Practice Guidelines

Treatment of Chronic Obstructive Pulmonary Disease Exacerbations: Guidelines from the American Academy of Family Physicians

Key Points for Practice

- Systemic corticosteroids prevent clinical failure in COPD exacerbations. Treatment for 10 days or longer increases adverse effects and may not be more effective than treatment for three to five days.
- Antibiotics for seven days increase clinical cure in COPD exacerbations with an NNT of 7.
- Magnesium, theophyllines, and mucolytics do not improve outcomes in COPD exacerbations, and bronchodilators had no benefit in limited studies.

From the *AFP* Editors

Approximately 15 million Americans are affected by chronic obstructive pulmonary disease (COPD), with airflow limitations, cough, and shortness of breath. Chronic respiratory diseases, including COPD, are the fourth leading cause of death in the United States. Acute exacerbations of COPD increase mortality and hospital admissions while reducing lung function and quality of life. Despite this risk, evidence is limited for treating exacerbations. The American Academy of Family Physicians (AAFP) has published guidelines for treating acute exacerbations of COPD based on a systematic review.

See the full guideline at https://www.aafp.org/afp/2021/0700/od1.html.

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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Corticosteroids

In acute exacerbations, systemic corticosteroids reduce exacerbations with a number needed to treat (NNT) of 3 to prevent clinical failure. Clinical failure is defined as the lack of significant clinical improvement or the need for additional therapy. This is based on only two randomized controlled trials with 286 patients, yet there were no clinical failures in the corticosteroid group of either study. The evidence is low quality due to the high risk of bias and imprecision in both studies. Adverse events are not significantly increased with corticosteroid therapy. Treatment for 10 to 14 days may not provide greater benefit over treatment for three to five days. A large retrospective study of more than 10,000 patients demonstrated small increases in hospitalization for pneumonia and mortality with longer corticosteroid courses.

Antibiotic Therapy

Antibiotic therapy also improves outcomes in acute exacerbations of COPD. Moderate quality evidence suggests that antibiotic treatment increases the rate of clinical cure at the end of treatment with an NNT of 7 (95% CI, 5 to 11) and reduces the rate of clinical failure with an NNT of 9 (95% CI, 6 to 33). Evidence is insufficient to suggest the superiority of any one antibiotic. Antibiotics used in trials included doxycycline, amoxicillin, and amoxicillin/clavulanate (Augmentin). Antibiotics were most often administered for seven days.

Other Therapies

Although bronchodilators are routinely used to treat breathlessness during exacerbation, limited studies comparing bronchodilators showed no differences in lung performance and failed to report patient-oriented outcomes. Limited study of theophyllines, magnesium sulfate, and mucolytics has not demonstrated clinical benefit.

Nonpharmacologic Treatments

Chest physiotherapy was not found to improve outcomes in COPD exacerbations, but a small study of whole-body vibration showed improvements in quality of life. Small trials of aerobic training and resistance training suggest a slight improvement in dyspnea. One trial of oxygen therapy in acute COPD exacerbations found lower mortality when oxygen is titrated to a target oxygen saturation instead of using high-flow oxygen for all patients.

Editor's Note: The NNTs were calculated by the author from data provided in the guideline.

These recommendations from the AAFP are similar to those of the U.S. Department of Veterans Affairs and the U.S. Department of Defense (VA/DoD), the Global Initiative for Chronic Obstructive Lung Disease (GOLD), and a review by the Agency for Healthcare Research and Quality (AHRQ; https://www.aafp.org/afp/2020/0501/p557.html). All agree on the usefulness of corticosteroid therapy in exacerbations and cast doubt on magnesium and mucolytics. Although all agree that antibiotics appear to reduce treatment failure, the VA/DoD are ambivalent about their use because antibiotics have not been shown to reduce recurrent exacerbations. The GOLD and AHRQ reports support the AAFP recommendation for antibiotic use.—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.

Guideline source: American Academy of Family Physicians

Evidence rating system used? Yes

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Guideline developed by participants without relevant financial ties to industry? Yes

Recommendations based on patient-oriented outcomes? Yes

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