Asthma, Allergies & the Environment

Co-written by Shalini Shah DO & Marissa Hauptman, MD, MPH

You may be familiar with the phrase, “we are what we eat” – based on a concept that our health is impacted by the dietary choices we make each day, and our overall wellness is linked to the cumulative effect of these decisions over time. In the world of allergies and asthma, perhaps a more appropriate analogy would be “we are what we breathe”. This shift in perspective allows us to consider that the environments in which we live, learn, work, and play significantly affect individuals with asthma and allergies.

What do we know now? The link between asthma, allergies, and the environment has been studied extensively and is seen in our understanding of how environmental factors trigger these conditions. Indoor environmental considerations known to impact these conditions include dust, mold, rodents, pests/mites, and indoor air pollutants such as secondhand smoke, nitrogen oxide from gas stoves, and particulate matter from urbanization/neighborhood traffic exposure (1). Outdoor environmental factors include air pollution (e.g. particulate matter, ozone, nitrogen dioxide, sulfur dioxide) and allergens (e.g. pollen, weeds/grasses) and more (1,2). Avoidance of these triggers leads to better symptom and disease control.

What's to come? Not only are these connections between environment and disease present, they are expected to worsen and be compounded by climate change, the looming public health emergency of our time. Studies show that global warming due to climate change is making allergy seasons longer and more severe (3). Extreme heat, especially in urban areas, favors increases in ozone, VOC and nitrogen oxide levels, which has been linked to worsening asthma flares (4). This means that those individuals with asthma and allergic disease are particularly vulnerable to health impacts of climate change. While climate change affects everyone, it most heavily affects the health of people who are experiencing chronic health conditions and disabilities, social and/or economic disadvantages, and environmental exposures. A history of systemic injustices means that climate change hazards disproportionately affect neighborhoods where people of color, people with limited understanding of English and people with low incomes live, which further results in disproportionate negative health consequences for these communities (5).

Oral Immunotherapy (OIT)

Written by Chen E. Rosenberg, MD

A food allergy is defined as an adverse response to a food that is mediated by the immune system. For example, if you have an allergy to peanut, your immune system identifies peanut as a danger signal, or allergen. An allergen is a type of antigen or substance that produces an abnormally vigorous immune response in which the immune system tries to fend off a perceived threat that would otherwise be harmless to the body. There are different types of food allergies, which can be broadly divided into immediate type (IgE-mediated) food allergies or non-immediate type (delayed type or non-IgE-mediated) food allergies. The immune system generates immunoglobulin E antibodies specific to the allergen; IgE is the antibody type that mediates responses to allergens and plays an important role in allergic diseases such as allergic rhinitis, asthma, food allergy, atopic dermatitis (eczema). When the immune system encounters a specific
What can we do? Knowing that trigger avoidance improves symptoms, a better understanding of one’s environment and the health hazards within it can be quite powerful in breaking the cycle of exposure and disease. Both healthcare providers and patients should discuss potential environmental exposures that impact their health at visits and ways to minimize potential health threats. To start, patients with asthma and allergies can familiarize themselves with their local Air Quality Index (airnow.gov) to better prepare for high risk days by minimizing exposure wherever possible, recognizing symptoms early, and keeping rescue medications nearby for better control. However, identification and education is not enough for the vast majority of patients with asthma. More resources are greatly needed to support environmental interventions at homes and schools of the families of children suffering from asthma.

Where can you find help? The Region 1 New England Pediatric Environmental Health Specialty Unit (PEHSU), which covers the New England states of Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont, is one of ten regional units in the U.S. that has been providing services for over twenty years. It is a collaborative effort between the Pediatric Environmental Health Center (PEHC) at Boston Children’s Hospital, the Occupational and Environmental Health Center of Cambridge Health Alliance, the Maternal Fetal Medicine Division at Beth Israel Deaconess Medical Center and the Lead Clinic at Boston Medical Center. Together, our goal is to improve children’s health and reproductive health by leading the integration of environmental health into clinical care and public health. The Region 1 New England PEHSU aims to support communities as they address historical injustices and ongoing environmental racism, and the existential threat of climate change. Our program is available to provide community members and medical providers both education and consultative medical care so as to address effectively environmental concerns in pediatric and reproductive health.

