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The First Nutritional Guidelines for FPIES

The Nutritional Management of FPIES:

Feeding Your Baby with FPIES

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Parents often worry about their babies' nutrition. Infants do have great nutritional needs, and they grow so rapidly in the first year of life. At no other time do children triple their weight in just one year! As a parent of a child with FPIES, you may be worried too. Although some babies with FPIES may grow poorly prior to the diagnosis, once the offending food is removed and adequate nutrition is provided, your baby can quickly catch-up.

Growing well is the best indicator that your baby is well-fed.¹ An infant's growth is normally monitored on a *growth chart*. Plotting your baby's growth on a growth chart helps your doctor compare your baby's size to other babies of the same age and gender. Some babies are larger and some are smaller. This is normal. The most important information provided by a growth chart is the consistency of your baby's growth.² It is usually expected that infants will maintain their rate of growth (or their growth percentile) or at least stay fairly close to it. For example, a baby born between the 25th and 50th percentile for weight and height will likely continue to grow within or somewhat close to this percentile range. Many parents worry that their baby is not eating enough, but with a very consistent growth pattern we can see if a baby is getting enough to eat.

On the other hand, a baby's growth (either height or weight percentiles) may change. Sometimes this means the baby is not getting enough nutrition, but it can also be a very normal adjustment in the child's growth patterns. A doctor will look at many features to determine if a baby is growing well. This can be a distressing time for parents, but your doctor will let you know if there is cause for concern. If nutritional intake is not sufficient, poor growth can be rectified with the input and support from a dietitian and your doctor.

When Is Breast Milk Not Enough?

For babies with FPIES, breastfeeding can typically continue without interruption. Rarely, a mother may be asked to exclude some foods from her diet. If you require an elimination diet, a dietitian should review your diet and may ask you to supplement certain nutrients. Adequate nutrition for your baby means appropriate calories, proteins, carbohydrates and fats, as well as vitamins, minerals and fluids. While breast milk is the ideal food for babies, at some point, breast milk alone simply does not provide adequate nutrition. For one thing, breast milk alone after six months of age might not provide adequate calories for your baby to grow properly.¹

Breast milk is also low in iron, which is an important nutrient for infant growth and cognitive development.³ If a mother's iron stores during pregnancy were sufficient, a baby is born with an iron supply that will last until about four months of age. After four months of age, an additional iron source will be required.³ This is the time when iron-enriched cereals are typically introduced. Iron-enriched cereals might not be an option for some babies with FPIES to grains such as rice, oat and barley, so supplementation may be important. The American Academy of Pediatrics (AAP) recommends iron supplementation (1 mg iron/kg body weight) after four months of age for babies who continue to breast feed exclusively and iron-enriched formula for those infants who are bottle-fed.³

Calcium and Vitamin D are also two nutrients of importance for the development of strong bones and the immune system. The AAP recommends Vitamin D supplementation (400 IU) beginning shortly after birth for all breastfeeding infants and infants receiving less than 32 ounces or one liter of infant formula.⁴

In some cases, supplemental foods (if tolerated), a supplemental formula, and/or micronutrient supplementation may be suggested by a doctor, especially if an older baby is not growing sufficiently. If your baby is already on a formula, your doctor or dietitian can give you advice on either increasing the volume of formula taken or concentrating the formula to better meet nutritional needs.

Infant Formula

When a formula is desired either for complete nutrition or to supplement a restricted diet, a suitable formula should be suggested by a healthcare professional who has experience working with children with FPIES.

Extensively hydrolyzed casein formulas and amino acid-based formulas are recommended for infants with FPIES.⁵ These formulas are considered hypoallergenic and are typically well tolerated. Infants, particularly breastfed infants, may initially refuse these formulas due to taste. A dietitian can give useful advice on how to overcome this problem. One solution may be to mix a small amount of the hypoallergenic formula with the breast milk and very gradually increase the amount of hypoallergenic formula to breast milk. Flavoring may also be added to the recommended formula (e.g., a few drops of vanilla) but you should try to stop using these within a few days. Many parents worry about the corn oil and corn syrup solids in most formulas, but these corn ingredients do not contain corn protein and are not considered allergenic for those with corn allergy.

Feeding and Developmental Needs

In addition to nutritional needs, babies have developmental needs associated with eating. During the first year of life, your baby has a lot to learn about eating. A healthy baby is born with the ability to coordinate sucking, breathing and swallowing and so can nurse or take a bottle without your teaching him to do so. All other feeding skills, however, are learned and your baby will need the presentation of foods of appropriate textures to learn these skills. There appears to be critical periods in a baby's development when chewing and taste acceptance are more easily learned. For instance, when textured foods are introduced after ten months of age, children are more likely to refuse solid foods; therefore, it is best if feeding opportunities can be presented to your baby when developmentally appropriate.⁶

The extrusion reflex, or your baby's tendency to push foods out of the mouth with the tongue, typically diminishes by six months of age...just when your baby will need the addition of solid, pureed foods to his/her diet. Another developmental sign of readiness is that your baby can sit with assistance for short periods of time. Table 1 outlines the developmental skills associated with different feeding stages. Typically, at around six months of age, your baby will be ready for complimentary solid, pureed foods. Learning to remove foods from a spoon usually begins with the presentation of thin purees. With spoon feeding, your baby will work on the skills of removing food from a spoon with the lips, holding food in the mouth (and not pushing it out) as well as moving and shaping the food with the tongue to prepare for swallowing.⁶ As your baby gets better at these and other feeding skills, you can progress to thicker purees, then eventually lumpier purees and finally on to soft finger foods.

