STATUS ASTHMATICUS
What Your Patients Need to Know

Status asthmaticus is an acute, severe asthma attack that doesn’t respond to high doses of inhaled bronchodilators and steroids. It may develop over several days or come on suddenly and progress rapidly. About 30 percent of acute, severe asthma episodes require hospitalization, and the mortality rate is as high as 8 percent. Death is usually caused by severe bronchospasm but can also be due to hypoxia-related cardiac dysrhythmia, tension pneumothorax, and air trapping from hyperinflation.

In the vast majority of asthma deaths, the final episode lasts for several hours—long enough that the patients could have survived had they sought and received prompt, effective treatment. To prevent life-threatening treatment delays, it is critical to educate patients who are at risk for severe attacks about the rationale for preventive therapy; the need for self-monitoring; and, in the event of an exacerbation, the importance of aggressive self-treatment and seeking emergency care early.

WHO IS AT RISK

Status asthmaticus is most likely to occur in patients who have had severe attacks previously. One study found that patients who experienced near-fatal asthma were taking fewer corticosteroids than prescribed, but some patients have severe asthma attacks in spite of long-term corticosteroid therapy. Both age and asthma duration may increase risk because they are associated with reduced lung elasticity. African-Americans, inner-city residents, and those with low socioeconomic status appear to be especially at risk, although this may be due to a greater likelihood of a delay in seeking care. Other risk factors include:

- A prior near-fatal asthma episode
- A prior hospitalization for severe asthma
- History of visits to the emergency department for asthma in the past year
- A prior life-threatening allergic reaction
- Recent increased use of short-acting beta agonists
- A worsening of asthma despite pharmacologic therapy

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Troubleshooting Problems with Inhaler Devices

Delivery of asthma drugs by inhaler is a cornerstone of asthma management. Yet, even with repeated instructions, many patients don’t use inhaler devices correctly. Studies have shown that just reading the instructions results in poor metered-dose inhaler (MDI) technique for between 54 and 79 percent of patients. But even after being instructed by a health care provider or another trained personnel, only 46 to 52 percent of patients use an MDI correctly. In a study of children, only 29 percent of those using a dry-powder inhaler (DPI) and 67 percent of those using an MDI with a spacer used the devices correctly after instruction (A.W. Kamps et al., *Pediatric Pulmonology*, January 2000).

In their 2005 guidelines on aerosol devices, the American College of Chest Physicians (ACCP) and American College of Asthma, Allergy, and Immunology (ACAAI) note that in relevant age groups, DPs have not been shown to be any more effective than MDIs (with or without spacers). They recommend either a DPI or an MDI (with or without a spacer) for short-acting beta agonists and a DPI or an MDI with spacer for inhaled corticosteroids.

In choosing an aerosol device, ACCP/ACAAI 2005 guidelines suggest taking into account which devices are available for the drug; the patient’s age, physical coordination, and preferences; the cost; the durability of the device; and convenience and portability. In addition, for patients taking more than one drug via aerosol delivery, it may be helpful to stick with one type of device. Above all, it is critically important to provide comprehensive instructions and repeatedly check the patient’s technique.

WHAT TO WATCH OUT FOR

**Common problems with DPs:**
- Not rotating a Turbuhaler or Rotadisk before use
- Not placing the mouthpiece firmly between the teeth and lips
- Not inhaling deeply and forcefully

**Common problems with MDIs:**
- Not placing the mouthpiece firmly between the teeth and lips
- Not shaking the inhaler before use
- Failing to fully exhale before activating the inhaler
- Activating the inhaler before inhalation
- Activating the inhaler at the end of inhalation
- Failing to continuously inhale after activating the inhaler
- Inhaling through the nose
- Stopping inhalation once the inhaler is activated

ASTHMA DELIVERY DEVICE GUIDELINES FOR CHILDREN

- Age ≤ 2 years .............................................. Small-volume nebulizer
- Age ≤ 4 years .............................................. MDI with spacer and mask
- Age > 4 years .............................................. MDI with spacer
- Age ≥ 5 years .............................................. DPI
- Age > 5 years .............................................. MDI

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**Reactive Airways Disease or Asthma?**

Is *reactive airways disease* (RAD) just another name for asthma? Providers are increasingly using these two terms synonymously, especially in pediatric settings. In addition to asthma, *RAD* has been used as a catch-all term to describe everything from wheezy bronchitis to viral bronchiolitis and even pneumonia.

