



COPD and GOLD Treatment Guidelines

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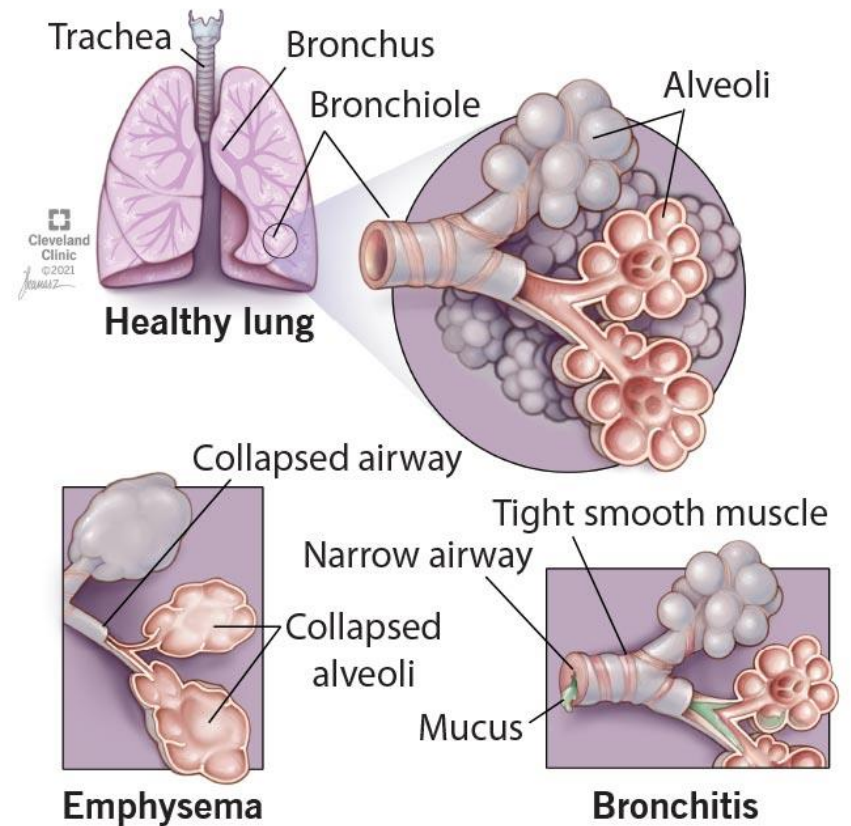


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Chronic Obstructive Pulmonary Disease (Big Picture)

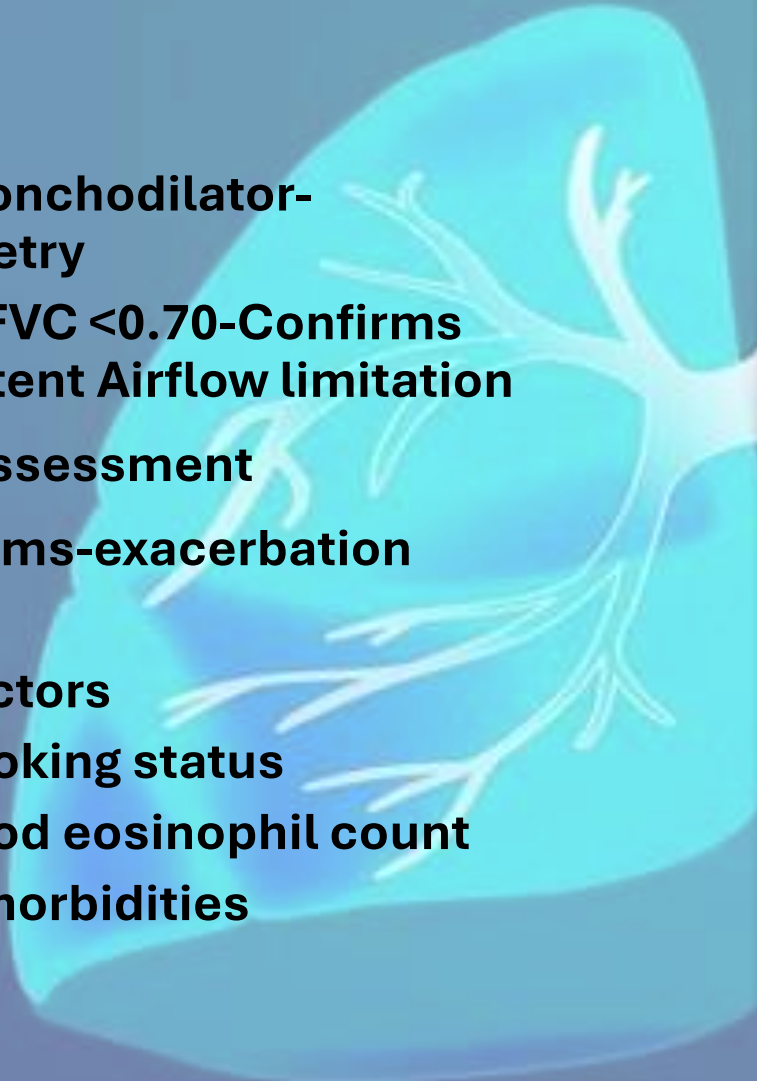
- Chronic Inflammation
- Two Core Pathologic Processes
- Parenchymal destruction(emphysema)
- Protease-Antiprotease imbalance
- Oxidative Stress
- Mucous Hypersecretion
- Airflow limitation
- Gas exchange abnormalities
- Systemic effects

