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 A

![Graph showing breastfeeding and complementary foods over age in months]

- Breastfeeding
- Complementary Foods
Infant A

Infant B

% of Infant’s Intake

Age in Months

Breastfeeding

Complementary Foods

% of Infant’s Intake

Age in Months

Breastfeeding

Complementary Foods
Infant B

- % of Infant’s Intake
- Age in Months

Complementary Foods
Breastfeeding

Infant C

- % of Infant’s Intake
- Age in Months

Breastfeeding
Complementary Foods
Infant C

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

Breastfeeding
Self Feeding

Infant Led

Parent Led

Bottle Feeding
Spoon Feeding
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

He’s sitting up. Or is he? Is he ready? NO!
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>
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<tr>
<th>Heme Iron</th>
<th>Non-Heme Iron</th>
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<tr>
<td>Derived from hemoglobin &amp; myoglobin (animal sources)</td>
<td>Derived from plants (also contained in animal sources)</td>
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<tr>
<td>meat</td>
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<tr>
<td>poultry</td>
<td>chickpeas</td>
</tr>
<tr>
<td>fish</td>
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<tr>
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<tr>
<td></td>
<td>molasses</td>
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<tr>
<td></td>
<td>beans</td>
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<tr>
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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.
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

Intolerance

Immune mediated

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
  - eggs
  - peanuts
  - tree nuts
  - fish
  - shellfish
  - soy
  - 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

- 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: Fish

Food Safety: Other Concerns

• Avoid foods with potential to cause foodborne illness ([www.foodsafety.gov](http://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.