Pharmacotherapy for COPD

Based on the 2024 Global Initiative for Chronic Lung Disease (GOLD) Report

Reference: Global Initiative for Chronic Obstructive Lung Disease. Global Strategy for the Diagnosis, Management, and Prevention of Chronic Obstructive Pulmonary Disease (2024 Report). https://goldcopd.org/2024-gold-report/.

COPD Treatment Goals

Stable COPD

- **Improve:** symptoms, exercise tolerance, health
- **Reduce risks of:** disease progression, exacerbations, death

COPD Exacerbations

- **Minimize** the effects of the exacerbation
- **Prevent** future exacerbations

Initiation of Pharmacotherapy in Stable COPD

Select initial pharmacotherapy based upon current symptoms and exacerbations history

Exacerbations

≥ 2 moderate exacerbations OR ≥1 resulting in hospital admission

E

LABA + LAMA

- If eos ≥ 300, consider LABA + LAMA + **ICS**
- Consider single-inhaler options for patient convenience

≤ 1 moderate exacerbations not resulting in hospital admission

A

Bronchodilator
Either long- or short-acting

LABA, LAMA, SABA or SAMA

- Long-acting generally preferred unless very occasional dyspnea
- SABA + SAMA combination more effective than either alone

CAT < 10, mMRC 0-1

B

LABA + LAMA

- Consider single-inhaler options for convenience

CAT ≥ 10, mMRC ≥ 2

Symptoms

CAT: COPD Assessment Test
mMRC: Modified Medical Research Council dyspnea scale

Pharmacotherapy Key Points

Inhaled Medications

- Choice of inhaler device should be individualized for optimal efficacy, access, cost, patient preference, and ability to properly use
- Must ensure proficiency in proper use of inhalers; educate and demonstrate
- Assess inhaler technique and adherence prior to therapy modification

Bronchodilators

- Bronchodilators are first-line for all diagnosed with COPD
- Long-acting agents (e.g., LABA, LAMA) are preferred over short-acting (e.g., SABA, SAMA), except in those with only occasional dyspnea and when immediate relief is needed in those on long-acting maintenance therapy
- Combination of [LAMA + LABA] is preferred when starting treatment with long-acting bronchodilators; patients not controlled on a single long-acting bronchodilator should be escalated to dual (more effective)
- LAMAs provide greater exacerbation risk reduction than LABAs
- Combination of [SABA + SAMA] is more effective than either alone
- Inhaled bronchodilators are recommended over oral bronchodilators
- Theophylline is not recommended unless other bronchodilators are either unavailable or unaffordable for long-term treatment

Anti-Inflammatory Agents

- Long-term monotherapy with ICS/oral steroids is not recommended; low efficacy, increases risk for side effects (e.g., pneumonia)
- If ICS indicated, [ICS + LABA + LAMA] is superior to & preferred over [LABA + ICS]; [ICS + LABA + LAMA] has proven mortality benefit versus [LABA + LAMA] in those with symptomatic COPD and history of exacerbations
- ICS can be added to [LABA + LAMA] regimens to improve symptoms and reduce exacerbations in those with signs of inflammation (e.g., comorbid asthma, eos ≥ 300 or present with an exacerbation history)
  - ICS **should** be included if features of asthma are present
- Addition of PDE4 inhibitor to [LABA + LAMA (+/- ICS)] may be considered in those with severe to very severe airflow limitation, chronic bronchitis, and exacerbations
- In those with exacerbations despite appropriate therapy, macrolides (e.g., azithromycin) may be considered (especially in former smokers)

Follow-Up Pharmacotherapy Management in Stable COPD

COPD management is an individualized, continuous cycle of assessment and treatment adjustment

Is COPD controlled?

Review:
- Symptoms (e.g., dyspnea)
- Exacerbations

Assess:
- Inhaler technique and adherence
- Non-pharmacological interventions

Adjust:
- Consider escalation or de-escalation
- Switch device or molecules

No

Continue current therapy

Primary Issue?*

Dyspnea (shortness of breath)

LAMA or LABA

↓

LAMA + LABA**

↓

- Consider switching inhaler/medication
- Optimize non-pharmacological interventions
- Assess and address other causes of symptoms

Exacerbations

LAMA or LABA

↓

eos < 300? → **No** → **LAMA + LABA****

↓

eos ≥ 100? → **No** → **LAMA + LABA + ICS****
(Consider **de-escalating** to LAMA + LABA if significant side effects occur with ICS)

- **Roflumilast** if FEV1 < 50% + chronic bronchitis
- **Azithromycin**, especially in former smokers

Although [LABA + ICS] is not preferred in treatment of COPD without features of asthma, if the patient has already been on [LABA + ICS] for any reason and is well controlled, the current therapy may be continued.
- If further exacerbations occur, escalate to [LABA + LAMA + ICS] (if eos ≥ 100) **or** switch to [LABA + LAMA] (if eos < 100)
- If major symptoms are present, consider switching to [LABA + LAMA]

*If both dyspnea and exacerbation must be addressed, **use the exacerbation pathway**
**For patients on [LAMA + LABA] or [LAMA + LABA + ICS], single-inhaler options should be considered for convenience

Inhalers Chart & Administration Guides

eos: Blood eosinophil count
ICS: Inhaled corticosteroid
LABA: Long-acting beta-agonist
LAMA: Long-acting muscarinic antagonist
SABA: Short-acting beta-agonist
SAMA: Short-acting muscarinic antagonist

Pharmacotherapy Management of Acute Exacerbations*

*Non life-threatening

Initial Treatment: SABA
(with or without SAMA)

- Initiate maintenance with **long-acting bronchodilators** as soon as stable
  - Consider adding **ICS** to [LAMA + LABA] if frequent exacerbations with ↑ eos
- If severe exacerbation, consider **systemic corticosteroids** (duration: generally **≤5 days**)
- If indicated (e.g., signs of bacterial infection), give **antibiotics** (duration: **5-7 days**)