Chronic Obstructive Pulmonary Disease (COPD)



Diagnosis is KEY!

- **Post bronchodilator-Spirometry**
FEV1/FVC <0.70-Confirms persistent Airflow limitation
- **CAAT Assessment**
- **Symptoms-exacerbation history**
- **Risk Factors**
 - **Smoking status**
 - **Blood eosinophil count**
 - **comorbidities**



CAAT™ Assessment

Figure 2.12

For each item below, place a mark (x) in the box that best describes you currently. Be sure to only select one response for each question.

EXAMPLE: I am very happy	0 <input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	I am very sad	Score
I never cough	0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	I cough all the time	
I have no phlegm (mucus) in my chest at all	0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	My chest is completely full of phlegm (mucus)	
My chest does not feel tight at all	0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	My chest feels very tight	
When I walk up a hill or one flight of stairs I am not breathless	0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	When I walk up a hill or one flight of stairs I am very breathless	
I am not limited doing any activities at home	0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	I am very limited doing activities at home	
I am confident leaving my home despite my lung condition	0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	I am not at all confident leaving my home because of my lung condition	
I sleep soundly	0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	I don't sleep soundly because of my lung condition	
I have lots of energy	0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	I have no energy at all	

Reference: Jones et al. ERJ 2009; 34 (3); 648-54.

TOTAL SCORE:

CAT™ has been renamed as the Chronic Airways Assessment Test CAAT™; CAT™ and CAAT™ are equivalent and the scores are interchangeable.

MMRC

Modified Medical Research Council Scale- Dyspnea Scale

Grade – 0

Grade- 1

Grade- 2

Grade- 3

Grade- 4

Combine MMRC with CAAT, easy to score and get an idea of risk stratification.

