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Starting Solids with the Breastfed Baby
A Common Sense Approach to Complementary Feeding

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Objectives

• Review current infant feeding recommendations, and the role of complementary foods for breastfed infants.
• Explain infant-led complementary feeding for breastfed infants.
• Recognize typical developmental milestones indicating readiness.
• Discuss concerns of complementary feeding, including choking, food allergies, and food safety.

Current Infant Feeding Recommendation

Per AAP policy statement†

- *Exclusive* breastfeeding is recommended for about first 6 months
- Complementary foods introduced while breastfeeding
- Continuation of breastfeeding “through the first year and beyond as more and varied complementary foods are introduced”

†Breastfeeding and the Use of Human Milk, Pediatrics, March 2012, Vol 129(3)
**Food and the Infant Gut**

- Introduction of food impacts the gut flora, transitioning from the microbiota profile of breastfed infant toward that of a formula-fed infant
- At birth, infant’s intestinal tract is permeable, as the tight junctions have not yet closed; introducing a foreign substance (i.e. anything other than breastmilk) prior to closure will lead to inflammation
- By delaying introduction of complementary foods until infant demonstrates readiness, the GI tract is likely ready as well

**Benefits of a Common Sense, Infant Led Approach**

- Continues feeding as an infant led process, just like breastfeeding
- **Does not equate with weaning**, so will not disrupt breastfeeding
- Introduces complementary foods only when infant is developmentally ready
- Follows normal infant developmental milestones
Benefits of a Common Sense, Infant Led Approach

- Develops fine motor skills while learning to eat
- Avoids overfeeding
- Uses common sense, not rules
- Avoids texture aversion
- Infants learn to chew from the start
- Uses whole foods rather than processed foods

Complementing, not Weaning

- Food is the complement, not the replacement, to breastfeeding
- Breastfeeding is not disrupted or discontinued
- Initial intake of solid foods is minimal
- Breastfeeding continues, typically as a significant portion of an infant’s nutrition
Infant B

% of Infant's Intake

0% 20% 40% 60% 80% 100%

Age in Months

Breastfeeding
Complementary Foods

Infant B

% of Infant's Intake

0% 20% 40% 60% 80% 100%

Age in Months

Complementary Foods
Breastfeeding
Complementing, not Weaning

• Again, complementary feeding does not replace breastfeeding
• Amount and variety of complementary food varies
• Breastmilk continues to complete the diet

Infant Led Feeding

• Like infants take the lead with breastfeeding, they are also allowed to lead with solid foods
  • Timing and pace determined by the infant
  • Allows infant to follow satiety cues
  • Avoids overfeeding/overeating
  • Begins lifelong healthy relationship with food
Typical Developmental Milestones

- Gag reflex lessens – 6 months
- Loss of extrusion (tongue thrust) reflex – 6 months
- Sitting
  - With support – 6 months
  - Without support – 9 months
- Reaching for objects
  - Swiping reach – 4 months
  - Purposeful reach with one hand – 6 months
- Grasping objects
  - Raking – 6 months
  - Pincer – 9 months
- Transferring objects from hand to hand – 6 months
Developmental Readiness

• Look for developmental signs of readiness:
  • Interest in food – usually begins first
  • Sitting up with posterior support
  • Reaching for and picking up objects
  • Loss of tongue thrust reflex

Getting Started

• Initial introduction at age 6 months
  • Not about nutrition or calories
  • Just for practice/fun
  • Oral exploration of new flavors and textures

• Bring infants to the table
  • Meals are social
  • Learn by imitation and practice
**Getting Started**

- Use fresh foods when possible
- Choose foods that make sense
  - Typically eaten by the family
  - Seasonal
  - Nutrient-dense
- Select first foods based on texture, i.e. soft enough to easily smash
- Cut to appropriate size (≤1cm)

