

# From Breastfeeding to Solid Food: How to Help Parents Navigate the Infant Nutrition Maze

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LECOM Summer Primary Care Conference 2017

## Objectives

- Review normal nutrition from birth to one year
- Review breast feeding and how to encourage
- Discuss the presence of Baby-Friendly Hospital Initiative
- Review normal development in relation to feeding
- Review new feeding recommendations

## Infant Feeding

- Parents ask pediatricians more questions about feeding (how, what to feed) than any other aspect of early child care
- Every baby is different so you have to tailor your advice based on each patient

## Infant Feeding

- Anecdotes
  - Real life vs text book – you never see this more until you have a child or work closely with families
  - Post-partum is a very sensitive time for parents: sleep deprived, responsible for infant. Provide supportive environment, validation, no pressure, help redirect parents from the grips of “parent/mommy guilt”
  - The most important thing is to FEED YOUR BABY

## In Your Office Case #1

- A 30-year old first time mom comes into your office for a “meet and greet” before she delivers. She plans to breastfeed but cannot afford to take too much time off of work, so will return after 8 weeks. She feels guilty about having to return to work so early and is considering formula feeding her infant when she returns to work, which she is also feeling guilty about because she is very aware of “breast is best.” She asks for your advice.

## Infant Feeding

- American Academy of Pediatrics:
  - Recommends breastfeeding as the sole source of nutrition for you baby for about 6 months. When you add solid foods to your baby’s diet, continue breastfeeding until at least 12 months.
    - No water (6months), no juice (>1year) no honey (1year)
- Breast milk is ideal food for newborns and young babies
  - Inexpensive
  - Emotional and physical benefits

## Infant Feeding

- Human milk uniquely tailored to meet almost all of baby's nutritional needs for first 6 months and changes with the babies ages
  - i.e. in first few days, colostrum antibody rich and helps digestive system
- Babies can digest human milk easier than formula
- Studies show breastfed babies have fewer:
  - Allergies, ear infections, GI upset
  - SIDS

## Infant Feeding

- “The most significant inheritance a child will ever receive is the maternal microbiome” Dr. Tow
- Mainly Immunoglobulins A, smaller amounts of G and M
- Breast milk oligosaccharides act as decoys

## Infant Feeding

Highlighted Risks of Not Breastfeeding for Infants:

Outcome	Excess Risk %
Acute Ear infections	100
Eczema	47
Diarrhea and vomiting	178
Hospitalization for lower respiratory tract diseases in the first year	257
Asthma, with family history	67
Asthma, no family history	35
Childhood obesity	32
Type 2 diabetes mellitus	64
Acute lymphocytic leukemia	23
Acute myelogenous leukemia	18
Sudden infant death syndrome	56

## Infant Feeding

- Breastfeeding benefits go beyond infancy
  - Breastfed children lower rates of diabetes, obesity
- Because breastmilk changes with what mom eats, breastfed babies adapt more readily to new foods when introduced
- Uterus contracts and regain pre-pregnancy size faster
- Women who breastfeed have lower rates of certain types of breast and ovarian cancers, heart disease, diabetes

## Infant Feeding

- Several studies childhood development show relationship breastfeeding and intelligence
- Breast fed babies consistently better on standard tests, longer they breastfed, better they did
- More likely to finish high school irrespective of family income, education and standard of living

## Infant Feeding

- Most formulas provide a comparable balance of fat, protein and sugar and supplemented with calcium, iron, C,D,K
- Added docosahexaenoic acid and probiotics
  - Labeling of formula to address non-specific infant issues
- Has slightly higher level of proteins than human milk (1.5g vs 1.1g per 110ml respectively)

## Infant Feeding

- Formula fed infants
  - feeding is controlled by caregiver
  - Bottle is also easier to extract milk from
- Exclusively breastfed infants
  - The infant is in control of milk volume and are more aware of hunger/satiety cues

## Infant Feeding

- Formula fed infants
  - 2.9% (vaginal deliver) 3.5% (c-scnc) lost 10% or more of birth weight after 48hours
- Exclusively breastfed infants
  - 5% (vaginal) 10% (c-scnc) lost 10% or more of birth weight after 48hours
  - Often take more than 2 weeks to return to birth weight
    - Frequent weight checks

