



Maternal and Early Child Feeding

The impact of nutrition on food allergy development pre-birth through 2 years

December 3, 2020, 3pm ET

Objectives:

1. Demonstrate how maternal and infant diet can influence the development of food allergy from pre-birth through 2 years old.
2. Apply best practices for early infant feeding as a primary way to reduce the risk of food allergies.
3. Discuss the updates from the report of the 2020 Dietary Guidelines Scientific Advisory Committee as it relates to infant feeding and allergy prevention.



Poll Questions #1

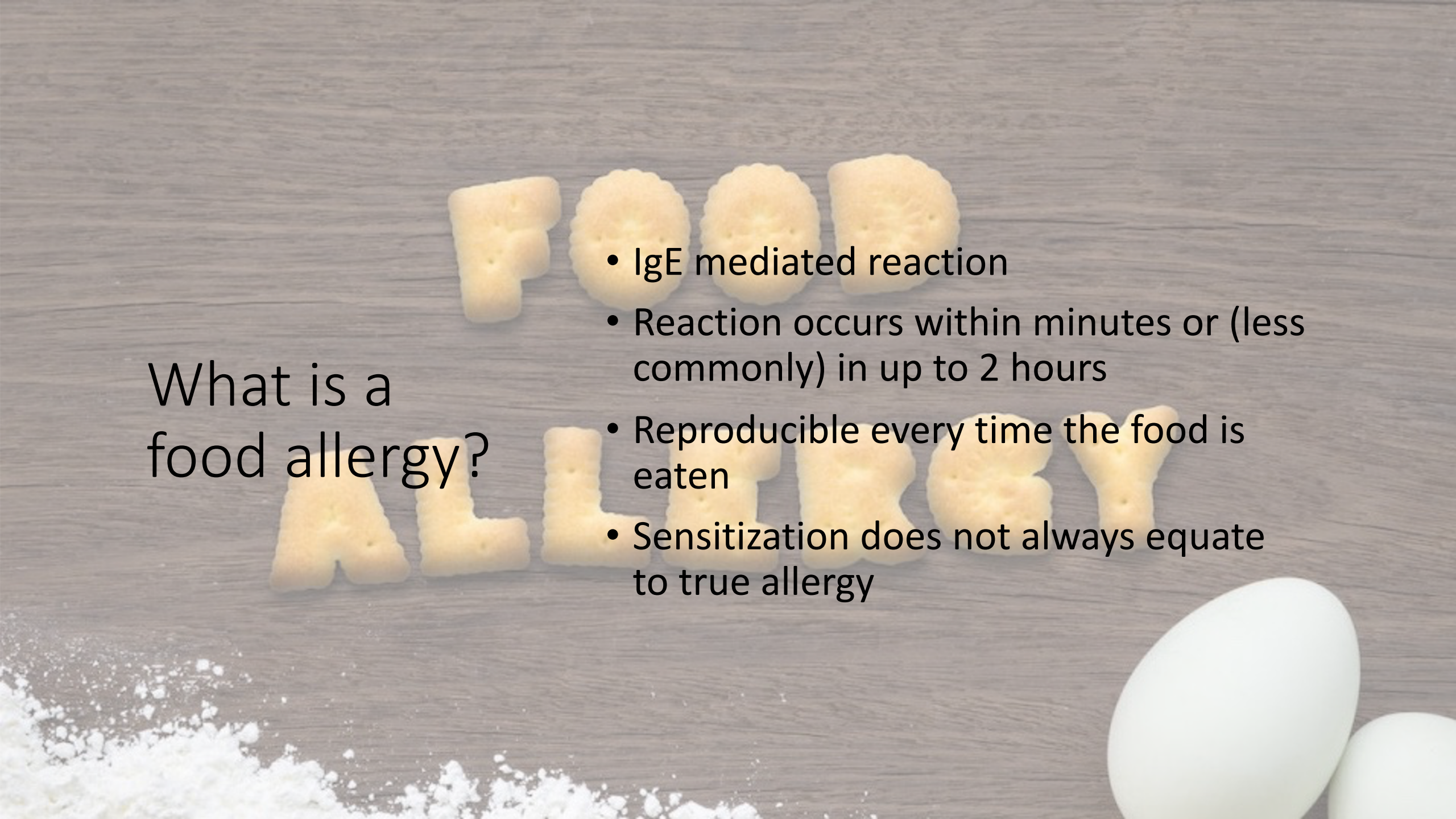


Food Allergy Fast Facts

