

Hilary A. Perr M.D.
Practical Nutrition in Food Allergies and
Eosinophilic Disorders of the Gastrointestinal Tract

THE BIG PICTURE

- FOCUS ON FOOD: CONTENT, HANDLING, RESOURCES
- NIAID OFFICIAL RECOMMENDATIONS
- OFFICE
- HOME
- DIET-AGE APPROPRIATE/ALLERGEN FREE
- OUTSIDE WORLD
- FUTURE

INTRODUCTION

- Prevalence food allergy (FA) increasing
 - 6% infants (Infant Feeding Practices Study II 2005-2007)
 - 5% children < 5 years
 - 4% teens/adults
 - 3 million children < 18 years old, up 18% in 10 years (CDC 2007)
- Food allergy in the news December 2010
 - NIAID Guidelines published
 - FAAMA passed re: national policies for schools to address allergy
 - Deaths due to unintended/accidental food allergen exposure
- Many foods elicit allergies, but 8 most commonly
 - >170 foods implicated in IgE-mediated reactions alone
 - 90% FA eggs, milk, peanuts, tree nuts, soy, wheat, crustacean shellfish, fish
- Causative foods children
 - Milk > egg > peanut > tree nuts > fish > crustacean shellfish > wheat > soy
 - Transient: milk, egg, wheat, soy allergies
 - Permanent, frequently severe: peanut, tree nut allergies
- Causative foods adults
 - Crustacean shellfish > peanut > food additives or spices > tree nuts > beef > almond > peach
 - Crustacean allergy persists
- Risk factors for severity of allergic reactions to foods
 - Varies with
 - Amount ingested
 - Food form (cooked, raw, processed)
 - Co-ingestion other foods
 - Influenced by
 - Patient age
 - Degree sensitization
 - Rapidity of absorption
 - Empty stomach
 - Exercise
 - Concurrent alcohol
 - Comorbid condition
- Food allergy coexists with other allergic disease (CDC)
 - Asthma (4X)
 - Atopic dermatitis (2.4X)
 - Respiratory allergies (3.6X)
 - Other FA, EoE, exercise-induced anaphylaxis
- FA and comorbid disease impacts severity each condition
 - 1 to 70/100,000 hospitalizations for anaphylaxis
 - 13-65% anaphylaxis due to food

- FA may exacerbate asthma (hospitalizations/death)
- Elimination food allergens improves co-existing conditions (EoE)
- FA less likely to resolve if comorbid disease
- Elimination diets avoid allergens but risk nutrient deficiencies
 - Eliminating even 1 food impacts nutritional adequacy
 - Nutrient deficiencies increase with number of foods eliminated
 - Most vulnerable where allergic to nutrient-rich foods or dietary staples
 - Milk allergy
 - Allergy to two or more foods
 - Growth compromised by FA and/or restricted diets vs. age-matched controls
 - Ht. for wt. less (Tiannen 1995)
 - Weight-for-age and height-for-age less (Flammarion 2010)
 - Kids with 2 or more FA shorter than kids with 1 FA (Christie 2002)
 - Most common deficiencies: Ca, vitamins D & E, Zn
 - Nutrient deficiencies risk allergy/asthma – controversial (Nurmatov 2010)
- Food allergy: the bottom-line
 - Increasing
 - Hinders ready access to complete nutrition
 - Nutritional deficiencies may enhance risk allergy/asthma risk
 - Linked to severity comorbid conditions
 - Potentially fatal
 - Allergen avoidance mainstay therapy to
 - Decrease symptoms
 - Decrease severity comorbid conditions
 - Avoid severe reactions/anaphylaxis
- OFFICE
 - Overview: determine and monitor
 - Allergens to be restricted
 - Current dietary practices
 - Baseline nutritional status
 - Future nutritional risks/needs
 - Therapeutic strategy
 - Educate
 - Patient (age-appropriate)
 - Family/contacts/caretakers
 - Optimize
 - Avoidance allergens
 - Nutrition
 - Growth and development
 - Quality of life, patient and family
- History
 - Food practices: family
 - Who prepares meals at home(s)?(ideally present at clinic visit)
 - Food procurement
 - Eat out or take out?
 - Who selects food/meal; child, parent or caregiver?
 - Who eats with the patient?
 - Dietary beliefs and religious practices
 - Other dietary health requirements
 - Diabetes, dyslipidemia, weight control, celiac
 - Oral-motor disorders, dysphagia, integrative sensory disorder
 - Patient food preferences
 - 3 consecutive day prospective intake record (weekday + weekend)
 - Symptoms and timing relative to intake, exercise
 - Food selection