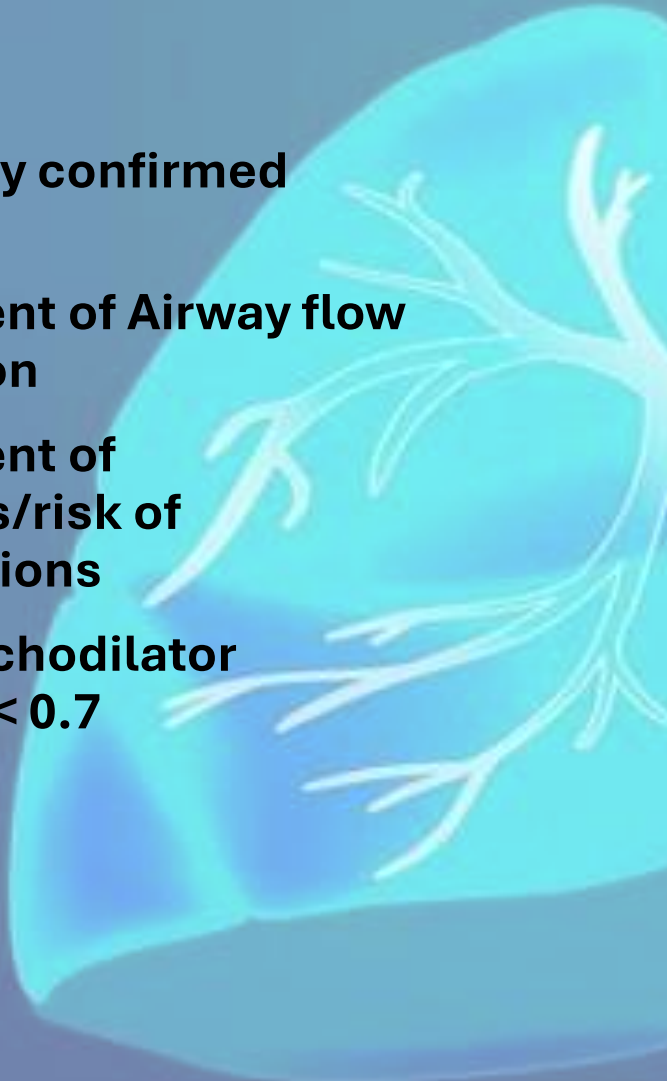
Modified Medical Research Council scale (MMRC)

Description of Breathlessness	Grade	Score
I only get breathless with strenuous exercise	0	None
I get short of breath when hurrying on level ground or walking up a slight hill	1	Slight
On level ground, I walk slower than people of the same age because of breathlessness, or have to stop for breath when walking at my own pace.	2	Moderate
I stop for breath after walking about 100 yards or after a few minutes on level ground	3	Severe
I am too breathless to leave the house or I am breathless when dressing.	4	Very severe



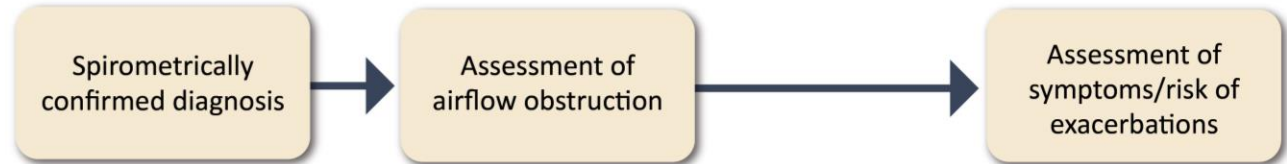
GOLD ABE Assessment

- Spirometry confirmed diagnosis
- Assessment of Airway flow obstruction
- Assessment of symptoms/risk of exacerbations
- Post bronchodilator FEV1/FVC < 0.7



