

Nuts and Bolts of Dietary Management in EoE from Pediatrics to Adults



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- Employment

Children's Healthcare of Atlanta

Division of Pulmonology, Allergy/Immunology, Cystic Fibrosis, and Sleep

- Financial

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Nuts and Bolts of Dietary Management in EoE from Pediatrics to Adults

Learning Objectives

- Participants will
 - Gain a general understanding of EoE
 - Learn the different types of elimination diets
 - Become familiar with feeding issues that may develop as a result of EoE
 - Be able to provide patients and families with survival skills to help them be successful with their elimination diet



EoE Definition

Eosinophilic esophagitis represents a chronic, immune/antigen-mediated esophageal disease characterized clinically by symptoms related to esophageal dysfunction and histologically by eosinophil-predominant inflammation that is not responsive to acid blockade with a proton pump inhibitor (PPI)



EoE Definition

- 15 eosinophils/hpf is considered a minimum threshold for a diagnosis of EoE
- Endoscopy is currently the only reliable diagnostic test
 - Must be done while on PPI to rule out GERD as possible cause of increased eosinophil levels



What is an Eosinophil?

- White blood cells
- Formed in bone marrow
- Function
 - Movement to inflamed areas
 - Anti-parasitic
 - Bactericidal
 - Involved in allergic reactions
 - Modulate inflammatory responses



EoE Symptoms in Children

- Vomiting
- Nausea
- Dysphagia
- Chest pain
- Heart burn
- Early Satiety
- Poor Weight Gain
- Poor Appetite
- Abdominal Pain



Assessing your Pediatric Patient

General Characteristics

- Children 6 and under
 - Feeding Problems
- Children 6-12
 - Vomiting
- Children 10-14
 - Abdominal Pain
 - Dysphagia
- Children 14-20
 - Food bolus impaction

Feeding Problems

- Does not advance to solid foods
- Self restricts
- Drinks a lot of water with meals
- Chews food for a long time
- Slow eater



Assessing Your Adult Patient

- Occurs more often in males
- May have been misdiagnosed for a number of years or never diagnosed
- Average age of diagnosis is 30 years old



Assessing Your Adult Patient

- Requires a lot of liquids with meals
- Dysphagia
- Reports that feels like food is going to get stuck
- Esophageal narrowing
 - Requiring dilation
- Food bolus impaction
- Chronic, poorly controlled heart burn



Management Options

- PPI Therapy
- Elimination Diet
 - Directed
 - Empiric
- Elemental Diet
- Topical Swallowed Corticosteroids
- Combination of diet and swallowed corticosteroids
 - No FDA-approved medicines are available for EoE (Chehade, 2015).



Medication

- Systemic steroids reserved for severe cases
- Topical swallowed corticosteroids
 - Fluticasone or Budesonide
 - Coats the esophagus
 - Fewer side effects than systemic steroids
- Does not “cure” EoE
- Complications with long term use
 - Viral esophagitis
 - Fungal esophagitis
 - Bone mineralization
 - Decreased linear growth



Elimination Diets

- Goals
 - Reduce or Eliminate EoE symptoms
 - Find Safe Foods
 - Make the diet as varied as possible
 - Determine trigger foods
 - Maintain balanced nutritional status
 - Supplementation with a hypoallergenic formula or multivitamin is often necessary
 - Maintain quality of life
 - Adherence from the patient and family



Elimination Diets

- Empiric Six Food (really 8) Elimination Diet Avoids
 - Milk
 - Egg
 - Wheat
 - Soy
 - Peanut
 - Tree Nut
 - Fish
 - Shellfish

Research has shown effective in
73% of pediatric patients, 71% of
adult patients



Elimination Diets

- Empiric Four Food Elimination Diet Avoids
 - Milk
 - Egg
 - Soy
 - Wheat

Research has shown effective
in 60% of pediatric patients,
46% of adult patients



Elimination Diets

- Guided elimination via allergy testing
 - Atopy patch testing (APT)
 - Controversial – different centers achieve different success rates
 - More centers are deciding to stop APT
 - Does the right allergy test exist to help detect problem foods in EoE?
 - EoE involves both IgE-mediated and cell mediated mechanisms



Elemental Diet

- 100% oral intake is amino acid based formula
 - There are several brands available
 - Manufacturers are introducing new flavors
 - May require administration via feeding tube if a patient is unable to drink enough to meet energy needs
- Reserve for severe patients or those that fail other diet manipulations
- This is not a long term solution for management of EoE



Elimination Diet

- In Children:
 - Milk is the most common trigger food (74%)
 - Wheat is the second most common trigger food (26%)
 - Followed by egg, soy, peanut
- In Adults:
 - Wheat is the most common trigger food (60%)
 - Milk is the second most common trigger food (50%)
 - Followed by soy, nut, egg



