Practice Guidelines

Treatment of Chronic Obstructive Pulmonary Disease: Guidelines from the American Thoracic Society

Key Points for Practice

- For symptomatic COPD, combination LABA/LAMA therapy is recommended over monotherapy because of reduced exacerbations and hospitalizations and improvements in dyspnea.
- Adding an ICS to LABA/LAMA therapy further reduces exacerbations but increases pneumonia risk with no change in hospitalization rate.
- Maintenance oral corticosteroid therapy does not appear to improve outcomes in COPD, but it does increase adverse events.
- Long-term oxygen therapy reduces mortality in patients with COPD who have severe hypoxia and a resting oxygen saturation of 88% or less.

From the *AFP* Editors

Chronic obstructive pulmonary disease (COPD) is characterized by persistent respiratory symptoms and airflow limitation from airway or alveolar abnormalities. The goal of medical treatment for COPD is to reduce exacerbation frequency, improve quality of life, and control symptoms.

The American Thoracic Society (ATS) published guidelines for pharmacologic management of COPD and long-term oxygen therapy for COPD and interstitial lung disease based on systematic reviews.

Baseline Therapy

For patients with symptoms from COPD, the ATS recommends combination therapy with a long-acting beta agonist (LABA) and a long-acting muscarinic antagonist (LAMA) based on improved outcomes over monotherapy with either agent. LABA/LAMA combination therapy results in fewer exacerbations than monotherapy, with a number needed to treat (NNT) of 12 to prevent one exacerbation (95% CI, 8 to 29). Hospitalizations are also reduced with combination therapy (NNT = 53; 95% CI, 31 to 200) compared with monotherapy. With LABA/LAMA combination therapy, patients experience a mild decrease in dyspnea and a clinically insignificant quality of life improvement without increased adverse events.

Adding Corticosteroid Therapy

If patients with COPD are symptomatic despite combination LABA/LAMA therapy, adding an inhaled corticosteroid (ICS) can be considered. Adding the ICS reduces exacerbations over LABA/LAMA therapy (NNT = 16; 95% CI, 12 to 33) without changing dyspnea or health-related quality of life. The risk of pneumonia increases with ICS/LABA/LAMA triple therapy compared with LABA/LAMA therapy, although with no increase in hospitalization rates. Patients with blood eosinophilia and COPD have greater reduction in exacerbations and a greater risk of pneumonia with ICS use.

Discontinuing ICS use is recommended for patients taking triple therapy who have had no exacerbations in the past year. Limited study suggests no change in exacerbations, hospital admissions, dyspnea, or quality of life after ICS discontinuation.

Maintenance oral corticosteroid therapy is not recommended, even in patients with severe and frequent exacerbations. Oral corticosteroid therapy in these patients does not appear to change dyspnea, exacerbations, hospitalization, or mortality in limited study, although adverse events are increased (number needed to harm = 6; 95% CI, 3 to 24).

Coverage of guidelines from other organizations does not imply endorsement by *AFP* or the AAFP.

This series is coordinated by Michael J. Arnold, MD, contributing editor.

A collection of Practice Guidelines published in *AFP* is available at https://www.aafp.org/afp/practguide.

CME **This clinical content** conforms to AAFP criteria for CME. See CME Quiz on page 20.

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Treatment of Refractory Dyspnea

Some patients, despite optimal treatment, will continue to have dyspnea. Opioid treatment (e.g., low-dose morphine) may decrease dyspnea without affecting outcomes such as exacerbations or emergency department visits. Limited research suggests that treatment does not increase the risk of falls, sedation, or overdose.

Treatment of Hypoxia

The ATS evaluated long-term oxygen therapy for COPD in a separate guideline. Long-term oxygen therapy of at least 15 hours a day is recommended for patients with severe resting hypoxia, defined as an oxygen saturation of 88% or less or a partial pressure of oxygen of 55 mm Hg or less. In these patients, oxygen therapy reduces mortality by more than one-half at two and five years, although evidence is limited. Harms include burns, nosebleeds, tripping over equipment, and patient and caregiver burden of equipment maintenance and use.

With less than severe hypoxia, mortality is not improved by oxygen therapy. When patients have severe hypoxia only with exertion, ambulatory oxygen therapy improves walking distance but has a clinically insignificant effect on dyspnea and quality of life.

Evidence Limitations

The available evidence for COPD is too limited to make recommendations for patients older than 80 years or for patients with asthma and COPD, eosinophilia and COPD, and other chronic conditions with COPD.

Editor's Note: The NNTs and number needed to harm were calculated by the author from data provided in the guideline.

The recommendations by the ATS are similar to those of the U.S. Department of Veterans Affairs and the U.S. Department of Defense (VA/DoD) recommendations and the Global Initiative for Chronic Obstructive Lung Disease (GOLD) recommendations that were included in the most recent *AFP* COPD review (https://www.aafp.org/afp/2017/0401/p433.html). Although all three note that combination LABA/LAMA therapy is superior to monotherapy, the ATS recommends combination LABA/LAMA use by all symptomatic patients with COPD, whereas the VA/DoD recommend starting with LAMA monotherapy. The ATS recommendation is based on a comparison of combination LABA/LAMA therapy with either monotherapy, which overstates the benefits because LABA monotherapy, but not LAMA monotherapy, is inferior to the combination. The GOLD does not recommend any treatment order. Based on cost, ease of use, and clinical equivalence, LAMA monotherapy recommended by the VA/DoD may be the best starting point. All three organizations note that exacerbation risk is further reduced by adding an ICS at the cost of increased pneumonia risk. All three organizations recommend long-term oxygen therapy in COPD when associated with severe resting hypoxia, and the ATS alone suggests consideration of ambulatory oxygen with severe exertional hypoxia. Only the ATS discusses the use of opioid therapy for refractory dyspnea. The ATS addresses smoking cessation (https://www.aafp.org/afp/2021/0315/p380.html) in a separate guideline.—Michael J. Arnold, MD, Contributing Editor

The views expressed in this article are those of the author and do not necessarily reflect the official policy or position of the Department of the Navy, Uniformed Services University of the Health Sciences, Department of Defense, or the U.S. government.

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Recommendations based on patient-oriented outcomes? Yes

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Available at: https://www.atsjournals.org/doi/pdf/10.1164/rccm.202003-0625ST, and https://www.atsjournals.org/doi/full/10.1164/rccm.202009-3608ST

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