GOLD ABE Assessment Tool

Figure 2.13



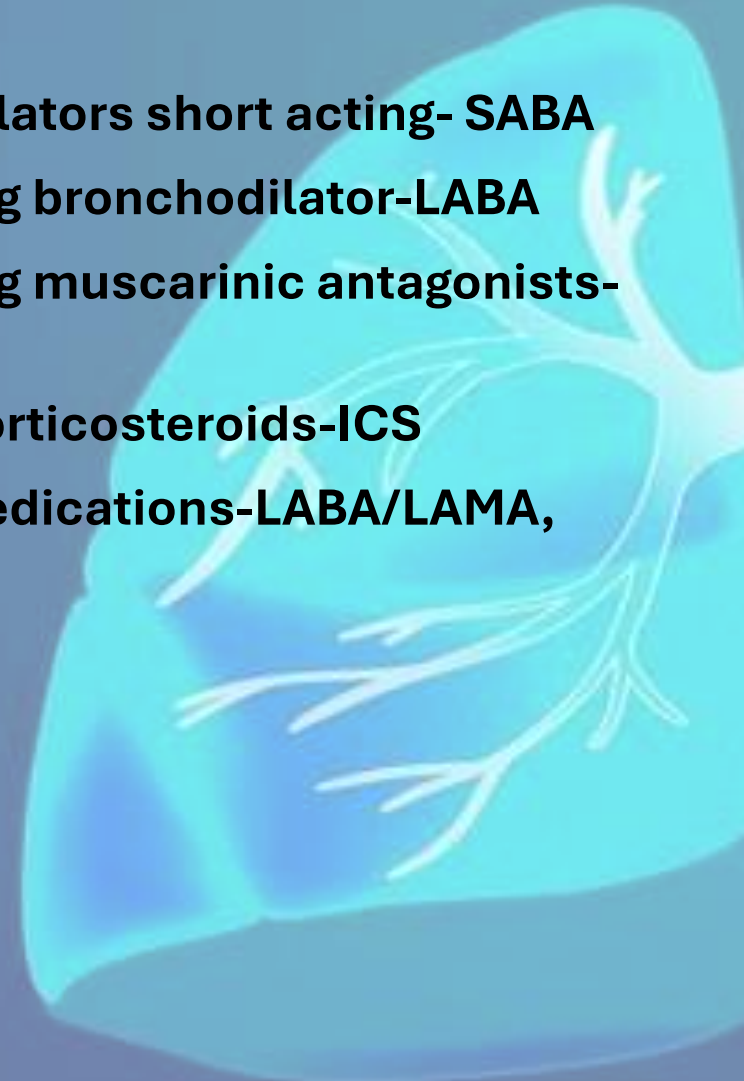
GRADE	FEV1 (% predicted)	EXACERBATION HISTORY (PER YEAR)		SYMPTOMS	
		One or more (≥ 1) moderate or severe exacerbations in the previous year	Zero (0) moderate or severe exacerbations in the previous year	A	B
GOLD 1	≥ 80	E		A	B
GOLD 2	50-79				
GOLD 3	30-49	E		A	B
GOLD 4	< 30				

Post-bronchodilator FEV1/FVC < 0.7

mMRC 0-1 CAAT < 10 mMRC ≥ 2 CAAT ≥ 10

Medications for COPD

- Bronchodilators short acting- SABA
- Long acting bronchodilator-LABA
- Long acting muscarinic antagonists-LAMA
- Inhaled Corticosteroids-ICS
- Combo medications-LABA/LAMA, LABA/ICS



