


# Food Allergy Prevention in 2024: Best Practices, Tools, and Tips for Early Allergen Introduction Success

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## This Webinar is a Collaboration with...




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### Disclosures

- Julianne is on the Food Allergy Prevention Advisory Committee and the Grassroots Advocacy Subcommittee for the Food Allergy Research and Education (FARE) organization.
- Brian provides consulting for AstraZeneca and Regeneron Pharmaceuticals and is a speaker for Grifols Biosciences.
- Amanda is a consultant on multiple projects for the Food Allergy Research and Education (FARE) organization.

All relevant financial relationships have been mitigated.

The Food Allergy Research and Education organization is a non-profit organization focused on providing education and advocacy for those with food allergy through improved awareness about healthcare options and treatment.


The mission is to improve the quality of life and health of those with food allergies through transformative research, education, and advocacy.



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### Learning Objectives


- Summarize current early allergen introduction guidelines and guidance
- Apply the guidelines effectively into practice
- Discuss barriers to adoption along with potential strategies to overcome barriers at both the clinician and patient/family level
- Identify resources and tools to support practice integration and to help parents or caregivers safely conduct early allergen introduction at home



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### Introduction to Food Allergy

- The body encounters allergen
  - Via skin or oral ingestion
- Body classifies allergen as harmful
  - sigE antibodies are formed and anchor onto mast cells and basophils
- Subsequent exposure causes release of chemicals from mast cells basophils
  - Causing allergic reaction: hives, swelling, redness of the skin, respiratory symptoms and other symptoms



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### Food Allergy Prevalence

Majority of infants **will** be able to eat peanuts and other allergenic foods in infancy and not develop a food allergy - **5.8% were diagnosed with a food allergy in a 2021 Report**


#### Atopic Disorders

Disorder	Prevalence (%)
Any allergic condition	27.2
Seasonal allergy	18.9
Eczema	10.8
Food allergy	5.8

#### Food Allergy

Allergen	Prevalence (%)
Egg	1.8
Milk	1.6
Peanut	1.8
Soy	1.0
Wheat	1.0
Sesame	0.5
Tree Nuts	0.5
Shellfish	0.4
Other	0.4

Peanut allergy = 1.8% - 2% of US population (Warren et al., 2021; Gupta, 2010)



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## Burden of Food Allergy in Society

- Burden of food allergy includes healthcare costs, stress, anxiety:
- Peanut Allergy Cohort
  - Higher number of comorbidities
  - Greater health care resource utilization
    - Increased admissions, ED visits, outpatient visits, epinephrine prescriptions
  - Spends more on direct health care costs
    - Private insured: extra \$2,247 per year
    - Medicaid insured: extra \$2,845 per year
- Psychological Burden
  - Increased anxiety, bullying, PTSD, social isolation, decreases quality of life

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## Clinician Role

Prevention may be the key to arresting the development of food allergy

- Clinicians play a critical role in implementing the guidelines
- Trusted provider who is connected to families from the beginning
- Able to educate early and often about the introduction of foods, specifically allergenic foods
- Provide support during the introduction process

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## Atopic March

Natural progression of allergic diseases often beginning in early life  
Once it starts it cannot be stopped

Atopic Dermatitis

Food Allergy

Asthma

Allergic Rhinitis

Development of atopic diseases may initiate the sensitization process

- Food allergy and asthma risk increases with presence and severity of atopic dermatitis
- Early life food sensitization increases the risk of wheeze, asthma, allergic rhinitis

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## Atopic Dermatitis & Food Allergen Sensitization

One of the most common pediatric conditions

Caused by breakdown of the skin barrier

It is difficult to diagnose a food allergy trigger

Test results are not well established in the context of AD

Avoidance/delay can lead to developing IgE-mediated allergy

PreventADALL shows early introduction reduces risk of food allergy better than topical treatments

Group	Prevalence (%)
0-3	10.8
4-11	10.4
12-17	12.1
Non-Hispanic White	10.2
Non-Hispanic Black	14.2
Hispanic	9.5

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## Allergen Avoidance

Increased rates of allergy in the last two decades

The Centers for Disease Control & Prevention reports that the prevalence of food allergy in children increased by 50 percent between 1997 and 2011.

