



Pharmaceutical Assistance
Contract for the Elderly



Balanced information for better care

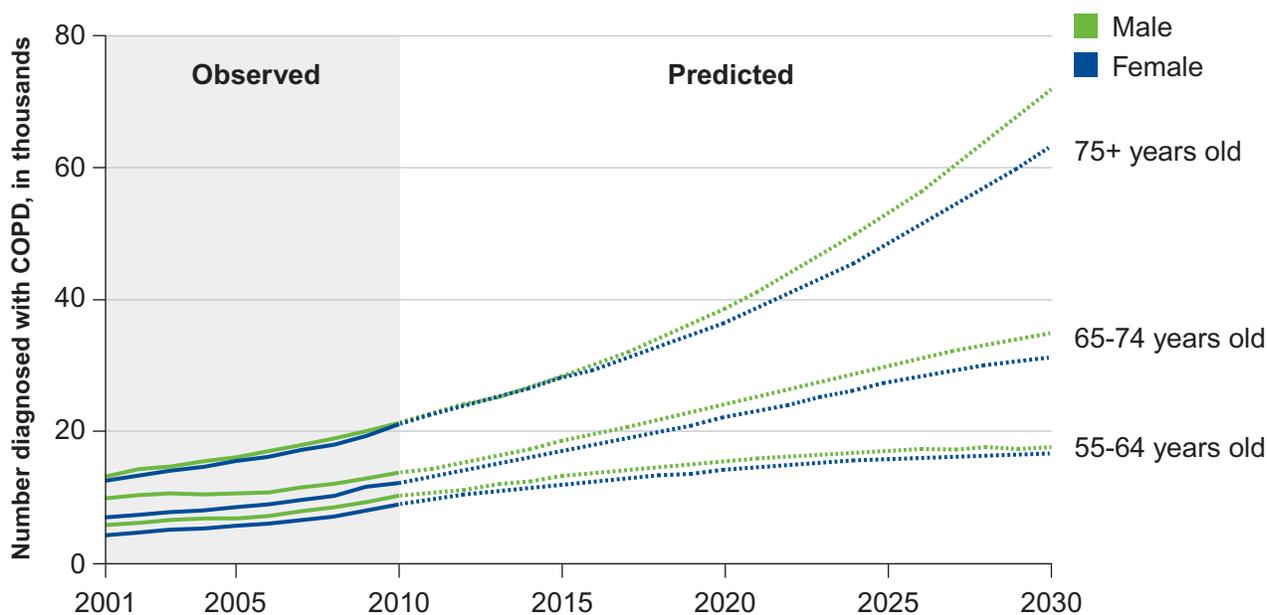
Helping patients with COPD breathe easier



COPD is the fourth-leading cause of death^{1*}

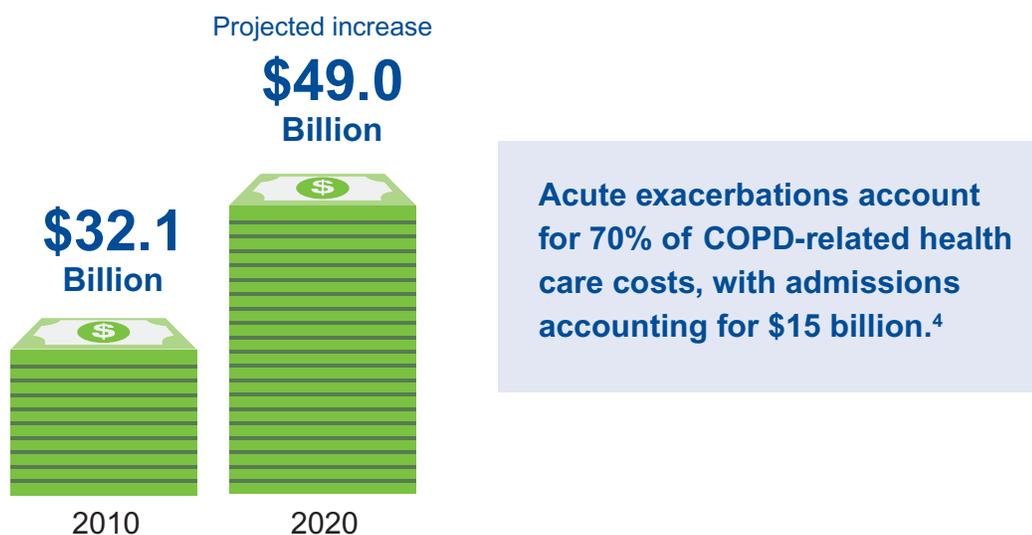
Older adults bear an increasing burden of disease.

FIGURE 1. People over 75 will make up over half of COPD patients by 2030.²



Economic impact of COPD

FIGURE 2. The financial burden of COPD is rising.³



*In the U.S., after cancer, heart disease, and accidental injury.

