Infant Feeding Practices
Update

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The Diet: Managing in the Complex World of Food Allergies

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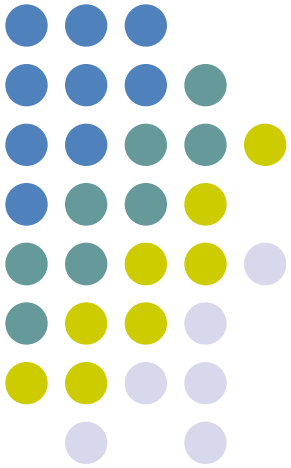

Objectives

- Summarize the basics of food allergy prevalence, incidence, and diagnosis
- Review nutritional management of food allergies
- Understand current guidelines on eating allergenic foods during pregnancy and breastfeeding
- Understand current guidelines for introducing allergenic foods in the infant diet
- Discuss common myths and misconceptions

Food Allergy - Definition

"An adverse health effect arising from a specific immune response that occurs reproducibly on exposure to a given food"

- Majority is IgE antibody mediated → immediate reaction
- Non-IgE mediated (involves GI tract) → delayed reaction

Food Allergy - Definition

Food intolerance – non-immune reactions that include:

- Metabolic - examples include lactose intolerance and metabolic diseases/enzymatic deficiencies
- Structural
- GERD
- Pharmacologic – caffeine, histamine (fish, wine), tyramine (aged cheese)
- Toxic contaminant – Scomboid (histamine), other food poisoning
- Aversion or phobia to food: a bodily reaction associated with a food ingestion which cannot be reproduced by DBPCFC

Food Allergy - Prevalence

- Documented food allergy in United States
  - 8.96% of overall population
  - 6.53% of young children
- Prevalence is increasing in industrialized nations
  - Food allergy → 3.4% to 5.1%
  - Peanut allergy → 0.4% to 1.4% between 1997 and 2008
  - True prevalence vs. increasing awareness

Food Allergy - Prevalence

TABLE I. Estimated food allergy rates in North America

Prevalence	Infant/child	Adult
Milk	2.5%	0.3%
Egg	1.5%	0.2%
Peanut	1%	0.6%
Tree nuts	0.5%	0.6%
Fish	0.1%	0.4%
Shellfish	0.1%	2%
Wheat, soy	0.4%	0.3%
Sesame	0.1%	0.1%
Overall	5%	3% to 4%

Common Food Allergens

- Eight foods responsible for over 90% of food allergic reactions
  - Milk, egg, wheat, soy, peanut, tree nuts, fish, shellfish
- A wide variety of foods account for the remaining 10%
  - Food allergies with increasing prevalence
    - Kiwi and Sesame Seeds

Common Food Allergens

- 30% of food allergic children have multiple food allergies
- Almost 40% of food allergic children have a history of severe reactions
  - ~30,000 ED visits yearly
- Children with food allergy are 2-4 x more likely to have other related conditions
  - Asthma, eczema, or other allergies.

Common Food Allergens

- Do they last?
  - Egg, milk, soy, wheat
    - 80% outgrow by school age
  - Peanut, tree nut, fish, shellfish
    - Less likely to be outgrown
    - Peanut - new research indicates 20% of children experience resolution by age 5

Symptoms of Food Allergy

- Cutaneous
  - Flushing, hives, swelling, redness, eczema
- GI
  - Redness or swelling around mouth and throat,abdominal cramping, nausea, vomiting, diarrhea
- Pulmonary
  - Rhinitis, laryngeal edema,wheezing,coughing & shortness of breath
- Cardiovascular
  - Hypotension, tachycardia, arrhythmias
- Neurological
  - Loss of consciousness
- Behavioral
  - Irritability & anxiety (preceding or in combination with other symptoms)

Diagnosis

- Subjective
  - Food records
  - Elimination diets
  - Patient history
- Objective
  - Skin testing
  - Cap RAST testing
  - Oral food challenges