Quick Reliever Medicines				AIR			
Short-Acting Beta₂-Agonists (SABA) Albuterol Sulfate HFA albuterol sulfate 80 mg 				Short-Acting Muscarinic Antagonists (SAMA) Atrovent® HFA ipratropium bromide 17 mg 			
Albuterol Sulfate Neb 0.64 mg/3 ml, 1.25 mg/3 ml, 2.5 mg/3 ml 				Short-Acting Combinations (SABA-ICS) AirSupra® (albuterol and budesonide) 80, 90 mg 			
ProAir® Digihaler™ albuterol sulfate 117 mg 				Short-Acting Combinations (SABA-SAMA) Combivent® RespiMat® ipratropium bromide and albuterol 20/100 mg 			
ProAir® RespiClick albuterol sulfate 117 mg 				DuoNeb® ipratropium bromide and albuterol sulfate 0.5 mg-3 mg/3 ml 			
Proventil® HFA albuterol sulfate 120 mg 							
Ventolin® HFA albuterol sulfate 90 mg 							
Xopenex® HFA levalbuterol tartrate 30 mg 							
Xopenex® Neb levalbuterol hydrochloride 0.31 mg/3 ml, 0.63 mg/3 ml, 1.25 mg/3 ml 							
Maintenance/Controller Medicines							
Inhaled Corticosteroids (ICS) asthma only							
Alvesco® HFA ciclesonide 80/160 mcg 		ArmonAir™ RespiClick® fluticasone propionate 55/113/220 mcg 		Arnuity® Ellipta® fluticasone propionate 100/200 mcg 		Asmanex® HFA mometasone furoate 100/200 mcg 	
Asmanex® Twisthaler™ mometasone furoate 110/220 mcg 		Budesonide Inhalation Suspension 0.25 mg/2 ml, 0.5 mg/2 ml, 1 mg/2 ml 		Pulmicort® Flexhaler® budesonide 90/180 mcg 		Pulmicort Respules® budesonide inhalation suspension 0.25 mg/2 ml, 0.5 mg/2 ml, 1 mg/2 ml 	
QVAR® Redihaler™ beclomethasone dipropionate 40/80 mcg 							
Combination Therapy (Inhaled Corticosteroid - Long-Acting Beta₂-Agonists) (ICS-LABA)							
Advair Diskus® fluticasone propionate and salmeterol 100/50, 250/50, 500/50 mcg Milk 		Advair® HFA fluticasone propionate and salmeterol 45/21, 115/21, 230/21 mcg 		AirDuo® RespiClick® fluticasone propionate and salmeterol 55/14, 113/14, 230/14 mcg 		Breo® Ellipta® fluticasone and vilanterol 100/25, 200/25 mcg Milk 	
Wixela™ Inhub™ fluticasone propionate and salmeterol xinafoate 100/50, 250/50, 500/50 mcg 		SMART/MART		Triple Therapy (ICS-LABA-LAMA)			
Symbicort® budesonide and formoterol fumarate dihydrate 80/4.5, 160/4.5 mg 		Dulera® mometasone furoate and formoterol fumarate dihydrate 50/5, 100/5, 200/5 mcg 		Trelegy Ellipta budesonide/vanterol/formoterol 100 mcg/6.25 mcg/25 mcg 		Breztri Aerosphere® budesonide/glycopyrronium bromide/formoterol fumarate dihydrate 160/9/4.8 mg 	
Long-Acting Muscarinic Antagonists (LAMA)							
Increase® Ellipta® umecidinium 62.5 mcg 		Lonhala Magnair® glycopyrronium 25 mcg/1 ml 		Spiriva® HandiHaler™ tiotropium bromide 18 mcg 		Spiriva® RespiMat® tiotropium bromide 1.25 mcg 	
Tudorza™ Pressair™ aclidinium bromide 400 mcg 		Yupelri® Neb efenaterol 175 mg/3 ml 		Long-Acting Beta₂-Agonists (LABA) COPD only		LAMA-LABA COPD only	
Brovana® Neb aclometamolol 15 mg 		Perforomist® Neb formoterol fumarate dihydrate 20 mg 		Serevent® Diskus® salmeterol xinafoate 50 mg 		Striverdi® RespiMat® olodaterol hydrochloride 2.5 mg 	
Anoro® Ellipta umecidinium and vilanterol 55/22, 62.5/25 mcg 		Bevpesi Aerosphere® glycopyrronium and formoterol 9/4.8 mg 		Duaklir® Pressair™ aclidinium and formoterol 400/12 mcg 		Stiolto® RespiMat® tiotropium and tiotropium bromide 2.5/2.5 mcg 	
Add-On Medicines				Use a valved holding chamber/spacer			
Monoclonal Antibody (biologics, injection)			PDE4 Inhibitor		Leukotriene Receptor Antagonists (LTRA)		
Cinqair® reslizumab 100 mg 			Dupilxent® dupilumab 100/200/300 mg 		Daliresp® roflumilast 200/500 mg 		
Fasenra™ benralumab 30 mg 			Singulair® montelukast sodium 4/5/10 mg 		Zylto® zileuton ER 600 mg 		
Nucala® mepolizumab 100 mg 			Tezspire™ roflumilast 210 mg 				
Xolair® omalizumab 75/150 mg 			All HFA inhalers should be used with a compatible valved holding chamber/spacer. 				
Disease States: A Asthma C COPD G Generic S SMART AIR AIR				You can also connect with a lung health navigator for one-on-one, free support from the American Lung Association's Lung HelpLine at 1-800-LUNGUSA.			