Diagnose COPD accurately, using spirometry whenever possible

The diagnosis of COPD in patients with compatible symptoms is defined by an obstructive pattern on spirometry, even after bronchodilator treatment:

$$\frac{\text{Forced Expiratory Volume in 1 second (FEV}_1\text{)}}{\text{Forced Vital Capacity (FVC)}} < 0.7$$



A significant FEV₁ response to bronchodilators suggests asthma, whether in conjunction with COPD (asthma-COPD overlap) or on its own (if FEV₁/FVC ≥ 0.7). Asthma is managed differently from COPD.

During the COVID-19 pandemic, limited availability of spirometry should not delay diagnosis and treatment. Try to obtain spirometry as soon as feasible.

Use non-pharmacologic approaches throughout the course of COPD:



Smoking cessation



Vaccinations

- Influenza annually
- Pneumococcus (see page 9)



Self-management education, including proper inhaler use.

Instructional videos: bit.ly/Inhaler_videos



Pulmonary rehabilitation for patients with history of exacerbations or more symptoms



Exercise/physical therapy

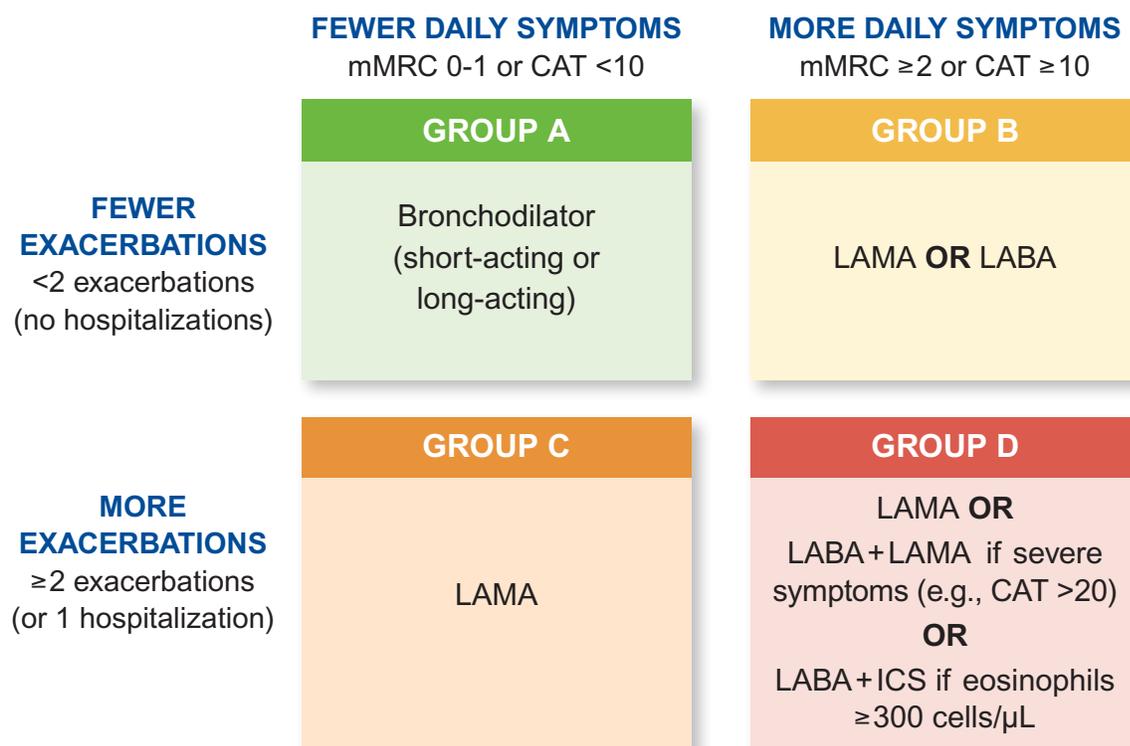


Adequate nutrition

Initiate treatment based on GOLD category

Use daily symptoms and exacerbations to determine therapy.

FIGURE 3. Initial treatment choice should be based on daily symptom severity and history of exacerbations, which define the GOLD groups.⁵



LABA: long-acting beta agonist; **LAMA:** long-acting muscarinic antagonist; **ICS:** inhaled corticosteroid

DAILY SYMPTOMS:

Defined according to either the mMRC scale,⁶ which focuses on dyspnea (scores from 0-4), or the COPD Assessment Test [CAT],⁷ which includes dyspnea and other symptoms (scores from 0-40). See AlosaHealth.org/COPD for assessments.

EXACERBATIONS:

Discrete episodes characterized by acute worsening of symptoms (i.e., increased dyspnea, sputum volume, purulence) beyond usual day-to-day variation and requiring intervention.