- Favorite, most hated foods
- Taste, texture, color
- Eating pattern-timing and amount
- Eating skill

- Symptoms-allergic and GI
- Dietary adequacy/deficiencies

Assessment of nutritional status

Growth and development

- Weight, height, BMI, HC < 2 years, growth curve
- Sexual maturation, menarche

Exam

- Signs of nutritional deficiencies, allergy, GI disorder
- Skin color, hair texture, nails, subcutaneous tissue

Baseline deficiencies or excesses

- Baseline tests: CBC, diff, plt, CMP, alb, U/A
- Nutritional tests if red flags (impaired growth, pallor, bruising, bleeding, diarrhea, extensive skin or mucosal lesion)
- PT, vits D 25 OH, E & A, Zn, Iron panel + ferritin

Vitamin supplementation

- Variation in content and amount nutrients
- “Complete” = many vitamins and minerals, not 100% RDA
- Complete chewables Ca, Fe, Zn > gummy vitamins
- Calcium daily value based on 1000mg (age needs may differ)

HOME

Prevention cross-contamination

- Inadvertent mixing of safe and unsafe foods: harmful to eat
- Food preparation, cooking, storage, serving, waste disposal

Severity of allergic reaction determines strategy

- Anaphylaxis/severe reaction: eliminate allergen from home
- Mild symptoms: precautions to minimize allergen exposure

Labels

- Read label EVERY time, changes in product manufacturing
- “May contain (allergen)”
- “Processed in facility that also processes (allergen)”
- If label unclear, incomplete, call or e-mail manufacturer

Avoid allergens in non-food products

- Hair and skin products
- Pet foods, litter

Keep safe foods separate

- Designated shelves refrigerator, cupboard
- Store in covered containers
- Stickers for “safe” foods, “unsafe” foods (green/red tape)
- Keep “unsafe” foods out of reach of young children

Likely sources of food cross-contamination

- Crusty, crumbly breads, biscuits, crackers, pastries
- Food fried in oil that splatters during cooking
- Messy foods, hard to clean, leave oils or residues
- Nuts, seeds leave oils on plates, tables, counters

Kitchen equipment or utensils

- Plastic cutting boards preferable to wood, easy to sanitize
- Separate or well-washed utensils
- Separate or well-washed cooking/prep surfaces
- If allergens rarely served to rest of family, use plastic silverware + paper plates
- Avoid bagel cutters, meat slicers if used for allergenic foods

Separate toaster for wheat allergy
Clean immediately and thoroughly
Soap, water, dishwasher, regular cleansing agents
Remove allergens from
Dishware, countertops, table, utensils, cooking
equipment/appliances
Towels-out of reach, wash after use
Hands

Meals

Cook at home: safest, affordable, most control
Make allergen-free food first, cover, remove
Then prepare food for rest household
Keep allergenic child out of kitchen during meal preparation
When allergens heated (boiling milk, frying eggs or fish)
Avoids respiratory symptoms
Bulk cooking, baking, freezing - "convenience" foods available
Used dedicated silverware for serving

Guests, family

If entertaining, have an allergy free table or buffet. Guests can try those
foods first but not go back and forth
Educate re: allergy, foods not to bring or eat before the visit
Avoid sharing utensils, glasses, cups, food
If severe allergy might have to avoid hugging, kissing, hand contact if guest
ingested allergens recently
Good hand washing

SEE REFERENCES re: apps, websites, materials for baking substitutes, menu
planning, grocery shopping, ordering online

Summary

Learn to cook
Home most controllable environment
Keep safe food separate, prepare first
Educate child, family, friends, contacts

HYPOALLEGENIC DIET: VULNERABLE STAGES OF LIFE

Overview

Pregnancy
Lactation/breast milk
Infant-at-risk, high-risk, allergic

Pregnancy

Intrauterine sensitization
Specific IgE antibodies: fetal & cord blood
Significance unknown, relevant allergy risks unclear
Maternal allergen avoidance of essential foods/nutrients not recommended
(peanuts not considered essential AAP)

Lactation/breast milk

Cows milk beta lactoglobulin (95%)
Food allergen exposure still possible if exclusively breastfed via:
Breast milk, aeroallergen, contaminated hands
Breast milk protective, stimulates gut epithelium growth, maturation