Diet Choices

	Definition	Pros	Cons
Elemental	100% amino acid based formula	<ul style="list-style-type: none">• Achieve disease resolution• Nutritionally complete	<ul style="list-style-type: none">• Palatability• Cost• Impacts quality of life
Directed Elimination	Diet avoids foods based on allergy testing	<ul style="list-style-type: none">• Maintains a more diverse diet• Reduces symptoms, lowers eos count	<ul style="list-style-type: none">• Testing inconsistent across centers• Some avoidance may be unnecessary• Empiric milk elimination improves response
Empiric Elimination	Diet avoids the major food allergens- variations exist (milk, wheat, egg, soy, peanut, tree nut, fish, shell fish)	<ul style="list-style-type: none">• No allergy testing required• Studied across all age groups• Reduces symptoms, lowers eos count	<ul style="list-style-type: none">• Some avoidance may be unnecessary• Cost• Can be nutritionally incomplete

Adapted from Greenhawt et al. J Allergy Clin Immunol. In Practice 2013;1(6):602-607.



Which Diet?

- Consider the patient's and/or family's:

Ability to Follow
the Diet and
Their Lifestyle

Current
Nutritional Status

Endoscopic
Findings

Consider Results of
Allergy Evaluation

What is the Patient
and/or Family
Willing to do?



Nutrients at Risk

Allergen	Vitamins and Minerals
Milk	Vitamin A, Vitamin D, Riboflavin, Pantothenic Acid, Vitamin B12, Calcium, Phosphorus
Egg	Vitamin B12, Riboflavin, Pantothenic Acid, Biotin, Selenium
Soy	Thiamin, Riboflavin, Pyridoxine, Folate, Calcium, Phosphorus, Magnesium, Iron, Zinc
Wheat	Thiamin, Riboflavin, Niacin, Iron, Folate (if fortified)
Peanut	Vitamin E, Niacin, Magnesium, Manganese, Chromium



MVI Supplementation for all Patients

- Conduct a diet analysis first to determine what macro and micro nutrients are over represented in the diet and which ones are deficient
- No one vitamin/mineral supplement is best – depends on the food the patient is currently eating
- When recommending supplements, be careful of potential toxicities



Vitamins



Always read the label for allergy warnings!

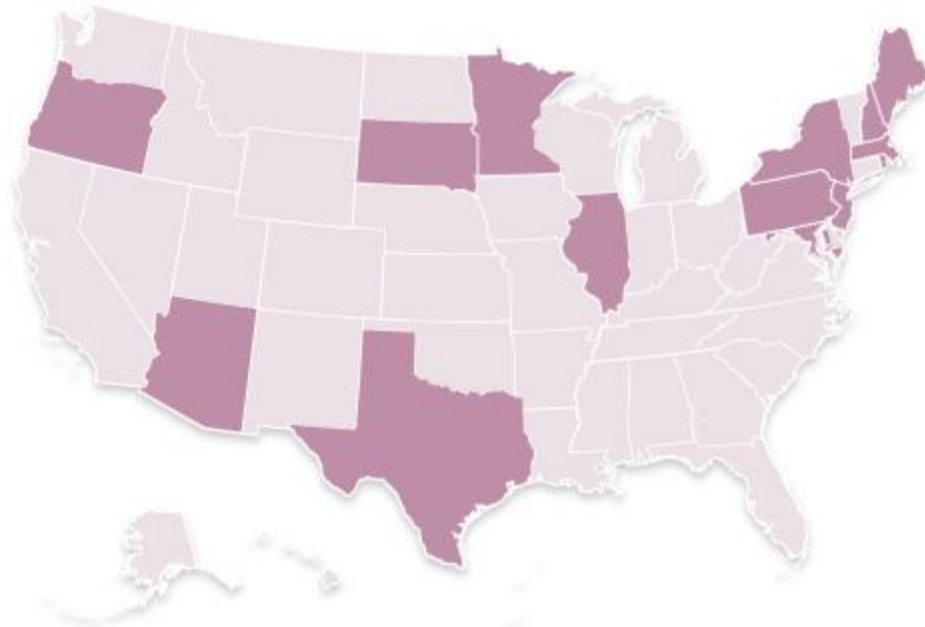


Hypoallergenic Formulas

- Regularly used to supplement an elimination diet to achieve adequate nutritional intake of protein and key micronutrients
- Research has shown that approximately 1 in every 3 patients on an elimination diet require daily amino acid-based formula supplementation to achieve adequate nutritional intake
- Infant and 1+ formulations available



Elemental Formula Insurance Coverage



Arizona | Connecticut | Illinois | Maine | Maryland | Massachusetts | Minnesota
New Hampshire | New Jersey | New York | Oregon | Pennsylvania | Rhode Island
South Dakota | Texas

Nutricia offers The Navigator Service which provides comprehensive assistance to families and health care providers regarding reimbursement

Source: <http://www.neocate.com/reimbursement/insurance-coverage-map/>



Elimination Diet Strategies

- Keep mealtime as normal as possible
- No force feeding
- Flavor elemental formulas with
 - Blenderized fruits, Crystal Lite, Coffee Syrups
- Focus on balanced, healthy eating
- Add fortified products (cereals, vegan protein powders, etc)

Focus on



WHAT YOU CAN EAT!