Diagnosis - Skin Testing

- Commercial or freshly prepared extracts
- Positive predictive accuracy
  - Less than 50% (many false positives)
- Negative predictive accuracy
  - Greater than 95% (few false negatives)

Diagnosis – CAP RASTs

- Blood test looking at a patient's specific IgE levels to selected foods
- Allows allergist to predict at 95% confidence whether patient will react or not react
- Can be falsely elevated if patient has high total IgE
- Predictive values are limited to a select number of foods

Diagnosis - Food Challenges

- Types
  - Open
    - Both patient and medical team know what patient is eating
  - Single blind
    - Patient does not know what they are eating
  - Double Blind Placebo Controlled (DBPC)
    - Neither patient or medical team know what food is being challenged
    - GOLD STANDARD for diagnosis of food allergy
- Goal of Food Challenge
  - Document reaction or lack of reaction

Nutritional Management of Food Allergy

- Avoid the offending food!
  - Prevent acute and chronic food allergic reactions
- Maintain appropriate nutrition for growth and development

Nutritional Management of Food Allergy

- How do you avoid the offending food?
  - Read labels, read labels, read labels
  - Know/understand which foods are more likely to contain allergens

Nutritional Management of Food Allergies

- Food Allergen Labeling and Consumer Protection Act (FALCPA) of 2004
  - Effective January 1, 2006
  - Requires food labels to state in plain English terms if the food contains ingredients from a “major food allergen” protein
  - Major food allergens must also be declared in flavoring, colorings, and incidental additives
  - Major allergens include: milk, egg, wheat, soy, peanut, tree nut, fish, and crustacean shellfish

Nutritional Management of Food Allergies

- Food manufacturers can label foods in one of two ways:
  - A paranthetical statement in the list of ingredients for major food allergens.
    - ***Ingredients****: Enriched flour (**wheat** flour, malted barley, niacin, reduced iron, thiamin mononitrate, riboflavin, folic acid), sugar, partially hydrogenated soybean oil, and/or cottonseed oil, high fructose corn syrup, whey (**milk)**, **eggs**, vanilla, natural and artificial flavoring) salt, leavening (sodium acid pyrophosphate, monocalcium phosphate), lecithin (**soy**), mono-and diglycerides (emulsifier)*
  - The word "Contains" followed by the name of the major food allergen.
    - ***Contains: Wheat, Milk, Egg, and Soy***

Nutritional Management of Food Allergies

- Advisory labeling
  - Voluntary and unregulated
  - Declares unintentional contamination or cross contact during processing
    - *May contain (allergen)*
    - *Produced in a facility that also produces (allergen)*

Nutritional Management of Food Allergies

- Exceptions to FALCPA
  - Raw agricultural commodities
    - Generally fruits and vegetables
  - Highly refined oils
  - Packaged meats, poultry, and eggs regulated by USDA
  - Foods not included: sesame, mustard, sunflower, and poppy seeds

Nutritional Management of Food Allergies

- Common FA in Children
  - Milk
  - Egg
  - Soy
  - Wheat
  - Peanut

Nutritional Management of Food Allergies

- Recommendations for milk allergy during infancy
  - Breastfeeding mom needs to avoid cow's milk in her diet
  - Soy formula may work
    - 8-14% of with milk allergy will also react to soy
  - Hypoallergenic formula may be necessary

Nutritional Management of Food Allergies

- Hypoallergenic Formulas
  - Extensively hydrolyzed
    - Hypoallergenic
    - 10% of milk allergic individuals will react
    - Nutramigen, Alimentum
  - Amino acid based
    - Infant
      - Neocate Infant, Elecare (unflavored), Nutramigen AA Lipil
    - Toddler
      - Neocate Jr., Neocate 1+, Elecare, EO28

Nutritional Management of Food Allergies

- 12 months and beyond with milk allergy
  - May require extended use of formula
    - Generally encourage formula/breastmilk until 18-24 months
  - Need to assess solid food intake prior to weaning
  - Which alternative is best?