How-To Videos



Treatment Guidelines

Initial Treatment-COPD who are naïve to maintenance therapy

- Exacerbation history
(PER YEAR-Prior year)
- 1 or More moderate or severe exacerbations in the previous year
 - LABA + LAMA
(CONSIDER LABA + LAMA + ICS if blood eosinophil is \geq or equal to 300)
- ZERO moderate or severe exacerbations
(Prior Year)
 - mMRC 0-1, CAAT less than 10-Bronchodilator
 - mMRC \geq or equal to 2, CAAT \geq or equal to 10- LABA + LAMA

Follow-pharmacological Treatment



PERSISTENT Dyspnea

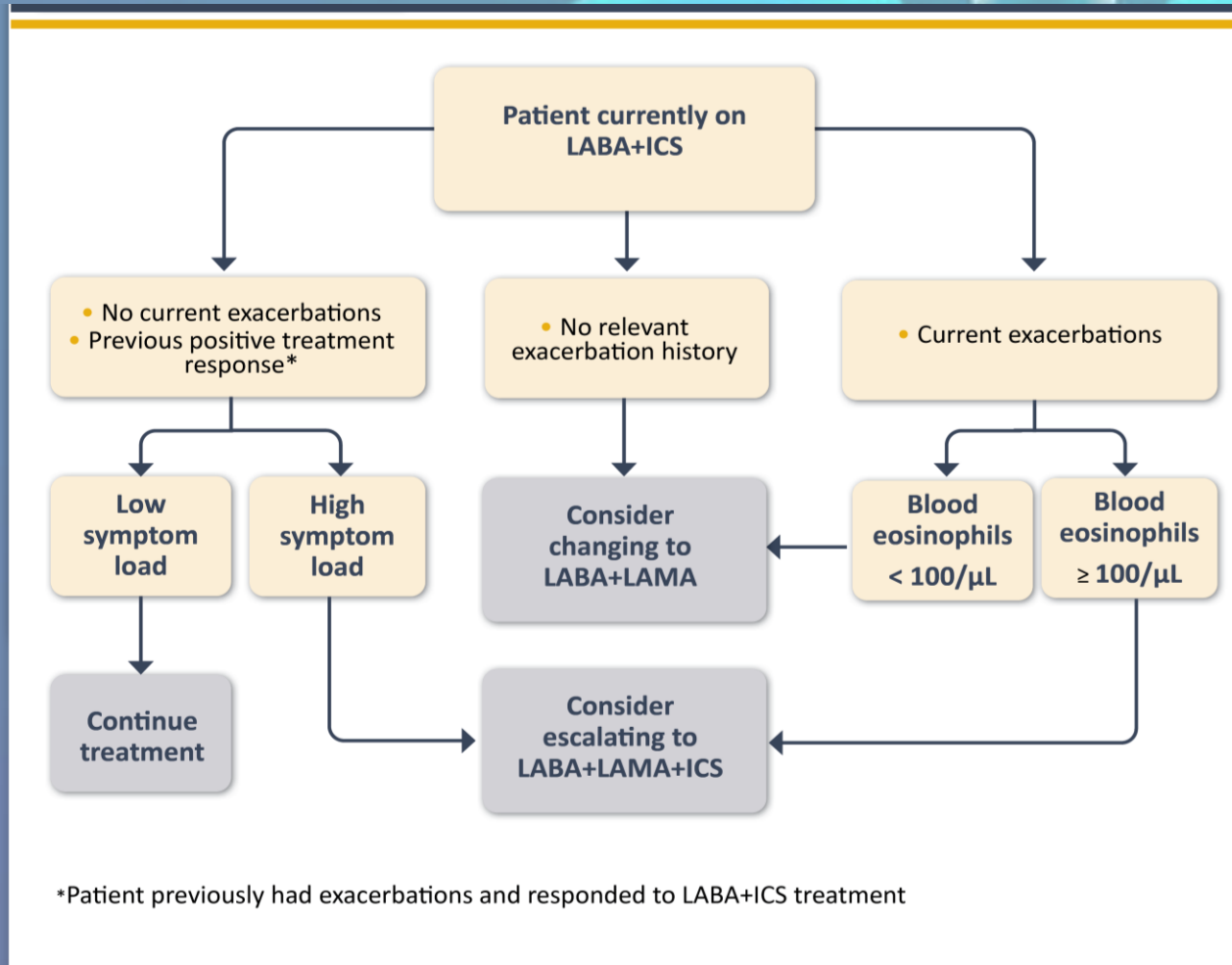
- LABA or LAMA
- LABA + LAMA
- Consider switching device
- Implement or escalate non-pharmacologic treatment
- Investigate treat other causes