## Infant Feeding

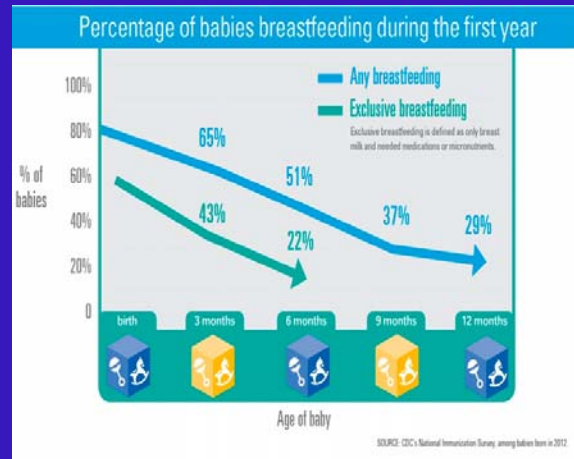
- According to CDC, many mothers start breastfeeding but only 22% of infants are exclusively breastfed for 6 months
  - 80% expect to breastfeed
- 29% experience any breastfeeding in first 12 months
- Goal of Healthy People: by 2020 25.5% exclusively breastfeeding for 6 months and 34.1% breastfeeding in first 12 months

## Infant Feeding

- Critical moments for breastfeeding cessation
  - 2-3 days: pain, lack of sleep, **pain, concern about milk supply**, pain
  - 1 month: concern about milk supply, pain, lack of sleep
  - 2 months: feel like they have the 6-8 weeks of immunity now
  - 3 months: RETURN TO WORK....pumping (this is a full time job) -
- Pain and sore nipples are the main reasons for early cessation of breastfeeding



## Infant Feeding



## Infant Feeding

- Educate you patient what is to be expected and what is normal
- It is normal to worry about milk supply, but with a good latch, normal wet diapers and weight gain, baby is getting enough
- The body produces what the baby needs
- At 3-4 months may notice baby doesn't feed as long, they are more effective at breastfeeding by this age (sometimes half the time)

## Infant Feeding

- Pain
  - Sore nipples occur in 1/3 of mothers
- Proper latch helps avoid pain and trauma
  - Wipe the nose with the nipple downward that will often initiate opening of baby's mouth wide enough to establish "fish mouth" latch on nipple (this makes it sound so easy)
- Avoid non-nutritive sucking with painful nipples, total of 30 minutes is sufficient

## Infant Feeding

- Pain:
  - Poor latch
  - Herpes
  - First few week discomfort
  - Candida
  - Tongue-tied
  - Bleb
  - Eczema
  - Vasospasm
  - Oversupply
  - Mastitis

## Infant Feeding

- hydrogel or soothing pads and lanolin application to nipple
- Most post-partum nipple pain usually improves by day 7-10
- Breast engorgement usually occurs in first few days
  - Ensure good latch to drain breasts
  - Warm compresses prior to breast feeding help
  - Pumping here is an option if latch isn't good, or if latch is good but an "overproducer" sometimes baby can have difficulty with initial latch

## Infant Feeding

- Causes of irreversible low milk production include primary glandular insufficiency (<5% of women), previous breast surgeries/scarring, post-partum hypertension, blood loss
- Reversible causes poor milk supply include poor latch, sleepy at the breast, inadequate milk removal
  - Help reassure parents with office weights, pre and post breastfeed weight in office
  - The more babies feed, the more milk is made

## Infant Feeding

- To help improve breastfeeding rates, patients should seek class before delivery, and reach out to “mentor mothers” (La Leche League International)
- Encourage breastfeeding-friendly office
  - Evaluate early and often in first few weeks
  - Advocate for maternity leave – pumps are covered by most insurance
    - Women who intend to return to work within a year of child’s birth are less likely to initiate breastfeeding
    - Those who work full-time breastfeed shorter

## Infant Feeding

### OFFERING BREASTFEEDING SUPPORT IN YOUR OFFICE IS AS EASY AS 1-2-3

**#1** Train internal staff or provide early referral for breastfeeding management and support. This is also known as extending the Baby-Friendly Hospital Initiative to your office.

