Chronic Obstructive Pulmonary Disease (COPD)

The purpose of this summary is to provide a consolidated description of the guidelines on COPD. This is not a complete summary. For the full guidelines, please read the full articles below:

Yawn, B. P., Mintz, M. L., & Doherty, D. E. (2021). *GOLD in practice: chronic obstructive pulmonary disease treatment and management in the primary care setting*. International journal of chronic obstructive pulmonary disease, 16, 289.

COPD is a common, preventable, and treatable disease characterized by persistent respiratory symptoms and limitations to airflow due to abnormalities within the airway and/or alveolar. Common symptoms are chronic or progressive dyspnea, cough with sputum production, and recurrent lower respiratory tract infections. Exposure to cigarettes, occupational exposures, or air pollution, genetics, socioeconomic status, and airway hyperreactivity are all factors that increase patients risk for COPD.

Diagnosis

Spirometry and history lead to a COPD diagnosis. Spirometry will give you the Forced Vital Capacity (FEV) and Forced Expiratory Volume (FEV1)

Spirometry results suggestive for diagnosis:

- Post-bronchodilator FEV1/FVC **<0.7**

History suggestive of COPD

- Smoking status, occupational or environmental factors
- Common symptoms of dyspnea, cough, sputum production, wheezing, and chest tightness

GOLD Classification of Severity in COPD (Post-Bronchodilator FEV1)
Patients with FEV1/FVC <0.7

GOLD 1	Mild	FEV1 ≥ 80% predicted
GOLD 2	Moderate	50% ≤ FEV1 < 80% predicted
GOLD 3	Severe	30% ≤ FEV1 < 50% predicted
GOLD 4	Very severe	FEV1 < 30% predicted

Management

First, using spirometry both COPD is diagnosed and severity of airflow is confirmed. However, management is based on the history of exacerbations and the severity of symptoms.

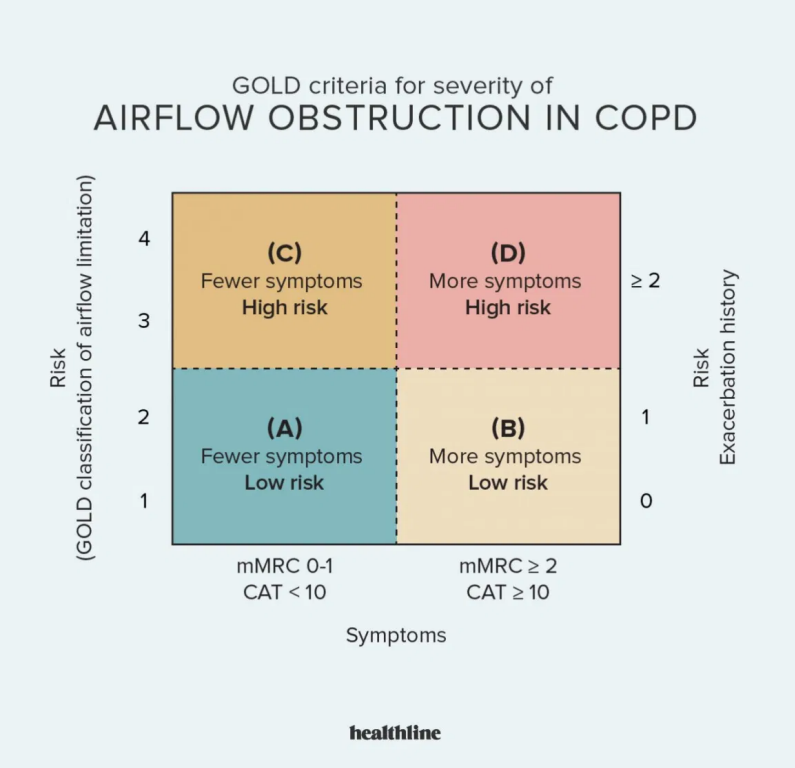
Severity of symptoms is determined by:

- Modified British Medical Research Council (mMRC) Questionnaire. Scored 0 (breathlessness only with strenuous exercise) to 4 (breathlessness that affects activities of daily living as well as the ability to leave the house)
- COPD Assessment Test (CAT). Scored 0 to 40. Higher score = higher impact on patient's life

