

# Infant Feeding Practice and Food Allergy Update

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## Disclosure

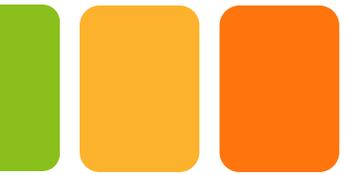
- Consultant for National Peanut Board, who sponsored this session
- Private Practice – Southern Fried Nutrition Services, LLC





# Objectives

- At the end of the session, attendees will be able to:
  - Define the basics of food allergies and their difference from intolerances or sensitivities;
  - Understand, in brief, the evolution of the research around infant feeding recommendations over the last 15 years;
  - Share specific recommendations on eating common food allergies by the pregnant and breastfeeding mother, as well as in early feeding.



# Food Allergies 101

The Basics



## Food Allergies Are...

- *A food allergy is defined as an adverse health effect arising from a specific immune response that occurs reproducibly on exposure to a given food. ([NIAID, 2010](#))*
  - Must involve the immune system
  - Must be reproducible



## Defining “Food”

- *A food is defined as any substance—whether processed, semi-processed, or raw—that is intended for human consumption, and includes drinks, chewing gum, food additives, and dietary supplements. ([NIAID, 2010](#))*



## Defining “Food Allergen”

- *Food allergens are defined as those specific components of food or ingredients within food (typically proteins, but sometimes also chemical haptens) that are recognized by allergen-specific immune cells and elicit specific immunologic reactions, resulting in characteristic symptoms. ([NIAID, 2010](#))*



# Possible Signs and Symptoms

- Most Common, according to the Mayo Clinic:
  - “Tingling or itching in the mouth
  - Hives, itching or eczema
  - Swelling of the lips, face, tongue and throat or other parts of the body
  - Wheezing, nasal congestion or trouble breathing
  - Abdominal pain, diarrhea, nausea or vomiting
  - Dizziness, lightheadedness or fainting” ([Mayo Clinic, 2014](#))



# Food Allergy Reaction



COURTESY JO PARKER

[Photo Source](#)



# Anaphylaxis

- “In some people, [food allergy reactions] can cause life-threatening signs and symptoms, including:
  - Constriction and tightening of airways
  - A swollen throat or the sensation of a lump in your throat that makes it difficult to breathe
  - Shock with a severe drop in blood pressure
  - Rapid pulse
  - Dizziness, lightheadedness or loss of consciousness

Emergency treatment is critical for anaphylaxis. Untreated, anaphylaxis can cause a coma or even death.” ([Mayo Clinic, 2014](#))