**#2** Provide resources for mothers, such as hospital-based drop-in clinics or groups or other mother support groups. It is always a good idea to attend or have one of your staff attend these sites so that you are sure that the advice and any concerns raised are addressed appropriately and in line with general American Academy of Pediatrics recommendations.

**#3** Avoid storing and giving out formula samples in your office. It may seem supportive, but it gives the wrong message about breastfeeding exclusivity. Providing information about pumps, pump rental stations, or hand expression is a better idea.

## Infant Feeding

- Baby-Friendly Hospital Initiative (BFHI) developed in 1991 by the WHO and United Nations Children's Fund to improve breastfeeding rates
- Implemented in 152 countries
- 18% of US births occur in 11% of BFHI facilities
  - Meta-analysis of BFHI increased exclusive breastfeeding by 49% and any breastfeeding by 66%

## Infant Feeding

- Core tenets of BFHI are the Ten Steps to Successful breastfeeding endorsed by AAP
  - Written breastfeeding policy
  - Staff competency assessment
  - Prenatal breastfeeding education
  - Early initiation for latch, skin-to-skin. Kangaroo care, nursing immediately after birth
  - Teaching breastfeeding techniques

## Infant Feeding

- BFHI Ten Steps
  - Limiting non-human milk feedings
  - Rooming-in, including performing milk expression with the newborn nearby
  - Teaching feeding cues
  - Limit pacifier use
  - Post-discharge support

## Infant Feeding

- “Unfortunately, there is now emerging evidence that full compliance with the 10 steps of the initiative may inadvertently be promoting potentially hazardous practices and/or having counterproductive outcomes,” Bass (JAMA Pediatrics October 2016)
  - Step 4 – initiate breastfeeding within 1 hour
    - Reports of sudden unexpected postnatal collapse (SUPC): 400 case reports in literature, mainly occurring during skin-to-skin care

## Infant Feeding

- “Unfortunately, there is now emerging evidence that full compliance with the 10 steps of the initiative may inadvertently be promoting potentially hazardous practices and/or having counterproductive outcomes,” Bass (JAMA Pediatrics October 2016)
  - Step 6&7 – exclusively breastfeeding, 24-hour rooming
    - Doesn’t endorse safe-sleeping practices
  - Step 9 – no pacifiers (pacifier and SIDS)

## Infant Feeding

- What about a little formula supplementation in those early, fatigue-ridden days?
  - Studies show that early formula use helps increase breastfeeding rates by reducing stress among new moms while they wait for milk to come in
  - Fatigue, stress = hinder milk production
  - FEED THE BABY
    - Hypoglycemia
    - Hyperbilirubinemia
    - Hyponatremia

## In Your Office

- A 30-year old first time mom comes into your office for a “meet and greet” before she delivers. She plans to breastfeed but cannot afford to take too much time off of work, so will return after 8 weeks. She feels guilty about having to return to work so early and is considering formula feeding her infant when she returns to work, which she is also feeling guilty about because she is very aware of “breast is best.” She asks for your advice.

## Infant Feeding


- Pump both breasts simultaneously, look at photo of baby
- Pump for 15-20 minutes
- Incorporate the "Massage-Stroke-Shake" (M-S-S) technique
  - Double-pump for 5 to 7 minutes. Stop. Massage both breasts simultaneously in a circular motion similar to a breast self-exam. Stroke both breasts all the way around from the chest wall to the tip of the nipple in a straight line using only your fingertips. Then cup each breast with your hand, lean forward, and gently shake your breasts. Repeat by pumping 3-5 minutes, then M-S-S. Finish by pumping 2-3 minutes.



## Infant Feeding

Freshly Expressed Breastmilk Storage Guidelines (For Healthy Term Babies)				
Room Temperature	Cooler with 3 Frozen Ice Packs	Refrigerator	Freezer	Thawed Breastmilk
4–6 hours at 66–78 °F (19–26 °C)	24 hours at 59 °F (15 °C)	3–8 days at 39 °F or lower (4 °C)	6–12 months 0–4 °F (–18–20 °C)	use within 24 hrs

For more information, or to find a lactation consultant near you, call our Breastfeeding National Network (BNN) at 1-800-TELL YOU or visit [www.medela.com](http://www.medela.com)

**medela** 

References: [www.BreastmilkGuidelines.com](http://www.BreastmilkGuidelines.com) 1047514B 0008

## In Your Office Case #2

- The very well-intentioned grandmother of your patient asks why the 2 month old baby cannot have baby cereal yet. When she was raising her children in the 1970s, she started her children on baby cereal at 8 weeks and then added a pureed fruit or vegetable a week after this. Grandma is worried because her grandchild is only eating breastmilk.

