

ABFM ASTHMA SAM PART 5

The background is a solid blue gradient. On the right side, there are several white, parallel diagonal lines that sweep upwards from the bottom towards the top right corner, creating a sense of motion and modern design.

A 25-year-old female with a history of mild persistent asthma presents to the emergency department with a 5-day history of increasing cough, wheezing, and shortness of breath. On examination, she is noted to be slightly agitated with a pulse rate of 110 beats/min. Examination of the lungs reveals loud expiratory wheezing on auscultation, and obvious suprasternal retractions. Her FEV₁ is 1.71 L (63% of predicted) and her oxygen saturation is 92%.

Which of the following treatment interventions would you initially prescribe? (Mark all that are true.)

- A. Intubation
- B. An inhaled SABA, up to 3 treatments in the first hour
- C. Intravenous theophylline
- D. Oxygen by mask
- E. Oral corticosteroid therapy

QUESTION #49

- ▶ The patient's clinical presentation is consistent with a moderate asthma exacerbation. Features of a moderate exacerbation include
 - ▶ Breathlessness at rest
 - ▶ Loud expiratory wheezes on examination
 - ▶ Agitation
 - ▶ Use of accessory muscles of respiration with suprasternal retractions
 - ▶ Pulse rate of 100–120 beats/min
 - ▶ Pulsus paradoxus of 10–25 mm Hg
 - ▶ PEF or FEV₁ of 40%–69% of predicted
 - ▶ PaO₂ ≥60 mm Hg
 - ▶ pCO₂ <42 mm Hg
 - ▶ Oxygen saturation of 90%–95%

CRITIQUE

- ▶ Initial treatment in the emergency department should include
 - ▶ β_2 -agonist by metered-dose inhaler or nebulizer (up to 3 doses in the first hour at 20-minute intervals)
 - ▶ An oral systemic corticosteroid, particularly if there is no immediate response or the patient recently took an oral corticosteroid.

CRITIQUE

- ▶ Inhaled anticholinergic agents are generally used as an adjunct to β_2 -agonist therapy and systemic corticosteroids in patients with a severe exacerbation (FEV_1 or PEF $\leq 40\%$ of predicted/personal best)
- ▶ Oxygen is recommended when required to maintain an oxygen saturation of more than 90%, or more than 95% in pregnant women and patients with coexistent heart disease
- ▶ Hospitalization should be considered if the patient fails to respond to the initial measures and the FEV_1 or PEF remains below 70% of predicted

CRITIQUE

- ▶ Intubation is recommended for patients with impending or actual respiratory arrest; findings in such patients include drowsiness or confusion, paradoxical thoracoabdominal movement, the absence of wheezes, bradycardia, and a PEF <25% of predicted (or personal best)
- ▶ Theophylline is not generally recommended for treatment in the emergency department because there is no evidence it provides added benefit to treatment with inhaled β_2 -agonists, and it is associated with significant adverse effects

CRITIQUE

A 2-year-old male is brought to your office because of a cough and wheezing. His mother states that on at least four other occasions during the past year he has experienced episodes of wheezing precipitated by “colds.”

Risk factors for developing persistent asthma include which of the following? (Mark all that are true.)

- A. A parental history of asthma
- B. A previous history of atopic dermatitis
- C. Evidence of sensitization to aeroantigens
- D. Elevated IgE levels
- E. Improvement of wheezing with use of a B2-agonist

QUESTION #50

- ▶ For children younger than 3 years of age who have had four or more episodes of wheezing during the previous year, long-term longitudinal studies have identified the following risk factors for developing persistent asthma:
 - ▶ a parental history of asthma,
 - ▶ a physician diagnosis of atopic dermatitis
 - ▶ evidence of sensitization to aeroallergens
- ▶ Risk factors also include the presence of any two of the following:
 - ▶ evidence of sensitization to foods
 - ▶ peripheral blood eosinophilia $\geq 4\%$
 - ▶ wheezing apart from colds.

CRITIQUE

True statements regarding bronchoprovocative testing include which of the following? (Mark all that are true.)

- A. Histamine is the most commonly used bronchoprovocative agent
- B. A positive test is defined as a 12% decline in FEV1 following a challenge
- C. A positive test is diagnostic of asthma
- D. A negative test is helpful in excluding the diagnosis of asthma
- E. Testing is not recommended in patients with a baseline FEV1 <65% of predicted

QUESTION #51

- ▶ Asthma is characterized by nonspecific airway hyperreactivity. Bronchoprovocation tests can provide evidence of this hyperreactivity, which would support the diagnosis of asthma
- ▶ Methacholine is the most commonly used bronchoprovocative agent, with histamine and hypertonic (or hypotonic) saline used less commonly
- ▶ A positive test is defined as a 20% decline in FEV_1

CRITIQUE

- ▶ Although a negative test is helpful for excluding the diagnosis of asthma, a positive test is not diagnostic of asthma
- ▶ A positive test may also occur in patients with emphysema, bronchiectasis, or cystic fibrosis, as well as in up to 8% of normal subjects
- ▶ For safety reasons, bronchoprovocative testing is not recommended if a patient's baseline FEV₁ is <65% of predicted.

