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

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

Auvi-Q

Photo Source
Food Allergy Risk Factors

• First degree relative with allergies
• Maybe:
  – Eczema
  – Progression of “Allergic March”
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)

- 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. diary)
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

• Primary Prevention of Food Allergies Through Nutritional Intervention http://www.jaci-inpractice.org/article/S2213-2198%2812%2900014-1/pdf

Resources

- PeanutAllergyFacts.org
- FAACT: FoodAllergyAwareness.org
- AllergyHome.org
- FARE: FoodAllergy.org