

How should we manage an acute exacerbation of COPD?

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Would you order a chest film to evaluate an acute exacerbation of chronic obstructive pulmonary disease (COPD)?

Which medication would you first prescribe—a short-acting inhaled beta-2 agonist or an anticholinergic bronchodilator?

These are important questions for family physicians who commonly manage acute exacerbations of COPD.

The guideline summarized here was developed by a joint expert panel of the American College of Physicians–American Society of Internal Medicine and the American College of Chest Physicians. Three outcomes were considered: treatment efficacy, 6-month mortality, and relapse, as defined by return visit to the emergency department within 14 days of initial presentation. Systematic reviews with evidence tables were used to analyze data. The rationale for each recommendation is clear and well documented.

We added strength-of-recommendation ratings, which are not in the original guideline.

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Practice recommendations

Diagnosis

- Chest radiography is useful (**B**).
- Spirometry should not be used to diagnose an exacerbation or to assess its severity (**A**).
- An arterial blood gas reading is helpful in gauging the severity of an exacerbation (**A**).
- There is little evidence regarding the contribution of additional laboratory testing, the predictive value of physical examination findings, or the usefulness of electrocardiography or echocardiography.

Treatment

- Inhaled short-acting beta-2 agonists and anticholinergic bronchodilators have positive effects. Since inhaled anti-cholinergic bronchodilators have fewer side effects, use them first. If improvement is slow with the initial bronchodilator, even at maximum dose, add a second bronchodilator (**A**).
- Parenteral agents (methyxanthines and sympathomimetics) are not as effective and have potential adverse effects (**B**).
- Mucolytic medications and chest physiotherapy are not effective (**C**).

- Systemic corticosteroids improve respiration and reduce relapse rate (**A**).
- Noninvasive positive-pressure ventilation decreases risk for invasive mechanical ventilation (**A**).
- Oxygen is beneficial for hypoxemic patients (**B**).
- Antibiotics are beneficial. Narrow-spectrum antibiotics (eg, amoxicillin, trimethoprim-sulfamethoxazole, or tetracycline) are recommended as first-line agents. The more severe the episode, the more beneficial are antibiotics (**A**). There is no data regarding the optimal length of antibiotic treatment.
- Little evidence is available regarding the empiric use of diuretics.

Prognosis

- No methods reliably predict readmission to the hospital within 14 days after discharge (**B**).
- No methods reliably predict inpatient mortality (**B**).

■ LIMITATIONS OF THE GUIDELINE AND ADDITIONAL EVIDENCE

Several weaknesses underlie this guideline. The authors found that, despite the importance of COPD, it has been the subject of very few high-quality studies. The highest-quality studies were few in number and had enrolled a small number of participants. The authors did not grade the strength of each recommendation in the summary document or in the detailed manuscripts, making it difficult to rapidly review.

Different diagnostic criteria are used in the source studies, making the context of treatment recommendations difficult to fully understand. Outcome endpoints also varied among studies. Goals for oxygen therapy were not addressed. Antibiotic treatment was based on studies before the emergence of multidrug-resistant organisms, particularly *Streptococcus pneumoniae*. It did not

address tobacco use or smoking cessation, vaccine administration, outpatient management, management of stable COPD, or stratification of patients by severity.

■ GUIDELINE DEVELOPMENT AND EVIDENCE REVIEW

Literature searches were performed using MEDLINE (1966–2000), EMBASE (1966–2000), Health Star (1966–2000), and the Cochrane Controlled Trials Register (2000, Issue 1).

Search strategies included the index terms and text words *chronic obstructive pulmonary disease* and *acute exacerbation* and specific terms relating to interventions and outcomes. Variations on several search strategies were tested to locate the greatest number of relevant articles. Reference lists of retrieved articles were also examined. In all, 770 source articles were found.

■ TWO OTHER GUIDELINES FOR COPD

- **Global strategy for the diagnosis, management, and prevention of chronic obstructive pulmonary disease.** Bethesda, Md: Global Initiative for Chronic Obstructive Lung Disease, World Health Organization/National Heart, Lung, and Blood Institute; 2001. Various pagings. (Web access at: www.gold-copd.com.)

This guideline recommends COPD treatment appropriate for use worldwide, emphasizes prevention interventions, and is an excellent source of teaching materials for patients and medical professionals. It is not, however, evidence-based.

- **Veterans Health Administration (VHA). Clinical practice guideline for the management of chronic obstructive pulmonary disease.** Version 1.1a. Washington, DC: Department of Veterans Affairs (US), Veterans Health Administration; 1999 Aug. 116 p. (Web access at: www.oqp.med.va.gov/cpg/COPD/COPD_base.htm).