IF one or more MODERATE or SEVERE exacerbations

- LABA+ LAMA or LABA+ LAMA+ ICS
- Azithromycin role
- Biologic – eosinophils-referral to pulmonology



CURRENTLY on LABA +ICS



*Patient previously had exacerbations and responded to LABA+ICS treatment

COPD meds

- **Biologics-Role with eosinophilic COPD- monoclonal antibodies**
- **Leukotriene receptor agonists-More for allergic asthma component**
- **Mucolytics**
- **Steroids**
- **Nebulized options**



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Factors to consider when adding ICS to therapy

Strongly Favor use

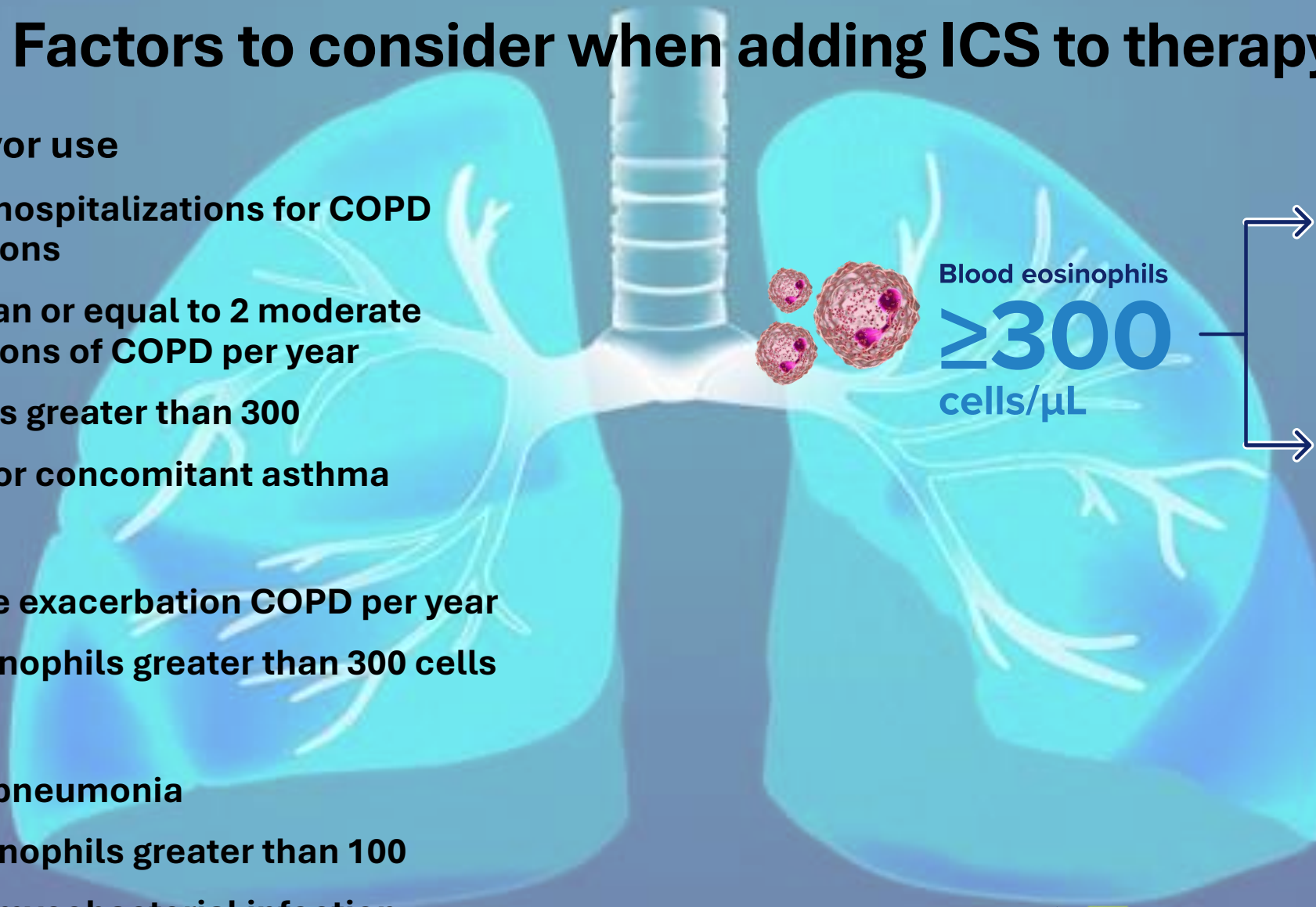
- History of hospitalizations for COPD exacerbations
- Greater than or equal to 2 moderate exacerbations of COPD per year
- Eosinophils greater than 300
- History of or concomitant asthma

