

## Asthma Management: Review Questions

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### QUESTIONS

Choose the single best answer for each question.

- 1. A 25-year-old woman visits her physician's office, requesting refills of her albuterol inhaler. She has had asthma with daily symptoms for the past 10 years. She generally uses 2 puffs of her albuterol inhaler 4 times daily. She wakes up with asthma symptoms 1 to 2 nights a week; 2 puffs from her inhaler always brings complete relief of her wheezing and cough. Her peak expiratory flow (PEF) is 400 L/min, which is 100% of predicted. Besides refilling her prescription for the albuterol inhaler, which of the following is the best management option for this patient?**

  - Have her return for a visit in 3 months
  - Start therapy with a combination of a long-acting  $\beta$ -agonist and an inhaled corticosteroid
  - Start therapy with an ipratropium bromide inhaler
  - Start therapy with clarithromycin
- 2. A 28-year-old woman comes to her physician's office with a 24-hour history of continuous wheezing and dry cough. She is taking 2 puffs from an over-the-counter epinephrine inhaler every 15 minutes, with only partial relief. She used up her prescriptions for albuterol and fluticasone metered-dose inhalers, and she is requesting refills. Examination shows pulsus paradoxus (decrease in systolic blood pressure of 20 mm Hg). She is using accessory muscles of respiration and is unable to lie flat because of dyspnea. PEF is 100 L/min (30% of predicted) before 3 aerosol treatments with albuterol and saline solution and 110 L/min (37% of predicted) after treatment. She reports feeling better after the treatments. Subsequent examination shows decreased breath sounds and no wheezes in the lung fields. Which of the following is the best management option for this patient?**

  - Admit the patient to the hospital
  - Refill her prescriptions and start therapy with clarithromycin
  - Refill her prescriptions, prescribe prednisone 15 mg daily for 4 weeks (then taper over
- 3. A 22-year-old woman goes to her physician's office because of a 24-hour history of wheezing, dry cough, and chest tightness. She takes 2 puffs from an albuterol inhaler every 2 hours, with only partial relief. She ran out of her fluticasone and salmeterol 2 weeks ago. There is no accessory muscle use, and she has pulsus paradoxus (decrease in systolic blood pressure of 5 mm Hg). She is afebrile, with a pulse of 90 bpm and respiratory rate of 20 breaths/min. PEF is 100 L/min (30% of predicted) before and 250 L/min (83% predicted) after an aerosol treatment with albuterol and saline solution. The patient reports feeling better after treatment, but bilateral expiratory wheezes are heard in both lung fields. Which of the following is the best management option for this patient?**

  - Admit the patient to the hospital
  - Refill her prescriptions and have her return to the office in 24 hours
  - Refill her prescriptions, prescribe prednisone 40 mg daily for 7 days, and re-evaluate in 24 hours
  - Refill her prescriptions, prescribe trimethoprim sulfate, and re-evaluate in 24 hours

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4 weeks), and schedule a follow-up appointment in 1 week

- D) Refill her prescriptions, prescribe prednisone 40 mg daily for 7 days, and schedule a follow-up appointment in 1 week

4. **An 18-year-old man comes to his physician's office for follow-up examination because of his asthma. His PEF is 400 L/min (80% of personal best). He currently takes fluticasone 110 µg 2 puffs twice daily and uses an albuterol inhaler 3 to 4 times daily. He is compliant with his medications, but he still wakes up at night 3 to 4 times a week with coughing that is relieved with his albuterol inhaler. Which of the following is the best management option for this patient?**

- A) Add a long-acting  $\beta$ -agonist such as salmeterol or formoterol to his fluticasone therapy  
B) Prescribe erythromycin 250 mg 4 times daily  
C) Prescribe prednisone 40 mg daily for 7 days  
D) Prescribe prednisone 40 mg daily for 7 days, then 30 mg daily for 7 days, then 20 mg daily for 7 days, and then 10 mg daily for 7 days

#### EXPLANATIONS

1. **(B) Start therapy with a combination of a long-acting  $\beta$ -agonist and an inhaled corticosteroid.** This patient with daily symptoms and frequent nocturnal awakenings has moderate persistent asthma. The 1997 National Institutes of Health (NIH) Guidelines for the Diagnosis and Treatment of Asthma suggest daily maintenance therapy with a low to medium dose of an inhaled corticosteroid plus a long-acting  $\beta$ -agonist and a short-acting  $\beta$ -agonist for rescue.<sup>1</sup> A leukotriene modifier along with a long-acting  $\beta$ -agonist may be an acceptable alternative treatment. This patient should also receive asthma education and an asthma action plan. Anticholinergic therapy (eg, with ipratropium bromide) is more effective in chronic obstructive pulmonary disease than in asthma and has limited indications in asthma. Antibiotics (eg, clarithromycin) are not indicated for chronic asthma and should only be used to treat specific infections such as sinusitis.

2. **(A) Admit the patient to the hospital with a diagnosis of status asthmaticus.** Asthma symptoms and reduced flow rates that are unresponsive to initial therapy are defined as status asthmaticus. This patient has a severe exacerbation characterized by elevated pulsus paradoxus, use of accessory muscles, and peak expiratory flows (PEFs) less than 50% of predicted, with no improvement after inhalation of bronchodilators. With minimal airflow, wheezes may not be heard. This patient should be urgently admitted to the hospital. An arterial blood gas measurement should be obtained to evaluate for hypercarbic respiratory failure. Antibiotics are not indicated for exacerbations of asthma, unless a specific infection is identified.

3. **(D) Refill her prescriptions, prescribe prednisone 40 mg daily for 7 days, and schedule a follow-up appointment in 1 week.** Patients with acute exacerbations who are able to improve their peak flow above 70% of predicted after 3 doses of a nebulized bronchodilator can generally be managed as outpatients. In adults, 40 to 60 mg of prednisone for 5 to 10 days without a taper is recommended by the NIH guidelines.<sup>1</sup> Antibiotics are not indicated for exacerbations of asthma, unless a specific infection is identified.

4. **(A) Add a long-acting  $\beta$ -agonist such as salmeterol or formoterol to his fluticasone therapy.** Oral corticosteroids such as prednisone are usually reserved for patients with acute exacerbations of asthma symptoms and PEFs below 50% of predicted. Some patients with exacerbations and PEFs between 50% and 70% are treated with prednisone. This patient has moderate, persistent asthma. Increasing the dose of his inhaled corticosteroid or adding a long-acting  $\beta$ -agonist are both acceptable treatment options. Since long-term treatment with high-dose inhaled corticosteroids may lead to complications, adding a long-acting bronchodilator may be preferred.

#### REFERENCE

1. National Asthma Education and Prevention Program Expert Panel Report 2: Guidelines for the diagnosis and management of asthma. Bethesda (MD): National Heart, Lung, and Blood Institute; 1998. NIH Publication No. 98-4051.

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