CRITIQUE

A 15-year-old asthmatic male presents with an episodic cough and wheezing. He reports wheezing episodes 3–5 days per week and nighttime awakenings no more than 3 times a month. He states that 6 months ago he had to go to an urgent care center for an upper respiratory infection with a severe cough, which was treated with an asthma inhaler and some “oral medication for a few days.” His FEV₁ is 70% of predicted.

This patient has

- A. Mild intermittent asthma
- B. Moderate intermittent asthma
- C. Mild persistent asthma
- D. Moderate persistent asthma
- E. Severe persistent asthma

QUESTION #52

- ▶ Although the patient's clinical symptoms and risk profile are both consistent with mild persistent asthma, his pulmonary function (FEV_1 70% of predicted) is consistent with moderate persistent asthma
- ▶ According to National Asthma Education and Prevention Program guidelines, patients should be assigned to the most severe category in which any feature occurs.

CRITIQUE

A 32-year-old patient has a history of moderate persistent asthma treated with a medium-dose inhaled corticosteroid. Over the past 3 months he has awakened with a cough once or twice a month and has required the use of his albuterol (Proventil, Ventolin) inhaler once a week. Once in the past year he had an exacerbation that required the use of an oral corticosteroid. His peak flow periodically drops as low as 540 L/min, down from a personal best of 600 L/min.

Which one of the following would be most appropriate?

- A. No change in drug therapy
- B. Adding a LABA to his regimen
- C. Adding a LTRA to his regimen
- D. Adding theophylline to his regimen
- E. A short course of an oral corticosteroid

QUESTION #53

- ▶ The patient has well-controlled asthma and no intervention needs to be made
- ▶ Well-controlled asthma is defined as symptoms that occur
 - ▶ 2 days or less per week
 - ▶ Nighttime awakening 2 nights or less per month
 - ▶ Use of a short-acting inhaled β_2 -agonist 2 days or fewer per week
 - ▶ A peak flow (or FEV₁) >80% of predicted/personal best
 - ▶ No more than one asthma exacerbation requiring oral corticosteroids per year
 - ▶ No interference with normal activity

CRITIQUE

True statements regarding occupational asthma include which of the following? (Mark all that are true.)

- A. The likelihood of complete resolution decreases with time of exposure to the sensitizer
- B. Continued symptoms during weekends away from work excludes the diagnosis
- C. The onset of symptoms may occur after a high-level exposure (e.g., a spill)
- D. Symptoms can occur 2-8 hours after exposure
- E. Serial measurement of peak expiratory flow rates at work and away from work is helpful in the diagnostic evaluation

QUESTION #54

- ▶ Early recognition and control of occupational asthma is important, since the likelihood of complete resolution decreases with time
- ▶ Although improvement in symptoms is typically seen during vacations or days off, a week or more away from the sensitizer may be required
- ▶ Symptoms may be immediate (within an hour) or delayed (commonly 2–8 hours) after exposure or may be nocturnal

CRITIQUE

- ▶ Initial symptoms may be traced to a high-level exposure
- ▶ Serial charting of peak expiratory flow rates at work and away from work to identify or exclude work-related changes in flow rates is helpful in the diagnostic evaluation.

CRITIQUE

Physical findings consistent with airway obstruction in a patient with uncomplicated asthma include which of the following? (Mark all that are true.)

- A. Clubbing
- B. Expiratory wheezing
- C. A shortened expiratory phase
- D. Distant breath sounds
- E. Hyperresonance of the thorax on percussion

QUESTION #55

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- ▶ If asthma is mild and airflow obstruction minimal, the chest examination is usually normal
- ▶ Findings that suggest airflow obstruction include
 - ▶ Diffuse scattered expiratory wheezing
 - ▶ A prolonged expiratory time
 - ▶ Hyperresonance of the thorax to percussion

CRITIQUE

- ▶ Breath sounds can be distant and difficult to auscultate in the presence of thoracic hyperinflation
- ▶ In more severe or active asthma, inspiratory and expiratory wheezing can be heard and patients may require the use of accessory muscles to breathe
- ▶ Clubbing is not found in uncomplicated asthma

CRITIQUE



True statements about written asthma action plans include which of the following? (Mark all that are true.)

- A. They are recommended for all patients with asthma, regardless of severity
- B. They have been shown to reduce hospitalizations and emergency department visits when used in the context of an asthma self-management program
- C. Medication adjustments by patients using a written asthma action plan are likely to be less effective than changes by a physician during an office visit
- D. They are of particular value for patients who have moderate or severe persistent asthma, a history of severe exacerbations, or poorly controlled asthma

QUESTION #56

- ▶ 2007 NAEPP guidelines recommend that all patients who have asthma be provided with a written asthma action plan
- ▶ They are particularly recommended for patients who have moderate or severe persistent asthma, a history of severe exacerbations, or poorly controlled asthma
- ▶

CRITIQUE

- ▶ Optimal asthma self-management, including self-monitoring of symptoms and/or peak control and a written asthma action plan, has been shown to significantly reduce hospitalizations and emergency department visits
- ▶ Adjustment of medications for asthma control using a written asthma action plan appears to be as effective as changes by a physician during an office visit

CRITIQUE

A 17-year-old male reports that his asthma is usually worse in the early spring. Which one of the following is most likely triggering his symptoms at that time of year?