The following have not been proven to reduce the risk of developing food allergy:

- Avoidance of allergens in the infant's diet
- Restricting maternal diets prior to birth
- Restricting maternal diets during breastfeeding
- Hydrolyzed infant formulas

Rate of ER visits due to anaphylaxis in children by year, per 10,000 children

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## Timeline of Research and Guidelines

1990s: AAP noticed food allergies were increasing among US children and adolescents

2000: AAP & UK recommend avoidance of allergens in young infant's diet

2008: AAP & UK decide evidence did not support delay of introduction past 4-6 months

2010: Guidelines for the Diagnosis and Management of Food Allergy in the US report

2013: AAAAI recommends introducing allergenic foods once other complementary foods introduced

2015: Learning Early About Peanut Allergy (LEAP) study shows 81% reduction of peanut allergy

Enquiring About Tolerance (EAT) study: 67% reduction of peanut, egg and milk allergy

2016: AAAAI, ACAAI, CSAI Consensus Guidance: Feed ALL babies common allergens at 4-6 mo. with other solids and screening high-risk infants is not needed

2017: PreventADALL: Preventing Atopic Dermatitis and Allergies in Children

2018: NIAID Addendum Guidelines for the Prevention of Peanut Allergy

2019-2020: AAP and USFDA recommend early introduction of peanut and not delaying starting other foods past 4-6 months

BREAKING NEWS- NEJM data just published May 28, 2024, shows that children enrolled in the LEAP study that consumed peanut early in life continued to show peanut tolerance though 12 years of age!

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### Applying LEAP to "General Population"

**Percent Reduction of Peanut Allergy after 36 months when peanut was introduced between 4-6 months of age**

Eczema Severity Group (ESG)	Percent Reduction
>40 Severe	5.3%
15-40 Moderate	21.6%
1-14 Mild	27.6%
0 None	30.9%

**Population Modeled Relative Reduction in peanut Allergy by Eczema Severity Groups**

Line graph showing relative reduction in peanut allergy (0% to 100%) versus age at introduction to peanut (months) (1 to 12). Curves are shown for ESG 0 (None), ESG 1 (Mild), ESG 2 (Moderate), and ESG 3 (Severe). Reduction increases with age and decreases with severity.

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### International Prevention Studies/Guidelines

Study	Description
PreventADALL (Norway/Sweden)	Preventing Atopic Dermatitis and Allergies in Children
PAS (US)	Peanut Sensitization
PETIT (Japan)	The Prevention of Egg Allergy with Tiny Amount Intake
SPADE (Japan)	The Strategy for Prevention of Cow Milk Allergy by Daily Ingestion of Infant Formula in Early Infancy

Guidelines	Description
2016 Australian Guidelines	
2021 European Academy of Allergy and Clinical Immunology	

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### Important US Food Allergy Guidelines & Guidance

2010 Guidelines for Diagnosis of Food Allergy in the United States

2017 Addendum Guidelines for the Prevention of Peanut Allergy by the National Institute of Allergy and Infectious Diseases (NIAID)

2019 American Academy of Pediatrics Guidance

2020-2025 U.S. Dietary Guidelines

2020 North American Consensus Guidance on Food Allergy Prevention Through Nutrition

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### Addendum Guidelines for Peanut Allergy Prevention (NIAID)

Three recommendations based on infant risk level:

- No Eczema or Food Allergy**
  - Introduce peanut products and a variety of foods (including other allergens)
  - When developmentally ready (4-6 months)
  - Following cultural and family preferences, but do not delay
- Mild to Moderate Eczema**
  - Introduce peanut products
  - When developmentally ready (6 months)
- Severe Eczema and/or egg allergy**
  - Strongly consider IgE blood test to peanut and/or skin test
  - If negative <0.35 kU/L - introduce peanut at 4-6 months at home or in primary care office - **do not delay!**
  - If positive >0.35 kU/L - refer to allergist for evaluation ASAP - do not delay early introduction

If reaction occurs recommendation is to avoid the food and confirm with an allergist

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### Determining Eczema Severity

SCORAD Assessment Grid:

- Itches the skin out?** (0-3)
- Redness** (0-3)
- Swelling** (0-3)
- Crusting/oozing** (0-3)
- Traces of scratching** (0-3)
- Thickened skin** (0-3)

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### American Academy of Pediatrics 2019

**Recommend early introduction of peanut and not delaying any food including allergens after 4-6 months**

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### Dietary Guidelines for Americans 2020-2025

- Make every bite count, infants eat small amounts
- Recommend exclusive breastfeeding for first 6 months  
Provide vitamin D supplementation, as needed
- Continue breastfeeding through 1 year and beyond if desired  
Substitute iron-fortified formula if breastmilk not feasible
- Add complementary foods including allergens at 6 months and developmentally ready





