

# Chronic Obstructive Pulmonary Disease (COPD)

## MSHS Ambulatory Care Pathway



### Commonly Used Maintenance Medications in COPD

TYPES OF DELIVERY OPTIONS					
Generic Drug Name	Inhaler Type	Nebulizer	Oral	Injection	Duration of Action
<b>BETA<sub>2</sub>-AGONISTS</b>					
<b>Short-Acting (SABA)</b>					
Levalbuterol	MDI	Yes			6-8 hours
Albuterol	MDI & DPI	Yes	Pill, syrup, ext. release tablet	Yes	4-6 hours 12 hours (ext. release)
Terbutaline	DPI		Pill	Yes	4-6 hours
<b>Long-Acting (LABA)</b>					
Formoterol	DPI	Yes			12 hours
Indacaterol	DPI				24 hours
Olodaterol	SMI				24 hours
Salmeterol	MDI & DPI				12 hours
<b>ANTICHOLINERGICS</b>					
<b>Short-Acting (SAMA)</b>					
Ipratropium bromide	MDI	Yes			6-8 hours
<b>Long-Acting (LAMA)</b>					
Aclidinium bromide	DPI, MDI				12 hours
Glycopyrronium bromide	DPI		Solution	Yes	12-24 hours
Tiotropium	DPI, SMI				24 hours
Umeclidinium	DPI				24 hours
<b>COMBINATION LONG-ACTING-BETA<sub>2</sub>-AGONIST PLUS ANTICHOLINERGIC IN ONE DEVICE (LABA/LAMA)</b>					
Formoterol/aclidinium	DPI				12 hours
Formoterol/glycopyrronium	MDI				12 hours
Indacaterol/ glycopyrronium	DPI				12-24 hours
Vilanterol /umeclidinium	DPI				24 hours
Olodaterol/tiotropium	SMI				24 hours
<b>METHYLXANTHINES</b>					
Theophylline (SR)		Pill		Yes	Variable, up to 24 hrs
<b>COMBINATION OF LONG-ACTING BETA<sub>2</sub>-AGONIST PLUS CORTICOSTEROIDS IN ONE DEVICE (LABA/ICS)</b>					
Formoterol/budesonide	MDI, DPI				12 hours
Formoterol/mometasone	MDI				12 hours
Salmeterol/fluticasone	MDI, DPI				12-24 hours
Vilanterol/fluticasone furoate	DPI				24 hours
<b>TRIPLE COMBINATION IN ONE DEVICE (LABA/LAMA/ICS)</b>					
Fluticasone/umeclidinium/vilanterol	DPI				
<b>PHOSPHODIESTERASE-4 INHIBITORS</b>					
Roflumilast		Pill			

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Updated January 15, 2020

### Pharmacologic Treatment Algorithms by GOLD Grade

#### APPROACH:

- Classify by GOLD Criteria using mMRC dyspnea scale, COPD Assessment Test (CAT), and # of exacerbations and hospitalizations.
- Patients must see a doctor at least four times (4x) per year for COPD management.

### Modified Medical Research Council (mMRC) Dyspnea Scale

Grade of Dyspnea	Description
	Not troubled by breathlessness except on strenuous exercise
<b>1</b>	Shortness of breath when hurrying on the level or walking up a slight hill
<b>2</b>	Walks slower than people of the same age on the level because of breathlessness or has to stop for breath when walking at own pace on the level
<b>3</b>	Stops for breath after walking about 100 m or after a few minutes on the level
<b>4</b>	Too breathless to leave the house or breathless when dressing or undressing

Source: Mahler DA, Wells CK. Evaluation of clinical methods for rating dyspnea. Chest 1988; 93:580-586

