

## A Synopsis of the Synopses

This synopsis book reports advances and key observations that will affect the care of children with allergic and immunologic diseases now and in the near future. Reviewers for this synopsis book selected many articles that have clinical “pearls” and provide insights that are applicable for daily practice, as well as ones that challenge our previous notions and provide data that might lead to new approaches for diagnosis and treatment.

The apparent increase in atopic disease demands attention toward environmental and genetic factors and their interaction and an eye toward identifying prevention strategies. Barrier defects of the skin, reflected by genetic variants in filaggrin, are not only associated with atopic dermatitis but also with additional atopic diseases. This raises the possibility that a defective skin barrier, or immunologic changes associated with this defect, might predispose to allergen sensitization. Results of several studies support the notion that prematurity or lower birth weights might be protective against atopy, but the reason remains elusive. There are theories that obesity creates an inflammatory state that promotes atopy, as evidenced by a study from the National Health and Nutrition Survey reviewed in this supplement. An interesting novel observation was that even among lean adolescents, decreased sleep time was associated with a greater risk for atopy; fatigue is possibly being another stress on immune function. Our reviewers found a large number of studies with findings that suggest that vitamin D deficiency is related to increased atopy. Relationships were described among various studies to indicate that lower vitamin D levels or lower dietary intake is associated with more infections, more wheeze, a higher risk of atopy, and worse atopic dermatitis. Less outdoor activity, with its resulting decrease in sun exposure, and diet seem to be at fault. The indoor environment also includes indoor pollutants that might raise the risk of atopy and asthma. Additional environmental risk factors of atopy seem to be related to the hygiene hypothesis; less exposure to microbes is a risk. If we put all of the findings together, is it a surprise that children today, with so many electronic diversions that keep them indoors, sedentary, snacking, and staying up late, are suf-

fering more atopic disease? The solution seems obvious: put down the video games, go outside and play (especially if the playground is a farm), eat a healthy diet, and get a good night's sleep.

A major step forward in food-allergy diagnosis and management is the recent publication of the new national guidelines for the diagnosis and management of food allergies from the National Institute of Allergy and Infectious Diseases.<sup>1</sup> Several of the studies highlighted in this synopsis supplement have provided additional support for some of the recommendations in the guidelines. For example, the authors of the guidelines substantially agree with the American Academy of Pediatrics clinical report concerning the role of diet in atopy prevention, one aspect of which is that it is not necessary to delay introduction of allergenic foods for prolonged periods in otherwise healthy infants, even ones with a family history of atopy.<sup>2</sup> Studies reviewed herein have revealed that later, rather than earlier, introduction of egg or milk is associated with a higher risk of allergy to those foods. In addition, results of an interesting study from China suggest that delayed ingestion of peanut might be a risk for peanut allergy. There are no specific dietary recommendations for pregnant mothers, but regarding peanut there remains some controversy about the role of maternal peanut ingestion on peanut allergy outcomes, as discussed in 2 reviewed studies that produced different results. The current data continue to be insufficient to suggest anything other than a healthful diet during pregnancy; in fact, the results of several studies have underscored the importance of a diet sufficient in vitamins, fruits, and vegetables. The National Institute of Allergy and Infectious Diseases guidelines also support the important role of the supervised oral food challenge in food-allergy diagnosis, and the results of several reports reviewed herein also support the notion that tests alone are insufficient for diagnosis and that a successful diagnosis requires additional information including a careful history and, often, an oral food challenge. An emerging food-related disorder is eosinophilic esophagitis. Several study reports we reviewed have further elucidated the nature of this illness, with its relationship to allergy,

association with feeding disorders, and potential to result in esophageal fibrosis. A consensus guideline on eosinophilic esophagitis was recently published.<sup>3</sup>

It is important to stay alert for diagnosing asthma. Several studies have found that having allergic rhinitis is a risk, as is atopy. Studies on the role of infection continue to raise new questions; for example, it seems that airway bacterial infections, not only viral infections, are a risk factor for wheeze. But what came first, the virus or the asthma? This remains a question with studies reviewed here, which suggest that the asthma predisposition is the defining factor. The role of swimming in chlorinated pools as a risk factor remains under study, and there were opposing conclusions from some studies highlighted here. That extreme premature birth is a significant risk for asthma seems less controversial. Diagnosis and management of asthma is also highlighted with studies that have found possible disparities in care based on race and ethnicity, even when access was similar. The potential success of guidelines-based programs that can be undertaken in the office setting is also reviewed. It has been several years since the Expert Panel Report on asthma,<sup>4</sup> and studies continue to address therapeutic options. Reviewed here are a number of studies on medical treatment. Some of the studies addressed topics such as suggesting a potentially broader role in some settings for use of a leukotriene-receptor antagonist, options of doubling inhaled corticosteroid doses versus adding a combination of a long-acting bronchodilator with inhaled corticosteroid for children who were symptomatic on a moderate dose of inhaled corticosteroids, and the efficacy of adding inhaled corticosteroid to albuterol for rescue. The efficacy of omalizumab is reviewed in specific settings (eg, in improving asthma control for inner-city children who were not adequately controlled with guidelines-based management).

Allergy management is proactive, and numerous studies are ongoing to prevent and treat allergic disease. Promising immunotherapy studies for food and environmental allergens are also reviewed. For example, peanut oral immunotherapy significantly increased the threshold of reactivity for the children studied, although experts caution that this therapy requires more study regarding a variety of pitfalls such as reactions to the treatment, loss of efficacy if doses are missed, and other limitations. Still, progress has been swift and promising. We also reviewed a number of studies on prebiotics and probiotics that found promising results, particularly in prevention; some favored outcomes for reducing the risk of eczema, and some had disheartening results with regard to treatment. This is an area of investigation that is still early in addressing the influence of numerous variables such as the types of probiotics or mixtures

used, dosing, the timing of administration, and target populations.

Several primary immunodeficiency diseases are highlighted, which underscores the wide phenotypic diversity of these genetic diseases, and there are lessons for the pediatrician about clues for raising concern for investigating underlying immune defects with the guidance of a clinical immunologist. Dissection of the immunologic basis of these disorders provides new insights on the complexities of the immune response. For example, translational research identified mutations in interleukin 17 family genes that cause functional deficiency of this pathway that are associated with chronic mucocutaneous candidiasis. Meanwhile, the approach to treatment extends beyond antimicrobial agents with a report of successful gene therapy for Wiskott-Aldrich syndrome. Studies are also delineating effective means to prevent mother-to-infant transmission of HIV with less use of drug, but the authors also advise caution regarding cardiac toxicity of perinatal exposure to antiretroviral therapy. Finally, the risks and burden of seasonal influenza is delineated and emphasizes the need for vaccination. Studies are emerging that qualify the degree of risk of influenza vaccinations of children with egg allergy and support more liberal immunization with some caution.

On behalf of myself and our reviewers, we hope that this supplement stimulates and informs, giving you practical information for improving the care of children with allergic and immunologic diseases now, and an exciting peek out of a window toward understanding therapies on the horizon. For additional information about our Section, please visit [www.aap.org/sections/allergy](http://www.aap.org/sections/allergy).

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Chair, Section on Allergy and Immunology

Editor, Best Articles Relevant to Pediatric Allergy and Immunology

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