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### Consensus Document Recently Devised

Consensus Document

**A Consensus Approach to the Primary Prevention of Food Allergy Through Nutrition: Guidance from the American Academy of Allergy, Asthma, and Immunology; American College of Allergy, Asthma, and Immunology; and the Canadian Society for Allergy and Clinical Immunology**


Fleisher, D. Chan, E., Venter, C., et al., 2021



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### AAAAI, ACAAI, and CSACI Consensus Guidelines (2020)

- Infants with Eczema at highest risk for IgE-mediated food allergy
- Prevent peanut and egg allergy by introduction between 4-6 months of age
- Screening of infant for potential food allergy is not required, but may occur if family prefers
- Introduce all allergens when solid foods introduced so infant consumes a diverse diet
- Hydrolyzed formula provides no protection from development of food allergy
- Do not recommend mothers restrict diet during pregnancy to prevent food allergy in their infant
- Breastfeeding recommended for all mothers if possible but no correlation between breastfeeding and prevention of food allergy



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### Research Studies in the Pipeline



Center for Food Allergy & Asthma Research (CFAAR)

#### Childhood Activities Nutrition and Development Oversight (CAN DO):

- Evaluate how food allergies develop in infancy and early childhood and if nutritional interventions can reduce risk for developing food allergy
- Study infants through 1-3 years to document development of food allergy
- 1800 diverse participants from Chicago area (900 intervention arm- SEED, 900 control arm- HUGS)
- Observe infant nutrition, behavior, caregiver stress, child behavior and screen time.

#### Start Eating Early Diet (SEED)

- Intervention arm of CAN DO Study
- Early introduction of peanut and other allergens such as milk, egg, soy, almond, walnut, cashew, and sesame when infant is developmentally ready
- Primary aim to prevent food allergy
- Goal to set groundwork for advocacy:
  - Increase access to infant safe allergenic food through federal feeding programs
  - Provide updates for USDA Guidelines for Americans

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### Implementing Guidelines into Practice




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### Clinician Workflow

[www.FoodAllergyPrevention.org](http://www.FoodAllergyPrevention.org)

#### Clinician Workflow for Early Peanut Introduction

Visit [FoodAllergyPrevention.org](http://FoodAllergyPrevention.org) for these resources to help with practice integration and patient education.

#### 4 & 6 Month Visits

For more than 95% of infants you should recommend introduction of early peanut consumption. Peanut oil should be used as it is already in 10-6 meats and other ready for solids and in accordance with family preferences and cultural practices. <sup>10</sup> (Guidance on Feeding, Storage and Safety)


**HOWEVER, If Infant Has Severe Eczema and/or Egg Allergy (4% of infants):**

- Consider Skin Prick Testing (SPT) or IgE
- Consider Referral to Specialist
- Recommend Peanut Introduction at Home (on govt) or Consider In-Clinic Supervised Feeding Based on Family/Provider Preference

**SEVERE ECZEMA:** Consider referral to a pediatric dermatologist for treatment. **EGG ALLERGY:** Consider referral to a pediatric allergist for evaluation and management.

#### 6, 9, & 12 Month Visits

- Peanut Already Introduced?
  - YES: Reintroduce 1/2 tsp per feeding, 2 times per week
  - NO: Provide Guidance & Assess Risk (on govt)



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### Market Research and Barriers to Adoption of the Guidelines

**FARE Market Research APPs**  
504 (253 NP & 251 PA)

- Only 45% were aware of the 2017 NIAID Addendum Guidelines
- Only 21% implement all of the guideline in clinical practice
- Asked for more education/training on the Guidelines

**Most Common Barriers APPs**


- Lack of clinic time to discuss (47%)
- Clinician concerns about potential allergic reactions (25%)
- Believe families are concerned about allergic reactions (53%) and blood draws (36%)



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### NIAID Food Prevention Guidelines- 2022 FARE Market Research Findings


Specific Survey Items	PA	NP	APP (PA + NP)
<b>Aware of 2017 NIAID Guidelines</b>			
Number	251	253	504
Yes	43%	47%	45%
No	57%	53%	55%
<b>Familiarity with Guidelines Before Survey</b>			
Number	109	119	228
Very familiar	17%	15%	16%
Somewhat familiar	80%	79%	79%
Not at all familiar	4%	6%	5%
<b>Implementation of Guidelines Prior to Survey</b>			
Number	109	119	228
Not using in clinical practice	0%	<1%	<1%
Using parts in clinical practice	74%	83%	79%
Using all of guidelines in clinical practice	26%	16%	21%



