Information for Re-entry Providers

COPD EXACERBATION

Case: A 55-year-old man presents to the clinic with a chief complaint of shortness of breath and sputum production. He has a past medical history of hypertension that is managed with amlodipine and COPD, for which he uses a tiotropium inhaler once a day. He has a 35-pack year history and still smokes a pack a day. Three days ago, he began experiencing increased fatigue. Now, he is unable to walk around his house without getting short of breath. He is also producing thick yellow sputum. He denies fever, chills, arthralgias, or myalgias. He currently does not use home oxygen.

On physical exam, his lungs have diffuse wheezing on auscultation, there is evidence of accessory muscle use while breathing, and his fingers demonstrate clubbing.

His vital signs are: HR-98; BP-138/85; Temperature 37.5 C; RR-25; Oxygen saturation 86% on room air.

Labs are significant for an elevated white blood cell count. Chest x-ray demonstrates a barrel chest.

COMMON SYMPTOMS

- Shortness of breath
- Dyspnea
- Increased sputum production
- Fatigued as compared to baseline

PHYSICAL EXAM

- Patients will commonly have wheezing on auscultation.
- The use of accessory muscle to breathe is also very common.
- The respiratory rate will often be elevated, while the oxygen saturation will be below baseline.

LABS AND IMAGING

Consider depending on severity at presentation

- CBC with Differential
- Basic Metabolic Panel
- Arterial Blood Gas – if you are concerned about your patient's oxygenation status
- Chest X-Ray
- Sputum Culture

TREATMENT

Home therapy is possible if none of the following apply: the patient does not have an increased oxygen requirement, does not have a blood pH <7.35, there is no concern for respiratory failure, chest x-ray is not concerning for pneumonia.

- **Short acting beta agonist inhaler** are the mainstay of therapy in exacerbations.:
  - Albuterol 90 mcg/actuation with 1-2 inhalation q4 hours PRN.
- **Short acting anticholinergic inhaler** may be added if symptoms are deemed severe enough:
  - Ipratropium 2 inhalations (34 mcg) QID.
  - Remember, if the patient is already on an anticholinergic inhaler, such as tiotropium, they may be at an increased risk of urinary retention, especially if they have BPH.
- **Systemic glucocorticoid steroids** have been shown to be beneficial in treating exacerbations. Prednisone 40 mg po for 5 days is the current recommendation.
- **Antibiotic therapy** is recommended for patients who have two of the following three symptoms: increased dyspnea, increased sputum volume, or increased sputum purulence.
  - Pseudomonas is suspected if prior broad-spectrum antibiotic use in the past three months, bronchiectasis, chronic systemic steroid use, or FEV1 < 30% predicted.
  - If Pseudomonas infection suspected, use respiratory fluoroquinolone (levofloxacin). Otherwise use amoxicillin-clavulanate.
- Admit the patient if they have an increased oxygen requirement, hypoxia, hypercarbia, altered mental status, history of multiple exacerbations, serious comorbidities, chest x-ray concerning for pneumonia, or marked frailty due to symptoms.

CONCLUSION

The patient does not have a history of a prior exacerbation and, despite feeling short of breath and fatigue from moving, is able to hold a conversation. His vitals signs are not within normal limits but not concerning enough to warrant admission. He can be prescribed short acting beta agonist and anti-cholinergic inhalers to help manage the exacerbation. He also meets the criteria for outpatient antibiotics. He has no concerning factors for a Pseudomonas infection, so amoxicillin-clavulanate is appropriate.

Patients who present with constitutional symptoms, fever, cough, chest pain, or edema should be worked up for other possibilities listed on the differential. Ordering the labs discussed above will help with arranging the differential and determining the final diagnosis.

References

Global Initiative for Chronic Obstructive Lung Disease (GOLD). Global Strategy for the Diagnosis, Management and Prevention of Chronic Obstructive Pulmonary Disease: 2020 Report. http://www.goldcopd.org (Accessed on March 30, 2020).

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.

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