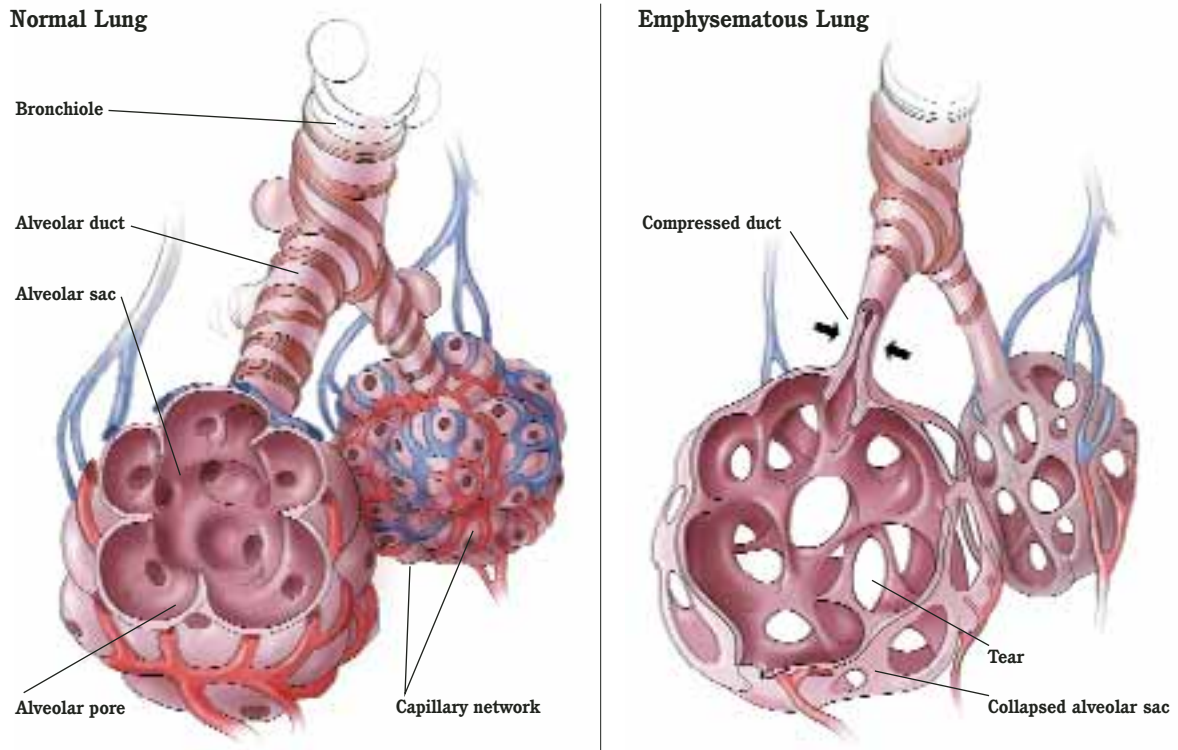
FIGURE Emphysematous dysfunction in COPD

ILLUSTRATION BY JENNIFER E. FAIRMAN

There is no widely accepted definition of an acute exacerbation of chronic obstructive pulmonary disease. It is based on 3 clinical findings—worsening dyspnea, increase in sputum purulence, and an increase in sputum volume. These do not translate into airway changes in all patients. However, in emphysema, a physician may observe damaged alveoli, loss of elasticity of airways (bronchioles and alveoli), compression and collapse of alveoli, tearing of walls of alveoli, and formation of bullae. In chronic bronchitis, the bronchial walls are inflamed and thickened, with a narrowing and plugging of the bronchial airways. Many COPD patients have a mixture of these two conditions.

This guideline is more comprehensive than the others, but slow to download and review. It includes recommendations for acute and chronic management of COPD, preoperative evaluation of COPD patients, and key points in summary format.

GUIDELINE SOURCES

Bach PB, Brown C, Gelfand SE, McCrory DC; American College of Physicians–American Society of Internal Medicine; American College of Chest Physicians. Management of acute exacerbations of chronic obstructive pulmonary disease: A summary and appraisal of published evidence. *Ann Intern Med* 2001; 134:600–620. (Available at: www.annals.org/issues/v134n7/full/200104030-00016.html. Accessed on September 5, 2003.)

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Snow V, Lascher S, Mottur-Pilson C; Joint Expert Panel on Chronic Obstructive Pulmonary Disease of the American College of Chest Physicians and the American College of Physicians–American Society of Internal Medicine. Evidence base for management of acute exacerbations of chronic obstructive pulmonary disease. *Ann Intern Med* 2001; 134: 595–599. (Available at: www.annals.org/issues/v134n7/full/200104030-00015.html. Accessed on September 5, 2003.)

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