**Getting Started**

- Don’t rely on rules, just use common sense
- The initial focus is only on learning to eat, so no need to measure or count
- Throw out these old adages
  - “One color at a time”
  - “Vegetables before fruit”
  - “One new food a week”
- Good “starter” foods are typically fruits and vegetables
well cooked, peeled vegetables:  
sweet potato  
squash  
carrots  
potato  

avocado  
banana  

peeled ripe fruit:  
peach  
nectarine  
mango  
pear  

Advance as Tolerated

• Once infants have *learned to self feed*, introduce more variety
  • Increasing texture
  • No “stages” to follow
  • Eat from family meal
  • Foods with multiple ingredients are fine
  • Include iron-rich foods
Important Dietary Minerals

• Iron stores in healthy full-term breastfed infants last approximately 6 months
• Beyond 6 months, infants usually need a dietary source of iron and zinc in addition to breastmilk
  • Include iron-rich foods once infant is eating
  • Iron-rich foods typically contain zinc as well (e.g. meat, seafood, beans)
  • Mixed (non-vegetarian) diets have higher iron bioavailability
  • Increase absorption of dietary iron by also eating foods rich in Vitamin C (ascorbic acid)
• Calcium may decrease absorption

Sources of Iron

<table>
<thead>
<tr>
<th>Heme Iron</th>
<th>Non-Heme Iron</th>
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<tbody>
<tr>
<td>Derived from hemoglobin &amp; myoglobin (animal sources)</td>
<td>Derived from plants (also contained in animal sources)</td>
</tr>
<tr>
<td>meat</td>
<td>lentils</td>
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<tr>
<td>poultry</td>
<td>chickpeas</td>
</tr>
<tr>
<td>fish</td>
<td>spinach &amp; leafy greens</td>
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<tr>
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<td>soybeans/ tofu</td>
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<tr>
<td></td>
<td>molasses</td>
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<tr>
<td></td>
<td>beans</td>
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<td>iron-fortified foods</td>
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</tbody>
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Higher bioavailability
More readily absorbed (15-35%)

Not as well absorbed (2-20%)
### Suggestions for More Foods

- Ground meat
- Fish
- Eggs
- Pasta
- Rice
- Tofu

- Other fruits and veggies
- Soup/stew
- Casserole
- French toast
- Pancakes
- Yogurt

### Use with Caution

- Foods with indigestible parts
- Foods containing seeds
- Fruit with skin (e.g. apples, grapes)
- Legumes with intact hulls (e.g. peas, beans, lentils)
- Grains with hulls (e.g. corn)
- Acidic foods – may cause diaper rash
  - Citrus fruits, tomatoes, pineapple, kiwi
Avoid Choking Hazards

• Peanuts, nuts and seeds
• Whole grapes or cherry tomatoes
• Raw vegetables (e.g. carrots)
• Hot-dog shaped foods cut into rounds
• Chunks of cheese or meat
• Chunks or spoonfuls of peanut or other nut butters
• Popcorn

Gagging, Aspirating, and Choking

• The term “choking” is used loosely to describe all 3 of these physiologic processes

• Gagging is a normal protective reflex triggered by an object in the back of the throat that is too large to swallow
  • Infants have a more sensitive gag reflex
Gagging, Aspirating, and Choking

Aspirating and Choking

- **Aspirating** occurs when food or liquid enters the trachea instead of the esophagus
  - “goes down the wrong pipe”
- **Choking** occurs when an object obstructs the airway, and there will be no coughing or breathing
Gagging, Aspirating, and Choking

- Only choking requires intervention
- Infants should always be supervised while eating
- Avoid choking risk by choosing and offering foods appropriate in size and texture for infant’s age and development
- Caution older siblings

Sensitivity, Intolerance, or Allergy?

