

Management of Chronic Obstructive Pulmonary Disease: Review Questions

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QUESTIONS

Choose the single best answer for each question.

Questions 1 and 2 refer to the following case study.

A 65-year-old man presents to his physician's office with a 6-month history of wheezing, dyspnea on exertion, and daily sputum production. He is a 50 pack-year smoker but is otherwise healthy. Examination shows markedly decreased breath sounds with mild wheezing at the end of expiration. When spirometry is performed, his forced expiratory volume in 1 second (FEV₁) is 1.5 L (60% of predicted). His forced vital capacity (FVC) is 2.3 L. The FEV₁/FVC ratio is 0.65.

- 1. Which of the following interventions will be most effective for improving this patient's long-term survival?**
 - (A) Inhaled corticosteroids
 - (B) Long-term oral corticosteroids
 - (C) Inhaled ipratropium
 - (D) Smoking cessation
- 2. Which of the following is the best management option for this patient?**
 - (A) Inhaled ipratropium as needed
 - (B) Inhaled albuterol as needed
 - (C) A short-acting bronchodilator as needed and regular treatment with a long-acting bronchodilator
 - (D) An inhaled corticosteroid
- 3. Which of the following statements regarding corticosteroid therapy in patients with an exacerbation of chronic obstructive pulmonary disease (COPD) is true?**
 - (A) Systemic corticosteroids should be given for more than 2 weeks to prevent treatment failure
 - (B) Systemic corticosteroids improve survival
 - (C) Intravenous therapy is better than oral therapy
 - (D) Systemic corticosteroids reduce hospital stays by 1 to 2 days
- 4. A 57-year-old woman is discharged from the hospital after an exacerbation of COPD. She has finished a course of antibiotics, and her current regimen includes salmeterol 2 puffs twice per day, albuterol 2 puffs every 6 hours as needed, and a tapering dose of prednisone. She has had COPD exacerbations 2 to 3 times per year for the last 2 years. She quit smoking 3 years ago, received a dose of pneumococcal vaccine 3 years ago, and had a flu shot this year. Her most recent spirometry showed FEV₁ of 1.1 L (45% of predicted) with no significant bronchodilator response. Her oxygen saturation on room air is 90%, and she has no signs of cor pulmonale. Which of the following is the best management option for this patient?**
 - (A) Arrange home oxygen therapy
 - (B) Maintain the patient on chronic oral prednisone
 - (C) Add an inhaled corticosteroid
 - (D) Start therapy with oral theophylline

(turn page for answers)

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ANSWERS AND EXPLANATIONS

- 1. (D) Smoking cessation.** Smoking cessation is the single most effective and cost-effective intervention for slowing the progression of COPD.¹ Inhaled corticosteroids and ipratropium may reduce hospitalization rates in patients with moderate to severe COPD, but they failed to retard the rate of decline of FEV₁ in large randomized controlled trials. It is unlikely that either of these medications has a positive impact on long-term survival in stable COPD patients. Oral corticosteroids do not benefit most patients with COPD and can cause severe adverse effects. Counseling patients to stop smoking can be an effective intervention—even a brief, 3-minute session—and, at the very least, counseling should be done for every smoker at every visit.
- 2. (C) A short-acting bronchodilator as needed and regular treatment with a long-acting bronchodilator.** This patient has moderate COPD (FEV₁/FVC < 70%; 50% of predicted ≤ FEV₁ < 80% of predicted) according to the revised GOLD (Global Initiative for Chronic Obstructive Lung Disease) guidelines.² The GOLD guidelines suggest regular treatment with a long-acting bronchodilator, such as salmeterol or formoterol, plus a short-acting bronchodilator as rescue medication in this category. Inhaled corticosteroids are indicated in symptomatic COPD patients with severe COPD (FEV₁ < 50% of predicted) and repeated exacerbations (eg, 3 or more in the past 3 years). A short-acting bronchodilator can be used on an as-needed basis in mild COPD (FEV₁ > 80 % of predicted) if patients are symptomatic.
- 3. (D) Systemic corticosteroids reduce hospital stays by 1 to 2 days.** Recent randomized controlled trials^{3,4} established that systemic corticosteroids hasten recovery, reduce hospital stay, and reduce early treatment failure in patients with acute exacerbations of COPD. However, the studies did not demonstrate significant mortality benefit associated with the use of systemic corticosteroids. No more than 2 weeks of therapy should be given (unless patients

are on chronic corticosteroids) because prolonged treatment may increase the readmission rate due to infectious complications. There is no reason to believe that intravenous therapy is inherently better than oral therapy. The exact dose of oral prednisone that should be given is unknown, but high doses are associated with a significant risk of side effects. Thirty to 40 mg of oral prednisone daily seems reasonable.

- 4. (C) Add an inhaled corticosteroid.** Regular treatment with inhaled corticosteroids has been shown to reduce the frequency of exacerbations and improve health status in symptomatic COPD patients with an FEV₁ < 50% predicted and repeated exacerbations (eg, 3 or more in the last 3 years). Long-term treatment with oral corticosteroids is not recommended in COPD.² Theophylline is effective in COPD but is not a preferred drug due to its potential toxicity. There is no evidence that theophylline reduces the frequency of exacerbation. Long-term oxygen therapy is indicated for patients with very severe COPD who have a PaO₂ at or below 55 mm Hg or SaO₂ at or below 88%, or, if there is evidence of cor pulmonale or polycythemia (hematocrit > 55%), PaO₂ between 55 and 60 mm Hg or SaO₂ of 89%.

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