Short-acting beta agonists (e.g., albuterol, levalbuterol) and/or short-acting muscarinic antagonists (e.g., ipratropium) can improve dyspnea and exercise tolerance. These medications should be offered to patients in all GOLD groups as rescue inhalers.

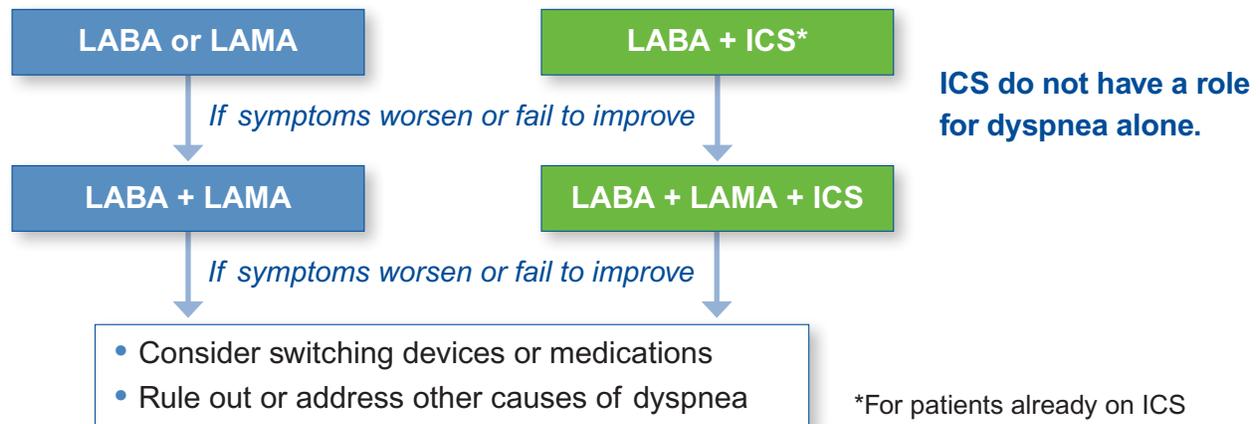
Once an initial therapy has been selected (Figure 3), adjustments may be needed depending on the progression of daily symptoms and exacerbations. For dyspnea that is worsening or not improving, follow Figure 4. For more frequent or continued exacerbations, follow Figure 5.

Adjust for symptoms and exacerbations

Base treatment escalation on current therapy.

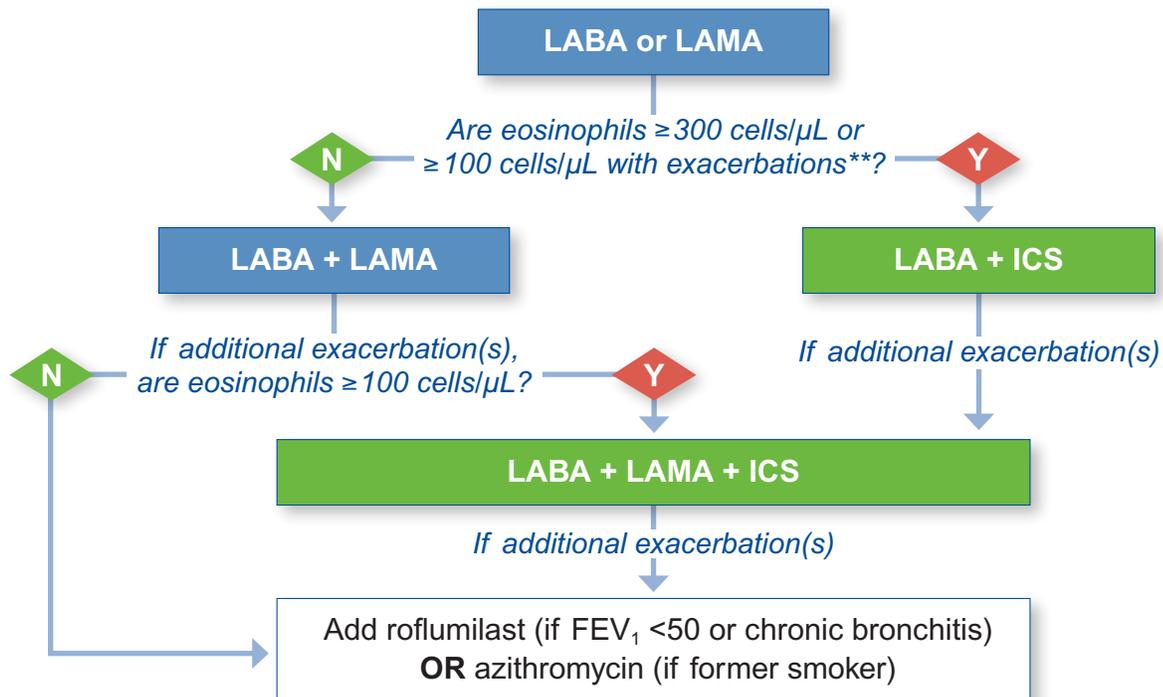
For dyspnea

FIGURE 4. If dyspnea is worsening or not improving, consider dual bronchodilators.⁵