Elimination Diet Strategies

- A Mediterranean type diet can be a healthy, flavorful solution for an elimination diet
 - Lean proteins
 - Healthy fats
 - Vegetables
 - Fruits
 - Grains/Starch
 - Quinoa, Amaranth, Tapioca, Millet, Sorghum, Oats (Gluten Free), Corn, Rice, Potato



Elimination Diet Strategies

- Buy less processed food
 - Items with 5 ingredients or less
 - Outer aisles of the grocery store
- Patients and their family may need to learn how to cook, store, and freeze meals
- This diet does forces patients to get more connected to the food they buy and eat
 - Have we gotten too disconnected from our food in the United States?



Elimination Diet Strategies

- Avoid cross contamination
 - Salad bars or buffets
 - Cooking utensils, strainers
 - Toaster
 - Cook top
 - Fried foods



Elimination Diet Strategies

- Eating Out
 - Call ahead to speak with manager
 - Review with the wait staff about how you need your food prepared
 - State that your food needs to be prepared on a clean surface with clean utensils
 - Ask about preparation methods
 - Try to go during off peak hours
 - BE SPECIFIC. Tell them what you can have



Elimination Diet Strategies

The following are highly refined & considered safe

- Heat processed oils (do not purchase imported oils)
 - Olive, canola, grape seed, peanut, soybean
- Plain white table sugar
- Vitamin C (ascorbic acid)
- Artificial colors
- Artificial flavors
- Corn syrup, corn syrup solids, high fructose corn syrup



Elimination Diet Strategies

- At school parents should
 - Have a 504 plan in place that documents what foods must be avoided
 - Speak with school nurse, cafeteria manager, school district dietitian
 - Speak with the teacher
 - Encourage classroom celebrations that do not involve food (movie, extra recess, etc instead of a pizza party)
- Encourage families to send some of their own food, if possible



Elimination Diet Strategies

- At college
 - Speak with the manager of dining services
 - Speak with a nurse or manager of the campus clinic
- Food scouting mission prior to the first day
 - Restaurants
 - Grocery Store / Convenience Store
- Prepare an emergency food kit
 - Power outage
 - Miss dining hours



Teenagers

- Typically highest risk group in all food allergy
- They do not want to be different from their friends
- Feel invincible
- Becoming more independent
- Need to feel empowered about their food choices
- Need some autonomy



Teenagers/Young Adults

- Make recommendations that include them
- Ask them what their goals are for their diet and how they want their body to look
- What does success look like to them?
- Connect them with other teenagers with EoE or other types of food allergy or intolerance
 - No one likes to feel like they are alone
- Ask them what is the greatest source of stress related to EoE...it may not be the food



Adults

- Alcohol
 - Gluten free beer
 - Organic, vegan wine
- Cross Contamination
- If has children without food allergy or EoE, parent should provide all types of food
- Parents with EoE that have children without EoE need to keep their own condition in perspective



Adults

- Many prefer to be on medication
- Dietary modification is gaining acceptance as first line management
- Dietary approaches have been shown to be effective in adults
 - Some may do a combination of medication and diet elimination
- Symptoms may change over time
 - Aeroallergens may influence EoE symptoms
- EoE triggers may change over time as the immune system does not stay constant



Food Labels

- NIAID guidelines suggest avoiding products that have an allergy advisory statement
- Precautionary labels are voluntary and not regulated by the FDA
- Avoiding foods with the precautionary label for a patient's specific allergen is the safest advice



Elimination Diet Strategies

Websites

- Amazon
- Vitacost

Support Groups

- Oley Foundation
 - Message board where families offer formula they cannot use – only pay shipping charge

Grocery store options

- Sprouts Farmers Market
- Trader Joe's
- Aldi
- International grocery stores
- Wal-Mart
- Target



Got Milk?

