Pharmacy Pearls

January 2024

GOLD Guideline 2023: Key Updates in Pharmacological Management of COPD

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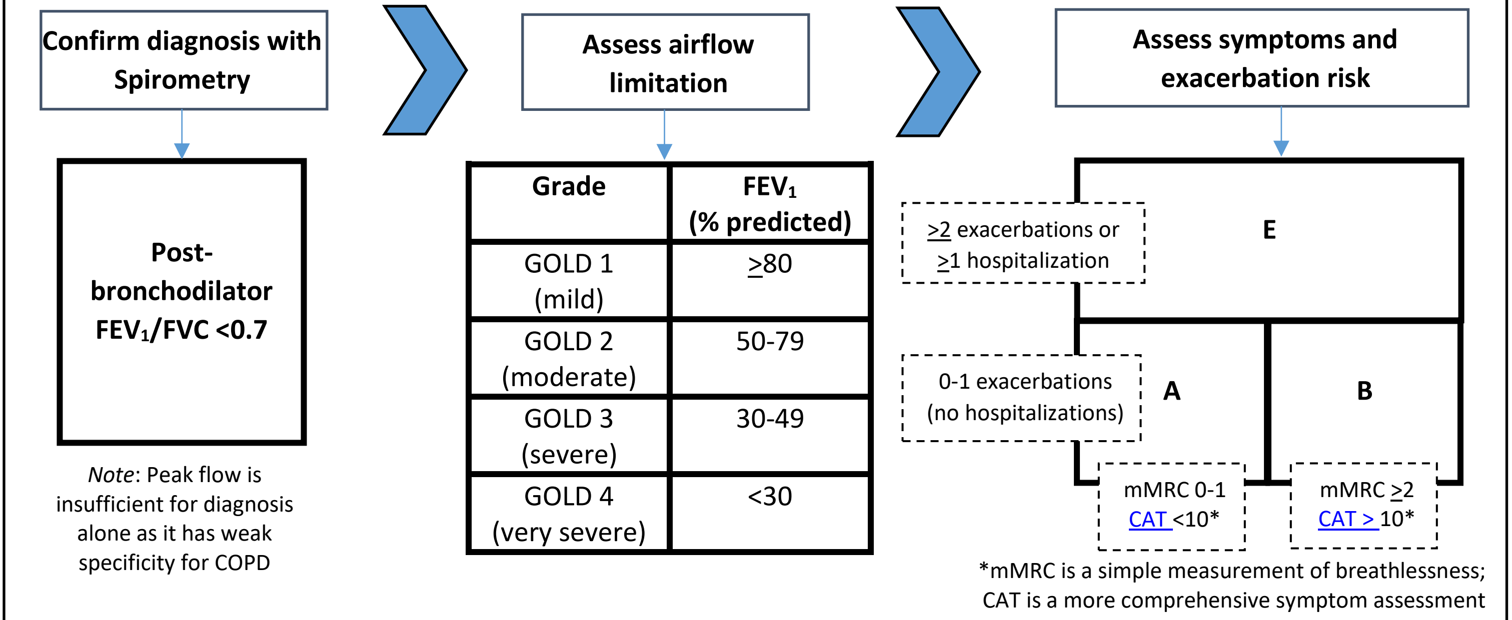
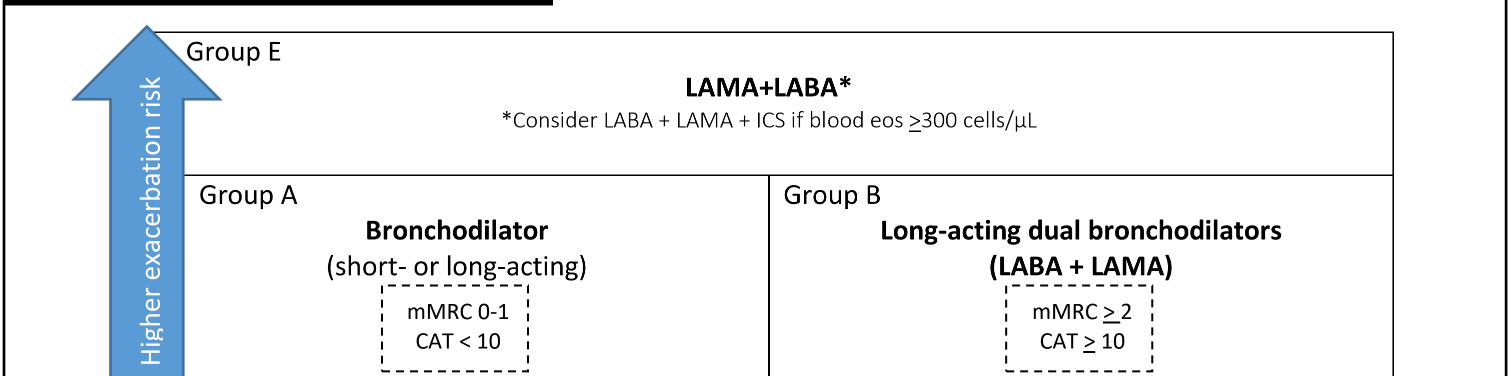
Adapted from 2023 GOLD Guidelines