Infant vulnerable to allergy and diet

Infant diet modifications may effect growth, gut function, feeding
Lactose-free diet may alter
Colonic micro-flora
Colonic physiological functioning
Calcium absorption
Some protein hydrolysates

Altered nitrogen absorption and retention
Decreased weight gain
Bitter taste

Milk-free diet

Deficiencies of calcium, vitamin D
If child < 24 months age, deficiencies of
Protein, riboflavin, phosphorus, fat, calories
Nutritionally suboptimal infant milk alternatives
Cow's milk and goat's milk-
High -renal solute load, protein
Low -Fe, Zn, vitamins E & C, folic acid
Nondairy creamers
Low-vitamins A, C, B1, B2, niacin, Ca, Fe
Rice milk-low protein, fat; unfortified-low Ca, vits A, D

Recommended feeds for confirmed infant allergy

Complete exclusion causal protein
If exclusively breastfed, exclude causal protein from maternal diet
If not breastfed, use "extensively hydrolyzed" formula, some require amino acid mixture
If adverse reaction to food protein + malabsorptive enteropathy; use
Extensively hydrolyzed formula or amino acid mixture
Lactose-free
Plus medium chain triglycerides
In food allergy with normal digestive function:
Extensively hydrolyzed protein
Amino acid
No goat or sheep milk (cross-reactivity)
No soy (sometimes used in Australia after age 6 months)
No partially hydrolyzed formula due to residual allergens (budget)

Dietary prevention of FA in *at-risk* and *high-risk* infants

At-risk: FH parent or sibling + allergic rhinitis, asthma, AD, or FA
NIAID Guideline 36. Not recommended to restrict maternal diet during pregnancy or lactation
NIAID Guideline 39. Consider extensively hydrolyzed formula in *at-risk* infant if not exclusively breast-fed.
Issues: cost, and duration unknown
High-risk: FH parent + sibling or 2 parents
Exclusive breastfeeding first 4-6 months life
No supplementary foods before 5th month life
Bottle fed infant with hereditary atopy risk (affecting parent or sibling), use formula with reduced allergenicity

No FH allergic disease -No evidence to support use hypoallergenic formula

Some Hydrolyzed Protein and Amino Acid-Based
Infant and Pediatric Formulas Available in the United States

Extensively hydrolyzed casein (cow milk protein)
Enfamil Nutramigen Lipil (Mead Johnson)
With Enflora LGG (powdered, prebiotics)
Enfamil Pregestimil (MCT oil)(Mead Johnson)
Similac Alimentum Advance (MCT oil) (Ross)
Partially hydrolyzed whey (cow milk protein)
Good Start Supreme (Nestlé USA,)
Partially hydrolyzed whey/casein (cow milk protein)
Enfamil Gentlease Lipil (Mead Johnson)
Partially Hydrolyzed Soy (Soy Protein)

Good Start Supreme Soy (Nestlé USA)
Free amino acid-based
Neocate (Nutricia)
Neocate Jr., Neocate One+ (age 1-10y)(Nutricia)
EO28 Splash (age 1-10y)(Nutricia)
EleCare (age 1-10y)(Ross Pediatrics)
Vivonex Pediatric (age 1-10y)(Nestlé)

Note: partially hydrolyzed formulas are not recommended for cow's milk protein allergy-----

Introduction of complementary and allergenic foods to infant diet

NIAID Guideline 40: Do not delay introduction beyond 4 to 6 months of age. Includes potentially allergenic foods to at risk infants

Timely introduction complementary foods physiologically important

Breast milk less able to provide complete nutrient needs with age

>90% iron comes from complementary food in breastfed infant

Motor skill for solids develops at 4-6 months

Taste preferences and eating patterns develop in early life

Good evidence that certain foods more allergenic than others

Controversy when to introduce allergens into diet

Observational evidence (Europe)

Early introduction (<4 months) of > 4 foods

Increased risk of atopic dermatitis (short term and at 10 years)

ACAAI re: *at-risk* infants

Delay introduction

Dairy products 12 months

Eggs until 24 months

Peanuts, tree nuts, fish, seafood 3 years

Criticism - nutritional consequences

Peanuts and shellfish not an issue

Avoiding fish potential impact

Cognitive development or immune functions

Protective role of early dietary n-3 LCPUFA

Delayed introduction may increase risk allergic sensitization

Increased risk wheat allergy depending on timing

Avoid early (<4 months) or late (>6 months) gluten

Introduce gradually while breastfed (ESPGHAN)

