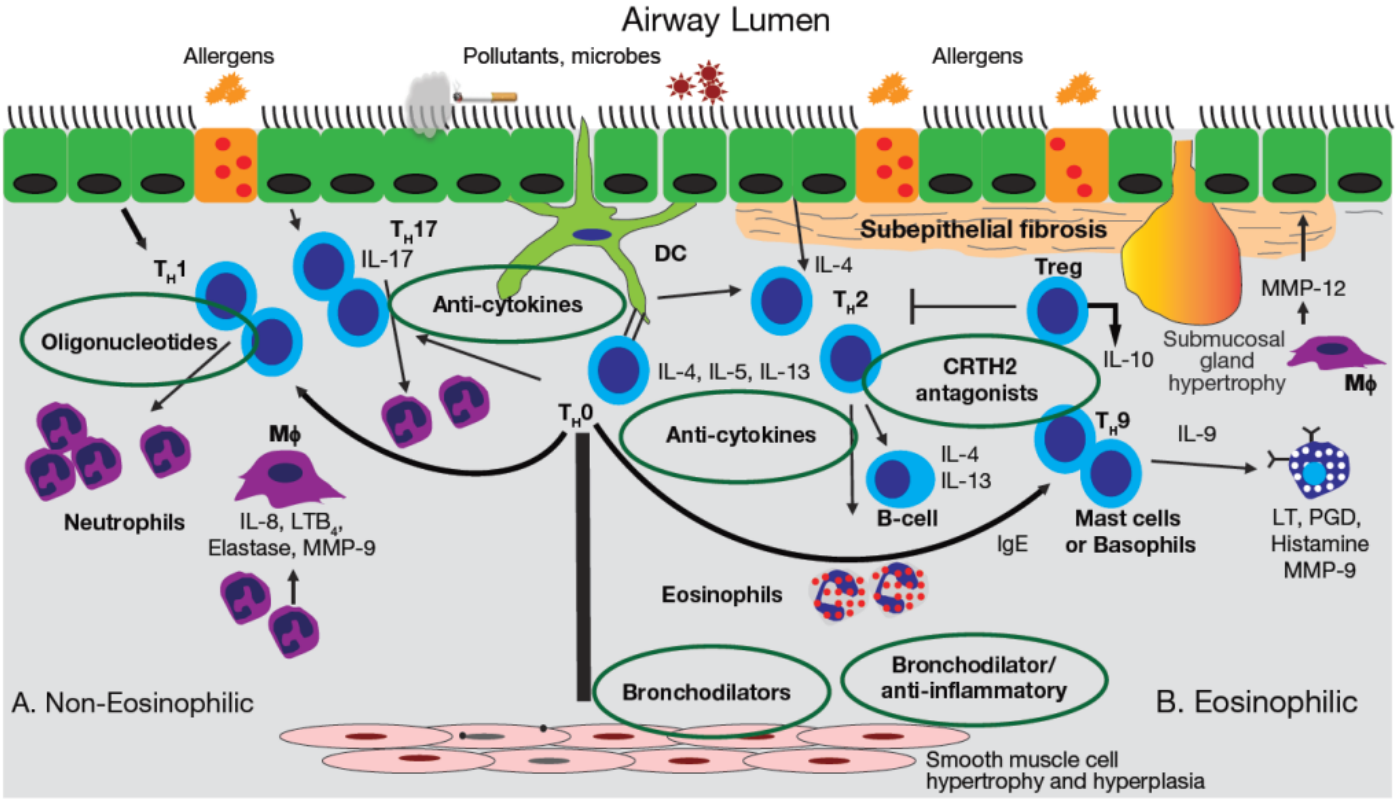
New and future strategies for asthma control in children

Asthma continues to be a predominant health concern in children despite advances in medical care. Children are being diagnosed with asthma at earlier ages, and the adverse effects of early-onset, poorly controlled asthma can last throughout childhood and into adult life. Unfortunately, no treatment to date has been able to prevent the development of pediatric asthma. Therefore, strategies should focus on steps to control day-to-day asthma symptoms and prevent future asthma exacerbations.

The first step in controlling asthma should be addressing medication adherence. Patients with asthma may have poor adherence to their medications leading to adverse outcomes, including hospitalizations and emergency room visits. New technologies are developing that allow patients and doctors to track medication adherence in real-time. These electronic monitoring devices (EMDs) are attached to a patient's inhalers and transmit data about his or her medication use through a smartphone or the internet. EMDs have been shown to increase patient medication adherence. However, the use of EMDs has not consistently shown improvement in hospitalizations for asthma exacerbations, lung function, or quality of life.



Pediatric patients who continue to have poor asthma control despite adherence with their current medications may benefit from new medications in development. However, there are significantly

fewer pharmaceutical studies investigating these medications in children compared to adults. Because of this limited data, the use of most pediatric asthma medications is based on adult studies. These results from adult studies may not directly apply to children though due to differences between adult and pediatric asthma. More studies are needed specifically in pediatric patients to determine the best treatment options for them.

The primary treatment currently available for asthma control is inhaled corticosteroids (ICS), which help reduce inflammation in the lungs. These ICS may be paired with long-acting beta-agonists (LABAs), which are used to help keep the airways open. Both of these drugs have potential side effects, such as reduced adult height with ICS use. New dosing strategies are demonstrating that some patients with more mild disease can have their asthma controlled with only intermittent or as needed use of ICS or ICS/LABAs, which help minimize their side effects.

A new combination ICS/LABA, known as fluticasone furoate/vilanterol, only requires once daily dosing, which simplifies a patient's medication regimen and may help improve adherence. Another inhaled medication, tiotropium, is a once daily medication initially approved for COPD in adults. Tiotropium has been shown to help improve asthma control, symptoms, and lung function in patients with asthma. Tiotropium could be an add-on medication if a patient is not well controlled with their current regimen. Studies to date on both of these drugs have been conducted primarily on adults and adolescents.

Biologics are a new class of medications that specifically target molecules that contribute to asthma development and disease progression. Most biologics in development target molecules in allergy-driven asthma, which is the most common type of asthma in children. As such, these drugs may be ideally suited for pediatric patients. However, most studies to date have focused on adult patients. These medications include omalizumab, mepolizumab, reslizumab, lebrikizumab, and dupilumab. Given the variety of biologics in development and their high cost, physicians need markers that they can easily obtain in clinic to help identify which drug would work best in which patient.

The coming years will see numerous options available to provide control of pediatric asthma, including the use of EMDs and new medications. Cooperation between patients and doctors will be key to finding the best personalized strategy for each patient to obtain asthma control.

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Publication

New and future strategies to improve asthma control in children.
Anderson WC 3rd, Szefler SJ
J Allergy Clin Immunol. 2015 Oct