For exacerbations

FIGURE 5. If exacerbations are increasing, use eosinophil levels to guide treatment.⁵



**2 moderate exacerbations or 1 exacerbation requiring hospitalization

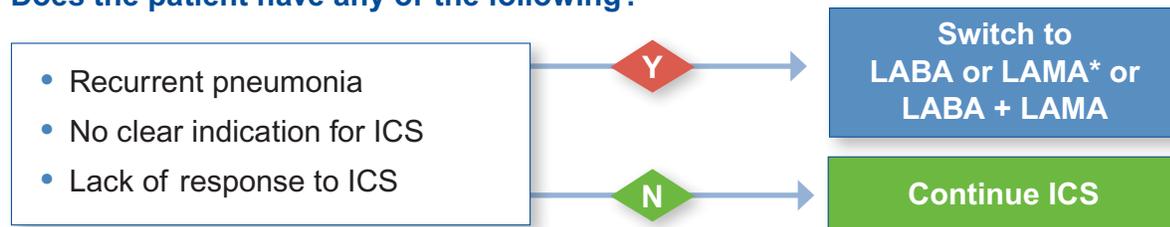
Stop or replace ICS when appropriate

Recent evidence shows that ICS increase the risk of pneumonia.

In the FLAME trial, patients treated with ICS had a 50% relative increase in the risk of pneumonia (4.8% with ICS vs 3.2% without ICS).⁸ With similarly effective alternative treatments available, ICS can safely be stopped in patients who do not have frequent exacerbations or a high eosinophil count.

FIGURE 6. Reassessing the need for inhaled steroids⁵

Does the patient have any of the following?

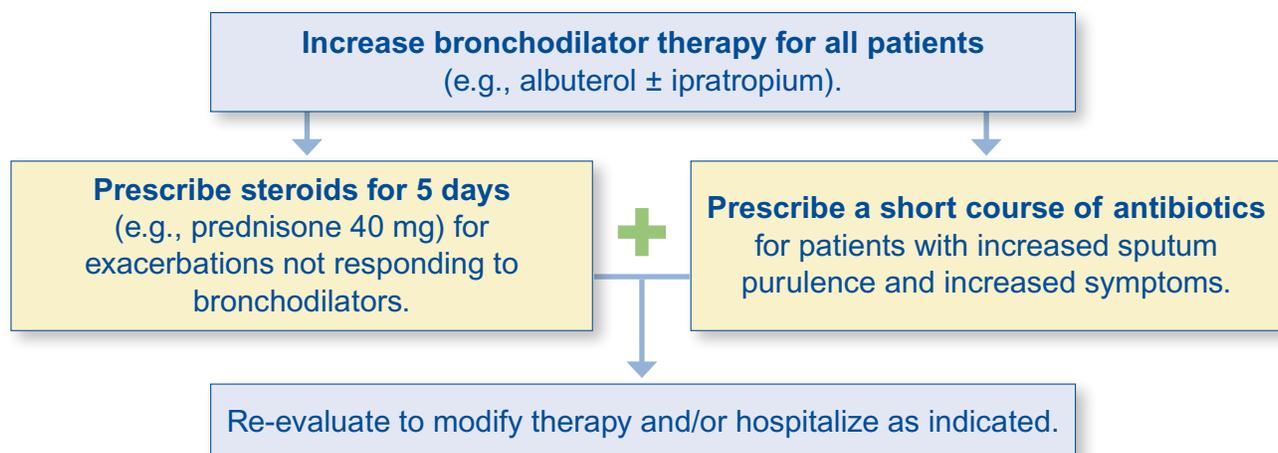


*Monotherapy selection based on GOLD group and symptom control.

Gradual withdrawal of ICS does not trigger exacerbations.
In the WISDOM trial, a stepwise taper of ICS did not increase exacerbations.⁹

