

BACKGROUND

Chronic obstructive pulmonary disease (COPD) is responsible for one death every four minutes in the US. While 12 million Americans have been diagnosed with the disease, it is estimated that at least that many have COPD but are undiagnosed. Several COPD risk factors converge in East Texas, resulting in some of the highest rates of unnecessary hospitalizations in the state. Since primary care physicians, PAs and NPs in the region are the most likely to diagnose and manage COPD, they should be made aware of the most current information available on how to improve patient outcomes and overcome clinical barriers to diagnostic testing and treatment.

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Dr. Al-Farra has no conflicts of interest to disclose.

HOW TO RECEIVE CREDIT

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This activity is commercially supported by Boehringer Ingelheim and Pfizer. Great care has been exercised to ensure the content is fair and balanced.

COPD Case Presentation

CONTINUING MEDICAL EDUCATION

LEARNING OBJECTIVES

Those completing this activity will receive information that should allow them to...

- Determine the severity of COPD based on GOLD recommendations;
- Formulate a treatment plan for patients with COPD based on severity of their underlying disease;
- Identify the importance of smoking cessation in patients with COPD; and
- Identify causes of COPD exacerbation.

67 YEAR OLD MALE WITH SHORTNESS OF BREATH WITH EXERTION

Your patient is a 67 year old male who complains of progressively worsening shortness of breath with exertion over the last year. He currently smokes half a pack of cigarettes daily and has accumulated 45 pack years. He uses a short acting beta agonist 3-4 times a day with limited relief. He is no longer able to ride a bike with his grandchildren.

His last hospitalization was 4 months ago secondary to right lower lobe pneumonia. He does not complain of weight loss or loss of appetite. He has a past medical history of dietary controlled diabetes and mild osteoarthritis. Medications include Albuterol and Celecoxib.

On exam respiratory rate is 22 per minute; chest exam reveals mild end expiratory wheezing without use of accessory muscles of respiration and no retractions. No clubbing, cyanosis or lower extremity edema is noted. Spirometry reveals an FVC of 78% predicted, FEV1 of 62% predicted and FEV1/FVC of 68%, post bronchodilator.



1 CME CREDIT

Physicians
Physician Assistants
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PRE-ASSESSMENT

Question One

Based on GOLD guidelines your patient:

- A. Has mild COPD.
- B. Has moderate COPD.
- C. Has severe COPD.
- D. Has very severe COPD.
- E. Is at risk of developing COPD.

Question Two

Based on GOLD guidelines the most appropriate next step would be to initiate:

- A. An inhaled corticosteroid.
- B. A *Leukotriene* inhibitor.
- C. Daily oral steroid.
- D. Long acting anticholinergic agent.
- E. Nebulized short acting beta 2 agonist.

Question Three

Your patient inquires about smoking cessation. You should inform him that:

- A. He can expect to recover 30-50% of his FEV1 six months after he quits smoking.
- B. It is too late for him to quit smoking as he has developed lung damage.
- C. Once he quits smoking rate of FEV1 decline parallels that of non smokers, but he will not recover lung function that has been lost due to tobacco use.
- D. He should quit smoking “cold turkey” as he is smoking less than a pack daily.
- E. Most smokers are able to quit after the first attempt.

Question Four

The patient develops a cough productive of green thick sputum associated with increasing shortness of breath, a low grade fever, and a clear chest x-ray.

You determine that he has tracheobronchitis and inform him that:

- A. The most common cause of his infection is an atypical organism.
- B. Bacterial infections are responsible for less than 10% of exacerbations.
- C. *Haemophilus influenzae*, *Moraxella catarrhalis*, and *Streptococcus pneumoniae* are the bacteria most frequently isolated from patients with an exacerbation of COPD.
- D. Viral infection should not be considered as it rarely leads to exacerbation of COPD.
- E. Antibiotics should not be initiated until sputum culture results are available.

PLEASE COMPLETE THE RESPONSE FORM BEFORE PROCEEDING TO THE CASE DISCUSSION.



DISCUSSION

Question One

It is important to determine the severity of COPD as this impacts treatment. Based on GOLD guidelines spirometry is indicated in patients with COPD to facilitate a diagnosis and determine severity. An FEV1/FVC ratio less than 70% is diagnostic of obstruction. The severity of obstruction is based on the FEV1. If the FEV1 is above or equal to 80% of predicted, the patient has mild COPD. If the FEV1 is between 50-80% of predicted the patient has moderate COPD making answer B correct. Severe COPD is diagnosed if the FEV1 is between 30-50% of predicted and very severe COPD is diagnosed when the FEV1 is less than 30% of predicted (below 50% with evidence of respiratory failure). The “at risk” category is no longer used.

Question Two

Our patient has moderate COPD based on an FEV1/FVC ratio less than 70% and an FEV1 between 50-80%. GOLD guidelines recommend the use of a long acting bronchodilator for patients with moderate COPD. A long acting cholinergic (answer D) such as tiotropium should be considered in our patient. An inhaled corticosteroid may be indicated in patients with severe or very severe disease in combination with a long acting bronchodilator. Leukotrine inhibitors are indicated in asthma but are not routinely used in patients with COPD. Daily oral steroids may be utilized in some patients with very severe debilitating COPD when the perceived benefits outweigh potential side effects. Short acting beta 2 agonists may be used on an as needed basis to supplement long acting bronchodilators.

SUMMARY

COPD is under recognized and undertreated. GOLD recommendations facilitate establishing a diagnosis and determining appropriate therapy. Spirometry should be performed at presentation and periodically. Obstruction is determined by the presence of an FEV1/FVC ratio of less than 70%. Severity of COPD is then based on the FEV1 as mentioned above. Judicious use of empiric antibiotics should be considered in exacerbations associated with increase or change in color of sputum especially when accompanied by worsening symptoms.

Question Three

Smoking cessation is one of if not the most important intervention in patients with COPD. The FEV1 declines in normal individuals starting at age 30-35. This decline is more rapid in smokers and is irreversible making answer 1 incorrect. Smokers are encouraged to quit regardless of severity of COPD (answer B is incorrect). Once smokers stop smoking their decline in FEV1 parallels the decline in FEV1 that occurs in non smokers; they will not recover lung function that has been lost due to tobacco use (C is the correct answer). Amount of tobacco use should not be the only criterion used to determine smoking cessation method. A multi disciplined approach including counseling and pharmacotherapy is more successful in most individuals than quitting “cold turkey” with the majority of smokers requiring multiple attempts before they are able to quit completely.

Question Four

Patients with an exacerbation of COPD usually present with increased sputum production, a change in sputum color compared with baseline, cough and/or worsening dyspnea. Infection is the most common cause of exacerbation. Bacterial and viral organisms are each responsible for 30-50% of infections. The most frequent bacterial organisms identified during an exacerbation are *Haemophilus influenzae*, *Moraxella catarrhalis*, and *Streptococcus pneumoniae* and empiric antibiotic therapy should be directed accordingly. Sputum cultures are rarely beneficial and not routinely indicated. Based on this information, C is the correct answer.

REFERENCES

Infection in the pathogenesis and course of chronic obstructive pulmonary disease. Sethi S, Murphy TF. *N Engl J Med*. 2008;359(22):2355-65.
Global strategy for the Diagnosis, Management, and prevention of Chronic Obstructive Disease. +Global Initiative for Chronic Obstructive Lung Disease (GOLD) 2009. Available at: <http://www.goldcopd.org>
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