Diagnosing and Categorizing COPD



Grade	FEV_1 (% predicted)
GOLD 1 (mild)	≥80
GOLD 2 (moderate)	50-79
GOLD 3 (severe)	30-49
GOLD 4 (very severe)	<30

Initiating Pharmacologic Therapy



Inhaled Medication Selection and Management Tips

- **Agent/inhaler device selection within each class should be individualized.** Choice is guided by symptom severity, exacerbation risk, side effects, comorbidities, drug availability and cost/insurance coverage, as well as patient's response, preference and ability to use various delivery devices.
- **All patients should be offered a short-acting bronchodilator (beta-2 agonist, antimuscarinic or combination)** to use as needed for immediate symptom relief. Combination SABA+SAMA therapy may be more effective.
- **LAMA is the preferred class in patients with mild COPD (Group A).** Clinical trials have shown reduction in exacerbations and hospitalizations over short-acting options, except for those with very occasional breathlessness.
- **LAMA+LABA dual therapy is recommended for moderate-severe COPD (Group B+ E).** Studies involving patient-related outcomes suggest improved response and reduced exacerbations compared to single agents.
- **Use of LABA+ICS in COPD is not encouraged.** If there is an indication for an ICS (co-diagnosis of asthma), then LABA+LAMA+ICS has been shown to be superior to LABA+ICS and is the preferred choice.
- **Blood eosinophil counts (>300) predict the magnitude of the effect of ICS** in preventing future exacerbations (Group E).

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Optimizing Pharmacologic Therapy

Treatment goals are to **reduce symptoms and reduce risk**: relieve symptoms, improve exercise tolerance, improve health status, prevent disease progression, prevent and treat exacerbations, reduce mortality.

Review symptoms (dyspnea) and exacerbations, **assess adherence and inhaler technique** and nonpharmacological approaches (e.g. pulmonary rehab, self-management) prior to making pharmacological therapy adjustments.

1. If patient is responding to medication therapy (including LABA+ICS) → Maintain without change
2. If patient is not responding to medication therapy → **Modify based on dyspnea or exacerbation predominance**
   a. If both exacerbations and dyspnea need to be targeted, use exacerbation pathway
3. Patients who also have an asthma diagnosis should be treated with the mandatory use of LABA+LAMA+ICS

DYSPNEA

LABA or LAMA

Persistent ↓ Dyspnea

LABA + LAMA

Not improved ↓

- Switch device or molecules
- Implement or escalate non-pharmacologic treatment (s)
- Investigate other causes of dyspnea

- **Escalate to dual bronchodilator (LAMA+LABA) therapy** if persistent breathlessness/exercise limitation on LAMA or LABA monotherapy
- **Change device or molecules** if no improvement with dual therapy
- **Dyspnea due to other causes (not COPD) should be investigated** and treated appropriately at any stage.
- **Inhaler technique and adherence** should be considered as causes of inadequate treatment response.