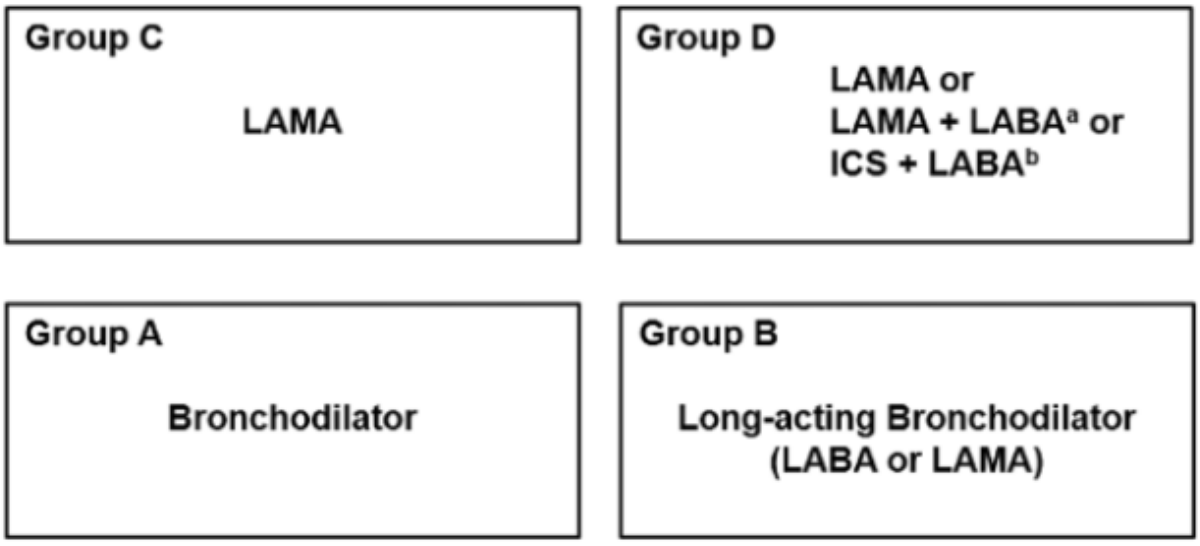
History of Exacerbations: both treated at home and in the hospital

- 0-1 = Low-risk
- ≥ 2 = high-risk *

* Or 1 that leads to hospitalization also considered high risk



Management decisions made after classification in A through D. All patients should recieve a rescure short-acting bronchodilator