Summary

Pregnancy-do not avoid essential maternal nutrients

Breast milk-may contain allergens, but many health benefits

Infants vulnerable to allergens and inappropriate nutrition

Extensively hydrolyzed formula/ amino acid formula optimal

SPECIFIC ALLERGEN-FREE DIETS

Overview

Three of 8 common allergens discussed

Milk-most common allergen

Peanut-most threatening, permanent

Wheat-basic dietary staple

Cross-reacting proteins (table and reference)

Hypoallergenic diet for multiple food allergies (sample)

COW'S MILK

Cow's milk allergy

Prevalence

2-6% children

Highest first year life

Resolution

- 50% by first year life
- 80-90% by fifth year life
- Greater chance tolerance if no asthma, allergic rhinitis, formula feeds
- Parent-reported cases
 - 4X higher than actual
 - Unnecessary diet
 - Inadequate medical /nutritional supervision
- Consequences
 - Rickets
 - Decreased bone mineralization
 - Anemia
 - Poor growth
 - Hypoalbuminemia
 - Gastropathy leading to malabsorption
- Labels
 - Parents of allergic children had most difficulty identifying milk proteins
 - Read food labels and avoid ingredients containing the words:
 - Butter, casein, caseinate, cheese, cream, curds, custard, ghee,
 - half & half, lactalbumin, lactose, nougat, yogurt, whey
 - Terms that may indicate cow's milk protein:
 - High protein flour
 - Caramel flavoring
 - Natural flavoring
 - Artificial butter flavor
 - Less obvious milk exposures
 - Meat-hot dogs, luncheon meats, meat loaf, commercial meat patties
 - Sauces-made with butter, margarine, milk or cream
 - Soups-bisques, chowders, cream soups
 - Vegetables-au gratin, scalloped or mashed potatoes, prepared with cream, butter or margarine
 - Breads/rolls-read labels bread mixes, pancakes waffles, soda crackers, zwieback
 - Calcium supplements
 - Biocal, Caltrate, Neocalglucon, Oscal, Roloids, Titalac, Tums, Kirkland sugar-free Calcium Chews, Viactiv
 - Calcium-rich foods
 - Salmon (canned + bones), tofu, legumes, almonds, brazil nuts, molasses, farina, greens (bok choy, spinach, kale, mustard greens, broccoli, rhubarb)
 - Cooking and baking milk-free and butter-free substitutes
 - Use equal amounts with water or fruit juice, rice milk (more watery, less protein, needs to be fortified), almond milk, pecan milk, cashew milk, walnut milk, brazil nut milk, oat milk (good in breakfast cereals, hemp milk (protein content between cow's milk and soy)
 - Use kosher foods labeled "parve" or "pareve"
 - Try Earth Balance or Fleischman's margarines (trans fat free) instead butter or margarine containing dairy
 - Summary-cow's milk
 - Most common food allergy
 - Transient
 - Affects infancy/early childhood when comprises more of diet
 - Milk alternatives less nutritious, need other foods/supplements
 - Families need more education re: labels
- PEANUTS
 - Peanut allergy
 - Minimal amount allergen exposure to produce adverse reaction

100mcg – 1g (Wensing. J Allergy Clin Immunol 2002)

Severe reactions often occurring at lower levels

0.6% U.S. population, 5.9% Sweden, 1.0-2.5% U.K., 0.06-0.2% Israel

Generally lifelong allergy

<20% individuals may outgrow it, but recurrence possible

Severe or life threatening

Peanut structure

Legume, not a nut

5% risk allergy to other legumes - peas, lentils, beans, chickpeas

Not related to tree nut, hazard if processed same equipment

Peanut labels

Mt. Sinai St.- ~1/2 parents identified peanut ingredients in 5/23

products

Read label

Word “peanut” must appear on manufacturer’s label

Avoid

Nuts

Nut oils

Beer nuts

Nut butters

Mixed nuts

Groundnuts

Peanut (also peanut flour, peanut butter) Snack mix, trail mix

NuNuts (and other artificially flavored nuts)