Treat exacerbations with bronchodilators, oral steroids, and/or antibiotics

FIGURE 7. Outpatient management of exacerbations⁵

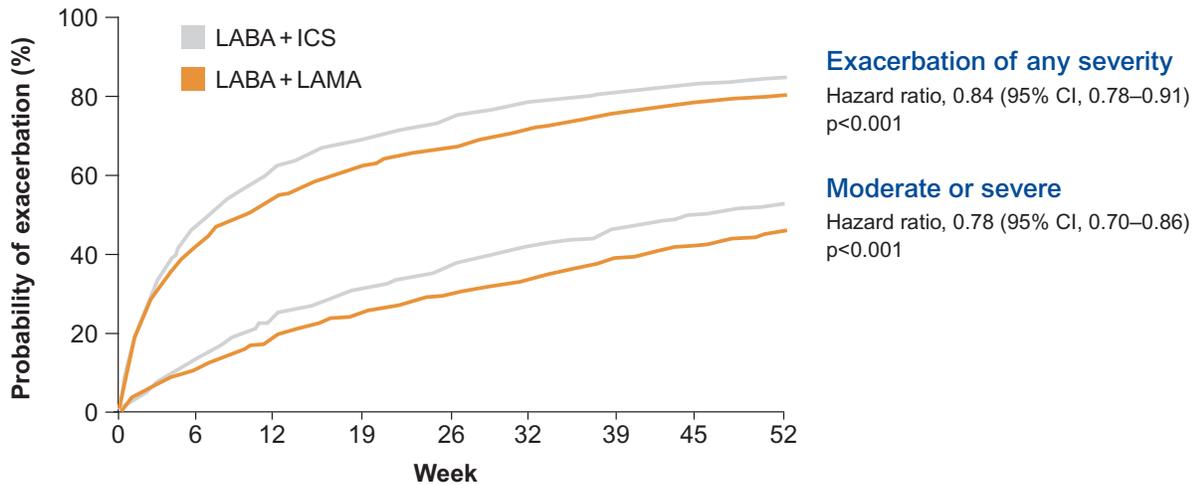


Initiate or adjust maintenance treatment based on GOLD recommendations (pages 4-5).

Intensify treatment when COPD advances

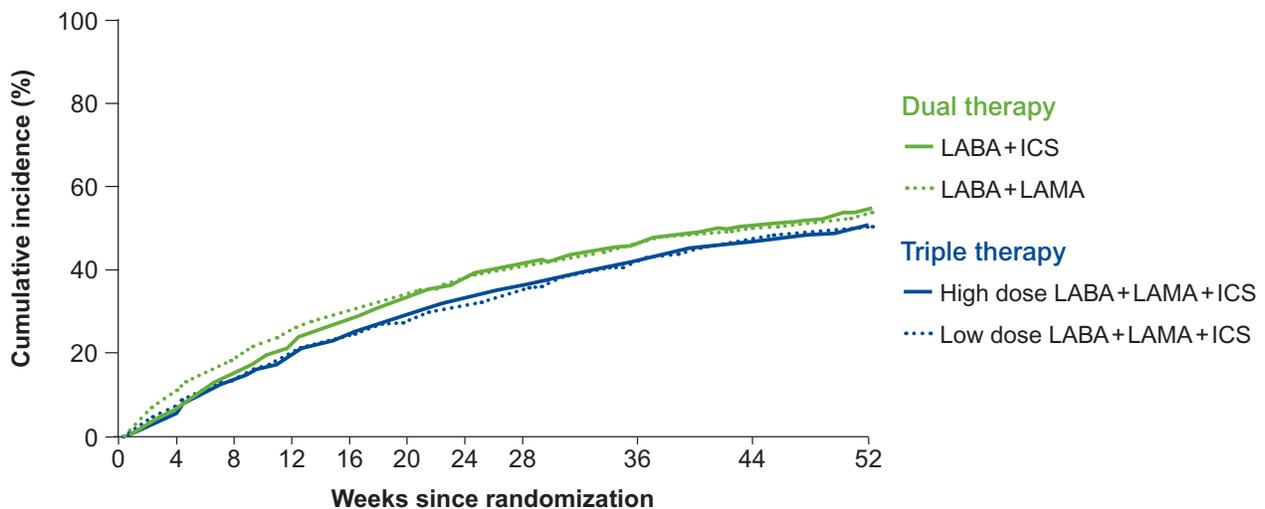
Dual therapy: LABA+LAMA reduces exacerbations more than LABA+ICS.

FIGURE 8. In the FLAME trial, LABA+LAMA reduced exacerbations more than LABA+ICS, and prolonged the time to first exacerbation.⁸



Triple therapy (LABA+LAMA+ICS) benefits patients with exacerbations compared to dual therapy.

FIGURE 9. The ETHOS trial showed lower rates of exacerbation from triple therapy compared to dual therapy with either an LABA+ICS or LABA+LAMA.¹⁰

