

Corticosteroids

Corticosteroids increase the number of β_2 -adrenergic receptors and improve receptor responsiveness to β_2 -adrenergic stimulation, thereby ***reducing mucus production and hypersecretion, reducing BHR, and reducing airway edema and exudation***. Inhaled corticosteroids are the preferred long-term control therapy for persistent asthma in all patients because of their potency and consistent effectiveness; they are also the only therapy shown to reduce the risk of death from asthma. Most patients with moderate disease can be controlled with twice-daily dosing; some products have once-daily dosing indications. Patients with more severe disease require multiple daily dosing. Because the inflammatory response of asthma inhibits steroid receptor binding, patients should be started on higher and more frequent doses and then tapered down once control has been achieved. The response to inhaled corticosteroids is delayed; symptoms improve in most patients within the first 1 to 2 weeks and reach maximum improvement in 4 to 8 weeks. Maximum improvement in FEV₁ and PEF rates may require 3 to 6 weeks.

Systemic toxicity of inhaled corticosteroids is minimal with low to moderate inhaled doses, but the risk of systemic effects increases with high doses. Local adverse effects include dose-dependent oropharyngeal candidiasis and dysphonia, which can be reduced by the use of a spacer device. The ability of spacer devices to enhance lung delivery is inconsistent and should not be relied on.

Systemic corticosteroids are indicated in all patients with acute severe asthma not responding completely to initial inhaled β_2 -agonist administration (every 20 minutes for three to four doses). Prednisone, 1 to 2 mg/kg/day (up to 40 to 60 mg/day), is administered orally in two divided doses for 3 to 10 days. Because short-term (1 to 2 weeks), high-dose systemic steroids do not produce serious toxicities, the ideal method is to use a short burst and then maintain the patient on appropriate long-term control therapy with inhaled corticosteroids.

In patients who require chronic systemic corticosteroids for asthma control, the lowest possible dose should be used. Toxicities may be decreased by alternate-day therapy or high-dose inhaled corticosteroids.

Methylxanthines

Theophylline appears to produce bronchodilation by inhibiting