Alternative Milks – Fortified is best

- Almond Milk
- Soy Milk
- Oat Milk
- Hemp Milk
- Coconut Milk
- Rice Milk



★ These milks should be used to add variety to the diet and should not be considered as a primary source of nutrition



Elimination Diet Strategies

- Replacing wheat flour
 - Wheat, Spelt, Kamut
- Replacing gluten flour
 - Wheat, Rye, Barley
- Wheat free and gluten free
 - Rice, brown rice, sorghum, amaranth, corn, millet, buckwheat, teff, quinoa, garbanzo bean, fava bean, oat, coconut, almond



Elimination Diet Strategies

Replacing Butter

- Spreads that contain soybean oil and flaxseed oil
- Sunflower seed butter
- Coconut oil
- Palm fruit oil
- Avocado, olive, hemp oils are safe but have a stronger flavor



Elimination Diet Strategies

- Birthday Party Ideas
 - Plan the party during traditionally non-meal hours
 - Example: 1:30-3:30pm
 - Cake ideas



Homemade Popsicles

<http://community.kidswithfoodallergies.org/blog/birthday-cakes-limited-diet-allergy>

Food Reintroduction

- How many to introduce at one time depends on the center and the patient's disease state
- Use single ingredient foods for reintroduction
- Consider what is important to the patient to have back in the diet
- Food must be eaten daily (age appropriate serving size)



Suggested Food Reintroduction

Pediatrics

- Fish
- Shellfish
- Peanut
- Tree nut
- Soy
- Wheat
- Egg
- Milk



Adults

- Fish
- Shellfish
- Egg
- Peanut
- Tree nut
- Soy
- Milk
- Wheat



Feeding Issues

- Picky eating may be due to a real medical issue
- When kids do not have the vocabulary to tell caregivers what is wrong, they just do not eat well as a means for self preservation
 - Fear of food getting stuck
 - Food does get stuck
 - Increased GERD symptoms
 - Feels like it is just hard to swallow



Feeding Issues

- Keep meal time low stress
- Make the interactions between parents, children, and food positive
- Never force a child to eat
 - It does not work
 - Creates more behavioral problems
- Parents have to trust their child's instinct on eating



Feeding Issues

- The Division of Responsibility (Ellyn Satter Model)
 - Parents provide the what, when, the where
 - The child decides how much
- SOS Model (Sequential Oral Sensory, Dr. Kay Toomey)
 - Done in a therapy setting
 - Treatment team: RD, OT, SLP, Psychology
- Speech Language Pathologists
 - Oral motor development
- Occupational Therapy
 - Sensory integration
- Behavioral Therapy
 - To address the fear and anxiety around food

Feeding Issues

- Know when to say when – seek outside therapy
- Patient continues to self-restrict
- Unintended weight loss
- Look for signs of deficiencies (remember previous slide)
- If not corrected, patient could end up with a G-tube to meet nutritional requirements



The EoE Unknown

- Natural history of EoE and rates and predictive indexes of complications
 - Food impaction, esophageal stricture, esophageal narrowing
- How do you treat patients with isolated esophageal eosinophilia that are asymptomatic?
 - Could the esophagus still change over time?



In Summary...

- Dietary avoidance is the best management of EoE in all ages
- Elimination diets change over time
- Supplementation with an amino-acid based formula is often required to keep the diet nutritionally complete
- Encourage your patients to get creative with their food to ensure the most variety in their diet
- RDs should educate their patients on survival skills – life is happy and healthy on restricted diets!



Resources

- APFED – American Partnership for Eosinophilic Disorders – www.apfed.org
- CURED – Campaign Urging Research for Eosinophilic Disorders - www.curedfoundation.org
- CoFar – Consortium on Food Allergy Research <https://web.emmes.com/study/cofar/>
- Nutricia – www.neocate.com/footsteps
- Abbott – www.elecare.com
- Children’s Hospital of Orange County – www.choc.org
- Gluten Free Drugs www.glutenfreedrugs.com

Resources

- Allergen-Free Baker's Handbook by Cybele Pascal
- Sweet Debbie's Organic Treats by Debbie Adler
- Food allergy websites for recipes
- Cookbooks at library
- Gluten Free and More Magazine
- Content Checked – www.contentchecked.com
- Shop Well – www.shopwell.com
- Allergy Eats – www.allergyeats.com
- Food Hypersensitivity Dietitian Network – for RDs only. Contact alexia.beauregard@choa.org to be added to the group

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- Ellyn Satter Institute www.ellynsatterinstitute.org
- SOS Approaches to Feeding www.sosapproach.com
- What is an Eosinophil? <http://www.cincinnatichildrens.org/service/c/eosinophilic-disorders/conditions/eosinophil/>



Thank you!
Questions?

Continuing Education Units (CEU)

Registered Dietitians (RDs) and Registered Nurses (RNs) interested in obtaining a certificate of attendance for 1 CEU credit

Visit and log into www.nutricialearningcenter.com
Click “My NLC Dashboard” – top right corner
Click “My CE credits”

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Event Code = GWEOE9