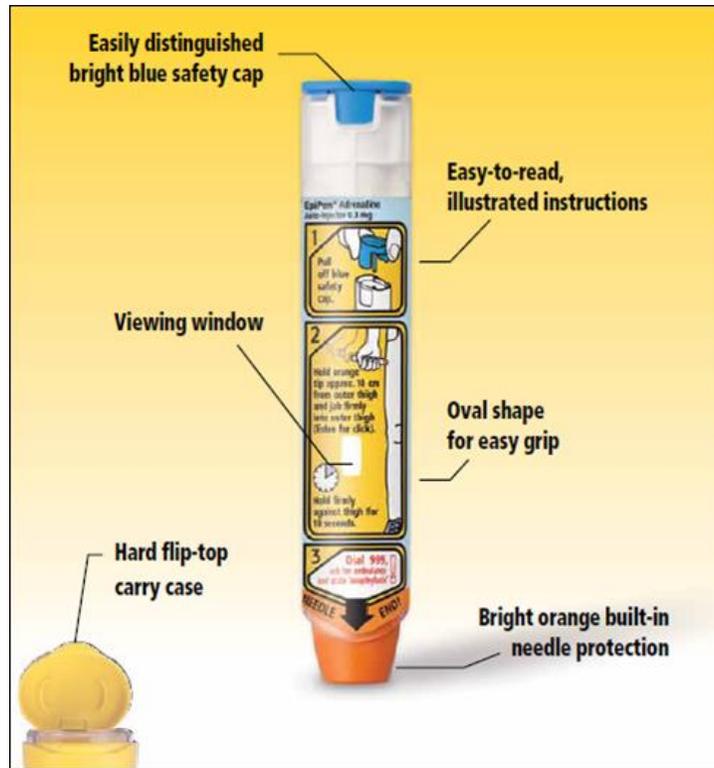


# Treating Anaphylaxis

- Epinephrine is currently the only recommended treatment for anaphylaxis
  - Ex. Epi-Pen, Auvi-Q
- Bi-phasic Response
- Always call 911 anytime epinephrine is administered
- Few to no contraindications for use

# Epinephrine

## Epi-Pen



[Photo Source](#)

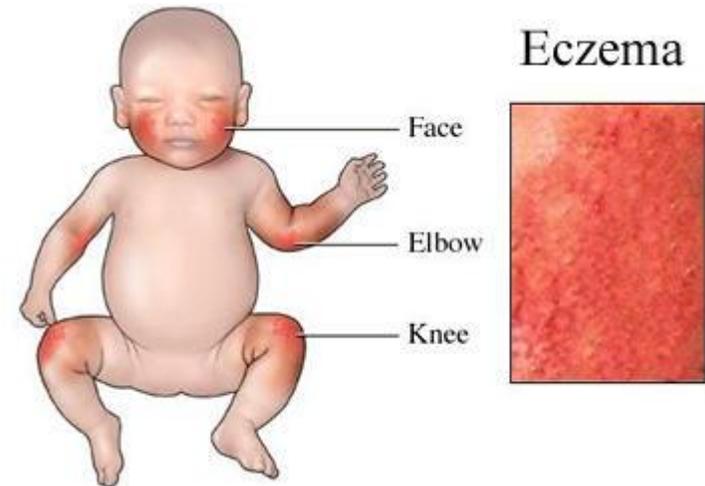
## Auvi-Q



[Photo Source](#)

# Food Allergy Risk Factors

- First degree relative with allergies
- Maybe:
  - Eczema
  - Progression of “Allergic March”



[Photo Source](#)



# Prevalence

- Exact prevalence is unknown; surveys are all self-report
- Approximately 4-6% among children
- Less than 5% of adults
- All allergies have been on the rise, including food allergies



# Multiple Food Allergies

- Exact prevalence is unknown
- About 1/3 of children allergic to peanut are also allergic to tree nuts
- Allergies tend to occur in clusters, perhaps making individuals with certain food allergies more likely to be allergic to others

## Why the Increase?

- Hygiene Hypothesis
- Vitamin D deficiency
- Microbiome
- We don't know



[Photo Source](#)



# Diagnosis

- Detailed History (What EXACTLY happened? When? How much time between food eaten and reaction? Happens every time food eaten?)
- Skin Prick Test (50% false positive)
- Serum-IgE Test (better, but still high false positive)
- Oral Food Challenge (**Gold Standard**)
  - Sensitization vs. True Food Allergy

# Most Common Allergens (The Big 8)

## The Big-8



Milk



Eggs



Fish



Crustacean  
Shellfish



Tree Nuts



Peanuts



Wheat



Soya

[Photo Source](#)

# Food Allergies Are NOT...

- Sensitivities (ex. Gluten sensitivity)
- Intolerances (ex. Lactose intolerance)
- Celiac Disease – autoimmune disease
- Oral Allergy Syndrome\*



\*There is disagreement between some in the medical community who consider OAS to be true food allergy.

