

Innovations to Improve Food Allergy Outcomes



Julie Wang, MD^a, and Robert A. Wood, MD^b New York, NY; and Baltimore, Md

This issue of the *Journal of Allergy and Clinical Immunology: In Practice* includes articles representing a spectrum of food allergy topics that are highly relevant to the practicing clinician. Although we have witnessed tremendous research gains in recent years, food allergy remains ubiquitous, affecting a significant proportion of the US population, both directly and indirectly. The widespread effects of food allergy range from the unpredictable risk of anaphylaxis and restrictive diets that can affect growth and nutrition, quality of life and psychosocial issues for patients and their families, as well as the undeniable economic burden related to medical care and non-medical expenditures, many of which are discussed in this issue.

Improvements in diagnostics are still needed to help improve the differentiation of allergic from nonallergic individuals, in order to allocate resources more efficiently. Furthermore, identifying various phenotypes of food allergy would help clarify the risks and benefits that guide clinicians, patients, and families in developing individualized management and treatment plans. Foong et al's clinical commentary¹ describes the limitations of skin tests and serum specific IgE testing, which have low test specificity despite high sensitivity; thus, labor-intensive food challenges are still required to determine the true allergic status in many cases. These diagnostic tests also provide limited binary information on allergy status, lacking the ability to answer clinically relevant questions that naturally follow after a diagnosis is made—What is the threshold dose of allergen to trigger an allergic reaction? What is the risk for a severe allergic reaction? Can we predict whether the allergy will be transient or lifelong? These are all questions that affect the quality of life for patients and families as described by Herbert and Dunn Galvin's Grand Rounds article.² Newer tests such as specific IgE to allergen epitopes and basophil activation test have higher diagnostic accuracy, holding the promise of being able to provide answers to such questions.

As illustrated by Cox et al,³ a deeper understanding of allergen cross-reactivity can guide a thoughtful approach to allergen testing and targeted education for patients and families regarding management. Providing clear counseling will help families be more specific in food avoidances, allow informed choices when food shopping, and support better communication regarding allergy risk with family, friends, restaurants, schools, and so forth to keep patients safe and preserve quality of life.

Primary prevention of peanut allergy has been a game-changer in the past 3 years. The power of epidemiologic data to inform interventional strategies and lead to policy changes is exemplified by the prevention of peanut allergy with its early introduction, as discussed by Warren et al.⁴ Emerging data suggesting lower rates of infant anaphylaxis and milder reactions can further provide reassurance to physicians and families as they implement these guideline changes.⁵

There is still much to learn about food allergy—new technologies in omics are driving advanced understanding of the complex, multifactorial nature in the pathophysiology of food allergy. Integration of genome, microbiome, transcriptome, epigenome, and metabolome data in a systems biology approach has the potential to identify biomarkers of risk and prognosis and inform new prevention and therapeutic targets.⁶

Innovative methods in epidemiology are also being leveraged to generate further insights in food allergy management. Mobile technology-based approaches can identify areas for optimization and improvement and provide longitudinal assessments of impact of food allergy on individuals and in populations in real time. These technology-supported approaches improve on traditional questionnaire-based approaches that are challenged by subject recall and have limited ability to assess changes over time.⁴ Novel approaches that can reach people where they live capture a more holistic picture of people's experiences, which may lead to identification of disparities in care or management. These data can be harnessed to support prevention approaches and promote education on diagnosis and treatment.

The field of food allergy continues to evolve rapidly, and novel research methods are enhancing our understanding of the diversity and complexity of this disorder. The articles provided in this issue not only summarize the current understanding of food allergy but also raise the awareness of knowledge gaps and encourage efforts to address them.

REFERENCES

1. Foong R-X, Dantzer JA, Wood RA, Santos AF. Improving diagnostic accuracy in food allergy. *J Allergy Clin Immunol Pract* 2021;9:71-80.
2. Herbert L, DunnGalvin A. Psychotherapeutic treatment for psychosocial concerns related to food allergy: current treatment approaches and unmet needs. *J Allergy Clin Immunol Pract* 2021;9:101-8.
3. Cox A, Eigenmann P, Sicherer SH. Clinical relevance of cross-reactivity in food allergy. *J Allergy Clin Immunol Pract* 2021;9:82-99.
4. Warren CM, Turner PJ, Chinthrajan RS, Gupta RS. Advancing food allergy through epidemiology: understanding and addressing disparities in food allergy management and outcomes. *J Allergy Clin Immunol Pract* 2021;9:110-8.

^aDivision of Allergy & Immunology, Department of Pediatrics, Icahn School of Medicine at Mount Sinai, New York, NY

^bDivision of Allergy, Immunology, and Rheumatology, Department of Pediatrics, Johns Hopkins University School of Medicine, Baltimore, Md

Conflicts of interest: J. Wang receives research support from the NIAID, Aimmune, DBV Technologies, and Regeneron and has received consultancy fees from ALK Abello, DBV Technologies, and Genentech. R. A. Wood receives research support from the NIAID, Aimmune, Astellas, DBV, HAL-Allergy, Regeneron, and Sanofi and receives royalties from Up To Date.

Received for publication September 28, 2020; accepted for publication September 29, 2020.

Corresponding author: Julie Wang, MD, Division of Allergy & Immunology, Department of Pediatrics, Icahn School of Medicine at Mount Sinai, One Gustave L. Levy Place, Box 1198, New York, NY 10029. E-mail: julie.wang@mssm.edu. *J Allergy Clin Immunol Pract* 2021;9:130-1. 2213-2198

© 2020 Published by Elsevier Inc. on behalf of the American Academy of Allergy, Asthma & Immunology
<https://doi.org/10.1016/j.jaip.2020.09.035>

5. Tsuang A, Chan ES, Wang J. Food-induced anaphylaxis in infants: can new evidence assist with implementation of food allergy prevention and treatment? *J Allergy Clin Immunol Pract* 2021;9:57-69.
6. Irizar H, Kanchan K, Mathias RA, Bunyavanich S. Advancing food allergy through omics sciences. *J Allergy Clin Immunol Pract* 2021;9:119-29.