Nutritional Management of Food Allergies

Comparison of Cow's Milk (CM) Substitutes

CM or Subs	Kcals/8oz.	Protein (g)	Fat (g)	Ca (mg)/ Vit D (IU)
CM	150	8	8	300 / 100
Soy	100	7	4	350 / 100
Oat	120	4	3	300 / 100
Hemp	100	2	6	300 / 100
Rice	120	1	2.5	300 / 100
Almond	50	1	2.5	300 / 100
Coconut	80	1	5	100-300/ 100

Nutritional Management of Food Allergies

- Eggs alone don’t pose significant nutrient risk but egg is common ingredient in many foods
  - Breads, muffins, baked goods, noodles/noodle dishes, breaded foods, sauces, etc.
- Avoidance of these foods can significantly reduce total energy intake
  - Families are encouraged replace eggs in recipes so similar foods can be enjoyed

Nutritional Management of Food Allergies

- Wheat is a staple grain in western diets
- Avoidance of this carbohydrate can impact nutrient intake
  - Energy, iron, thiamin, riboflavin, niacin, B6, and manganese
- Wheat Alternatives
  - Rice, corn, oats, buckwheat, potato, rye, barley, amaranth, quinoa, millet, sorghum, and tapioca

Nutritional Management of Food Allergies

- Avoidance of soy in combination with other allergens can increase nutritional risk
- Soy can be found in breads/baked goods, breaded meats/vegetables, Asian foods, processed foods, and high-protein foods

Nutritional Management of Food Allergies

- Peanut removal alone does not pose nutritional risk
- Commonly associated with anaphylaxis
  - Children with asthma are at greater risk for a severe reaction

Prevention of Allergic Disease through Nutritional Intervention

- Primary allergy prevention
  - Inhibiting the development of clinical disease before it occurs
- Not intended for those who have already developed an allergic condition
- Limited number of peer review studies on introduction of allergenic foods
  - Opinion based recommendations

Prevention of Allergic Disease through Nutritional Intervention

- Maternal Avoidance
  - Maternal avoidance of essential foods like milk and eggs is **NOT recommended**
  - No current recommendation on maternal avoidance of peanut during pregnancy
    - Inconclusive data to support removal
  - Maternal avoidance of highly allergenic foods during lactation is **NOT recommended** at this time
    - Recommendation does not apply to infants who show signs of allergic disease

Prevention of Allergic Disease through Nutritional Intervention

- Breastfeeding for primary prevention
  - Exclusive breastfeeding **IS recommended** for at least 4 to 6 months
    - Possibly reduce incidence of
      - Eczema
      - Early onset of wheezing
      - Milk allergy (but not all food allergy)

Prevention of Allergic Disease through Nutritional Intervention

- Selection of formula for primary prevention
  - Evidence is not conclusive to support use of formula over breastfeeding
  - No advantage of feeding soy formula
  - No evidence to recommend amino acid based formula
  - For those at increased risk for food allergy, a hydrolyzed formula may offer some advantage in allergic disease prevention

Prevention of Allergic Disease through Nutritional Intervention

- Introduction of Complementary Foods
  - Complementary foods can be introduced around 6 months of age
    - Do not delay beyond 6 months!
  - Complementary food may include highly allergenic foods after a few other foods are tolerated first
    - Do not delay or avoid feeding cow's milk protein (except for fluid milk), egg, soy, wheat, peanut, tree nuts, fish, and shellfish

Prevention of Allergic Disease through Nutritional Intervention

- Introduction of Complementary Foods
  - Emerging evidence to suggest early introduction of high allergenic foods may reduce the risk of food allergy
    - Are peanuts okay?
  - Introduce highly allergenic foods at home

Prevention of Allergic Disease through Nutritional Intervention

- When to refer to the allergist for food introduction?
  - Has difficult to control moderate-to-severe atopic dermatitis
  - If patient has previously had an allergic reaction to food
    - Children with underlying food allergy are at risk for developing other food allergies