Contact us at www.childrenshospital.org/pehc and www.pehsu.net Telephone Consultation – Call us at 617-355-8177. For General, Non-Clinical Inquiries - Email us as region1PEHSU@childrens.harvard.edu

References:

Shalini Shah, DO Pediatric and Reproductive Environmental Health Fellow, Boston Children's Hospital; Region 1 New England Pediatric Environmental Health Specialty Unit

Marissa Hauptman, MD, MPH, Associate Director Pediatric Environmental Health Center, Region 1 New England Pediatric Environmental Health Specialty Unit, Boston Children’s Hospital
Oral immunotherapy (OIT) is a treatment for patients with food allergies that helps to reduce their risk of severe allergic reactions through the process of desensitization. A person becomes desensitized to a food by ingesting small amounts of the food protein that are gradually increased over time. The process allows the body’s immune system to become used to the food so that it no longer causes an allergic reaction. Desensitizing an individual to their allergenic food(s) may lower the risk of life-threatening allergic reactions and lead to a decreased sensitivity to the food(s).

The treatment process involves administration of small, gradually increasing doses of food protein with the aim of enabling patients to eat varying amounts without reactions. Food allergies treated with OIT in clinical trials include allergies to milk, egg, peanut, tree nut(s), wheat, soy and sesame. In our peanut oral immunotherapy program, the initial visit is conducted over 3-4 hours (similar to a food challenge), and involves administration of several very, very low doses of peanut. Following the visit, the patient consumes the daily dose of peanut protein that was tolerated during their initial clinic visit. Patients return for follow-up visits every 2 weeks for dose increases during the updosing or build-up period until they reach the goal maintenance dose, which varies depending upon the protocol. Once the maintenance dose has been attained, follow up visits occur every several months for check-ins, which can become part of their regular allergy follow up appointments. The maintenance phase lasts for years. At present, ongoing, regular ingestion of peanut is advised as maintenance therapy.

Benefits of OIT include the potential for lowering the risk of systemic allergic reactions to accidental peanut exposure and decreased sensitivity to peanut. Peanut, egg and milk OIT have been shown to desensitize approximately 60 to 80% of patients studied. OIT may not be equally efficacious for every food allergy. Effectiveness of OIT can vary based on age, pubertal stage, level of sensitization to the food, presence of and level of control of additional atopic conditions (such as allergic rhinitis and asthma), compliance and duration of OIT. A recent meta-analysis study of many peanut OIT studies in LANCET revealed that quality of life (QoL) is not improved, and reactions are increased (including anaphylaxis) in children and adults on OIT compared to children avoiding allergenic foods. However, review of individual studies on QoL of individuals undergoing OIT, there is a trend for improved QoL. Anecdotally, patients who reach maintenance phase do report improved QoL. It is important to consider OIT goals and readiness of both caregivers and the patient. There is variable and limited data to support that OIT can lead to permanent, long-term tolerance to the allergenic food (for example, the ability to eat the previously allergic food at any amount or any frequency) without any problems or the need for daily dosing. It is likely that patients will have to continue daily therapy for the rest of their lives. A small percentage of patients do not achieve desensitization to the allergenic food(s) with OIT.

Risks include frequent side effects. The majority of reactions that occur during OIT are mild, but common and should be anticipated. There is also the potential for anaphylaxis. Another risk includes the development of eosinophilic esophagitis. Challenges include the likelihood that patients will have to be on daily therapy for the rest of their lives in order to maintain their tolerance. In addition to making a commitment to daily dosing, patients have to limit allergic reaction/anaphylaxis cofactors when they take their OIT dose, including exercise, illness, tiredness, uncontrolled allergic comorbidities, and medications such as NSAIDs. Some patients develop taste aversion. Continued carriage of epinephrine autoinjectors, is still required for those participating in OIT. The protection against large accidental exposures is unknown, but likely, reactions are less severe after desensitization. OIT is not a cure for their food allergy and it is important for patients and families to weigh possible benefits of OIT against these risks and challenges.

