

Stable COPD and COPD Exacerbations

ACP Clinical Guidelines for Diagnosis and Clinical Guidelines in November 2007
Annals of Internal Medicine also article about COPD screening in April 08 Annals from
the US Preventive Services Task Force. Articles concerning exacerbations from
UpToDate.

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A 56 year old African American female has been followed at the Medplex for COPD. She stopped smoking in 2005 and she has used 2 liters of nasal oxygen since approximately that time. Her COPD program includes inhaled fluticasone (Flovent) 220mcg/spray 2 puffs, bid, inhaled albuterol 2 puffs approximately four times a day, and tiotropium inhaled (Spriva) 18 mcg/cap once a day. Other medications include benazepril 20mg po each day and felodipine for her hypertension and Protonix 40 mg each day for her GERD. She takes Actonel for osteoporosis and Zocor 40 mg for hyperlipidemia. She has had no recent hospitalizations and is able to walk with her oxygen approximately a quarter of a block. There are no stairs at home. A physical examination revealed somewhat distant breath sounds and an increased duration of expiration. There was no use of accessory muscles in the neck to assist respiration. Her SaO₂ was 86%.

A pulmonary function study done several years ago revealed a FEV1 at 40 percent of predicted and a PaO₂ of 55 mm and a PCO₂ of 40. FEV1 was improved to 50%.with bronchodilators.

Question 1: In what stage of COPD does this patient fall?

1. mild
2. moderate
3. severe
4. very severe

Answer: She is a stage 4. To fall in that class your FEV1 has to be less than 30 percent of predicted or, as in her case, less than 50% of predicted with evidence of chronic respiratory failure. In her case her PaO₂ of 55 met that test. Her SaO₂ of 86% also is consistent with stage 4. Her PCO₂ would have had to be 50 to provide alternative support for that classification.

Mild COPD has a FEV1 equal to or greater than 80 percent of predicted with FEV1/FVC of less than 70%.

Moderate is FEV1/FVC of less than 70% with FEV1 between 50 and 80% of predicted.

Severe continues have an FEV1/FVC less than 70 with a FEV 1 between 30 and 50% of predicted.

Question 2: Additional spirometry tests would be useful in therapeutic planning for this patient True or False

Answer: False The American College of Physicians analysis suggested very little value in further planning by additional pulmonary function tests beyond the original one. (In this way, COPD may differ from pure asthma).

Question 3: This patient is on “triple therapy” (inhaled steroids, beta agonists and anticholinergics). Is there clear evidence that anything beyond monotherapy benefits this type of patient? If monotherapy is chosen, which of the three modalities is most useful?

Answer: Unlike asthma, the evidence for the value of triple therapy in COPD is more ambiguous. In COPD, good evidence supports long-acting inhaled anticholinergics, long acting beta 2 agonists, and corticosteroids as having similar effectiveness in reducing exacerbations (not mortality rates). Several studies suggest the possibility that various combinations (eg combivent) have some superiority over monotherapy but that evidence doesn't rise beyond the fair level.

Monotherapy with inhaled corticosteroids has somewhat more complications than monotherapy with the others.

None of the therapies dealt with in this question reduce mortality rates.

Question 4: Does this patient meet the criteria for oxygen therapy at least 15 hours a day.

Answer: Yes The evidence supports the use of oxygen in this way when the PaO₂ is equal to or less than 55mm Hg or when SaO₂ is < 89.

Question 5: To what level should the PaO₂ be raised?

Answer: It should be maintained at 60 or more.

Question 6: What are the criteria for prescribing pulmonary rehabilitation and does this patient meet them?

Answer: The value of pulmonary rehabilitation has only been shown in patients with an FEV₁ of less than 50% of predicted and this patient meets that test.

Question 7: Careful disease management and patient education has value for all COPD patients. True or false

Answer: False, unlike diabetes and a variety of other conditions, there is no evidence that these modalities add value to COPD patients

Question 8: Of all interventions that a physician can undertake, what is the single most important in improving mortality rates and complication rates in COPD patients?

Answer Smoking cessation.

This patient, having followed the case description, developed an episode involving increased cough, dyspnea and increased volume of sputum.

Question 9: What is the likelihood that this exacerbation is due to an infection?

Answer: Somewhere in the 60% range

Question 10: A sputum culture should promptly be secured so that therapy can be correctly directed.

Answer: False Gram stain and culture of expectorated sputum are similar during exacerbations and remissions. Many of the isolated organisms are probably colonizing flora rather than true pathogens. From a science point of view it does appear that an exacerbation may involve a new strain, based on molecular studies—however that does not have immediate application.

Question 11: What are the most likely organisms requiring treatment?

Answer: H. influenzae, M. catarrhalis, and S pneumoniae. Incidentally even purulent sputum does not entirely clarify whether the exacerbation is due to an infection. Also, over half of the infections that cause exacerbations are viral.

Question 12: Do the observations concerning monotherapy vs. triple therapy apply during management of an exacerbation?

Answer: No The pragmatic approach often requires more than one bronchodilator. During exacerbations, oral corticosteroids will produce better benefits than inhaled corticosteroids.

Future chapters: choice of antibiotics and criteria for admission to the hospital.

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