptom burden and can slow the progression of the disease. Note that pulmonary rehabilitation primarily benefits patients’ symptoms and exacerbation rate. CT lung cancer screening for eligible smokers or former smokers reduces mortality. Finally, vaccination for pneumonia, influenza, and likely COVID19 (data is preliminary) provide mortality benefits for patients with COPD. Note that this data was primarily collected prior to advancement in therapies for COPD.

**Objective 5: Employ an evidence-based approach to identifying and treating COPD exacerbations.**

Click on “acute exacerbation,” asking learners about the 3 cardinal signs used to identify a COPD exacerbation. Continue to click through the slide, which focuses on outpatient management of an exacerbation (e.g does not discuss interventions like positive pressure ventilation). Note that antibiotic selection should be based on local resistance patterns, and 5 days is typically sufficient duration of treatment for both antibiotics and steroids.