Feeding appropriate textures can, of course, be more challenging for a child with food allergies, especially for a child with FPIES when you are unsure what foods will be safe. Your doctor can help you determine what foods might be safe to try first. Remember, even if your baby has a very limited diet, a little creativity with the safe ingredients at your disposal will provide the textures necessary. For instance, a diet of only sweet potato can provide multiple textures. It can be mixed with breast milk (or your baby's safe substitute formula) into a smooth, thin or thick puree, mashed so that it has some lumps and bumps, or soft cooked and chopped so it provides an appropriate finger food texture. It can even be fried in a highly refined oil to provide some crunchy or crispier textures for older toddlers. Highly refined oils do not contain allergenic proteins so they are typically a safe option for children with food allergies.⁷

What to Feed

What to feed your baby is based on nutrition as well as developmental readiness and developmental needs. For those with FPIES, there are additional considerations. For instance, infants with cow's milk or soy FPIES have a greater chance of developing solid food FPIES, most commonly to rice and other grains.⁸ Therefore, introduction of yellow fruits and vegetables are often recommended prior to introduction of grains.⁹ Tolerance of one food from each higher risk food group (for example, soy for legumes, chicken for poultry, or oat for grains) is a sign that your baby may tolerate other foods from that same food group.⁹ Please ask your doctor to help you decide what foods to introduce first to your baby.

Although nutrition is quite important, remember that with careful planning, we can meet nutritional needs in older infants with supplements to breastfeeding or the proper concentration and volume of infant formula potentially with vitamin and mineral supplementation. Finding appropriate textures will require some creativity when multiple solid foods are restricted. Remember, even if you have only one food, you can provide many textures to help your baby develop the feeding skills needed as he/she grows up with eating. Table 2 shows how various foods may be used to provide a variety of textures that may be appropriate for your baby if any one of these foods is tolerated. Also see Table 3 for additional feeding tips.

FPIES can make feeding your baby more challenging but a proper diet, guided by your doctor and dietitian, and providing safe and appropriate textures will help you meet your baby's nutritional and developmental needs.

References

1. Childhood and Adolescence in Escott-Stump, S. Nutrition and Diagnosis Related Care. 7th ed. Wolters Kluwer/Lippincott Williams and Wilkins, Philadelphia. 2012, pp. 19 – 33
2. Grummer-Strawn LM, Reinold C, Krebs NF, Centers for Disease Control and Prevention (CDC). Use of World Health Organization and CDC growth charts for children aged 0-59 months in the United States. *MMWR Recomm Rep* 2010 Sep 10;59(RR-9):1-15.
3. Robert D. Baker, MD, PhD, Frank R. Greer, MD, The Committee on Nutrition. Diagnosis and Prevention of Iron Deficiency and Iron-Deficiency Anemia in Infants and Young Children (0–3 Years of Age). *Pediatrics* 2010 Nov; 126(5).
4. Carol L. Wagner and Frank R. Greer. Prevention of Rickets and Vitamin D Deficiency in Infants, Children, and Adolescents. *Pediatrics* 2008;122;1142
5. Fiocchi A, Brozek J, Schunemann H, Bahna SL, von Berg A, Beyer K, et al. World Allergy Organization (WAO) Diagnosis and Rationale for Action against Cow's Milk Allergy (DRACMA) Guidelines. *Pediatr Allergy Immunol* 2010 Jul;21 Suppl 21:1-125.
6. Delaney A, Arvedson J. Development of Swallowing and Feeding: Prenatal Through First Year of Life. *Developmental Disabilities Research Reviews* 2008; 14:105-117.
7. Crevel RWR, Kerkhoff MAT, Konig MMG. Allergenicity of refined vegetable oils. *Food and Chemical Toxicology* 2000 April;38(4):385-393.
8. Nowak-Węgrzyn A, Sampson HA, Wood RA, Sicherer SH. Food protein-induced enterocolitis syndrome caused by solid food proteins. *Pediatrics* 2003 Apr;111(4 Pt 1):829-835.
9. Leonard SA, Nowak-Węgrzyn A. Food protein-induced enterocolitis syndrome: an update on natural history and review of management. *Ann Allergy Asthma Immunol* 2011 Aug;107(2):95-101.