Management of food allergies includes food allergen avoidance and having epinephrine autoinjectors available in case of allergic reactions due to unintentional exposures. An alternative or adjunctive therapy includes food oral immunotherapy. In January 2020, the FDA approved Palforzia, the first approved oral immunotherapy treatment for peanut allergy, which is great news for our patients. Some clinical practices offer oral food desensitization using food products as routine clinical care. Interventions currently being studied in clinical trials include: epicutaneous, sublingual and subcutaneous immunotherapies, peanut DNA and peanut peptide vaccines, live biotherapeutic products in combination with oral immunotherapy, and biologic therapies (medications that are made from antibodies that have been changes so the antibodies modulate the allergic response) alone or in combination with food oral immunotherapy.

Dr. Chen E Rosenberg, MD, is a Pediatric Allergist/Immunologist at Massachusetts General Hospital for Children and an instructor at Harvard Medical School. She has special interests in food allergy, food oral immunotherapy, and investigational therapies for food allergy.
AAFA New England: News & Notes

LEGISLATIVE ADVOCACY

AAFA New England remains active advocating for our community at both the state and federal level. The following bills are supported by AAFA New England. Please continue reading to learn more about the efforts being made to help our asthma and allergy community live active, healthy lives.

Federal:

AAFA New England strongly endorses the Food Labeling Modernization Act (FLMA) (H.R.4917/S.2594).

The bill, introduced by Representative Frank Pallone (D-NJ) and Senator Richard Blumenthal (D-CT), along with Representative Rosa DeLauro (D-CT) and Senators Ed Markey (D-MA) and Sheldon Whitehouse (D-RI), would increase consumer transparency, encourage product reformulation, and counter misleading food claims. Food labels can play an important role in promoting healthy eating and preventing diet-related chronic diseases. Yet today’s food labels do not provide the simple, straightforward information that consumers need to evaluate products and make healthy choices. For example, studies show that consumers with less education and lower incomes are less likely to use the complex Nutrition Facts label, demonstrating inequitable access to nutrition information under current labeling policies.

Updates to align food labeling laws with modern consumer practices are long overdue. The bill will help counter misleading claims that make foods appear healthier than they truly are. For example, consumers sometimes misjudge the whole grain content of foods with claims like “multigrain” and “honey wheat.” The FLMA would require products using terms like these to also declare what percent of the grains are whole versus refined. This transparency will make it easier for consumers to follow dietary recommendations to make at least half of one’s daily grains whole grains.

Please contact your state representatives and state senators and ask them to support the health of our nation and consumers’ fundamental right to know what is in their food by supporting the Food Labeling Modernization Act!

To make nutrition information more accessible, the FLMA directs the Food and Drug Administration (FDA) to establish a simple, standard front-of-package labeling system for foods sold in the United States. Dozens of countries have implemented similar systems and seen significant public health gains.

The FLMA also brings food labels into the 21st century by requiring that nutrition, ingredient, and allergen information be available for grocery items sold online. Nearly one-third of Americans regularly buy groceries online. This has increased during the pandemic and is a trend that is not going away.

On October 21, AAFA New England President Jan Hanson, AAFA New England President, provided a slide deck that addressed alarming asthma statistics in the Commonwealth, environmental triggers and risk factors for developing asthma, including the vulnerability of children and the disproportionate burden affecting our underserved populations and communities of color, and presented strategies to achieve better health outcomes in alignment with those outlined in H.2392 and H.2393 for asthma remediation. AAFA New England’s Executive Director Julie Flynn and Amy Dow, Director of Education Programs attended the Briefing to provide further resources in support of these two bills. We are grateful for the important contributions by Dr. Margee Louisias, Brigham & Women’s Hospital, and AAFA NE Board member, Dr. Marissa Hauptman, Boston Children’s Hospital, and Dr. Quindelyn Cook, Boston Medical Center, who were present at the Briefing as part of the AAFA New England “team” to provide their professional experiences and expertise in support of these two bills.