Favor use

- 1 moderate exacerbation COPD per year
- Blood eosinophils greater than 300 cells

Against Use

- Repeated pneumonia
- Blood eosinophils greater than 100
- History of mycobacterial infection



Blood eosinophils
≥300
cells/μL

↑ 32%

increased risk of COPD exacerbations^{23,f}

↑ 99%

increased risk of COPD-related rehospitalization within 1 year^{24,g}



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Scenarios

71 year old smoker with 50 + pack years, CAT score 14, MMRC 3 but no recent hospitalizations

- LABA + LAMA therapy initial to relieve symptoms

64 year old female with severe COPD FEV1 64%, multiple hospitalizations CAT-28

- LABA/LAMA ICS-Pulmonary referral
- Non pharmacological
- Mucolytics

57 year old with chronic cough, productive sputum smoking history, but with bronchodilator response PFT

- Asthma overlap COPD ICS/LABA to address asthma component



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Exacerbation management



- **History, History, History**
- **Testing-Viral/bacterial cultures**
- **Treating appropriate antiviral/abx**
- **Steroid taper**
- **Mucolytics**
- **Azithromycin/Levaquin/Doxy**
- **Increase or return to nebulizers**
- **Acapella device**
- **Assess other causes**
 - **CHF**
 - **Core Pulmonale**
 - **PE risk**
 - **Viral/bacterial infection**



Medication adverse effects/Contraindications



Short-Acting Beta Agonists-SABA

- Fast Heart rate
- Arrhythmia
- Shakiness/nervousness
- Anxiety/insomnia

Long-Acting Beta Agonists-LABA

- Muscle cramps
- Tremor
- Increased heart rate/arrhythmias

Inhaled Corticosteroids-ICS

- Oral thrush
- Hoarseness
- Increased pneumonia risk

Oral corticosteroids

- Weight gain
- High blood sugar
- Mood swings
- Osteoporosis
- Bruising/thin skin/muscle wasting

Further Medication considerations

- **Cardiac issues- Short acting anticholinergic agents-LABA should be used cautiously with cardiac history**
- **Eyes LAMA-Anticholinergic may increase intraocular pressure, potentially worsening narrow angle glaucoma**
- **Medication interactions-Non selective beta-blockers propranolol should be avoided can worsen breathing**
- **Respiratory depressants-Sedatives can exacerbate sleep apnea a common co-morbidity in COPD patients**
- **ARB's and ACE- Cautiously use-HISTORY!!!**

PERILS and PITFALLS



- **COPD affects more than the lungs**
 - **Psychosocial**
 - **Economic impact**
- **Environmental factors**
- **Flu/Pneumonia/RSV/Pertussis/COVID vaccinations and boosters**
- **Hydration**
- **Nebulizers versus inhalers**
- **Spacers**
- **Educate, Educate, Educate- Make them demonstrate**
- **Provide printed plan**
- **INSURANCE the dreaded PA**
- **Referral to pulmonology**
- **QUESTIONS???**

References

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