EXACERBATIONS

LABA or LAMA

eos < 300 → LABA + LAMA

eos ≥ 300 → LABA+LAMA+ICS

LABA + LAMA — eos ≥100 → LABA+LAMA+ICS

LABA+LAMA+ICS — * → LABA + LAMA

LABA + LAMA — eos <100 → *FEV₁ <50% & chronic bronchitis* roflumilast (Daliresp) / *Former smoker* azithromycin

LABA+LAMA+ICS → *FEV_1 <50% & chronic bronchitis* roflumilast (Daliresp) / *Former smoker* azithromycin

*Consider de-escalation of ICS if pneumonia or other considerable side effects present

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- **Escalate from monotherapy to LABA+LAMA** if persistent exacerbations and blood eos < 300
- **Escalate from monotherapy to LABA+LAMA+ ICS** if persistent exacerbations and blood eos ≥ 300
- **Escalate to LABA+LAMA+ICS** if continued exacerbations on LABA+LAMA and blood eos ≥ 100
- **Add roflumilast or azithromycin** (former smoker) if continued exacerbations on LABA+LAMA and blood eos <100
- **Add roflumilast** if FEV_1 50% predicted & chronic bronchitis and ≥1 hospitalization in last year on LABA+LAMA+ICS
- **Add azithromycin** (former smoker) if continued exacerbations on LABA+LAMA+ICS
- **Stop ICS** if ICS side effects present
- **Eos thresholds of < 100 cells/µL and ≥ 300 cells/µL should be regarded as estimates,** rather than precise cut-offs

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Select Inhaled Medications

(agents generally well covered by insurance)

Generic Name	Brand Name	Generic Available?	Inhaler Type	Typical Dosing
Beta$_2$-Agonists (Bronchodilators)				
Short-acting (SABA)				
Levalbuterol	Xopenex HFA®	**Yes**	MDI	1-2 puffs Q4-6h PRN
Albuterol	Proair® HFA, Proair RespiClick®, Proventil® HFA, Ventolin® HFA	**Yes**	MDI, DPI	1-2 puffs Q4-6h PRN
Long-acting (LABA)				
Salmeterol	Serevent®	No	DPI	1 inhalation BID
Olodaterol	Striverdi®	No	MDI	2 puffs once daily
Arformoterol	Brovana®	No	Neb	Inhale contents of 1 neb BID
Anticholinergics (Bronchodilators)				
Short-acting (SAMA)				
Ipratropium	Atrovent® HFA	No	MDI	2 inhalations 4x/day
Long-acting (LAMA)				
Aclidinium	Tudorza® Pressair®	No	DPI	1 inhalation twice daily
Tiotropium	Spiriva® HandiHaler® Spiriva® Respimat®	No	DPI Slow-moving mist	Inhale contents of 1 cap BID 2 inhalations daily
Umeclidinium	Incruse® Ellipta®	No	DPI	1 inhalation daily
Combination Products				
SABA+SAMA				
Ipratropium/albuterol	Combivent® Respimat®	**Yes** (nebs only)	Slow-moving mist	1 inhalation 4x/day
LAMA+LABA				
Umeclidinium/vilanterol	Anoro® Ellipta®	No	DPI	1 inhalation daily
Glycopyrrolate and Formoterol	Bevespi Aerosphere®	No	MDI	2 inhalations twice daily
ICS+LABA				
Budesonide/formoterol	Symbicort®	**Yes**	MDI	2 inhalations BID
Fluticasone/salmeterol	Advair®, AirDuo®, Wixela™ Inhub™	**Yes**	DPI	1 inhalation BID
Fluticasone/vilanterol	Breo™ Ellipta™	No	DPI	1 inhalation daily
ICS+LAMA+LABA				
Fluticasone/umeclidinium/vilanterol	Trelegy™ Ellipta®	No	DPI	1 inhalation daily
budesonide/glycopyrrolate/formoterol	Breztri Aerosphere®	No	MDI	2 inhalations twice daily