### COPD Assessment Test (CAT)

EXAMPLE ▷ I am very happy	<input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> 0 1 2 3 4 5	I am very sad	SCORE
I never cough	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> 0 1 2 3 4 5	I cough all the time	
I have no phlegm (mucus) on my chest at all	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> 0 1 2 3 4 5	My chest is full of phlegm (mucus)	
My chest does not feel tight at all	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> 0 1 2 3 4 5	My chest feels very tight	
When I walk up a hill or a flight of stairs I am not out of breath	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> 0 1 2 3 4 5	When I walk up a hill or a flight of stairs I am completely out of breath	
I am not limited to doing any activities at home	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> 0 1 2 3 4 5	I am completely limited to doing all activities at home	
I am confident leaving my home despite my lung condition	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> 0 1 2 3 4 5	I am not confident leaving my home at all because of my lung condition	
I sleep soundly	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> 0 1 2 3 4 5	I do not sleep soundly because of my lung condition	
I have lots of energy	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> 0 1 2 3 4 5	I have no energy at all	
			TOTAL SCORE

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# Chronic Obstructive Pulmonary Disease (COPD)

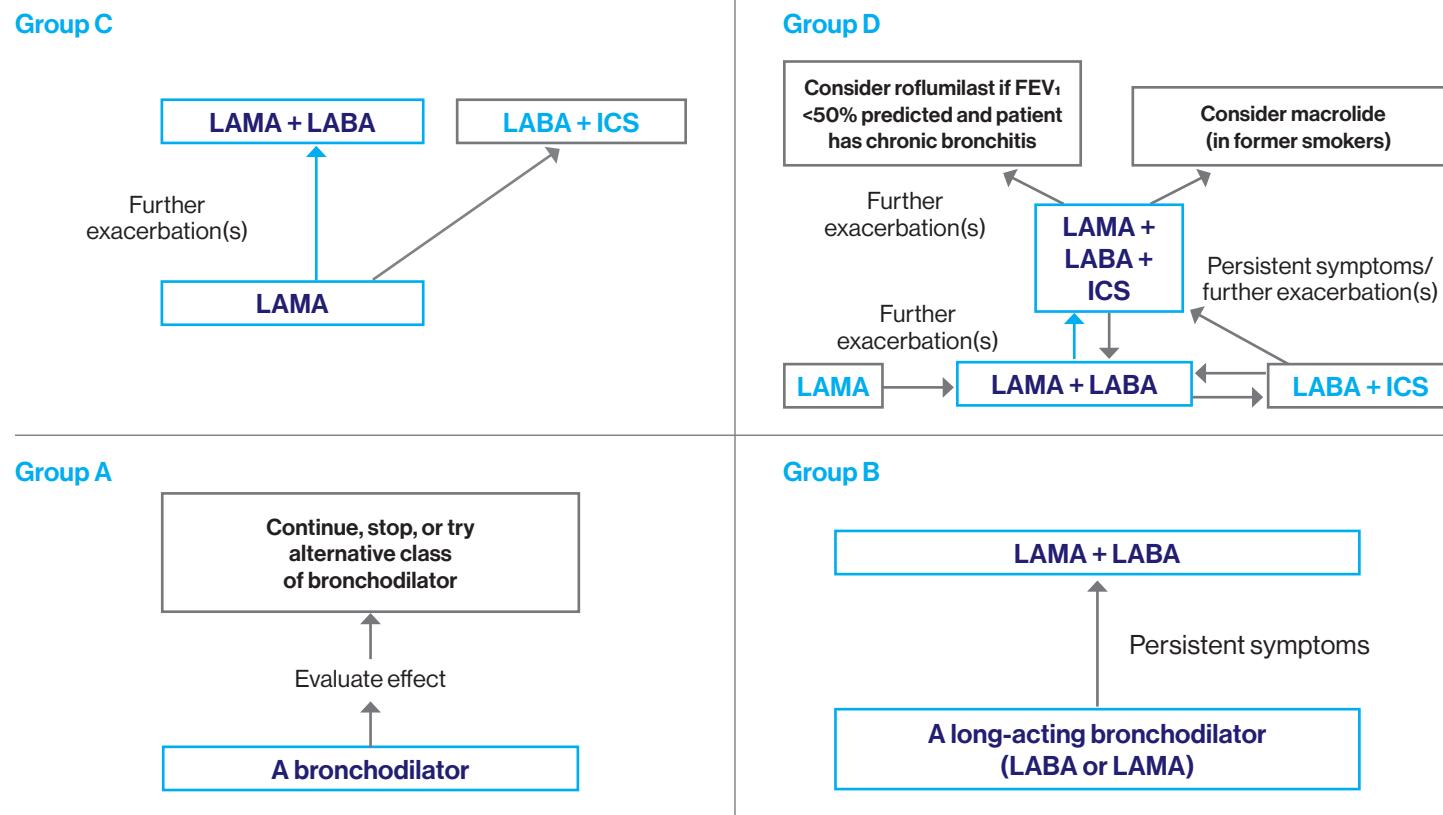
## MSHS Ambulatory Care Pathway



### Medication Guidelines (Groups A-D) Based on GOLD Classification

INITIAL PHARMACOLOGICAL TREATMENTS			
≥ 2 moderate exacerbations or ≥ 1 leading to hospitalization	Group C LAMA	Group D LAMA or LAMA + LABA* or ICS + LABA**  * Consider if highly symptomatic (e.g. CAT > 20) ** Consider if eosinophils ≥ 300	
0 or 1 moderate exacerbations (not leading to hospitalization)	Group A A Bronchodilator	Group B A Long Acting Bronchodilator (LABA or LAMA)	
	Dyspnea scale 0-1, CAT <10	Dyspnea scale ≥ 2, CAT≥10	