Food Reaction
  - Not immune mediated
    - Sensitivity
  - Immune mediated
    - Intolerance
    - IgE-mediated allergy
    - Non-IgE-mediated allergy
Food Sensitivity

- **Food sensitivity**: eating a particular food causes an unpleasant reaction in the body
  - Typically causes gastrointestinal (GI) symptoms such as nausea, gas, abdominal pain, diarrhea
  - Reactions are not necessarily the same with each exposure, and do not always occur with exposure
  - For infants, acidic foods may cause a rash (not hives) on face, hands, or diaper area

Food Intolerance

- **Food intolerance**: symptoms caused by the inability to digest a food
  - Also causes an unpleasant reaction, typically GI symptoms
  - Triggered by a lack of or insufficient amount of a digestive enzyme
  - Lactose intolerance is the most common example
Food Allergy

• Food allergies are immune mediated hypersensitivity reactions in response to dietary proteins
  • IgE-mediated reactions usually occur immediately or soon after exposure
  • Non-IgE-mediated reactions are delayed onset, typically hours after exposure

Food Allergy

• IgE-mediated reactions
  • Can be triggered by smelling, touching, or ingesting a particular food
  • Usually occur within minutes, up to an hour after exposure
  • Histamine release causes symptoms that may include itching, urticaria (hives), angioedema, respiratory distress, and anaphylaxis
  • Chronic IgE-mediated allergy may be a factor in atopic disease, e.g. atopic eczema and asthma, but these conditions usually have multifactorial causes
Food Allergy

- **Non-IgE-mediated reactions**
  - Delayed onset, typically hours after exposure
  - Believed to be T cell mediated
  - Usually manifest symptoms in the GI tract
  - Most common causative dietary proteins are those found in infant formula:
    - Cow’s milk
    - Soy

Allergenic Foods

- The most common allergenic foods
  - cow’s milk  fish
  - eggs        shellfish
  - peanuts     soy
  - tree nuts   wheat

- My advice to parents
  - Use caution if there is family history of food allergies: introduce allergenic foods individually and in small amounts, and observe carefully. Consider referral to allergist.
  - If no family history, may introduce as desired
**Allergenic Foods**

- Remember, infant has already been exposed via breastmilk if mother eats those foods
- Recent studies indicate early exposure to allergenic foods may actually be beneficial in preventing allergies
- Breastfeeding while introducing foods is likely beneficial
  - Reduced risk of developing celiac disease in early childhood if dietary gluten introduced to children under age 2 while continuing to breastfeed†


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**Food Safety: Produce**

Choosing fruits and vegetables: organic or not?

www.ewg.org
Food Safety: Fish

- Fish is nutritious with a texture that makes it an ideal early food; unfortunately some fish contains high levels of mercury
- While total intake is small for infants, there will also be additional low level exposure via breastmilk if mother is eating the same fish
- Choose fish high in Omega-3 fatty acids and low in mercury

Food Safety: Other Concerns

• Avoid foods with potential to cause foodborne illness (www.foodsafety.gov)
  • Raw seafood (sushi)
  • Raw or undercooked meat
  • Unpasteurized milk, cheese, and cider
  • Honey
  • Foods containing raw eggs

Common Myths

• Babies need teeth to eat foods with texture
• Avoid seasoning or spices
• Bigger (or smaller) babies need complementary foods sooner
• Babies will sleep longer once they are eating solid foods
Common Questions from Parents

Q: Should I breastfeed before or after offering food?
A: That’s up to your baby and you. Your baby will let you know what he/she wants.

Q: Why do I see what my baby ate in the diaper?
A: Breastmilk is very quickly digested, so breastfed infants have fast transit through the GI tract.

Q: What should my baby drink?
A: Once your baby is eating food, you may offer water in a cup or sippy cup.

Common Questions from Parents

Q: May I give my baby pureed food anyway?
A: Of course, it is the parents’ decision. I still encourage practice with self feeding, and suggest variation in pureed foods to avoid excess beta carotene.

Q: My baby doesn’t like ____. What should I do?
A: Continuing offering it. Your baby may need to try a food many times before “liking” it.
Summary

• Recommend exclusive breastfeeding for the first 6 months.
• Protect and promote continued breastfeeding as complementary foods introduced.
• Encourage parents to use common sense and an infant led approach to introducing complementary foods.