On May 3, Jan Hanson provided written and oral testimony in support of H.2392 at the virtual Hearing of the Joint Committee on Public Health, and on October 15, Jan provided written testimony in support of H.2392 at the virtual Hearing of the Joint Committee on Public Health.

MA S.1389 An Act to improve food allergy awareness

On October 7, AAFA New England President Jan Hanson provided written testimony in support of S.1389 at the virtual Hearing of the Joint Committee on Public Health on behalf of our food allergy community to help enhance the safety of those with food allergies when eating out at restaurants.

MA S.1389 An Act to improve food allergy awareness

AAFANE’s testimony and/or the Asthma and Indoor Air Quality PowerPoint are available by emailing aafane@aafane.org.
Our Fall events have all been recorded and can be found at asthmaandallergies.org

Asthma Goal Series: Living with Asthma — The Engaged Patient

Arnita Roberts-Christie RN, BSN, MS Patient Engagement Liaison at GlaxoSmithKline, discussed the impact of asthma, what an engaged patient is and why it is important to be engaged in your health care, how to be a goal setter, how to best partner with your doctor, and how to practice self-care.

Disparities in the Healthcare Delivery System: Part II

Dr. Margee Louisias: Director of Diversity and Inclusion with the Division of Allergy and Immunology at Brigham and Women’s Hospital

Our panel of doctors discussed:

- Environmental Racism and how it can cause or worsen allergic reactions
- Food Insecurity and how it manifests in patients with food allergies
- Lack of racial diversity in clinical trials and our healthcare workforce
- Education, Risk Factors, and myths regarding Allergic reactions to the mRNA based COVID-19 vaccines

Important News if you have Eczema!

The FDA has recently approved RINVOQ® for the treatment of refractory, moderate to severe atopic dermatitis in adults and children 12 years and older.

AAFANE Makes a Virtual Visit to the Worcester WooSox!

AAFA New England Leadership and members of our community met with the WooSox management team on January 27, 2022 to engage in an important discussion about peanut allergy-friendly baseball games for the 2022 season. Stay tuned for more information!

Understanding Your Health Insurance Options

Andrea Rodriguez, RN, BSN Genetech Patient Liaison, explored how changes in health insurance may affect your coverage and costs.

Our panel of doctors discussed:

- Environmental Racism and how it can cause or worsen allergic reactions
- Food Insecurity and how it manifests in patients with food allergies
- Lack of racial diversity in clinical trials and our healthcare workforce
- Education, Risk Factors, and myths regarding Allergic reactions to the mRNA based COVID-19 vaccines
MASSACHUSETTS GENERAL HOSPITAL

The Food Allergy Center at Massachusetts General Hospital has several upcoming clinical trials for infants, toddlers, adolescents, and adults. Many studies involve peanut allergy, while one study involves multiple food allergies. We have several trials starting for Eosinophilic Esophagitis.

Multiple food allergies:
Toddler to Adult:

1. Multiple-food oral immunotherapy (OIT) (peanut and 2 other foods) + Omalizumab
   - Phase III study – enrolling now.
   - Ages 1-55 years old.
   - Participants must be allergic to peanuts and at least two other foods (milk, egg, wheat, cashew, hazelnut or walnut)
   - Participants will receive omalizumab injections alone or in combination with multiallergen oral immunotherapy (OIT). The total study duration including long-term followup and dietary integration could last approximately 4 years.
   - Participants must react at entry food challenges to peanut and 2 other allergens listed to be eligible.
   - Omalizumab as Monotherapy and as Adjunct Therapy to Multi-Allergen OIT in Food Allergic Participants - Full Text View - ClinicalTrials.gov