- A. Tree pollen
- B. Grass pollen
- C. Weed pollen
- D. *Alternaria*
- E. Mites

QUESTION #57

- ▶ Patients with seasonal allergies become symptomatic only after exposure to certain pollens or molds
- ▶ Symptoms occurring in the early spring are usually due to tree pollen
- ▶ Grass pollen typically causes problems in the late spring
- ▶ Weed pollen typically causes problems in late summer to autumn
- ▶ *Alternaria*, *Cladosporium*, and mites typically cause problems in the summer and fall.

CRITIQUE

The mother of a 15-year-old female with a history of moderate persistent asthma calls your office and tells you that over the past few days the girl has experienced rhinorrhea and cough with growing dyspnea. Her asthma is treated with medium-dose inhaled corticosteroids and a long-acting β_2 -agonist, and the problem has developed even though she has used her β_2 -agonist metered-dose inhaler four times a day. The mother reports that the daughter's peak flow rate this morning was 310 L/min (61% of personal best) and that her personal best prior to the illness was 510 L/min. Following two treatments with her albuterol (Proventil, Ventolin) inhaler at 20-minute intervals, her wheezing improved and her peak flow rose from 310 L/min (61% of personal best) to 360 L/min (71% of personal best).

Which of the following would you recommend? (Mark all that are true.)

- A. Continue current management
- B. Continue use of the albuterol inhaler every 3-4 hours for 24-48 hours
- C. Double the dosage of the ICS
- D. Start oral prednisone at a dosage of 1-2 mg/kg/day
- E. Initiate mucolytic therapy

QUESTION #58

- ▶ Home treatment of asthma exacerbations begins with measurement of peak expiratory flow (PEF) and initial treatment with an inhaled short-acting β_2 -agonist, up to two treatments at 20-minute intervals
- ▶ A PEF of 50%–79% of predicted (or personal best) following a course of an inhaled β_2 -agonist represents an incomplete response to therapy
- ▶ In this situation, the 2007 NAEPP guidelines recommend that the β_2 -agonist be continued every 3–4 hours for several days, and that the patient be given a course of an oral corticosteroid

CRITIQUE

- ▶ Although patients should be advised to continue intensive short-acting inhaled β_2 -agonist therapy until symptoms and PEF are stable NAEPP also recommends that patients be advised to seek medical care rather than rely on bronchodilator therapy in excessive doses or for prolonged periods (e.g., more than 12 puffs/day for more than 24 hours)
- ▶ Doubling the dose of the inhaled corticosteroid was recommended in the 1997 NAEPP guidelines, but the 2007 guidelines indicate that subsequent studies have shown that this is not effective for reducing the severity or progression of exacerbations

CRITIQUE

- ▶ Mucolytic agents are not recommended because they may worsen cough or airflow obstruction
- ▶ Antibiotics are not generally recommended for the treatment of acute asthma exacerbations, and are generally reserved for patients with fever and purulent sputum, or with suspected pneumonia or sinusitis

CRITIQUE

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A 29-year-old female at 32 weeks gestation presents with a 3-day history of increasing wheezing and dyspnea. She has a history of asthma since childhood.

Which one of the following $p\text{CO}_2$ levels is the threshold for respiratory failure in this patient?

- A. 25 mm Hg
- B. 35 mm Hg
- C. 45 mm Hg
- D. 55 mm Hg
- E. 65 mm Hg

QUESTION #59

- ▶ Asthma affects 1%–4% of pregnant women
- ▶ Acute asthma attacks are rare during the last four weeks of pregnancy; attacks are most common between the 24th and 36th weeks of gestation

CRITIQUE

- ▶ Since minute ventilation rises 30%–40% by late pregnancy, normal $p\text{CO}_2$ levels fall to 27–32 mm Hg, compared with 37–40 mm Hg in the nonpregnant state
- ▶ If the $p\text{CO}_2$ is 35 mm Hg or greater in a pregnant patient with an asthma exacerbation, it signals respiratory failure

CRITIQUE

Foods that should be avoided by patients with persistent asthma who have a known sulfite sensitivity include which of the following?
(Mark all that are true.)

- A. Processed potatoes
- B. Wine
- C. Dried fruit
- D. Beer
- E. Shrimp

QUESTION #60

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- ▶ Sulfites are used to preserve foods and beverages
- ▶ Use of these agents has been restricted, so heavy exposures now occur only with a limited number of foods, such as
 - ▶ Beer
 - ▶ Wine
 - ▶ Dried fruit
 - ▶ Shrimp
 - ▶ Processed potatoes.

CRITIQUE