- **Prevalence** is between 6-8% in children and up to 10.8% in adults
- **Costly** in terms of finances, healthcare use, and psychosocial measures
- **Societal Confusion** over true allergy vs other adverse reactions to food
 - Overestimation of prevalence
 - Reduces empathy for those truly allergic
 - School bans increase risk of adverse outcomes
- **Prevention Works** but there's a critical window...

What is a food allergy?

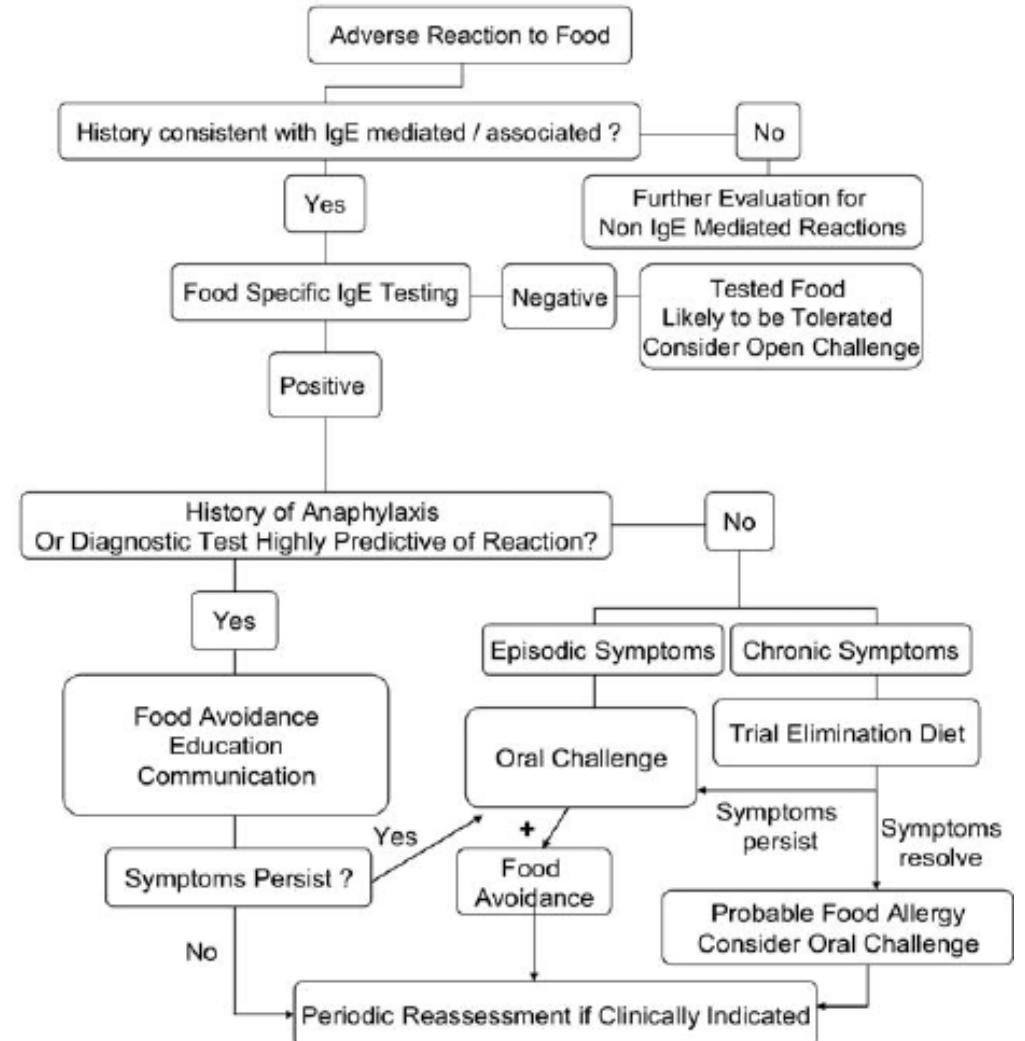
- IgE mediated reaction
- Reaction occurs within minutes or (less commonly) in up to 2 hours
- Reproducible every time the food is eaten
- Sensitization does not always equate to true allergy