### FOLLOW-UP PROTOCOLS



**Abbreviations:** FEV<sub>1</sub>, forced expiratory volume in 1 second; ICS, inhaled corticosteroids; LABA, long-acting  $\beta_2$ -agonist; LAMA, long-acting muscarinic receptor antagonist.  
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### Non-Pharmacologic Management of COPD

Patients Group	Essential	Recommended	Depending on Local Guidelines
A	Smoking cessation (can include pharmacologic treatment)	Physical activity	Flu vaccine Pneumococcal vaccination
B-D	Smoking cessation (can include pharmacologic treatment) <b>Pulmonary rehabilitation</b>	Physical activity	Flu vaccine Pneumococcal vaccination

### Prescription of Supplemental Oxygen to COPD Patients

1. Arterial hypoxemia defined as:
  - PaO<sub>2</sub> < 55 mmHg (8 kPa) or
  - SaO<sub>2</sub> < 88% or
  - PaO<sub>2</sub> > 55 but 60mmHg with right heart failure or erythrocytosis
2. Prescribe supplemental oxygen and titrate to keep **SaO<sub>2</sub> ≥ 90%**
3. Recheck in 60 to 90 days to assess:
  - If oxygen is still indicated
  - If prescribed supplemental oxygen is effective

### Care Coordination in COPD at MSHS

All patients should be evaluated by care management.

- Email [mshpcmreferral@mountsinai.org](mailto:mshpcmreferral@mountsinai.org) or call 212-241-7228.

- Use the **MSHP Care Management Referral in Epic (order #391414)**.

### Behavioral Health

Patients should be screened annually for depression using the PHQ-2/PHQ-9 and referred to psychiatric services through their current care pathway depending on their clinic.

### Clinical Pharmacist

Pharmacists can be a **key part of the care team for chronic disease management**. They are **credentialed providers that can prescribe and adjust medications** through the Collaborative Drug Treatment Model.

### Palliative Care Referral Options within Mount Sinai Health System

Patients with COPD may be referred to one of two practices. The services provided at each location are identical; please choose the location that is most convenient to your patient.

**Mount Sinai Health System Palliative Care Practices:**

- To make a referral to the **Martha Stewart Center for Living** at 1440 Madison Avenue, please call: **212-241-1446**
- To make a referral to the **Martha Stewart Center for Living Downtown** at Union Square, please call: **212-844-1712**