Foods contaminated with peanut during manufacturing/processing

Candy, marzipan, chocolate, baked goods, ice creams

Tree nuts

Foods containing peanut flour/butter as thickener

Homemade chili, spaghetti sauce

Lupine or lupin legumes used in gluten-free, high protein food

Many European baked goods mix lupine or peanut with wheat flour

Snacks containing defatted, granulated peanuts to boost protein

Snack bars

Energy or high protein bars

Cereal or breakfast bars

Avoid ethnic restaurants that use peanuts in cooking

Chinese, African, Indonesian, Thai, Vietnamese, Indian, Mexican

Nonfood products containing peanut

Cosmetics, nutrition supplements, medicines, pet foods, shoe polish, shaving cream, detergents, salves, metal polish, bleach, shampoo, axle grease, face creams, soap, linoleum, rubber, paint, explosives, ink

Unexpected sources of peanut

Sauces - chili sauce, hot sauce, pesto, gravy, mole sauce, salad dressing

Sweets-pudding, cookies, hot chocolate

Egg rolls

Potato pancakes

Some vegetarian “meat substitutes”

Glazes and marinades

Imitation milk, cheese and ice cream

Extruded, cold-pressed (unroasted), or expelled peanut oil

Safe

Nutmeg, water chestnut, butternut squash

Highly refined oil to be determined by allergist

Summary-peanuts

Reactions potentially severe, life-threatening

Usually lifelong allergy, can recur

Avoid peanuts in nonfood products and some ethnic cuisine

Tree nuts may be contaminated with peanuts through processing

Vigilance and education key

SEE REFERENCES for more on peanut labels, laminated cards, traveling peanut-free. especially FAAN website

WHEAT/GLUTEN

Wheat allergy

Depending on study rates of resolution:

29% by age 4

56% by age 8

65% by age 12

Higher wheat IgE levels associated with poorer outcome

Median age to outgrow allergy 6.5 years

Wheat is a staple in Western diet which impacts nutrition during early development

Introduced early into diet through maternal breast milk or solids at 5 months

Constitutes 20% caloric intake

Provides half world's supply of dietary protein

After sugar, most prevalent food in Western diet

U.S.-wheat may be eaten at every meal

Ubiquitous in processed food (see below)

Pathology

Enteropathy (protein sensitive and eosinophilic) atopic dermatitis, enterocolitis, vomiting, exercise-induced anaphylaxis

Wheat toxicity

Seed storage proteins with different solubility

Gliadins-aqueous alcohol

Glutenins-dilute alkalai

Gliadin + glutenin together termed "glutens" or "prolamins"

Prolamins are proline-rich

Resistant to proteolysis

Intact antigens presented to gut immune system

Gluten containing grains to avoid

Barley	Faro	Spelt
Graham flour	Farina	Triticale
Bran	Kamut	Udon
Bulgur	Matzo flour/meal	Wheat, bran, germ, starch
Couscous	Orzo	Durum
Emmer	Panko	Seminolina
Einkorn	Rye	Seitan

Overlooked Gluten Sources

Ales	Soup base
Beer/lagers	Stuffing
Breading	Self-basting poultry
Brown rice syrup	Imitation Bacon/seafood
Coating mix	Soy sauce
Communion wafers	Marinades thickeners herbal
Croutons	Supplements
Candy	Prescription Medications
Broth	Vitamin/mineral supplements
Pasta	Lipstick
Roux	Gloss and balms
Sauces	Play Dough
Laxatives	Toothpaste (some)
	Stamps, envelopes, gummed labels

Oats

May improve nutritional content diet and quality of life

Make sure not contaminated with gluten grains during growing, transportation, milling processes

Nutritional and medical consequences of a Gluten-free diet

Grain alternatives have less:

- Thiamin, riboflavin, niacin, folate, iron
- Not required to be enriched (unlike gluten-grains)

Diarrhea/constipation depending on fiber content diet

Weight loss secondary to decreased caloric intake

Nutrient-rich gluten-free foods

- Calcium- Milk, yogurt, cheese, ice cream, sardines, salmon, broccoli, spinach, almonds, figs, calcium-fortified soy milk + orange juice
- Iron- Meat, fish, poultry, nuts, seeds, legumes, dried fruit, eggs, amaranth, quinoa
- Folate- Broccoli, asparagus, orange juice, liver, legumes, bean flour, flax, peanuts, walnuts, sesame, sunflower seeds
- B12- Liver, eggs, milk, meat, poultry, fish, seafood

Summary-wheat

- Dietary staple
- Difficult to avoid since ubiquitous in processed food
- Toxicity from resistance of seed storage proteins (glutens) to proteolysis
- Alternative grains not as nutritious
- Monitor B12, riboflavin, niacin, folate, iron intake and stool patterns
- Take advantage of resources from celiac organizations
- SEE REFERENCES** for gluten-free diets-caution, many are written for Celiac disease, but information very useful for products and diet practices. Apps: iEatOut Gluten, Is that Gluten-free?