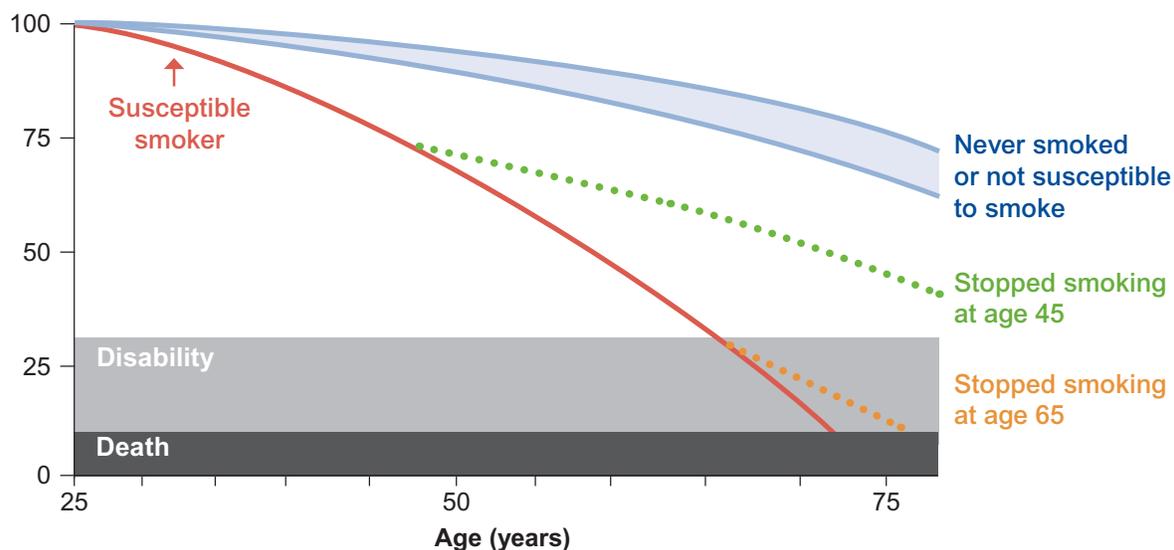


IMPACT found similar results with triple therapy vs. dual therapy, but the inclusion of people with asthma makes the application of these results to patients with COPD alone unclear.¹¹

Helping patients quit smoking is key

Smoking cessation is the most effective intervention to delay COPD symptoms, the onset of disability, and mortality.

FIGURE 10. Smoking and decline of lung function in COPD¹²



Create a plan for patients who are ready to quit.

1

Provide or refer for behavioral support. Even brief, simple advice increases the likelihood of quitting. More intensive advice can result in higher quit rates.¹³

2

Select treatment based on patient preferences, medical conditions, and cost.

- Pharmacologic options include:
 - **Nicotine replacement therapy:** long-acting (transdermal patch) and short-acting (e.g., gum, lozenge, nasal spray, inhaler); available without prescription
 - **Prescriptions:** varenicline (Chantix) OR bupropion (Wellbutrin, generics)
- When starting nicotine replacement, use a long-acting *plus* a short-acting agent.
- Varenicline is superior to bupropion and to long-acting nicotine replacement alone.¹⁴
- Nicotine replacement can be combined with either bupropion or varenicline.

3

Pharmacologic *plus* behavioral therapy offers the best prospects for quitting. Multiple attempts may be needed.¹⁵

Encourage patients to call 1-800-QUIT-NOW (1-800-784-8669) or text QUIT to 47848.

Additional interventions for patients with COPD

Pneumococcal vaccination¹⁶

- Give Pneumovax (23-valent) once before age 65 and again at or after age 65.
- Discuss Prevnar (13-valent). Consider giving in patients with advanced disease given low risk and small incremental benefit.



Pulmonary rehabilitation⁵

This is one of the most cost-effective interventions for COPD. A 6- to 8-week program of twice weekly exercise training can reduce:



- dyspnea
- symptoms of anxiety and depression
- readmissions in patients with a recent COPD hospitalization

Prescribe oxygen in patients with chronic hypoxemia.^{17,18}



Criteria for home oxygen in severe disease:

- O_2 saturation $\leq 88\%$ or $PaO_2 \leq 55$ mm Hg, **or**
- PaO_2 of 55-59 mm Hg with evidence of pulmonary hypertension, cor pulmonale, hematocrit $>55\%$, **or**
- $PaO_2 \geq 60$ mm Hg with exercise desaturation, sleep desaturation not corrected by continuous positive airway pressure (CPAP), or severe dyspnea that responds to oxygen therapy.¹⁹

Note: When titrating oxygen, aim for an O_2 saturation $>90\%$.