Table 1. Developmental Skills and Feeding

Approximate Age	0-4 months	4-6 months	6-8 months	8-12 months	12-24 months
Gross Motor Development Skills	- Limited truncal stability	- Head control - Ability to sit with support	- Can sit independently	- Crawling - May pull self to stand	- Stands alone - Walks with/without support
Fine Motor Development Skills	- Grasp only (reflexive)	- Grasp (voluntary)	- Squeeze / Palmar grasp - Playing with food (bringing food toward self)	- Self-feeding finger foods (i.e., pincer grasp) - Manipulating objects correctly (spoon) - Exploring with hands and mouth	- Easily self-feeding with fingers - Pincer grasp developed - Using spoon and fork
Oral Motor Development Skills	- Rooting and sucking - Early gag reflex	- Moving food front and back with tongue - Controlling tongue thrust	- Begins chewing movements (up and down) - Able to keep thicker purees in mouth	- Developing tongue lateralization (mashing and chewing) - Tracking and sorting food pieces in mouth	- Ability to drink from cup or straw - Chewing variety of foods/textures - Bites through variety of textures - Coordinated tongue movement
Appropriate Food Consistency & Texture	- Breast milk / Infant formula	- Breast milk / Infant formula - <u>Stage 1 consistency</u> (puree/ semi-liquid) → Very smooth; slightly thicker than breast milk and/or formula	- Breast milk / Infant formula - <u>Stage 2 consistency</u> (mashed and/or strained foods) → Still smooth; less liquid than Stage 1. Ability to form bolus on spoon.	- Breast milk / Infant formula - <u>Stage 3 consistency</u> (chopped / finger foods) → Working towards table foods; requires chewing	- Beverage per MD/RD recommendation - <u>Table foods</u>
Food Examples	- ASK YOUR DOCTOR which foods may be safe to add to your baby's diet. - Add new fruits and vegetables to your baby's diet, as tolerated.	- Enriched cereal/Elemental semi-solid food* - Fruits (apple, apricot, banana, pear, peach, prune) - Vegetables (carrot, sweet potato, squash, white potato, spinach)	- Enriched cereal or grains/ Elemental semi-solid food* - Fruits - Vegetables - Fats(avocado, cooked egg yolk, highly refined oil) - Proteins (meat, fish, poultry, legumes, egg)	- Enriched cereal or grains/ Elemental semi-solid food* - Fruits - Vegetables - Fats - Proteins	- Enriched cereal or grains/ Elemental semi-solid food* - Fruits - Vegetables - Fats - Proteins
Supplements*	- 400 IU Vitamin D for breast-fed babies - Vitamin D if less than 32 ounces or 1 L formula	- 1 ml/kg/day iron for exclusively breastfed infants	- Talk to your doctor or dietitian	- Talk to your doctor or dietitian	- Talk to your doctor or dietitian

Adapted from: www.gerber.com; www.babycenter.com; www.cdc.gov; www.marchofdimmes.com

* Ask your doctor if these supplements are right for your baby. Recommendations may be country specific and may vary depending on your country.

Table 2. Feeding Texture Ideas

<p>Texture ideas for vegetable or fruit (examples: white potato, sweet potato, carrot, squash, broccoli, cauliflower, apple, pear, peach, blueberry, etc.)</p> <ul style="list-style-type: none">• Thin puree• Thick puree• Mashed with lumps and bumps• Soft cooked for finger foods• Fried to crispy texture
<p>Corn</p> <ul style="list-style-type: none">• Corn meal/flour• Polenta• Corn pancake/cookie (recipe in <i>Food Allergy News Cookbook</i>)• Corn pasta• Corn puffs• Corn Chex[®]• Kix[®]
<p>Additional ingredients that may be used in cooking/baking:</p> <ul style="list-style-type: none">• Salt• Sugar• Safe formula or breast milk• Baking soda• Refined oils (corn, canola, etc.)

Table 3. Additional Feeding Tips

<ul style="list-style-type: none">• Serve individual pureed foods, one at a time, for 5–7 days to observe for signs of intolerance. Start with one teaspoon and gradually increase to four tablespoons per serving.• Ask your doctor which foods should be offered first. Based on your baby’s allergy history, your doctor may feel certain foods are more likely to be problematic. For instance, if your baby had an FPIES reaction to a grain, your doctor may ask you to introduce some fruits and vegetables instead of trying another grain right away.• Be creative with the ingredients that are safe for your child. Many individual foods can be used to create a variety of textures.• When age-appropriate, serve breast milk or safe formula from a cup. Your baby may depend on breast milk or substitute formula to meet nutritional needs longer than his/her peers without allergies. When it comes time to teach cup drinking skills, present the cup with breast milk or formula—not water. Children are creatures of habit and if you present a cup with water or juice first, your child may refuse the cup with breast milk and formula later, and you may have to rely on the bottle much longer than you may want to supply breast milk or formula.