Prevention of Allergic Disease through Nutritional Intervention

- When to refer to allergist for food introduction?
  - If IgE blood testing is positive but food has not been introduced
  - Child who has a sibling with peanut allergy → Parent or physician may want to evaluate for allergy before food introduction
    - There is a 7% risk of peanut allergy among siblings

Food Allergy Myth/Misconception

- All children with eczema have food allergy
  - Food allergy and eczema often co-exist but only about 27-60% of children will react to a food challenge
  - Avoiding allergens may not clear up eczema
- A positive allergy test indicates food allergy
  - There are many false positives with allergy testing and allergy testing alone can not diagnose patients

Food Allergy Myth/Misconception

- Artificial food coloring and dyes are highly allergenic
  - Little evidence to suggest these “artificial” things trigger allergies
- Oils from allergens need to be avoided
  - Refined oils contain only fat, no protein and therefore are typically well tolerated
    - Soy oil, peanut oil, corn oil
  - Expressed, extruded, expelled, pressed oils $\rightarrow$ less refined and may contain protein

Food Allergy Myth/Misconception

- Celiac disease and Wheat allergy are the same thing
  - Celiac disease is an autoimmune disease which damages the small intestine. Treatment includes avoidance of wheat, rye, barley, and sometime oats
  - Wheat allergy manifests in an immediate IgE response. Wheat needs to be avoided but patients often tolerate oat, rye, and barley

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Summary: Guidance on Intro of Potential Allergens

New WIC Guidance

- Around 6 months, once a few typical solid foods are provided and tolerated
- One new food every 3-5 days
- Foods offered should be of the appropriate texture

Previous WIC Guidance

- After 12 months
- One new food every 5-7 days

Summary: Guidance on Intro of Potential Allergens

Referral to a health care provider is recommended *before* introducing potential allergenic foods to infants with:

- at least one first-degree relative (parent or sibling) with food-related allergic disease,
- a parent/caregiver who perceives an allergy and, thus, limits the infant's diet,
- persistent moderate-to-severe eczema that is not well managed, or
- a diagnosis of milk protein allergy and prescribed a hydrolyzed or special formula (e.g., Alimentum, Nutramigen, Elecare Infant, etc.).

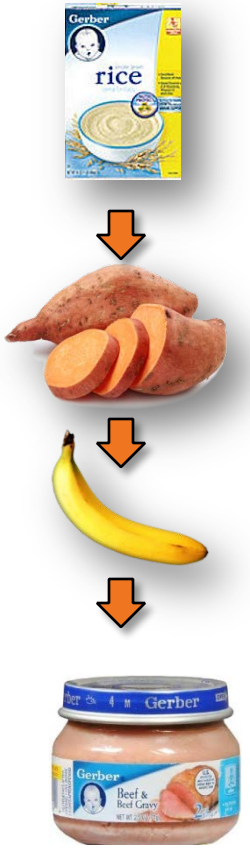
Order of Introducing Solid Food

New WIC Guidance:

No evidence that introducing solid foods in any particular order is of benefit, <u>except</u>:

Babies, especially for the mostly breastfed baby, benefit from early introduction of pureed meat and/or single-ingredient iron-and zinc-fortified infant cereal (i.e., rice, wheat, barley, oats)

Traditional/ Previous Guidance:



Translating the New Guidance

What does this mean?

- An adequate source of iron and zinc (i.e., meats, fortified single-grain cereal) should be introduced early on, around 6 months.
- After which, new foods from different food groups (cereals, meats/protein, fruits, vegetables) should be encouraged and could be achieved within the first month of complementary feeding
- By 7 to 8 months of age a baby should be eating foods from all food groups daily. Food variety should continue to increase.

Resources

Level II: Infant Nutrition Module

Revision Date: June 2015

Complementary Feeding of Infants: Updated Guidelines for Colorado WIC

Weekly Email Blasts

What's to Come

Revised and updated participant education infant feeding handouts

Updated Compass Counseling Points

Questions?

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