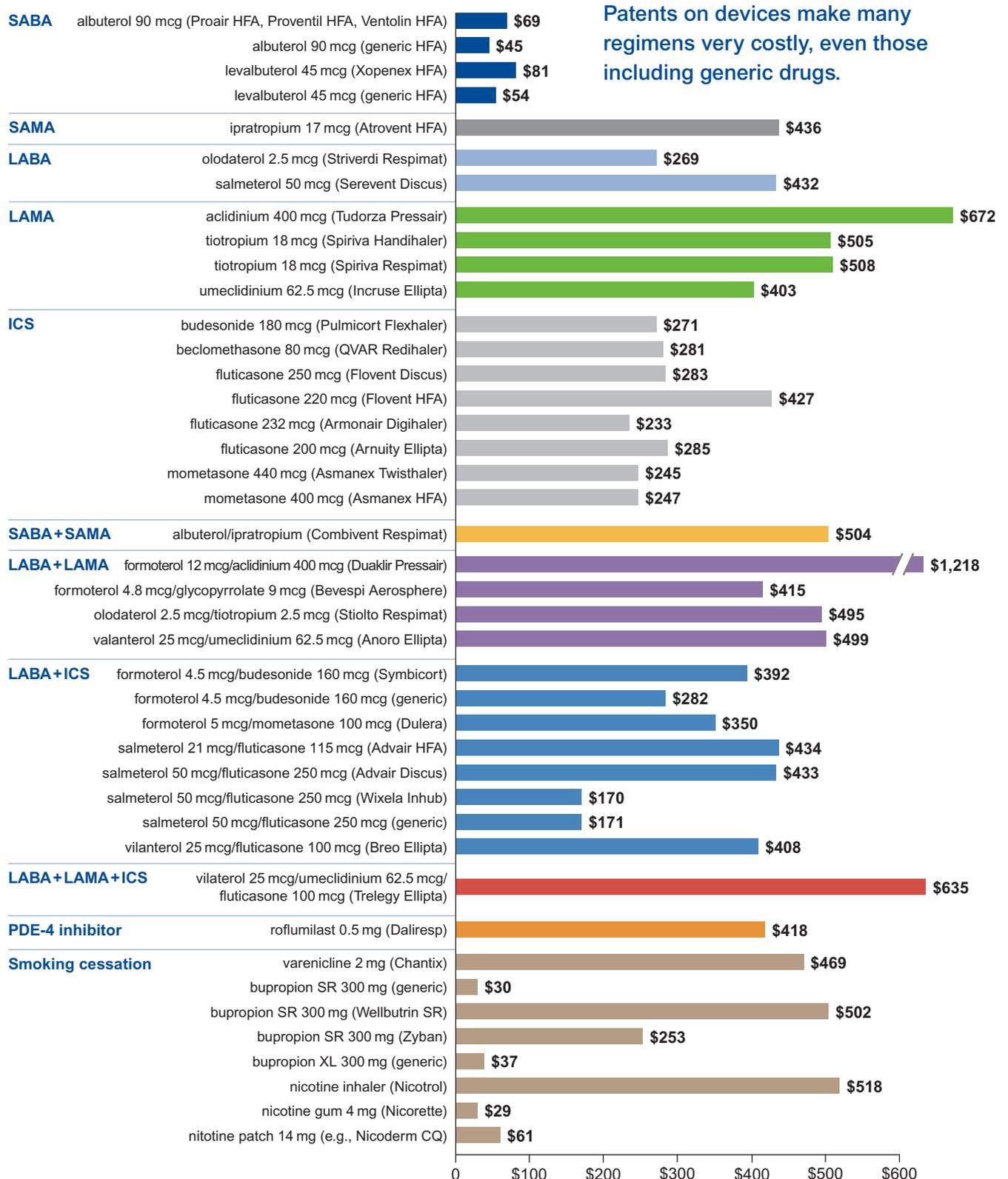
Engage COPD patients in conversations about palliative care.

- COPD is a progressive disease that does not have a cure.
- It causes worsening symptoms, deteriorating quality of life, frequent emergency room visits, and hospitalizations.²⁰
- Patients with end-stage COPD are far less likely than lung cancer patients to get palliative medications.
- In patients with end-stage COPD, low-dose opioids can help relieve refractory dyspnea without increasing the risk of death.^{21,22}

A conversation about palliative care for COPD should focus on enhancing quality of life, optimizing function, and helping patients and families get the emotional and spiritual support they need.⁵

Prices of these regimens vary widely

FIGURE 11. Cost of an inhaler or 30-day drug supply



Prices from goodrx.com, May 2020. Listed doses are based on Defined Daily Doses by the World Health Organization and should not be used for dosing in all patients. All doses shown are for generics when available, unless otherwise noted. These prices are a guide; patient costs will be subject to copays, rebates, and other incentives.

Not all inhalers are FDA approved to treat COPD.

Key messages

- **Use spirometry to diagnose COPD.**
- **Classify patients based on daily symptoms and history of exacerbations** according to the GOLD classification system, which can guide treatment.
- **Adjust the regimen based on daily symptoms and exacerbations.**
- **For patients who smoke, assess their willingness to quit** and tailor recommendations to their stage of readiness.
- **Include non-drug interventions** throughout the course of COPD:
 - Recommend exercise, good nutrition, and immunizations for all patients.
 - Refer selected patients to pulmonary rehabilitation.
- **Treat acute exacerbations** with short-acting bronchodilators, systemic steroids, and an antibiotic when indicated.
- **Begin conversations about palliative and end-of-life care** as the disease worsens.

Visit AlosaHealth.org/COPD
for links to a comprehensive evidence document and other resources.

