Bringing Baby to the Family Table

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Dietary Guidance

ChooseMyPlate.gov
Schedule an appointment and get your questions answered by an expert dietitian to help gain nutrition know-how.

Let's Talk Nutrition

Want help planning your child’s meals?
Let our Menu Planner do the work for you.
B-24 Project

- Dietary Guidelines 2020
  Include dietary guidance, pregnant women & birth-24 months
- NIH, National Institute of Child Health and Human Development (NICHD)
  - “Evaluation of the evidence base” to support inclusion of infants and children, 0-24 months
  - ID’ed topics for systematic review and for further research
Talk Content

- Recommendations, 0-6 months
- Infants 6-12 months
  - Complementary foods
    - What
    - How
- Curricula
- “Hot Topics”
  - Protein
  - Allergies
Breastfeeding Recommendations

United States
- American Academy of Pediatrics, American Dietetic Association, others...
  6 months exclusive, continued to 1 year, longer as mutually desired

World Health Organization
- 6 months exclusive, continued to 2 years, longer as mutually desired
Breastfeeding Benefits

- Infant
  - Complete nutrition
  - Health
- Mother
  - Health
  - Bonding
- Families
- Society
  - Economic
  - “Green”
Any Breastfeeding

Center for Disease Control and Prevention, National Immunization Survey
http://www.cdc.gov/breastfeeding/data/NIS_data/index.htm
“Culture & Tradition of Breastfeeding”

Earlier: “Mothering the Mother”
- New mothers cared for by other women (family, friends, neighbors)
- Passed on patterns of mothering
- Breastfeeding
  - Culture & tradition
  - Knowledge
  - Role models

Now: Reliance on health professionals

Role for peer counselors

Breast milk is “gold standard”
Formula = modified cow’s milk
- Protein, carbohydrate
- Fortified with nutrients, incl. iron, vitamin D

All nutrition needed for ~first 6 mo., then solid food is needed
NO cow’s milk til 1 year of age
Bottles

• For breast milk and formula only – no cereal!
• Hold baby (don’t prop bottles, put to bed with bottle, let carry bottle = Early Childhood Caries)
• Same for “sippy cups” or other = toddler bottle
Training Cups

For juice, milk, or water

Proper training cups have:
- Weighted bottom
- Two handles
- Snap or screw-on lid with a spout
- No valve on the spout
Flavor Learning

Pregnant women in last trimester, planning to breastfeed

Given water or organic carrot juice (300 ml/day)

- Pregnant: **Carrot**  Breastfeeding: **Water** (CW)
- Pregnant: **Water**  Breastfeeding: **Carrot** (WC)
- Pregnant: **Water**  Breastfeeding: **Water** (WW)

Babies’ responses
Cereal w/ carrot (compared to cereal-plain)

Complementary Foods

- Needed about six months of age
  - Breastmilk/formula inadequate
  - Infant stores depleted
  - Key: iron, zinc, vitamin D, LCPUFA, B12
- Baby developmentally and physiologically ready
- Need increases in types, textures, modes of feeding
Juice

The American Academy of Pediatrics (AAP) recommends that fruit juice not be given to infants under six months of age since it offers no nutritional benefit to babies in this age group. After six months of age, infants may have limited amounts of juice each day. For youngsters older than six months, fruit juice offers no nutritional benefits over whole fruit. Whole fruits also provide fiber and other nutrients. Infants should not be given fruit juice at bedtime, nor as a treatment of dehydration or management of diarrhea. For children ages one to six years old, limit fruit juice consumption to 4 to 6 ounces (120–180 ml) each day.
Age of introduction

- American Academy of Pediatrics
  - Developmental readiness = 4-6 months
  - Exclusive breastfeeding for 6 months
- To consider...?
  - Breastfed vs. formula fed
  - Newer research on allergies
    - Solids introduced while still breastfeeding
    - Window to introduce
Developmental readiness

• Sitting with support
• Head & neck control
• Tongue thrust/gag reflex
• Opening mouth for spoon
• Gumming/chewing
• Also-gut maturation
Reasons for starting solids