## Solids – Are We There Yet?

- Up until 6 months, only breast or formula (always ask how family mixing formula)
  - No cow milk
  - No water
  - No juice (AAP now recommends waiting until age 1)
  - No cereal in bottle to help baby sleep through the night
  - No solids
  - No honey

## Solids – Are We There Yet?

- Why wait for solids?
  - Until around 6 months old, digestive systems have trouble breaking down starches of other foods
  - Immature digestive system allow whole proteins to be absorbed, set-up for allergies
  - Spoon touches baby tongue, triggers reflex for tongue thrust and prevents swallowing – this reflex disappears at 3-4 months

## Solids – Are We There Yet?

- Can they hold their head up?
  - Demonstrate good head control (tummy time)
- Food watching
  - Stares at you eating, drools, opens mouth
- Able to push food to back of mouth
- Big enough?
  - Double birth weight (usually 4 months) and weigh about 13 pounds or more

## Solids – Are We There Yet?

- What food to start with? It doesn't matter but usually single grain cereals started first (NOT made with water, but made with formula or BM)
  - Iron stores deplete age 6 months, encourage meats EARLY
- Doesn't matter fruits or veggies first, babies are born with preferences
- When first initiate solids, it is more for interaction with texture, spoon, and help with development

## Food Groups

- Cereals = IRON
  - Start with single-grain plain cereal, after 6 months add fruits
  - Start with teaspoons and work way up to half a cup
- Breads
  - Introduction of wheat and potential allergen
  - Wheat-free cereals = rice
  - Wait until older than 4 months and before 7 months prevents gluten allergy

## Food Groups

- Rice Cereals and arsenic
  - U.S. Food and Drug Administration (FDA) proposed a new limit for inorganic arsenic in infant rice cereals of 100 parts per billion
  - This action supported by AAP
  - Infants with medical conditions requiring more frequent exposure to rice cereal, AAP recommends using oatmeal (i.e. GERD)

## Food Groups

- Fruits
  - Ready-to-eat fruits in jars Vitamin C fortified
  - Start single fruit then progress to combos
  - NO JUICE <1 year
- Veggies
  - Homemade baby food = spinach, beets, turnips, carrots, collard greens not good choices due to nitrates, commercially prepared safe
  - Better choices sweet potatoes, green beans, squash
- Meat
  - Introduce earlier than previously advocated for iron benefits-puree

## Food Groups

- Progression
  - Soupy, teaspoon of cereal, over next weeks thicken its consistency (mixed with formula or breast milk)
  - Add fruits/veggies/meats (puree) new food over 3-5 days BUT BREAST/FORMULA STILL ABOUT 80% -100% OF CALORIES FOR FIRST YEAR
    - 6-8 months 1-3 “meals” a day
    - 8-10 months 3 “meals” a day
    - 10-12 months 3 “meals” a day

## Solids – Are We There Yet?

4-7 months	Fruits, single-grain cereals, vegetables
7-10 months (self-feeding: developmentally putting things in their mouth - choking)	Strained, mashed fruits and veggies (banana, applesauce, egg yolk, textured foods i.e. finely chopped meat)
9-12 months	Soft combo foods macaroni, spaghetti, cheese

## Baby Menu by 12 Months – Regular Food with Milk (Cow, BM)

FOOD	SERVINGS
MILK	16-24 ounces
FRUIT AND VEGGIES	4-8 tablespoons
BREAD AND CEREAL	4 servings (1=1/4 slice bread)
MEAT, POULTRY, FISH, EGGS	2 servings (1 tablespoon each)