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### Parent Barriers

- Afraid of an allergic reaction**
  - 69% would not consider introducing peanut before/around 6 month of age
  - ~40% willing to introduce peanut, tree nuts, seafood, but only after 11 months of age
- Parent/guardians or siblings have a food allergy at home**
- Practical concerns**
  - Convenience, cost, and food preparation issues
- Concerns regarding testing**
  - 51% unwilling to do skin prick test before 11 months
  - 56.8% unwilling to do a food challenge before 11 months



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### Practical Tips to Overcome Barriers

**Provider Facilitators**



- Increase education/training on the guidelines
- Using practice aids in the office for providers
  - Guide to clinical assessment and recommendations
  - Guide to an in-office supervised feeding
- Collaborate with ancillary support providers
  - Nutrition, psychology, allergist
- Create an environment where introducing allergens early is part of the normal practice

**Working with Families**

- Start the conversation early
- Improve access to providers
- Identify affordable sources of potential allergens
- Provide resources to help with the introduction process
- Review anaphylaxis risk and develop a plan for parents in case of a reaction




foodallergyprevention.org    preventpeanutallergies.org

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### Shared Decision Making

- Collaborative discussions between providers and patients/families to develop a plan that is both evidence based and inline with personal values
- Goal is to empower families with confidence when feeding
- Normalize initial reluctance and mixed messages parents receive
- Be open, honest and listen to the patients needs and concerns
- Provide education on current guidelines and work with families to fit guidelines into their life
- Discuss when referral to allergist, nutritionist, or psychologist is needed



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### Allergic Reaction Signs and Symptoms

**Anaphylaxis is less frequent and less severe in infants**  
**Fatalities are rare in infants**

**Severe Food Allergy Symptoms to Watch For**


**IMPORTANT!** If your baby has any of the severe symptoms listed below, call 911 or go to the emergency room right away. These symptoms can be a potentially life-threatening food allergy reaction.

- Skin:** Rash or hives (swelling large areas of the body)
- Mouth or Face:** Swelling of lips, tongue, throat, or part of the face
- Throat:** Trouble swallowing
- Lungs or Chest:** Coughing repeatedly or wheezing, Shortness of breath or trouble breathing
- Gut:** Continuous vomiting or vomiting, Severe diarrhea
- Other:** In severe reactions, allergic reactions may include: pale, floppy or limp body, drowsy or limp, pale face, or trouble breathing or high-pitched, noisy breathing

For more information about food allergy, including ways to help prevent food allergies before they start, visit [foodallergyprevention.org](http://foodallergyprevention.org).

**Most Common Symptoms of Anaphylaxis in Infants and Toddlers**

- Skin reactions, such as hives, rash, hives 90%
- Swelling of lips, tongue, mouth, neck, hands, or feet 59%
- Stomach pain, vomiting, diarrhea, hiccups, spitting up, flatulence, burping, bloating to chest 51%
- Coughing, wheezing 45%
- Eye itching, itching, or redness 44%



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## Develop Treatment Plan with Family

**Symptoms occur within minutes to 2 hours after exposure**

- Mild symptoms (skin, no effect on breathing) = **Stop the food and contact clinician**
- Severe symptoms = **Stop the food and seek immediate medical attention/call 911**

**Medication parents can have on hand:**

**Antihistamine (PO):** Use for treatment of cutaneous only symptoms - Does not stop anaphylaxis

**Liquid Diphenhydramine:** No age limit listed = 1 mg/kg/dose (concentration: 12.5mg/5ml) q4-6 hours PRN



**Liquid Cetirizine:** 6 months old to 2 years = 2.5mg/2.5ml once

**Medication prescribed if reaction occurs or if avoiding food due to allergic concern**

**Epinephrine auto injector**

7.5 to <15 kg: 0.1 mg (Only available with Auvi-Q)

7.5 to <30 kg: 0.15 mg (Available with all brands/generics)

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## If Infant Reacts to New Food

Family may be hesitant to introduce more foods

Discuss risks of reaction, delaying introduction of other foods, and if testing is recommended

Some foods have clinically relevant cross-reactivity

**Important to refer to allergist or decide quickly to not delay early introduction of additional foods!**




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## Practical Tips for Introducing Complementary Foods






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## Developmental Readiness for Solid Foods

If the infant shows:



- Good head and neck control
- Sits up with support or alone
- Signs of putting objects to mouth
- Grasps small objects
- Ability to swallow pureed food instead of push out with tongue