# Adverse Food Reactions ([NIAID, 2010](#))

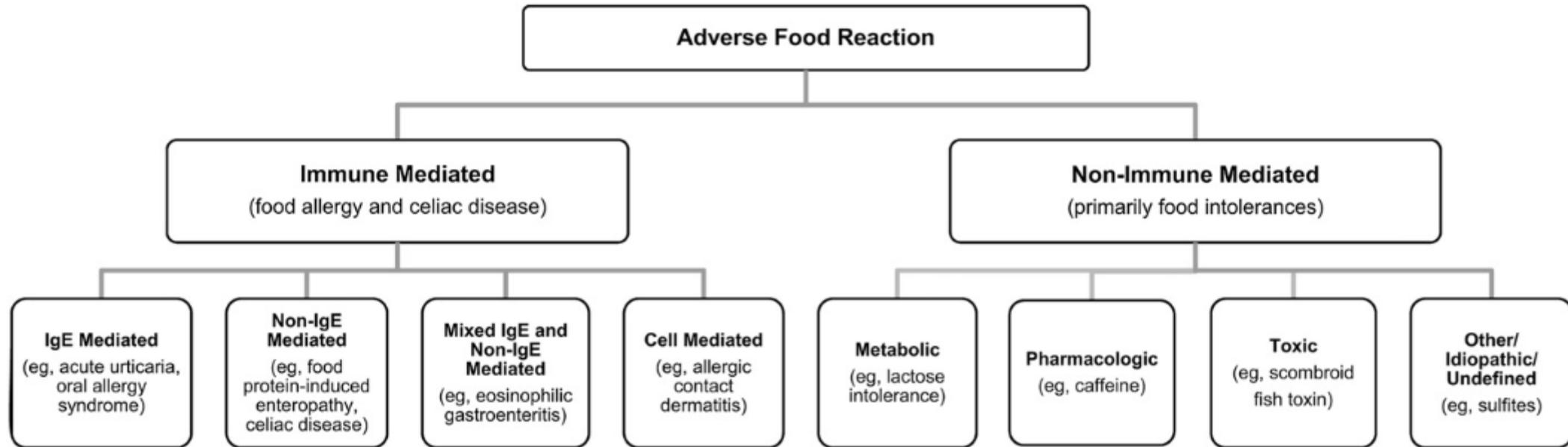


FIG 1. Types of adverse reactions to food

# Common Myths and Misconceptions

- Airborne exposure
- Casual contact
- Refined oils must be avoided
- Precautionary labeling
- Reactions get worse the more frequently they occur

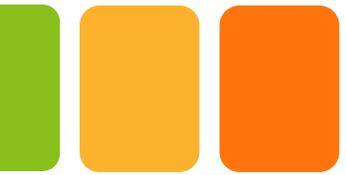


[Image credit: Richard Wilkinson](#)

# Quality of Life

- Food allergic adolescents reported more pain and limitations due to food allergy
- Allergic children have reported higher levels of anxiety
- Parents and caregivers report more stress and fear
- Quality of life improved after OFC, regardless of outcome





# Confusion About Feeding

*Adding Context*

## The Positive Side

- 94-96% of children do not develop food allergies
- Though food allergies can develop anytime, they are still uncommon
- Depending on the allergy, 20-80% will likely outgrow their allergy
- Most reactions to food allergens do not result in fatalities or serious reactions





## OLD Recommendations

- Possibly avoid peanuts during pregnancy
- Eliminate peanuts during breastfeeding, possibly egg, cow's milk and fish too, if high risk for atopy
- Recommended delayed introduction of highly allergenic foods in order to allow immune system of infants to mature
  - Cow's Milk until 12 months
  - Eggs until 24 months
  - Peanuts, tree nuts, and fish until 36 months

American Academy of Pediatrics, 2000



## Research – 2000-2008

- Pregnancy
  - A diet rich in n-3 may decrease, while a diet high in n-6 may increase the risk for allergic disease ([Sausenthaler, 2007](#))
  - Mediterranean diet may have positive impact on development of atopy
- Breastfeeding
  - Exclusive breastfeeding for 4 months delays or prevents eczema, cow milk allergy, and wheezing early in life. ([Greer, 2008](#))
  - Peanut protein detected in breastmilk, postulated to cause sensitization. ([Vadas, 2001](#))