Diagnosis

- Detailed Diet and Health History
- Skin prick test
- Serum IgE test
- Oral Food Challenge

Algorithm for Diagnosis and Management of Food Allergy





FARE

Food Allergy Research & Education

www.foodallergy.org

For a suspected or active food allergy reaction:

FOR ANY OF
THE FOLLOWING





SEVERE SYMPTOMS

-  **LUNG:** Short of breath, wheezing, repetitive cough
-  **HEART:** Pale, blue, faint, weak pulse, dizzy
-  **THROAT:** Tight, hoarse, trouble breathing/swallowing
-  **MOUTH:** Significant swelling of the tongue and/or lips
-  **SKIN:** Many hives over body, widespread redness
-  **GUT:** Repetitive vomiting or severe diarrhea
-  **OTHER:** Feeling something bad is about to happen, anxiety, confusion



OR MORE
THAN ONE

MILD SYMPTOM

-  **NOSE:** Itchy/runny nose, sneezing
-  **MOUTH:** Itchy mouth
-  **SKIN:** A few hives, mild itch
-  **GUT:** Mild nausea/discomfort



1. **INJECT EPINEPHRINE IMMEDIATELY.**
2. **Call 911.** Request ambulance with epinephrine.

Do not depend on antihistamines. When in doubt, give epinephrine and call 911.

Signs and
Symptoms

The Big 8





Other Causes of Adverse Food Reactions

Mixed (IgE and/or non-IgE-mediated): Eosinophilic Esophagitis, FPIES, Oral Allergy Syndrome

Intolerances: Lactose intolerance

Autoimmune: Celiac Disease

Poll Question #2





Maternal Diet and Food Allergies

Diet Diversity During Pregnancy

- Very limited research exists on diet diversity and pregnancy
- Non-standardized approach to defining “diet diversity”
- EAACI has a position paper calling for standardization and making recommendations for future research

Mediterranean Diet/Supplements During Pregnancy

- Research is inconclusive on the benefit (wheeze and rhinitis) of a Mediterranean way of eating during pregnancy
- Vitamin D supplementation may reduce the risk of asthma or wheeze, but does not impact food allergy development
- Omega-3 supplementation has a weak positive impact on reducing wheeze and asthma, but not food allergy



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Diet and Breastfeeding

- 2013 study showed a decrease in peanut allergies among mothers who ate peanuts during pregnancy and while breastfeeding
- 2016 review showed no difference in CMA or other food allergy
- 2018 study of 649 children DBPCFC found no difference
 - However, when breastfeeding duration considered, those who were breastfed longer had lower rates of food allergy
- 2019 retrospective cohort study of 46k+ children found reduced food allergy risk in those with eczema, but increased risk on those without and with prolonged breastfeeding



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Microbiome

- The following are associated with differences in infant microbiome and influencing the risk of food allergies and/or atopy:
 - Use of antibiotics during pregnancy and early infancy
 - Use of PPI in infancy
 - Vaginal birth vs cesarean birth
 - Breastfed vs formula
 - Exposure to farm animals and dogs in infancy
- Probiotic/Prebiotic supplementation may be protective, *but* more research is needed
- Research shows that a reduced microbiome diversity is associated with a higher risk for food allergies and atopy

Current Guidelines from AAP

Evidence does not support dietary manipulation or avoidance to prevent the development of food allergies during pregnancy OR breastfeeding.