The term *reactive airways* refers to hyperreactivity or hypersensitivity of the airways, resulting in bronchoconstriction. This can be caused by several stimuli, including allergens, irritants, exercise, and viral infections (especially respiratory syncytial virus), and it is a characteristic of chronic bronchitis, allergic rhinitis, asthma, and other conditions. Nearly everyone with asthma has airway hyperreactivity, but not everyone with hyperreactivity has asthma.

The use of the term *RAD* is sometimes understandable. In very young children, lower-airway infections frequently lead to decreased airway function due to children’s small intrapulmonary airways, yet only a minority of infants and children younger than age 3 with wheezing subsequently develop asthma. A formal asthma diagnosis requires documentation of the presence of airway obstruction that is rapidly reversible, either spontaneously or by using an inhaled bronchodilator. This documentation can be difficult in young children because it can be hard to obtain an accurate history or perform pulmonary function tests. In addition, providers may be reluctant to label a patient as having asthma because the diagnosis can be upsetting to patients.

**A FEW KEY POINTS**

To avoid diagnostic confusion and ensure that patients with airway hyperreactivity receive appropriate care, keep these points in mind:

- Whenever possible, avoid using *RAD* as a nonspecific term to describe airway hyperreactivity.
- Ensure that patients with a nonspecific diagnosis of RAD receive an appropriate workup, including measurement of airway reactivity, to refine the diagnosis and identify the best treatment.
- When appropriate and feasible, document a formal diagnosis of asthma.

**WHAT RAD ISN’T**

RAD should not be confused with reactive airways dysfunction syndrome (RADS), which is well-defined in pulmonary medicine and refers to a methacholine airway hyperreactivity that typically develops after a single large exposure to an irritant, such as smoke or fumes. The exposure causes an asthmalike illness, sometimes with severe coughing, that can last for years. Because RADS develops after a single exposure, it is not the same as occupational asthma, which manifests after a period of sensitization.
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The use of beta-blockers, nonsteroidal anti-inflammatories, aspirin, cocaine, heroin, and alcohol have been reported as precipitating factors for acute, severe asthma attacks. Patients who have a poor perception of dyspnea are at particularly high risk for a near-fatal event because they delay seeking treatment. It’s especially important that these patients use a peak-flow meter to monitor their lung function.

TALKING WITH PATIENTS

Once a patient has had a near-fatal attack, there is a significant likelihood of a future severe attack. To help prevent attacks and improve the chance of survival following an attack, it’s important to emphasize these points with at-risk patients:

- Take your controller medications regularly, even if you are feeling well. Research has shown that adhering to inhaled anti-inflammatory therapy helps reduce attacks and improves survival.
- Know the signs of an asthma attack. These include wheezing, tightness in the chest, feeling as if you can’t take in enough air, not being able to speak full sentences, and feeling agitated.
- An attack that quickly gets worse, does not respond to rescue medication, or comes back shortly after using rescue medication could be a dangerous attack.
- Use a peak-flow meter to monitor your asthma and know your normal value. If your peak flow drops to less than two-thirds of the normal value, increase your use of rescue medication and notify your provider. If peak flow drops to less than one-half of normal or you’re too short of breath to use your meter, seek emergency help promptly.
- Be especially vigilant when you have a cold or another respiratory infection or after you have been exposed to any of your allergy and asthma triggers.
- An asthma attack may be preceded by several days in which peak-flow values are lower than normal or the variation in values during the day and evening is greater than usual.

Be sure the patient has a written Action Plan that shows the peak-flow reading at which rescue medication should be started, along with the timing and dose. It should also list the warning signs that indicate it’s time to seek emergency help.