Typical Portion Sizes and Daily Servings for Children 0-24 months <sup>1,2</sup>				
Age (months)	Food Group	Foods Options (Portion Size)	Servings Per Day	Not Recommended
0-6 months <sup>1</sup>	Milk	Breast milk (preferred) or iron-fortified formula should be your baby's sole source of nutrition for the first six months of life. <sup>2</sup> Work with your pediatrician to track feeding patterns to ensure she is eating enough for growth.		Food or beverage other than breast milk or formula
6-8 months	Milk	Breast milk (preferred) or iron-fortified formula should be a major source of nutrition during this period of your baby's life. <sup>2</sup> Work with your pediatrician to track feeding patterns to ensure she is eating enough for growth.		Cow's milk or milk alternative, sports, energy or soft drinks
	Grain	Iron-fortified infant cereal (2-4 Tbsp.) Crackers (2) or bread (½ slice)	2 servings 1 serving	Popcorn, wheat cereals or other grains
	Fruit or Vegetables	Strained fruit or vegetables (2-3 Tbsp.) 100% fruit juice (0-3 oz.)	1-2 servings 1 serving	Raisins, whole grapes, dried, hard, raw fruits (e.g., apples) Dried, hard, raw vegetables (e.g., green beans)
	Meat	Strained meat (1-2 Tbsp.) Beans (1-2 Tbsp.)	1-2 servings	Uncut stringy meats, hot dog pieces or peanuts/peanut butter
8-12 months	Milk	Breast milk (preferred) or iron-fortified formula should be a major source of nutrition during this period of your baby's life. <sup>2</sup> Work with your pediatrician to track feeding patterns to ensure she is eating enough for growth. Yogurt (½ c.)	1 serving	Cow's milk or milk alternative, sports, energy or soft drinks, tea, lemonade, caffeinated beverages
	Grain	Iron-fortified infant cereal (2-4 Tbsp.), bread (½ slice), crackers (2) or pasta (2-4 Tbsp.)	2 servings	Popcorn or foods with more than 6g of sugar/serving, baked goods
	Fruit or Vegetables	Strained, mashed/finely cut (3-4 Tbsp.) 100% fruit juice (3 oz.)	2-3 servings 1 serving	Raisins, whole grapes, dried, hard, raw fruits or vegetables (e.g., apples, green beans)
	Meat	Soft, pureed, ground or finely chopped meat (3-4 Tbsp.) or beans (½ c.)	2 servings	Uncut stringy meats, hot dog pieces or peanuts/peanut butter
12-24 months	Milk	Whole plain milk <sup>3</sup> (½ c.), cheese (½ oz.) or yogurt (½ c.)	6 servings	Non-fat and sweetened flavored milk
	Grain	Bread (¼-½ slice), bagel/bun (¼-½), ready-to-eat cereal (½-½ c.), cooked cereal (¼-½ c.), or rice/pasta (¼-½ c.)	6 servings	Fried pastries and cereal mixes
	Fruit	Whole fruit (½ small), cooked, canned (in own juice) or chopped (¼-½ c.), or berries (½-½ c.) 100% fruit juice (¼-½ c.)	2-3 servings	Difficult to chew whole fresh fruits, especially those with peels; dried fruits
	Vegetables	Cooked, canned or fresh chopped (¼-½ c.) 100% vegetable juice (¼-½ c.)	2-3 servings	Difficult to chew fresh vegetables, especially those with peels
	Meat	Beef, pork, poultry or fish (1-3 Tbsp.), beans or chopped nuts (2-4 Tbsp.), or egg (1 small)	2 servings	Undercooked meat served in chunks larger than ½-inch pieces; whole nuts

<sup>1</sup>Consult your pediatrician for specific questions on feeding your child (timing, amounts, etc.).  
<sup>2</sup>After 24 months, low-fat milk (1%) can be considered if growth and weight appropriate.

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## In Your Office Case #2

- The very well-intentioned grandmother of your patient asks why the 2 month old baby cannot have baby cereal yet. When she was raising her children in the 1970s, she started her children on baby cereal at 8 weeks and then added a pureed fruit or vegetable a week after this. Grandma is worried because her grandchild is only eating breastmilk.

## In Your Office Case #3

- You are seeing a baby for her 4 month old well child visit. There is no family history of food allergies, but the parents have heard to wait and start peanut butter after she is 2. Counselling for peanut butter introduction have changed now and you review the new recommendations with the family.