# Research – 2000-2008

- Infant Feeding
  - Early consumption of peanut protein reduces risk of peanut allergy compared to delayed introduction ([Du Toit, 2008](#))
  - Modest evidence supports the use of hydrolyzed cow's milk, but not soy, formula to prevent atopic disease ([Greer, 2008](#))
  - Early introduction of solids (before 4 months):
    - Exposes infants to additional pathogens;
    - Reduces intake of immune protective substances in breastmilk;
    - Encourages early cessation of breastfeeding;
    - Increased consumption of fatty or sugary foods at 1 year (displacing nutritious foods). ([Grummer-Strawn, 2008](#))
  - Delaying Introduction of wheat past 6 months may increase risk of developing wheat allergy. ([Poole, 2006](#))



## 2008 Recommendations

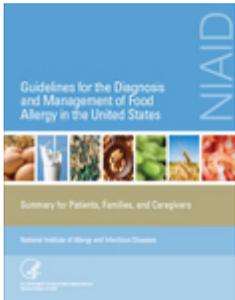
- Evidence does not support avoidance, except maybe peanut, for
  - Pregnancy
  - Breastfeeding
- Evidence does not support the delay in introducing potentially allergenic complementary foods past 4-6 months

American Academy of Pediatrics, 2008 ([Greer, 2008](#))



# Research & Consensus Statements – 2010-2012

- NIAID Guidelines for the Diagnosis and Management of Food Allergies in the US ([Burks, 2011](#))
  - Full Report and Summaries for clinicians and families
- ICON (International Consensus ON): food allergy ([Burks, 2012](#))
  - Detailed description of diagnostic criteria, management, and future research needs





## Review & Recommendations - 2013

- Primary Prevention of Allergic Disease Through Nutrition Intervention ([Fleischer, 2013](#))
  - Do not recommend maternal or breastfeeding dietary restrictions, recommend more research for peanut
  - Support exclusive breastfeeding for 4-6 months
  - Support introduction of solid foods, including potentially allergenic foods, starting at 4-6 months
  - Hydrolyzed formula may reduce risk for allergy among high risk



## Research – 2009-2013

- Early introduction and breastfeeding
  - Introduction to solids at or before 16 weeks increased risk for the development of food allergies by 2 years old; concurrent breastfeeding during early feeding reduced risk of cow's milk allergy ([Grimshaw, 2013](#))
  - Delaying introduction past 4-6 months increased risk for egg allergy, however introduction of cooked egg at 4-6 months reduced risk of egg allergy, compared with egg in baked goods ([Koplin, 2010](#))



## Position Paper – 2014

- Dietary exposures and allergy prevention in high-risk infants: a joint position statement of the Canadian Society of Allergy and Clinical Immunology and the Canadian Paediatric Society
  - No restrictions during pregnancy or breastfeeding
  - Exclusive breastfeeding for the first 6 months
  - Consider hydrolyzed cow's milk if not breastfed
  - Introduce solids, including potential allergens, by 6 months
  - Recommended more research on early introduction
  - Regular consumption of potential allergens to maintain tolerance

([Chan, 2014](#))



# Newest Research – 2015

- LEAP Study
  - Early infant exposure to peanut protein (between 4-11 months) as compared to withholding for up to 36 months
  - 530 high risk subjects (either with eczema or egg allergy) followed for 5 years
  - All prescreened for peanut allergy
  - Significant reduction (of 86%) of peanut allergy risk among those in the early introduction group
  - Call for new recommendations & additional research

(Du Toit, 2015)

