

Growth and Asthma

Quick Facts

- **Uncontrolled or severe asthma itself seems to adversely affect growth and final adult height. (7,9,10,11)**
- **Glucocorticosteroid-induced changes in growth rate during the first year of treatment appear to be temporary and do not predict adult height. (12,2,7)**
- **Important differences seem to exist between the growth-retarding effects of various inhaled glucocorticosteroids and inhalers. (6,5)**
- **Different age groups seem to differ in susceptibility to the growth-retarding effects of inhaled glucocorticosteroids; children aged 4 to 10 are more susceptible than adolescents. (7,8)**
- **Children with asthma treated with inhaled glucocorticosteroids have consistently been found to attain normal final adult height. (7,9)**
- **Growth retardation in both short- and medium-term studies is dose dependent. (5)**
- **No long-term effects of inhaled glucocorticosteroids on growth have been demonstrated.**

Adapted from GINA Workshop Report 2002

RECENT STUDY FINDINGS

- Inhaled corticosteroids are safe and effective for the long-term treatment of children with mild to moderate asthma, according to the "Childhood Asthma Management Program (CAMP)," a 5-year, 8-center study funded by the National Heart, Lung, and Blood Institute of the National Institutes of Health. (2)

CAMP is the longest and largest controlled study of treatments for childhood asthma to date. It showed that inhaled corticosteroids provide superior asthma control. Their only side effect was a temporary one – a small reduction in the children's rate of growth observed just in the first year of treatment. The inhaled corticosteroids significantly reduced airway hyperresponsiveness, the heightened sensitivity in the airways that leads to asthma symptoms following exposure to certain irritants and allergens. However, their use did not result in the anticipated improvements in measures of lung function.

- According to Dr. David B. Allen in the article "Inhaled Corticosteroid Therapy for Asthma in Preschool Children: Growth Issues"(1), inhaled corticosteroids (ICS) have emerged as the preventive treatment of choice for persistent

asthma, but few studies have been conducted in infants and very young children that assess the benefits and risks of ICS therapy, particularly with regard to growth. Oral glucocorticoids inhibit growth at multiple levels by blunting pulsatile growth hormone (GH) secretion, decreasing insulin-like growth factor-1 bioactivity, and directly inhibiting new collagen synthesis. Normal childhood growth can be divided conceptually into 3 phases according to primary growth-supporting factors: nutrition-dependent growth of infancy, GH-dependent childhood growth, and sex steroid/GH stimulation of pubertal growth. Susceptibility to glucocorticoid-induced growth suppression appears to increase during periods of transition from one phase to another, particularly in the immediate prepubertal years. Studies using ICS at varying dosages demonstrate the possibility of short-term growth suppression, but long-term studies suggest a negligible effect, if any, on final adult height or bone mineral density. Although certain speculations regarding the safety of ICS use in infants and very young children can be made based on these data, age-specific studies are needed to account for effects of differences in oral versus airway deposition and growth axis resiliency, which may occur in these patients.

- The attained adult height of patients with asthma is not different from the adult height of age- and sex-matched non-asthmatic subjects. The attained adult height of children with asthma treated with glucocorticoids is not significantly different from the adult height of children not treated with glucocorticoids. (3)

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