Supervised feedings in highchair or other safe place sitting upright

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## Safe Introduction of Peanut

- Thin 2 tsp of peanut butter with 2-3 tsp. of hot water, breastmilk, or formula (cool before feeding)
- Blend 2 tsp of peanut butter/powder into 2-3 tbsp of infant cereal, pureed fruit, yogurt
- Mix 2 tsp or peanut butter/powder into 2 tbsp of any fruit or vegetable purees
- Give baby peanut puffs, easily dissolvable
- To keep in the diet, incorporate peanut into baked goods, sauces, teething biscuits


Guidelines advise 2g of peanut protein (2 tsp peanut butter/powder) at any meal or snack, 3 times a week

Should not be the first food introduced into the child's diet

Do Not give whole nuts to a child under the age of 5 years old

Do Not give peanut in lumps/dollops or off a spoon until 4 years old

[www.preventpeanutallergies.org](http://www.preventpeanutallergies.org)



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## Safe Introduction of Egg




- Scramble eggs with water until cooked all the way through
- Mash with water, breastmilk, formula, yogurt, avocado
- Hard boiled eggs can be choking hazard if not mashed completely
- For older infants/toddlers: make a plain omelet and cut into rectangular strips the size of 2 adult fingers

**NEVER feed raw or runny eggs to infants**





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## Feed Early and Often




- Once peanut and egg are introduced with no reaction:
  - 1-2 teaspoons of thinned peanut butter and ½ of mashed egg
  - 2-3 times each week
- Specific recommendations for other allergens are forthcoming
  - current guidelines recommend introducing a variety of foods that are culturally appropriate including allergens
- There is no evidence that restricting the maternal diet during pregnancy or breastfeeding prevents food allergy





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## Summary of Early Introduction Recommendations



Who?	When?	How much?
<b>All infants</b> should start infant safe peanut products and eggs early once developmentally ready and other complementary foods have been introduced and accepted	<b>Has No Eczema</b> 4-6 months (delaying increases risk of developing allergy)	<b>Peanut</b> 2 grams 3 times/week about 2 teaspoons of peanut butter thinned
	<b>Has Eczema</b> 4 months (delaying increases risk of developing allergy)	<b>Egg</b> 2 grams 3 times/week about ½ of a mashed cooked egg



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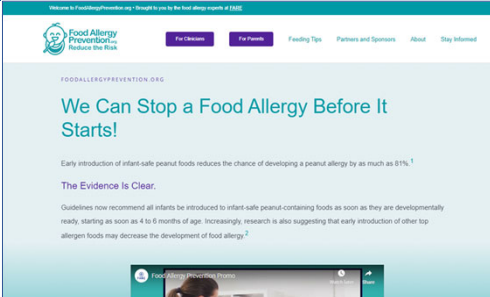

## Resources for Families

- [www.foodallergyprevention.org](http://www.foodallergyprevention.org)
- [www.preventpeanutallergies.org](http://www.preventpeanutallergies.org)
- [www.EggNutritionCenter.org](http://www.EggNutritionCenter.org)
- [www.niaid.nih.gov/sites/default/files/addendum\\_guidelines\\_peanut\\_appx\\_d.pdf](http://www.niaid.nih.gov/sites/default/files/addendum_guidelines_peanut_appx_d.pdf)
- [www.solidstarts.com/category/starting-solids](http://www.solidstarts.com/category/starting-solids)
- [www.aafa.org/allergies/types-of-allergies/food-allergies/](http://www.aafa.org/allergies/types-of-allergies/food-allergies/)




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## Recommend FoodAllergyPrevention.org

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## Practical Tools for Clinicians




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## Adopt the Three E's of Early Peanut Introduction

<b>ENCOURAGE</b>	<ul style="list-style-type: none"> <li>At-home introduction has been found to be safe for most</li> <li>Early and often – provide peanut foods, 2-3 times/week</li> <li>Empathize with family who already struggle with allergy</li> </ul>
<b>EVALUATE</b>	<ul style="list-style-type: none"> <li>High-risk infants often benefit the most</li> <li>Consider serum testing for high-risk infants</li> <li>If serum testing positive, rapid referral to allergy is key</li> </ul>
<b>EDUCATE</b>	<ul style="list-style-type: none"> <li>2 teaspoons mixed with formula or breast milk</li> <li>Introduce top allergen after peanut</li> <li>Teach how to recognize severe reactions</li> </ul>



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