Peanut allergy:
Toddler/Early Preschool

2. Peanut OIT
   - Phase III study—enrolling soon (early 2021)
   - Age 1 to <4 years old
   - Participants must be sensitized to peanut or have a history of allergic reactions to peanut.
   - All participants must react to peanut at an entry food challenge to peanut to be eligible.
   - The maximum duration of subject participation in this study is approximately 12 months.
   - Participants will be randomized to receive either peanut OIT or placebo in a ratio of 2:1. Participants who receive placebo will have the opportunity to receive peanut OIT by enrolling in a follow-up study.
   - Efficacy of treatment with AR101 will be evaluated by tolerability of single doses of peanut protein in a double-blind, placebo-controlled food challenge.
   - Immune response and changes in control of pre-existing atopic diseases (asthma, atopic dermatitis) will be evaluated.
   - Peanut Oral Immunotherapy Study of Early Intervention for Desensitization - Full Text View - ClinicalTrials.gov

If you are interested in receiving information regarding any of the following MGH studies, please email foodallergy@mgh.harvard.edu

Boston Children’s Hospital studies provide free treatments, compensation for time and travel. For more information about any of the above BCH studies and/or to refer potential interested families, please email asthma@childrens.harvard.edu or call 857-218-5336. https://www.childrenshospital.org/research/centers-departmental-programs/asthma-clinical-research-center
THANK YOU TO OUR CORPORATE PARTNERS

AAFA New England is grateful for the support of our Corporate Partners in 2022. Their generous support allows us to provide valuable resources to help our members live life fully with asthma and allergies.

The Thoracic Foundation

THANK YOU TO OUR COMMUNITY!

On behalf of the AAFA New England Board of Directors and Medical Advisory Committee and team, we sincerely thank you for your support in 2021. Despite the challenges imposed by COVID-19 restrictions, we have had an amazing year!

We are proud to have provided you with seven terrific Speaker Series Programs that addressed asthma management, tips for difficult to control eczema, the groundbreaking work of the Food Allergy Science Initiative (FASI), Disparities in the Healthcare Delivery System, and Understanding Health Insurance Options.

We advocated tirelessly with state legislators for the passage of bills that would improve food allergy protocols at restaurants and at school, and address indoor air quality remediation so that better asthma health outcomes may be achieved. We donated over 800 peak flow meters to assist those living with asthma in underserved communities.

Our virtual Fall Gala 2021 was a huge success, as we celebrated our two 2021 Champions of the Asthma and Allergy Community, Anne Dixon, MD, BM BCh and Jacqueline Rodriguez-Louis, MPH, M.Ed, for their outstanding dedication and work.

We look forward to 2022! Get Involved and Join Us!

ASTHMA & ALLERGY BULLETIN

Published three times a year by the
Asthma and Allergy Foundation of America
New England Chapter
781-444-7778
e-mail: aafane@aafane.org

The Asthma and Allergy Foundation of America, New England Chapter, is dedicated to helping people with asthma and allergic diseases, and those who care for them, through education, support for research and an array of services.

Information contained in this newsletter should not be used as a substitute for responsible professional care to diagnose and treat specific symptoms and illness. Any reference to available products and procedures should not be construed as an endorsement. AAFA New England, including all parties to or associated with this newsletter, will not be held responsible for any action taken by readers as a result of the newsletter. ©2022. All rights reserved. Material may not be reproduced without permission of the publisher.
School Nurses and Health Clinics

FYI

AAFA New England is donating over 18,000 new Respiratory Care Products!

Available items: Brand new Peak flow meters (adult & pediatric), mouthpieces (adult & pediatric), nose clips and calibration syringes, in their original packaging, are available for immediate distribution.

It is AAFA New England’s goal to help improve access to needed respiratory care equipment for community health centers, schools, and camps for patients and families impacted by asthma in underserved communities.

If you would like more information or to place an order for any of the above products please email us at respicare@aafane.org

“Like” us on Facebook: www.facebook.com/AAFANewEngland

Follow us on Twitter: @AAFANE

Follow us on Instagram: @allergyasthmanewengland

Follow us on LinkedIn: aafa-new-england