OUT SIDE THE HOME

Overview

- Preschool, School to be discussed
- Child care, restaurants, camp, special occasions *SEE REFERENCES*

PRESCHOOL, SCHOOL

- 10% children home-schooled
- Allergic reactions at school common
- 2.2 million school-age children with food allergies
- 20% allergic children experience > or = 1 reaction in school over 2 years
- Challenging environment to control
 - Lunchroom, class snacks, shared computer equipment, playground
- Some schools
 - Food aware zones
 - "Nut-free" zones
- Inform school staff (nurse, food service manager, teachers) of allergy **before** school year starts)
 - Safe and unsafe foods
 - No food sharing
 - Depending on age and allergy/increased supervision during lunch
 - Suggest sticker instead of food rewards
 - Avoid crafts that include food
 - Wheat in modeling clay
 - Egg in finger paint
 - Food craft projects
 - No eating on school bus ideal
- Provide child with safe food and /or ensure others do
- Child's age-appropriate responsibilities
 - No food sharing/trading or eating unsafe food
 - Report any symptoms to an adult

Hand-washing with soap and water before and after meals/snacks (hand sanitizers do not remove allergen)

(See References re: websites, papers for Child Care, School , Camp, Special Events, Restaurant strategies)

CROSS-REACTING FOODS

Only way to determine cross reactivity is oral food challenge.

Guide below from Sicherer S. Clinical implications of cross reactive food allergens.

J Allergy Immunol. 2001;108(6):881-890

If Allergic to:	Risk of Reaction to at Least One:	Risk:
A legume* peanut	Other legumes peas lentils beans	5%
A tree nut walnut	Other tree nuts brazil cashew hazelnut	37%
A fish* salmon	Other fish swordfish sole	50%
A shellfish shrimp	Other shellfish crab lobster	75%
A grain* wheat	Other grains barley rye	20%
Cow's milk* 	Beef hamburger	10%
Cow's milk* 	Goat's milk goat	92%
Cow's milk* 	Mare's milk horse	4%
Pollen birch ragweed	Fruits/vegetables apple peach honeydew	55%
Peach* 	Other Rosaceae plum pear apple cherry	55%
Melon* cantaloupe	Other fruits avocado watermelon banana	92%
Latex* latex glove	Fruits avocado kiwi banana	35%
Fruits banana kiwi avocado	Latex latex glove	11%

STRATEGIES FOR MULTIPLE FOOD ALLERGIES

Allergen-free menu

Tips on Eating Allergen-free

www.nal.usda.gov/fnic/pubs/bibs/gen/allergy.html

Applications for smart phones

iCanEat OnTheGo

AllergyFree Passport

MyAllergyFreeRecipes free

Midlife Crisis Apps, LLC

Eating Out
Allergy Guard for iPhone
>2000 ingredients and relationship to > 150 food products

CONCLUSION

There is nothing like a skilled nutritionist where they exist
Many resources available to practitioners and families
Complete nutrition critical to maximizing growth, development and minimizing risk other related diseases

FUTURE TRENDS in FA and NUTRITION

Predictors of FA risk based on genetic markers and immunologic factors
Timing of introduction of allergen
Probiotics
Heated-treated allergens
Food vaccines to induce tolerance
Bioengineered hypoallergenic crops

