Risk Management Pitfalls For Acute Asthma In Children

1. “She didn’t wheeze, so she couldn’t have had asthma.” Although asthma is the most common cause of wheezing in children aged > 2 to 3 years, there are multiple other causes that should be considered. In the pediatric population, bronchiolitis, airway foreign bodies, and laryngomalacia/tracheomalacia are other common asthma imitators that may be difficult to distinguish from a reactive airway asthma.

2. “He was in respiratory distress, but he wasn’t wheezing, so he must not have had asthma.” Some patients present with such severe exacerbations that they are unable to generate enough air movement to wheeze. In fact, the “silent lung” can be an ominous finding and generally requires aggressive treatment. Additionally, patients with cough-variant asthma may not present with wheezing, but they may present with a history of persistent cough, particularly at night.

3. “She couldn’t have had asthma because she didn’t respond to inhaled albuterol.” Patients with severe exacerbations or prolonged symptoms prior to presenting to the ED may exhibit poor initial response to albuterol. For these patients, continued aggressive bronchodilator therapy for their asthma is critical. The addition of systemic corticosteroids is crucial, as corticosteroids and beta agonists act synergistically. Steroids can increase the expression of beta agonist receptors and prevent their downregulation when beta agonists are administered.

4. “I ordered a chest x-ray because all patients who present in respiratory distress should have one.” For most patients with asthma, chest x-rays add little to the clinical assessment. Abnormal chest x-rays are common in children with acute asthma, but they rarely result in changes to management. Chest x-rays may be helpful in children with fever > 39°C, hypoxia, focal abnormalities on examination, no family history of asthma, or in those who respond less favorably than expected to bronchodilator therapy. Chest x-rays may also be warranted in children with unilateral chest pain or differential wheezing to evaluate for foreign body, pneumothorax, or pneumomediastinum.

5. “I was reassured because her blood gas reading was normal.” Since pulse oximetry and ETCO2 monitoring are now readily available, blood gases are generally unnecessary in acute asthma management. There are currently no laboratory values that define respiratory failure; it is a clinical diagnosis. Furthermore, patients are often able to compensate for severe distress until failure is imminent; thus, reliance on a blood gas finding may provide a false sense of security.

6. “I didn’t prescribe corticosteroids because they are not indicated in mild exacerbations.” Corticosteroids combat the inflammatory component of asthma and are an integral part of acute asthma management. Even for mild exacerbations, steroids have been shown to improve symptoms, decrease the rate of relapse, and decrease return visits to the ED. Corticosteroids are best given early in an exacerbation.

7. “He couldn’t tolerate oral steroids, so I gave him inhaled corticosteroids. They are just as effective.” Although inhaled corticosteroids are paramount in the daily control of asthma, they offer little in its acute management. For exacerbations, systemic corticosteroids are required to treat inflammation. For patients who cannot tolerate oral steroids, dexamethasone may be given IM or IV. If compliance is an issue, a single dose of dexamethasone by mouth is equally as effective as a 3- to 5-day course of oral prednisolone.

8. “Inhaled anticholinergics like ipratropium should be given alongside bronchodilators throughout an acute exacerbation.” Anticholinergics provide beneficial adjunct treatment by blocking cholinergic receptors and reducing bronchoconstriction. Although ineffective as monotherapy, ipratropium coadministered with beta agonists can improve lung function and reduce hospitalization rates in children with moderate to severe exacerbations in the acute setting. Ipratropium is generally given in the first 24 hours of treatment. Studies of children with acute exacerbations have failed to show any benefit to the addition of ipratropium beyond the first 24 hours.
9. “For patients in status asthmaticus who remain in severe distress despite continuous bronchodilators, systemic corticosteroids, and multiple other adjunct treatments such as magnesium and/or terbutaline and/or epinephrine, intubation is the next step in management.” Ketamine, heliox, and BPAP may be effective noninvasive treatment options that may be available for children in refractory status asthmatics. Heliox, an inert, low-density mixture of helium and oxygen, promotes less turbulent airflow through narrowed airways, which reduces the work of breathing and promotes inhaled drug delivery. Although unlikely to be beneficial for children with mild-to-moderate symptoms, heliox may improve respiratory distress and prevent respiratory failure in select children with severe obstruction. In addition, BPAP ventilation can offer significant respiratory support to select children with status asthmatics and may allow patients to avoid intubation and ICU admission.

10. “Once a child with asthma is intubated, the ventilator management is routine.” Children with life-threatening asthma are often challenging to ventilate, and strategies to promote exhalation are helpful. Prolonged expiratory times with small tidal volumes and slow ventilatory rates can help avoid progressive hyperinflation. High ventilatory pressure is best avoided, as it can result in barotrauma and pneumothorax. The ideal ventilator strategy in patients with asthma is characterized as “low and slow.” Aim for low pressures and slow respiratory rates.
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