# Summary of Current Evidence



- Encourage exclusive breastfeeding for the first 4-6 months
- Consider hydrolyzed formula for high-risk if not breastfed
- May begin to introduce solid foods, including potentially allergenic foods, at 4-6 months
- Concurrent breastfeeding during solid food introduction may provide added protection against food allergy ([Grimshaw, 2013](#))
- Those at highest risk may require food allergy screening prior to oral introduction of potential allergens – work with or refer to pediatrician



# How-To: Introduction of Potential Allergens

- At 4-6 months, when child is ready for solid foods
- After he has shown tolerance of several other foods
- At home, not in a restaurant
- In appropriate forms to avoid choking (PB vs. peanut)
- One new food every 2-3 days
  - Example:
    - Yogurt
    - Thinned peanut butter/nut butters
    - Mashed edamame
- At high risk should discuss with pediatrician for potential prescreening for food allergies



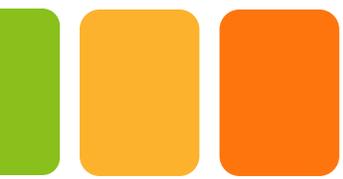
# Outstanding Questions

- Will early introduction work to reduce allergy for all potential allergens (beyond milk, egg and peanut)?
- Who are the best candidates for early introduction?
- Are there concurrent behaviors that can reduce risk even further?
- What role does the microbiome play in food allergy prevention?
- Is there an optimal gut bacteria composition for food allergy prevention?
- When is the “perfect” time for introduction to prevent food allergies, reduce obesity, and provide optimal nutrition?



## Other Considerations

- Diversity in infant feeding may:
  - Create a more diverse palate and reduce pickiness
  - Provide a wider variety of vitamins, minerals, fatty acids, and other nutrients
  - Develop a more diverse microbiome, which is associated with better overall health
  - Reduce obesity and overweight



# Can Food Allergies Be Prevented?



The Answer is...

~~Yes~~      ~~No~~

MAYBE.



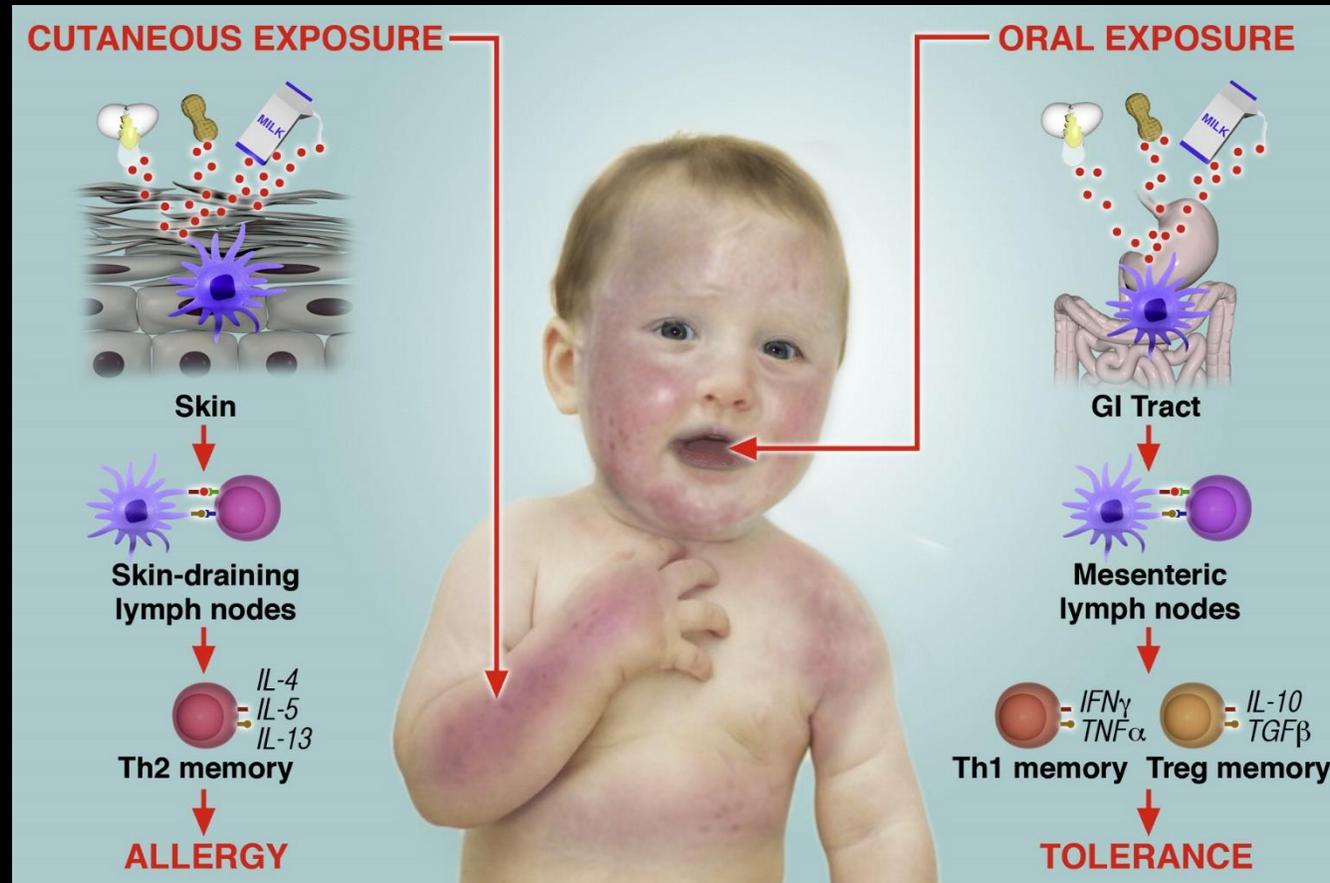
[Photo Source](#)