American Academy
of Pediatrics



DEDICATED TO THE HEALTH OF ALL CHILDREN®

Key Takeaways

- Maternal diet manipulation during pregnancy and breastfeeding does not prevent food allergies
- High-quality diverse Mediterranean style of diet have other possible benefits, which may include:
 - Reduced risk for wheeze/asthma and eczema
 - More robust microbiome
 - Supports cardiovascular health, healthy weight, etc.
- Pregnant women should discuss the benefits/risks of antibiotics during pregnancy, as well as method of delivery, with her healthcare provider

Poll Questions #3



The Science Behind Early Introduction



A Remarkable Difference



Learning Early About Peanut allergy (LEAP)

- 640 infants at high-risk for peanut allergy d/t egg allergy or mod/severe eczema
- Half ate peanut foods at 4-11 months
- Half avoided
- Up to 86% reduction in peanut allergy at the end of 5 years
- Early introduction is safe and effective



Dual Exposure Hypothesis





LEAP-On

- Followed same kids from LEAP for 12 more months
- Everyone avoided peanut foods
- Tolerance and protection from early introduction was retained



Enquiring About Tolerance (EAT)

Recruited breastfed infants for early intro of 6 foods

- Milk
- Egg
- Peanut
- Wheat
- Sesame
- Fish

Outcomes:

- Difficult to adhere to protocol
- Decreased food allergies overall in the EAT babies
- Decreased peanut and egg allergy in per protocol when 2g protein per week or more each was eaten



Child Study

Study design

- N=2669 birth through 3 years
- Population cohort study
- Compared rates of sensitization to peanut, egg, and milk among those who ate these foods early to those who ate them later

Results

“General-population infants introduced to peanut after age 12 months were more likely to have sensitization and probable clinical allergy to peanut at 3 years.”

PETIT Trial

- Two step introduction of egg to 147 high-risk (eczema) infants
- Used heated egg white powder
 - 50mg/day at 6 months-9 months
 - 250mg/day 9months-12 months
- Stopped early because it so successfully reduced egg allergy



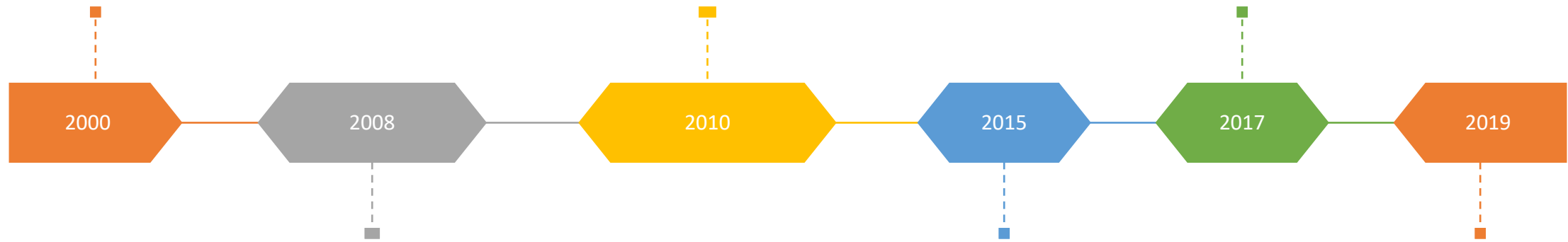
Breastfeeding & Diet Diversity in Infancy

- Breastfeeding does not prevent food allergies, but may reduce the risk of asthma and wheeze, as well as eczema
- Limited research on diet diversity
- PASTURE study showed inverse association between diet diversity and food allergy risk
- Mediterranean* dietary pattern (higher fruits/veg, seafood) may reduce the risk of wheeze and asthma, but no randomized trials have been conducted



Quick History of Feeding Guidelines

AAP
recommended
avoiding the
top allergens
for 1, 2 or 3
years



NIAID Guidelines for
the Diagnosis and
Management of Food
Allergies

NIAID
Addendum to
the Guidelines

Rescinded guidance
on avoidance, stating
that the research
doesn't support
avoidance as a way to
prevent allergies,
"more research is
needed"

Consensus
Report

AAP Revised Report
The Effects of Early
Nutritional
Interventions on the
Development of
Atopic Disease in
Infants and Children

NIAID Addendum Guidelines

Group 1 (High-risk)

Infants with egg allergy or severe to moderate eczema or both

- Discuss with pediatrician or allergist before introducing peanut foods
- Skin prick testing may be recommended
- Depending on SPT results, first oral intro may happen at doc's office
- Intro recommended at 4-6 months
- Children should eat 2g peanut protein three times per week thereafter

Group 2 (Moderate-risk)

Infants with mild eczema

- Not necessary to discuss with pediatrician first, but may
- Should introduce at home
- At or after 6 months

Group 3 (Low-risk)

Infants without risk factors

- Introduce at home at or after 6 months
- Age-appropriate and in accordance with family preferences and cultural practices

AAP Guidance

There is no evidence that delaying the introduction of allergenic foods, including peanuts, eggs, and fish, beyond 4-6 months prevents atopic disease.