- Baby old enough
- HCP recommended
- Baby interested
- Wanted to give something vs. breastmilk or formula
- Baby seemed hungry a lot of time
- Baby sleep longer
- Eating too much formula
- Friend/relative recommendation
- Not enough breastmilk
- Baby not gaining weight (Big baby)

Infant Feeding Practices Study II, Centers for Disease Control and Prevention
Foods

- Meet iron, zinc needs
  - Meat, poultry, fish
  - Fortified cereals, any grain
    (With formula, breast milk)
  - Fruit, veg, dairy

- Any order!
- Any rate!
Textures

- Textures
  - Pureed, fork-mashed, lumpy, minced, chopped...
  - Family foods
    - Softer (well-cooked, ripe)
    - ½ in pieces or less

- Additions
  - No salt, sugar
  - Spices?
Amounts

- Portions
  - Begin with teaspoons, progress to tablespoons
  - Single foods, then add multiple foods/eating occasion

- Frequency
  - 1 meal/day
  - Progress to 3 meals, 2-3 snacks
### Appendix D: Guidelines for Feeding Healthy Infants, Birth to 1 Year Old

*(Note: These are general guidelines for the healthy, full-term infant per day; serving sizes may vary with individual infants.)*

<table>
<thead>
<tr>
<th>Age</th>
<th>Breast Milk or Infant Formula</th>
<th>Grain Products</th>
<th>Juices</th>
<th>Vegetables</th>
<th>Fruits</th>
<th>Protein-Rich Foods</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Birth–4 Months</strong></td>
<td>Breast: 8–12+ feedings</td>
<td>None</td>
<td>None</td>
<td>Plain strained or pureed cooked vegetables (1–2 Tbsp)</td>
<td>Plain strained or pureed fresh or cooked fruits (1–2 Tbsp)</td>
<td>Plain strained or pureed protein-rich foods such as meats, egg yolk, and legumes may be introduced if an additional food source of iron is needed</td>
</tr>
<tr>
<td></td>
<td>Iron-Fortified Infant Formula: 14–42 ounces (~108 kcal/kg body weight)</td>
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<tr>
<td><strong>4–6 Months</strong></td>
<td>Breast: 5 or more feedings</td>
<td>Iron-fortified infant cereals or enriched hot cereals (1–2 Tbsp)</td>
<td>None</td>
<td>Plain strained or pureed cooked vegetables (1–2 Tbsp)</td>
<td>Plain strained or pureed fresh or cooked fruits (1–2 Tbsp)</td>
<td>Plain strained or pureed protein-rich foods such as meats, egg yolk, and legumes may be introduced if an additional food source of iron is needed</td>
</tr>
<tr>
<td></td>
<td>Iron-Fortified Infant Formula: 26–39 ounces (~108 kcal/kg body weight)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>6–8 Months</strong></td>
<td>Breast: 3–5 feedings</td>
<td>Iron-fortified infant cereals or enriched hot cereals (4–6 Tbsp)</td>
<td>100 percent pasteurized fruit or vegetable juice (2–4 ounces)</td>
<td>Plain strained or pureed cooked vegetables (3–4 Tbsp)</td>
<td>Plain strained or pureed fresh or cooked fruits (3–4 Tbsp)</td>
<td>Plain strained or pureed protein-rich foods such as meats, egg yolk, and legumes</td>
</tr>
<tr>
<td></td>
<td>Iron-Fortified Infant Formula: 24–32 ounces (~88 kcal/kg body weight)</td>
<td>Dry toast, small pieces of crackers, or dry breakfast cereals and other grain products (4–6 Tbsp)</td>
<td>* Juice offers no nutritional benefit over whole fruits and vegetables. If offered, it should be in a cup.</td>
<td></td>
<td></td>
<td></td>
</tr>
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<td>Age</td>
<td>Breast Milk or Infant Formula</td>
<td>Grain Products</td>
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</tr>
<tr>
<td>8–12 Months</td>
<td>Breast: 3–4 feedings</td>
<td>Iron-fortified infant cereals or enriched hot cereals (4–6 Tbsp)</td>
<td>100 percent pasteurized fruit or vegetable juice (2–4 ounces)</td>
<td>Plain pureed, mashed, or chopped cooked vegetables (3–4 Tbsp)</td>
<td>Plain pureed, mashed, or chopped cooked fruits (3–4 Tbsp)</td>
<td>Pureed or chopped lean meat, poultry, fish, egg yolk, cheese, yogurt, or mashed legumes (1–3 Tbsp)</td>
</tr>
<tr>
<td>Comments</td>
<td>* By about 12 to 14 months, try to wean entirely off the bottle and onto a cup. * An infant's health care provider may recommend feeding a small amount of sterile water (~4 to 8 ounces per day) in a cup when complementary foods are introduced.</td>
<td>* Examples of other grain products include zwieback, bread, noodles, mashed rice, corn grits, and soft tortilla pieces. * Avoid wheat cereals until 8 months. * Do not add sugar or syrups to cereal. * Never add honey to cereal or any foods. * Avoid foods that may cause choking.</td>
<td>* Avoid feeding soda, fruit punches, ades, and drinks, gelatin water, coffee, or tea. * It is not necessary to add salt, sugar, oil, butter, other fats, or seasonings. * Avoid foods that may cause choking.</td>
<td>* Do not add sugar or syrups to fruits. * Never add honey to fruit or any foods. * Remove seeds and pits from fruits. * Avoid foods that may cause choking.</td>
<td>* Avoid fried meats, gravies, sauces, processed meats (e.g., hot dogs, luncheon meats, bacon, and sausage). * Check carefully for bones (especially in fish). * Do not feed any shellfish, peanut butter, whole eggs, or egg whites before 1 year of age. * Avoid foods that may cause choking.</td>
<td></td>
</tr>
</tbody>
</table>
Safety