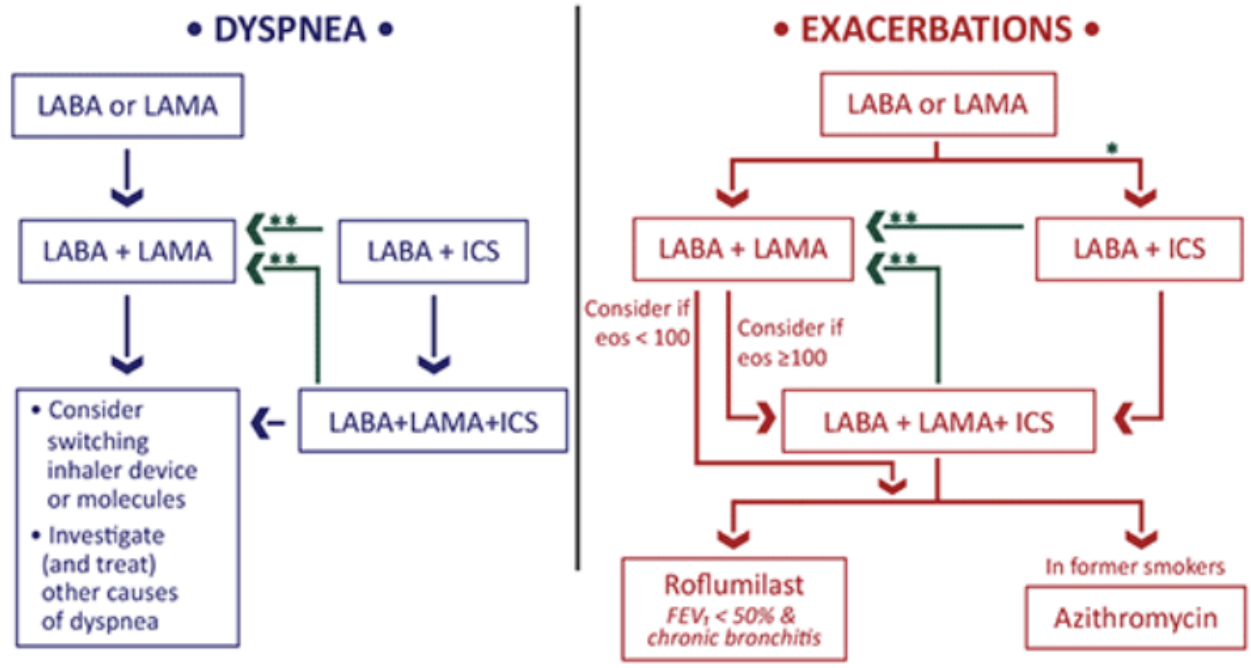


Group A: Treat with either a short- or long-acting bronchodilator.
Group B: Treat with Long-acting bronchodilator, either a long-acting beta2-agonist (LABA) or a long-acting muscarinic antagonist (LAMA)
Group C: Treat with a LAMA
Group D: Treat with a LAMA OR LAMA + LABA OR inhaled corticosteroid + LABA

COPD Management if Response to Initial Treatment is not Adequate

Exacerbations are defined as an acute worsening of respiratory symptoms that results in additional therapy If the initial response is not adequate, target predominant treatable trait (if both dyspnea and exacerbation, follow exacerbation pathway).

Most commonly, respiratory infections lead to exacerbations.



eos = eosinophils
* Consider if eos > 100 AND ≥2 moderate exacerbations / 1 hospitalization
** consider de-escalation of ICS or switch if pneumonia, inappropriate initial indication or lack of response to ICS

Diagnostic Testing to Obtain in Severe Exacerbations:

- Sp02
- ABG
- Chest X-ray
- CBC, CMP, Troponin, BNP
- Influenza and COVID swabs
- ECG

Mangmenent in the Emergency Deaprtment or Office

If hypoxic: provide oxygen → goal of SpO2 of 88-92% OR PaO2 of 60 to 70mmHg
Inhaled short-acting beta agonist (Albuterol) and muscarinic antagonist (Ipratropium)
Consider Steroid therapy: IV methylprednisolole OR oral prednisone
Consider Antibiotic therpay (if appropriate):

- No Pseudomonas risk factor(s): Ceftriaxone 1 to 2 grams IV, or cefotaxime 1 to 2 grams IV, or levofloxacin 500 mg IV or orally, or moxifloxacin 400 mg IV or orally
- Pseudomonas risk factor(s): Piperacillin-tazobactam 4.5 grams IV, or cefepime 2 grams IV, or ceftazidime 2 grams IV

Consider subcutaneous heparin or low molecular weight heparin for thromboebolism prophylaxis
Antiviral therapy for flu or COVID
Non-Invasive positive pressure

Intubation

Home vs Admission

80% of exacerbations can be managed from home.

Criteria for admission:

- Inadequate response to outpatient or emergency department management
- Onset of new signs (eg, cyanosis, altered mental status, peripheral edema)
- Marked increase in intensity of symptoms over baseline (eg, new onset resting dyspnea) accompanied by increased oxygen requirement or signs of respiratory distress
- Severe underlying COPD (eg, forced expiratory volume in one second [FEV1] ≤50 percent of predicted)
- History of frequent exacerbations or prior hospitalization for exacerbations
- Serious comorbidities including pneumonia, cardiac arrhythmia, heart failure, diabetes mellitus, renal failure, or liver failure
- Frailty
- Insufficient home support

KEY POINTS FOR THE MANAGEMENT OF EXACERBATIONS

- Short-acting inhaled beta-agonist with or without short-acting anticholinergics are recommended as the initial bronchodilators for exacerbations (C)
- Systemic corticosteroids for 5-7 days can improve FEV1, oxygenation and shorten recovery time and hospitalizations (A)
- Antibiotics for 5-7 days, when appropriate, can shorten recovery time, reduce the risk of relapse, treatment failure, and hospitalization (B)
- Non-invasive mechaincal ventilation should be the first mode of ventilation in COPD patients in respiratory failure who have no contraindications (A)