

# Factors influencing growth effects of inhaled corticosteroids in children

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**List of Design Committee Members:** Peter M. Wolfgram, MD, and David B. Allen, MD (authors), and James T. Li, MD, PhD (series editor)

#### Activity Objectives

1. To understand growth-suppressing actions of glucocorticoids.
2. To understand factors affecting growth during inhaled corticosteroid (ICS) treatment, including age, drug choice, dosing frequency, and adherence.
3. To identify steps to decrease the risk of growth attenuation from ICS therapy.

**Recognition of Commercial Support:** This CME activity has not received external commercial support.

#### Disclosure of Significant Relationships with Relevant Commercial Companies/Organizations:

The authors declare that they have no relevant conflicts of interest. J. T. Li has consulted for Abbott.

**Key words:** Growth suppression, asthma, methylphenidate, inhaled corticosteroids, children

### CLINICAL VIGNETTE

A 9-year, 10-month-old boy treated with inhaled corticosteroids (ICSs) for asthma returned to the endocrine clinic for follow-up of linear growth. He began taking Advair Diskus

(100/50; GlaxoSmithKline, Research Triangle Park, NC), 1 inhalation twice daily, when he was 4 years old. During treatment with Advair Diskus, he grew steadily along his previous height trajectory at between the 75th and 90th percentiles (Fig 1). Around 6 years of age, treatment was changed to Advair hydrofluoroalkane (HFA; 45/21), 2 inhalations twice daily. Repeat measurement 12 months later revealed that his height percentile had fallen to the 50th percentile. At that time, methylphenidate was started for treatment of

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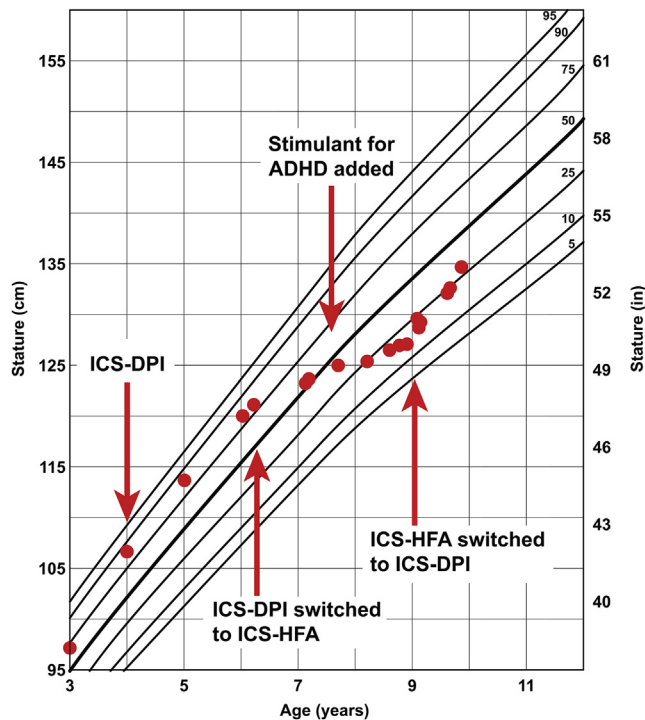
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**FIG 1.** Growth history of the clinical vignette's subject reflects ICS delivery device adjustments and addition of a stimulant for ADHD.

attention-deficit disorder. During the subsequent 2 years, while receiving methylphenidate and Advair HFA, his asthma was well controlled, but his height percentile continued to decrease to the 15th to 25th percentile. After treatment was switched back to Advair Diskus (100/50), 1 inhalation twice daily, his growth velocity promptly improved, and he began trending toward his previous height percentile (Fig 1).

The full review of this article, including a preview of relevant issues to be considered, can be found online at [www.jacionline.org](http://www.jacionline.org). If you wish to receive CME or MOC credit for the article, please see the instructions above.

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