- **Choking**
  - \(\leq \frac{1}{2}\) inch pieces
  - **Risky foods**
    - Round and firm foods, large chunks of food, sticky foods, foods hard to chew or gum
    - Whole circle hot dogs, whole grapes, chunks of peanut butter, candy, chewing gum, nuts, seeds, popcorn, raisins

- **Check fish safety**
- **Check water safety**
- **No honey before 1 year**
- **Safe food handling, cleanliness**
Hunger & Satiety

**Signs baby is hungry**
- Fussing and then crying
- Squirming and stretching, clenching fists
- Sucks fist
- “Roots” or turns head for breast or bottle
- Leans forward for food
- Opens mouth for spoon or even reaches for spoon

**Signs baby is full**
- Stops sucking, lets go of breast or bottle nipple
- Turns head away
- Becomes sleepy or falls asleep
- Pushes away bottle or spoon
- Closes mouth
- Loses interest in eating, starts to play
Feeding cues
Division of responsibility

- Parent provides, child decides
  - Parent provides variety of healthy foods, sets healthy eating environment
  - Child decides when and how much to eat
- Concept easier for us than parents!
  - Transition from “on-demand” to schedule
  - Trusting child knows “full”
  - “Cluster cues”
  - Baby temperament
Transition in infant feeding

Breastmilk/formula → “Baby foods” → Family foods

Mothers FGs
- Knowledge: solids foods, cues, environment
- Applicability of guidelines: skepticism/acceptance, exceptions, influence of others
- Role of HCP’s

HCPs FGs
- Sources of information, and conflicting advice
- Use of recommendations
- Early cereal introduction
- Mealtime environments

Olson, Horodynski et al. Matern Child Health J (2010) 14:75-85
Videos

http://www.youtube.com/channel/UCe2YCbPNj2erLN3ySW515MQ
# Feeding Infants and Toddlers Data 2008