REFERENCES

- 1) Agostini C, Decsi T, Fewtrell M, Goulet O, Kolacek S, Koletzko B, Michaelsen KF, Moreno L, Puntis J, Rigo J, Shamir R, Szajewska H, Turck D, van Goudoever J., ESPGHAN Committee on Nutrition. Complementary Feeding: A Commentary by the ESPGHAN Committee on Nutrition. *JPGN* 2008;46(1):99-110
- 2) Caffarelli C, Baldi F, Bendandi B, Calzone L, Marani M., Pasquinelli P, and on behalf of EWGPAG. Cow's milk protein allergy in children: a practical guide. *Ital. J Pediatr.* 2010;36;5. PMID:PMC2823764.
- 3) Christie et al. Food allergies in children affect nutrient intake and growth. *Am Diet Assoc* 2002;102(11):1648-51
- 4) Flammarion et al. Diet and nutritional status of children with food allergies. *Pediatr Allergy Immunol* June 14, 2010 online <http://www3.intersciences.wiley.com/journal/123524674/abstract> accessed 7/16/10
- 5) Guidelines for the Diagnosis and Management of Food Allergy in the United States: Report of the NIAID-Sponsored Expert Panel. *J Allergy Clin Immunol* 2010; 126(6) Supplement: S1-S58.
- 6) Green PHR, Cellier C. Celiac Disease. *NEJM* 2007;357:1731-43.
- 7) Greer FR, Sicherer SH, Burks WA and the Committee on Nutrition and Section on Allergy and Immunology Pediatrics 2008;121(1):183-191
- 8) Host A, Koletzko B, Dreborg S, Muraro A, Wahn U, Aggett P, Bresson J-L, Hernell O, Lafeber H, Michaelsen KF, Micheli J-L, Rigo J, Weaver L, Heymans, Strobel S, and Vandenplas Y. Dietary Products Used in Infants for Treatment and Prevention of Food Allergy. Joint statement of the European Society for Paediatric Allergy and Clinical Immunology (ESPACI) Committee on Hypoallergenic Formulas and the European Society for Paediatric Gastroenterology, Hepatology and Nutrition (ESPGHAN) committee on Nutrition. *Arch Dis Child* 1999;81:80-84
- 9) Houle CR, Leo HL, Clark NM. A developmental, community, and psychosocial approach to food allergies in children. *Curr Allergy Asthma Rep* 2010;10:381-386
- 10) Kirby M, Danner E. Nutritional deficiencies in children on restricted diets. *Pediatric Clinics of North America* 2009;56(5):1085-1103. HIL table 4 (Kirby. *Ped Clin N Am* 2009) to identify affected nutrients and off alternative food sources for the nutrients
- 11) Nurmatov U, Devereux G, Sheikh A. Nutrients and foods for the primary prevention of asthma and allergy: Systematic review and meta-analysis. *J Allergy Clin Immunol.* 2010 Dec 23. PMID: 21185068
- 12) Perr HA. Invited review. Children and genetically engineered food: problems and potentials. *JPGN* 2002;35:475-486.
- 13) Perr HA. Novel foods to treat food allergy and gastrointestinal infection. *Curr Gastroenterol Reports* 2004;6:254-260.
- 14) Sicherer SH. Clinical Implications of cross-reactive food allergens. *J Allergy Clin Immunol* 2001;108(6):881-890.

15) Tianinen et al. Diet and nutritional status in children with cow's milk allergy. Eur J Clin Nutr 1995;49(8):605-12.

16) Zeiger RS. Food Allergen Avoidance in the Prevention of Food Allergy in Infants and Children. Pediatrics 2007;111(6):1662-70.

About.com Food Allergies

<http://foodallergies.about.com>

Consortium of Food Allergy Research (COFAR) NIAID Grant U19AI066738. Last updated 9-08.

<https://web.emmes.com/study/cofar/EducationProgram.htm>

The Food Allergy & Anaphylaxis Network (information in several languages, (includes information on food, school, camp, events) <http://www.foodallergy.org/>

Consortium of Food Allergy Research (COFAR) NIAID Grant U19AI066738. Last updated 9-08.

<https://web.emmes.com/study/cofar/EducationProgram.htm>

Food and Nutrition Information Center

Website <http://www.nal.usda.gov/fnic/pubs/bibs/gen/allergy.pdf>

FNIC publications <http://fnic.na.usda.gov/resourcelists>

Pamphlets/magazines for Gluten-free diet

1) Gluten-Free Diet Guide for Families. Children's Digestive Health and Nutrition Foundation (CDHNF). North American Society for Pediatric Gastroenterology, Hepatology and Nutrition (NASPGHAN). www.CeliacHealth.org www.CDHNF.org www.NASPGHAN.org

2) Your Health Matters. Gluten-Free Diet for Patient's with Celiac Disease (43 pages). UCSF. Patient education library online www.ucsfhealth.org Revised October 2004.

3) Gluten-Free Living magazine. www.glutenfreeliving.com Good source for products, recipes, shopping, even gluten-free travel tours.