

Acute Asthma

Staging the severity

In acute asthma, the severity of an exacerbation does not depend on the classification of the patient's chronic asthma because even patients with intermittent asthma can have life-threatening acute exacerbations. Severity at the time of the evaluation can be estimated by signs and symptoms or presenting peak expiratory flow (PEF) or forced expiratory volume in 1 second (FEV1).

The exacerbation is considered ***mild*** if the patient is only having dyspnea with activity and the PEF is at least 70% of the personal best value, ***moderate*** if the dyspnea limits activity and the PEF is 40% to 69% of the personal best, and ***severe*** with PEF less than 40% and dyspnea interferes with conversation or occurs at rest. When the patient is not able to speak and the personal best PEF is less than 25% of the personal best predicted value, it is a ***life-threatening exacerbation***.

TREATMENT OF ASTHMA

Desired Outcomes

Acute Asthma

Acute or worsening asthma can be a life-threatening situation and requires rapid assessment and appropriate intensification of therapy. Mortality associated with asthma exacerbations is usually related to inappropriate assessment of the severity of the exacerbation resulting in insufficient treatment or referral for medical care. The goals of therapy are to:

- (a) Correct significant **hypoxemia**.
- (b) Reverse airflow obstruction rapidly.
- (c) Reduce the likelihood of exacerbation relapse or recurrence of severe airflow obstruction in the future.

Factors Associated with Worsening Asthma Control

1. Exercise is one of the most common precipitants of asthma symptoms. Pretreatment with a SABA 5 minutes prior to exercise is the treatment of choice and will protect against bronchospasm for 2 to 3 hours.

Regular treatment with an inhaled corticosteroid (ICS) also prevents bronchospasm associated with exercise.

2. A yearly influenza vaccine is recommended for patients 6 months and older with asthma to decrease the risk of complications from **influenza**. The pneumococcal vaccine may decrease the risk of invasive pneumococcal disease in patients with asthma and is recommended as a one-time immunization before the age of 65 years and again after age 65. In patients older than 11 years, providing a booster vaccine to protect against pertussis is becoming standard practice. The varicella vaccine is also highly recommended.
3. Nonselective β -blockers, such as carvedilol, labetalol, nadolol, pindolol, propranolol, and timolol (including those in ophthalmic preparations) may worsen asthma control. These agents are avoided in patients with asthma unless the benefits of therapy outweigh the risks. In patients with asthma requiring β -blocker therapy, a β 1-selective agent such as metoprolol or atenolol is the best option. Because selectivity is dose related, the lowest effective dose is used.
4. Patients with aspirin-sensitive asthma are usually adults and often present with the triad of rhinitis, nasal polyps, and asthma. In these patients, acute asthma may occur within minutes of receiving aspirin or nonsteroidal anti-inflammatory drugs (NSAIDs). These patients are counseled against using NSAIDs. Although acetaminophen is generally safe, doses larger than 1 g may cause acute asthmatic reactions in some patients.

Treatment of Acute Asthma

Early and aggressive treatment is necessary for quick resolution. The optimal treatment of acute asthma depends on the severity of the exacerbation.

Based on the initial response to SABA therapy, the severity of the exacerbation is assessed, and treatment is appropriately intensified. Patients deteriorating quickly or not responding to quick-relief medications should go to the emergency department for assessment and treatment of the asthma exacerbation. Patients responding to therapy in the emergency department with a sustained response to a SABA are discharged home.

Patients are discharged with an SABA, a 3- to 10-day course of oral corticosteroid, an ICS, and perhaps other appropriate long-term controller medications.

Oxygen saturation target

Patients with oxygen saturation less than 90% (less than 95% in children, pregnant women, and patients with coexisting heart disease) receive oxygen with the dose adjusted to keep oxygen saturation above these levels. Administration of low oxygen concentrations (less than 30% of the fraction of inspired air) by nasal cannula or facemask is usually sufficient to reverse hypoxemia in most patients.