There is now evidence that the early introduction of infant-safe forms of peanuts reduces the risk for peanut allergies. Data are less clear for timing of introduction of eggs.

The new recommendations for the prevention of peanut allergy are based largely on the LEAP trial and are endorsed by the AAP.



New! AAAAI/ACAAI/CSACI Practice Parameters

Regarding Infant Feeding:

- Recommend peanut and egg starting at 6 months (but not before 4) for all infants
- Eliminates strong recommendation for pediatrician or allergist referral if high-risk
- Once a food is introduced – keep it in the diet regularly and diversify the diet
- Shared decision making is emphasized

Regarding Other Recommendations:

- Supports other expert consensus that the evidence does not support dietary manipulation during pregnancy or breastfeeding to reduce risk of food allergy
- Recognizes that the research does not support breastfeeding vs formula to prevent food allergy

Developmental **Readiness**

- Remember, we feed for: Nutrition. Encourage growth and development. Allergen Prevention.
- Keep in mind the developmental readiness of the infant. Ideally, baby should have good head and trunk control with no tongue thrust.
- But for infants under 6 months of age, this may take trial and error.



HOW TO INTRODUCE: GETTING STARTED

- Start with a healthy, happy baby and feed at home.
- Don't introduce if baby is sick, vomiting or has a fever.
- Start early in the day and observe for at least 2 hours.
- Prepare a full, infant-sized portion, but give just a taste to start. After 10 minutes, continue with the rest. For peanut, the goal is 2g/day.

Introducing Peanut

DO:

- Introduce other lower allergen foods first.
- Use thinned peanut butter, powdered peanut butter, or either mixed with puree.
- Use peanut puffs for babies that have been "melted" into breastmilk, formula or warm water.

DON'T:

- Feed whole peanuts to infants or young children.
 - Give babies full strength peanut butter.
- *These can both be choking hazards for baby.





5 EASY WAYS TO INTRODUCE PEANUT FOODS TO YOUR INFANT



♥ 1



MIX WITH WATER, FORMULA OR BREAST MILK

Thin 2 tsp. of peanut butter
with 2-3 tsp. hot water, formula
or breast milk. Allow to cool
before serving.



3

MIX WITH PRODUCE

Stir 2 tsp. of powdered peanut
butter into 2 Tbsp. of previously
tolerated pureed fruits
or vegetables.



5

TEETHING BISCUITS

Teething infants who are older and self-
feeding may enjoy homemade peanut butter teething
biscuits. Find a recipe for teething biscuits at
nationalpeanutboard.org

2



MIX WITH FOOD

Blend 2 tsp. of peanut butter
into 2-3 Tbsp. of foods like infant
cereal, yogurt (if already tolerating
dairy), pureed chicken or tofu.

4



PEANUT SNACKS

Give your baby a peanut-containing
teething food, such as peanut puffs.



Remember:

The recommended way to introduce baby-friendly peanut foods depends on each child's individual risk factors. Depending on your child's risk, peanut foods should be introduced according to NIAID guidelines after they've already started other solid foods. Whole nuts should not be given to children under 5 years of age. Peanut butter directly from a spoon or in lumps/dollops should not be given to children less than 4 years of age. This content is not intended to be a substitute for professional medical advice, diagnosis or treatment. **Always seek the advice of your pediatrician.**

OTHER FOODS

- Moderate evidence supports early introduction of egg to prevent egg allergy.
- There is less evidence about other foods, but the literature is growing.
- Cow's milk (not fluid milk) introduction appears to be safe, but evidence is conflicting regarding prevention.
- For all other foods, introduction appears safe, but there is limited evidence regarding the power of EI for prevention.
- BUT – diet diversity, palate development are benefited by introduction to a variety of nutrient-rich foods, such as potential allergens.



