State of Food Allergies

The Latest Research and Progress
Food Allergy 101

- IgE mediated reaction
- Reaction occurs within minutes or (less commonly) in up to 2 hours
- Reproducible every time the food is eaten
- Sensitization does not always equate to true allergy
- Diagnosis should be made by a board certified allergist

- Reactions range from mild to very severe (potentially life-threatening)
- Affects about 6-8% of children and up to 10.8% of adults
- 90% of food allergy reactions are attributable to 8 foods (milk, egg, peanut, tree nut, fish, crustacean shellfish, wheat and soy)
Food Allergies Are One Piece of an Allergy Puzzle

Eczema * Allergic Rhinitis * Asthma * Food Allergy

Genetics AND Environment Play a Part

Solving the puzzle requires a more wholistic view of the problem
According to the LEAP Study findings...

We can reduce the number of children who develop peanut allergies by up to 86% in high-risk infants by introducing peanut foods as early as 4-6 months.
The Norm is *Becoming* Feeding Peanut Foods

- 2015: LEAP Study Published
- International Consensus Document Published
- 2017: NIAID Addendum Guidelines Published
- 2019: AAP Revised Guidelines Published
But We’re Not There Yet

Physicians aren’t fully implementing the guidelines.

Parents want more information.

We need to Mind the Gap.
Learning From the Success of Australia

Changes to infant feeding guidelines for allergy prevention in 2016 were followed by a marked increase in early peanut introduction.

Less than 3 IN 10 INFANTS consuming peanut by 12 months in 2007-2011¹...

...to nearly 9 IN 10 INFANTS consuming peanut by 12 months in 2017-2018².

¹ HealthNuts; n = 5,300; ² EarlyNuts; n = 860
Accurate Diagnosis is an Issue
Including self—diagnosis and physician diagnosed

According to the NIAID, 50-90% of self-diagnosed food allergies are wrong. In one meta-analysis, the rate of self-reported food allergy among children was 12%, compared with 3% when confirmatory testing was performed.

Blood and skin tests alone are not diagnostic for food allergies and panel tests are not best practice.
For example, in 111 OFCs performed in 44 children avoiding foods because of positive test results, 93% were tolerant of the avoided food.

Oral food challenges are considered the gold standard.
But they can be expensive and time consuming, and may provoke serious reactions.
Call to Action Within Medical Communities

To use better approach to food allergy testing to:
1. Reduce overtesting.
2. Eliminate panel testing.
3. Offer more oral food challenges.
4. Consider the cost of mislabeling an individual with food allergies.
   - Financial
   - Medical/Physical
   - Psychological

Same message being stated repeatedly by experts at #ACAA19:
#Foodallergy is NOT diagnosed by IgE testing alone...testing shouldn't be done unless the history suggests IgE reactions.

There are zero clinical indications to ever order a large random panel of food allergy tests.
**Better Diagnostic Tools**

- Mast Cell Activation (MAT)
- Basophil Activation Test (BAT)
- Epitopes
Protection through exposure:

**Oral Immunotherapy (OIT)**

- Has now received FDA approval, Aimmune’s AR101 would desensitize patients to peanut over a period of about six months.
- Afterward, patients would continue to take maintenance doses to maintain desensitization.
- This is a treatment, but not a cure.
The First FDA-approved Treatment for Peanut Allergies:  
**Palforzia**

- **Approved** January 2020.

**Indications:**
- PALFORZIA is an oral immunotherapy indicated for the **mitigation of allergic reactions**, including anaphylaxis, that may occur with accidental exposure to peanut.
- Initiation of PALFORZIA is approved in patients **aged 4 through 17 years** with a **confirmed diagnosis** of peanut allergy.
- PALFORZIA may be continued in patients 18 years of age and older.
- PALFORZIA is **to be used in conjunction with a peanut-avoidant diet**.

**Cost:**
- $890/month
- Unknown duration of treatment/maintenance
Protection through exposure:

**Epicutaneous Immunotherapy (EPIT)**

- **DBV’S Viaskin** delivers biologically active compounds to the immune system through intact skin.
- Aims to desensitize by delivering compounds in small quantities into the outer layers of the skin.
- Resubmitted to FDA 2019.
- Could be available mid/late 2020.
What to Know About Immunotherapy

OIT & EPIT do not CURE food allergies.

There are risks and benefits.

Controversies exist.

Some people will still choose avoidance.

Other co-treatments may make immunotherapy safer and more successful.
Peanut Allergy Treatments 2.0

Diagram of immune cells and molecules involved in peanut allergy inflammation:
- Goblet cells
- Dendritic cells
- Allergens (helminths, viruses)
- Toll-like receptors (TLR)
- Epithelial injury
- ASM (Airway smooth muscle)

Key cytokines and their targets:
- IL-25
- IL-33
- TSLP
  - Drives T\(^{+}\)2 inflammation

Cell types and their roles:
- B cells
- Mast cells
- Dendritic cells
- CD4 T cells
- NKT cells
- ILC2
- T\(^{Naive}\)
- Eosinophils
- Basophils

Drugs and their targets:
- Omalizumab
- Mepolizumab
- Reslizumab
- Benralizumab
- Dupilumab (via IL-4R\(\alpha\) binding)
- Lebrikizumab
- 1L-5R\(\alpha\)
- 1L-5
- 1L-4
- 1L-13
- Tralokinumab
Peanut allergy shots? A new Stanford-led study shows an antibody injection could prevent allergic reactions

Kristin Lam  USA TODAY
Published 9:00 a.m. ET Nov. 14, 2019  |  Updated 11:20 a.m. ET Nov. 14, 2019

Dr. Dave Stukus  @AllergyKidsDoc  Nov 15
Use of biologics holds promise for treating foodallergy not by curing the condition, but by blocking a signal/response if a food is accidentally ingested.

It's like a fairly specific layer of protection & security blanket.

It's not a desensitization such as oral immunotherapy

Dr. Dave Stukus  @AllergyKidsDoc  Nov 15
Biologics are not ready just yet to use for foodallergy:

- Need more data regarding dose, duration, safety, expected outcomes, optimal patient candidates

- These are EXPENSIVE, typically >$1000 per injection

- Injections are likely long term, some every 2-4 weeks

Dr. Dave Stukus  @AllergyKidsDoc  Nov 15
A fascinating approach in the future may be to use biologics 1st to offer protection from reactions, then start oral immunotherapy (or another form) to offer a better path towards desensitization.

This may lessen side effects/reactions. Still need to sort out MANY details & cost
More ‘Novel therapies’ under study

- Vaccines, injectable and nasal, using modified proteins
- Probiotics
- Enzyme blockers
- Microbials for fecal transplant
- PREVENTION: Diet Diversity?

Huge amount of money now targeting food allergy treatments – and peanut allergy is in the bullseye.
Food Allergies Are a Dynamic Area of Study

- Revisions to the guidelines?
- Ongoing efforts for early introduction of all allergens
- New, better diagnostic methods
- More coverage of immunotherapy & emerging treatments
- Better understanding of influence of diet diversity, microbiome and epigenetics