

## Long-term Effects of Inhaled Corticosteroids in the Pediatric Population: A Clinical Review

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Asthma is the most common chronic health condition affecting the pediatric population. Uncontrolled asthma can have significant consequences including lower academic performance, decreased cardiovascular fitness, and increased risk of anxiety, depression, obesity, and pneumonia. Inhaled corticosteroids (ICS) are a mainstay in the treatment of asthma, slowing the progression of the disease and reducing exacerbations and mortality. However, there is concern regarding the long-term use of ICS including their effects on growth, immunity, and bone, dental, and ocular health.

Multiple studies have found an association between ICS use and reduced adult height of up to 2.89 cm. Additional research shows that ICS use may decrease bone mineral density (BMD) of the lumbar spine and femoral neck but not of the tibia. However, this does not appear to affect lifetime fracture risk. Regular dental visits are important because ICS reduce salivary rates and increase dental plaque formation. ICS do not appear to put children at increased risk of cataracts or glaucoma. Results of studies evaluating the effects on immunity are inconsistent. ICS use is associated with an increase in oropharyngeal colonization of respiratory pathogens, however, evidence is conflicting on whether this increases the risk of pneumonia.

Studies investigating the long-term effects of ICS use in children are limited and are often complicated by the concurrent use of systemic corticosteroids. It is important that providers make decisions regarding the use of ICS on a case-by-case basis. Providers should use the lowest effective dose and keep the potential side effects in mind.