What About **Reactions?**

The most common food allergy symptoms in infants are **hives** and **vomiting**. Severe or life-threatening reactions in infants are *rare*.

Symptoms can include any of the following alone or in combination:

- lip swelling
- vomiting
- hives
- face or tongue swelling
- difficulty breathing
- wheeze
- repetitive coughing
- change in skin color (pale, blue)
- sudden tiredness/lethargy/seeming limp

Although anaphylaxis is unlikely, parents should be encouraged to seek immediate medical attention if they are concerned about their child's reaction.



Practical Take-Aways

- Introducing potential allergens early to infants is **safe** and may reduce the risk of developing food allergies. Guidelines recommend proactively introducing peanut foods starting at 4-6 months, based on risk.
- Use the evidence to **evaluate** risk and refer to allergist as needed.
- Encourage **confident** feeding behavior for parents.
- Help make introducing potential allergens a **normal** part of infant feeding.
- Beginning solid foods is about **more** than nutrition, it is also about developmental milestones and allergy prevention.



Changing dietary advice: DGAs and beyond



Scientific Report Issued June 2020

What's the difference between the Dietary Guidelines Advisory Committee Report & the Dietary Guidelines for Americans?

COMMITTEE REPORT DIETARY GUIDELINES



An overview of the latest available science on a variety of nutrition topics

WHAT IS IT?



Reccomendations on what the average American should eat and drink to promote health and prevent chronic disease

Table D5.1. Conclusion statements and grades from a systematic review examining the relationship between the types and amounts of complementary foods consumed and food allergy, atopic dermatitis/eczema, asthma, and allergic rhinitis

Peanut, tree nuts, seeds

- Strong evidence suggests that introducing peanut in the first year of life (after 4 months of age) may reduce risk of food allergy to peanuts [Grade: Strong]. This evidence is strongest for introducing peanut in infants at the highest risk (with severe atopic dermatitis and/or egg allergy) to prevent peanut allergy, but is also applicable to infants at lower risk. However, the evidence for tree nuts and sesame seeds is limited.
 - Limited evidence also suggests that there is no relationship between consumption of peanut, tree nuts, or sesame seeds during the complementary feeding period and risk of atopic dermatitis/eczema and asthma. Grade: Limited
 - There is not enough evidence to determine the relationship between consuming peanut, tree nuts, or seeds as complementary foods and allergic rhinitis.
-

Egg

- Moderate evidence suggests that introducing egg in the first year of life (after 4 months of age) may reduce risk of food allergy to egg. Grade: Moderate
- Limited evidence suggests that there is no relationship between the age of introduction to egg and risk of atopic dermatitis/eczema and asthma. Grade: Limited
- There is not enough evidence to determine if there is a relationship between consuming egg as a complementary food and allergic rhinitis.

Fish

- Limited evidence suggests that introducing fish in the first year of life (after 4 months of age) may reduce risk of atopic dermatitis/eczema. Grade: Limited
- There is not enough evidence to determine if there is a relationship between consuming fish as a complementary food and risk of allergy to fish or other foods, asthma, or allergic rhinitis.
- There is also not enough evidence to determine if there is a relationship between consuming shellfish as a complementary food and risk of food allergy, atopic dermatitis/eczema, asthma, or allergic rhinitis.

IN SUMMARY

- Feeding babies should be fun and exciting, including a diverse variety of foods in safe and appropriate forms
- Food allergy prevention is one aspect of infant feeding and should be focused on early introduction of potential allergens, especially peanut and egg starting at about 6 months of age (but not before 4) and in line with the guidelines and expert advice
- Manipulation of maternal diet during pregnancy and breastfeeding do not prevent food allergies



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A close-up photograph of a young child with dark skin and curly hair, wearing a white long-sleeved shirt with small pink hearts. The child is sitting at a wooden table, looking towards the camera with a slight smile. An adult's hand is visible on the right, holding a bright orange spoon with a dollop of food on it, positioned near the child's mouth. Another adult's hand is visible at the bottom left, holding a white bowl with a blue rim. The background is softly blurred, showing a wooden chair and a light-colored wall. The text "THANK YOU!" is overlaid in the center in a warm, orange font, with a thin white horizontal line underneath it.

THANK YOU!