## Allergies

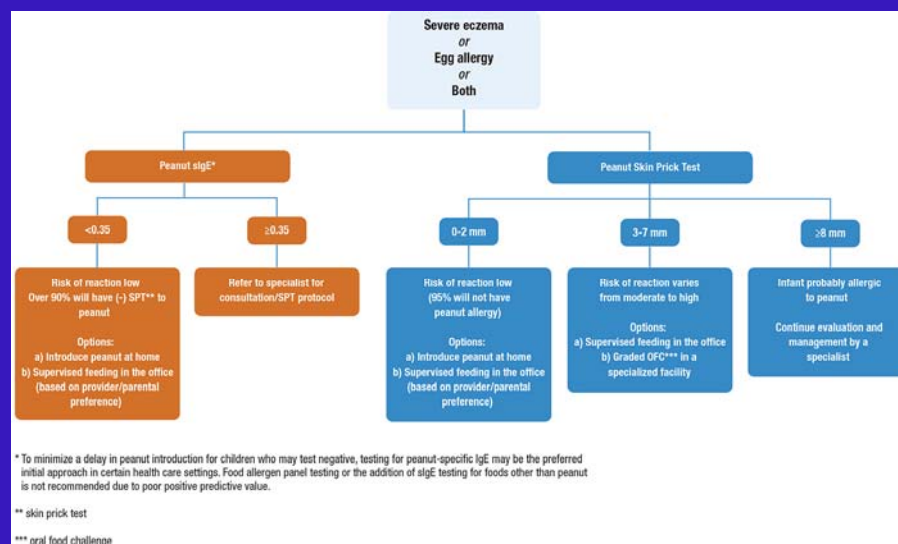
- Peanut Butter
  - Study in the *New England Journal of Medicine* in 2015
    - LEAP
  - Researchers found that babies at high risk of developing a peanut allergy who were fed the equivalent of 4 heaping teaspoons of peanut butter each week, starting at the age of 4 to 11 months, were about 80 percent less likely to develop an allergy to the legume by age 5 than similar kids who avoided peanuts



# Allergies

- GUIDELINES:**  
 Guideline 1 recommends that if your infant has severe eczema, egg allergy, or both (conditions that increase the risk of peanut allergy), he or she should have peanut-containing foods introduced into the diet as early as 4 to 6 months of age. This will reduce the risk of developing peanut allergy.

# Allergies



## Allergies

- Guidelines:
- Guideline 2 suggests that if your infant has mild to moderate eczema, he or she may have peanut-containing foods introduced into the diet around 6 months of age to reduce the risk of developing peanut allergy. However, this should be done with your family's dietary preferences in mind. If peanut-containing foods are not a regular part of your family's diet (and your infant does not have severe eczema, egg allergy, or both), do not feel compelled to introduce peanut at such an early stage.

## Allergies

- Guidelines:
- Guideline 3 suggests that if your infant has no eczema or any food allergy, you can freely introduce peanut-containing foods into his or her diet. This can be done at home in an age-appropriate manner together with other solid foods, keeping in mind your family's dietary routines and preferences as described in Guideline 2.

## In Your Office Case #3

- You are seeing a baby for her 4 month old well child visit. There is no family history of food allergies, but the parents have heard to wait and start peanut butter after she is 2. Counselling for peanut butter introduction have changed now and you review the new recommendations with the family.

## What About the Cup?

- Developmentally at 6 months babies can:
  - Sit without support
  - Bring hand together and pull objects into mouth (baby proof!)
  - Not afraid or wary of new things
  - Less oppositional than 1 year old

## What About the Cup?

- Start with open cup not sippy cup
  - The history of the sippy cup: invented by mechanical engineer and Dad Richard Belanger so that feedings weren't so messy
  - Invented 1981, licensed patent to Playtex...the rest is history

## Feeding 0-12 Months

- Breast is best, but a fed baby trumps all
- No solids until around 6 months – review development for solid introduction
- Doesn't matter what food to start with, many start with cereals IRON RICH is key
- When solids initially introduced, formula and BM still bulk of calories
- Slowly advance variety and texture until 1 year, soft table food with milk and BM added

THANK YOU