# Hypotheses

- Early introduction to “train the immune system” based on the dual-exposure hypothesis
- Establishing a healthy and optimal microbiome
- Vitamins/Minerals – Mediterranean style diet, high in fruits, vegetables, and n-3 fats

Fig 1



# Microbiome

- Fewer good bacteria is associated with atopic disease
- Antibiotics in early life may increase risk for developing food allergies





## Healthy Dietary Pattern

- Fruits and vegetables provide antioxidants and other nutrients that may support healthy immune function, while supporting microbiome
- Good fats help reduce inflammation and down-regulate the immune system (ex. fish and nuts)
- Adequate vitamin D is associated with immune health and food allergy (ex. dairy)



## To be continued...

- Questions?

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# References

- Throughout, plus:
- NIAID Guidelines for the Diagnosis and Management of Food Allergies  
<http://www.jacionline.org/article/S0091-6749%2810%2901566-6/pdf>
- Mayo Clinic: Food Allergy Symptoms <http://www.mayoclinic.org/diseases-conditions/food-allergy/basics/symptoms/con-20019293>
- CDC Voluntary Guidelines for the Management of Food Allergies in Schools and Early Care and Education Programs  
[http://www.cdc.gov/healthyyouth/foodallergies/pdf/13\\_243135\\_A\\_Food\\_Allergy\\_Web\\_508.pdf](http://www.cdc.gov/healthyyouth/foodallergies/pdf/13_243135_A_Food_Allergy_Web_508.pdf)
- Primary Prevention of Food Allergies Through Nutritional Intervention  
<http://www.jaci-inpractice.org/article/S2213-2198%2812%2900014-1/pdf>
- Starting Solid Foods During Infancy  
<http://www.uptodate.com/contents/starting-solid-foods-during-infancy-beyond-the-basics>



## Resources

- [PeanutAllergyFacts.org](http://PeanutAllergyFacts.org)
- [FAACT: FoodAllergyAwareness.org](http://FAACT: FoodAllergyAwareness.org)
- [AllergyHome.org](http://AllergyHome.org)
- [FARE: FoodAllergy.org](http://FARE: FoodAllergy.org)