References:

(1) Centers for Disease Control and Prevention, National Center for Health Statistics. Underlying Cause of Death 1999-2018 on CDC WONDER Online Database. <http://wonder.cdc.gov/ucd-icd10.html>. Published 2020. Accessed May 12, 2020. (2) Khakban A, Sin DD, FitzGerald JM, et al. The Projected Epidemic of Chronic Obstructive Pulmonary Disease Hospitalizations over the Next 15 Years. A Population-based Perspective. *Am J Respir Crit Care Med*. 2017;195(3):287-291. (3) Centers for Disease Control and Prevention. COPD costs. Updated February 21, 2018. Accessed June 24, 2020. (4) Press VG, Konezka RT, White SR. Insights about the economic impact of chronic obstructive pulmonary disease readmissions post implementation of the hospital readmission reduction program. *Curr Opin Pulm Med*. 2018;24(2):138-146. (5) Global Initiative for Chronic Obstructive Lung Disease. *Global strategy for the diagnosis, management, and prevention of chronic obstructive pulmonary disease*. 2020 report. (6) Stenton C. The MRC breathlessness scale. *Occup Med (Lond)*. 2008;58(3):226-227. (7) Jones PW, Harding G, Berry P, Wiklund I, Chen WH, Kline Leidy N. Development and first validation of the COPD Assessment Test. *Eur Respir J*. 2009;34(3):648-654. (8) Wedzicha JA, Banerji D, Chapman KR, et al. Indacaterol-Glycopyrronium versus Salmeterol-Fluticasone for COPD. *N Engl J Med*. 2016;374(23):2222-2234. (9) Magnussen H, Disse B, Rodriguez-Roisin R, et al. Withdrawal of inhaled glucocorticoids and exacerbations of COPD. *N Engl J Med*. 2014;371(14):1285-1294. (10) Rabe KF, Martinez FJ, Ferguson GT, et al. Triple Inhaled Therapy at Two Glucocorticoid Doses in Moderate-to-Very-Severe COPD. *N Engl J Med*. 2020;383(1):35-48. (11) Lipson DA, Barnhart F, Brealey N, et al. Once-Daily Single-Inhaler Triple versus Dual Therapy in Patients with COPD. *N Engl J Med*. 2018;378(18):1671-1680. (12) Fletcher C, Peto R. The natural history of chronic airflow obstruction. *Br Med J*. 1977;1(6077):1645-1648. (13) Stead LF, Buitrago D, Preciado N, Sanchez G, Hartmann-Boyce J, Lancaster T. Physician advice for smoking cessation. *Cochrane Database Syst Rev*. 2013;2013(5):Cd000165. (14) Anthenelli RM, Benowitz NL, West R, et al. Neuropsychiatric safety and efficacy of varenicline, bupropion, and nicotine patch in smokers with and without psychiatric disorders (EAGLES): a double-blind, randomised, placebo-controlled clinical trial. *Lancet*. 2016;387(10037):2507-2520. (15) van Eerd EA, van der Meer RM, van Schayck OC, Kotz D. Smoking cessation for people with chronic obstructive pulmonary disease. *Cochrane Database Syst Rev*. 2016;2016(8):Cd010744. (16) Centers for Disease Control and Prevention. Pneumococcal vaccine recommendations. <https://www.cdc.gov/vaccines/vpd/pneumo/hcp/recommendations.html>. Accessed June 16, 2020. (17) Continuous or nocturnal oxygen therapy in hypoxemic chronic obstructive lung disease: a clinical trial. Nocturnal Oxygen Therapy Trial Group. *Ann Intern Med*. 1980;93(3):391-398. (18) Long term domiciliary oxygen therapy in chronic hypoxic cor pulmonale complicating chronic bronchitis and emphysema. Report of the Medical Research Council Working Party. *Lancet*. 1981;1(8222):681-686. (19) U.S. Department of Health and Human Services, U.S. Centers for Medicare and Medicaid Services (CMS), Medicare Learning Network. Home oxygen therapy. CMS. Accessed June 23, 2020. (20) Iyer AS, Goodrich CA, Dransfield MT, et al. End-of-Life Spending and Healthcare Utilization Among Older Adults with Chronic Obstructive Pulmonary Disease. *Am J Med*. 2019. (21) Currow DC, Quinn S, Greene A, Bull J, Johnson MJ, Abernethy AP. The longitudinal pattern of response when morphine is used to treat chronic refractory dyspnea. *J Palliat Med*. 2013;16(8):881-886. (22) Ekström MP, Bornefalk-Hermansson A, Abernethy AP, Currow DC. Safety of benzodiazepines and opioids in very severe respiratory disease: national prospective study. *BMJ*. 2014;348:g445.

About this publication

These are general recommendations only; specific clinical decisions should be made by the treating clinician based on an individual patient's clinical condition. More detailed information on this topic is provided in a longer evidence document at AlosaHealth.org.



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