<table>
<thead>
<tr>
<th>Percent consuming at least once in a day</th>
<th>Age (mo)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4-5.9</td>
</tr>
<tr>
<td>Any fruit/juice</td>
<td>22</td>
</tr>
<tr>
<td>Any fruit</td>
<td>19</td>
</tr>
<tr>
<td>Baby fruit</td>
<td>17</td>
</tr>
<tr>
<td>Non-baby fruit</td>
<td>2</td>
</tr>
<tr>
<td>100% fruit juice</td>
<td>7</td>
</tr>
</tbody>
</table>

Fresh or frozen (vs. dried/canned)

* 18%
** 37%
*** 54%

Siega-Riz et al. 2010
### Percent consuming at least once in a day

<table>
<thead>
<tr>
<th>Age (mo)</th>
<th>4-5.9</th>
<th>6-8.9</th>
<th>9-11.9</th>
<th>12-14.9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any vegetable</td>
<td>26</td>
<td>63</td>
<td>72</td>
<td>72</td>
</tr>
<tr>
<td>Baby food vegetable</td>
<td>24</td>
<td>51</td>
<td>34</td>
<td>15</td>
</tr>
<tr>
<td>Cooked veg</td>
<td>2</td>
<td>15</td>
<td>45</td>
<td>61</td>
</tr>
<tr>
<td>Raw veg</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Dark green</td>
<td>0</td>
<td>2</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>Deep yellow</td>
<td>21</td>
<td>36</td>
<td>30</td>
<td>24</td>
</tr>
<tr>
<td>Potatoes</td>
<td>1</td>
<td>5</td>
<td>20</td>
<td>32</td>
</tr>
<tr>
<td>Fried potatoes</td>
<td>0</td>
<td>1</td>
<td>6</td>
<td>19</td>
</tr>
<tr>
<td>Other starchy</td>
<td>2</td>
<td>12</td>
<td>13</td>
<td>12</td>
</tr>
<tr>
<td>Other</td>
<td>8</td>
<td>24</td>
<td>29</td>
<td>27</td>
</tr>
</tbody>
</table>

Siega-Riz et al. 2010
Feeding environment

- **Early**
  - Seated (baby seat, lap, high chair)
  - TV off!
  - Caregiver sit with baby, interact

- **Later**
  - Eating family meals at table
  - Social interaction
  - Utensils, sharing, manners
Utensils, bowls, and FINGERS!
Healthy Babies

Randomized, controlled trial in Michigan & Colorado

Nutrition education

- Intervention: Healthy Babies = nutrition, cues, temperament, planning, responsiveness
- Control: Healthy Families = EFNEP curriculum

Participants

- Low income mothers (89% income < $25,000)
- Lower education, single
- AA, Hispanic, White

Data collection

- Times: baseline, 6 mo (n=260) & 12 mo (n=130)
- Maternal responsiveness, feeding practices & style
## Six lesson series

<table>
<thead>
<tr>
<th>Lesson</th>
<th>Goals</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. My Baby’s First Foods</td>
<td>• Parents wait to introduce solid foods until their baby is about six months old.</td>
</tr>
<tr>
<td>2. Feeding My Older Baby</td>
<td>• Parents successfully introduce solid foods to their baby.</td>
</tr>
<tr>
<td>3. What is My Baby Telling Me</td>
<td>• Parents can describe their baby’s basic feeding cues.</td>
</tr>
<tr>
<td>4. Is Your Baby Flexible, Shy or Feisty?</td>
<td>Parents describe:</td>
</tr>
<tr>
<td></td>
<td>• Characteristics of baby’s temperament; and,</td>
</tr>
<tr>
<td></td>
<td>• How understanding their baby’s temperament can help them feed their baby successfully.</td>
</tr>
<tr>
<td>5. Parent Provides, Baby Decides</td>
<td>• Parents learn what food to serve to baby and when to serve them.</td>
</tr>
<tr>
<td></td>
<td>• Parents let their baby decide whether or not to eat and how much to eat.</td>
</tr>
<tr>
<td>6. My Plan for Feeding My Baby</td>
<td>• Parents develop a plan for feeding their baby during the first year of life.</td>
</tr>
</tbody>
</table>
Healthy Babies: Preliminary results

Maternal Knowledge

IFSQ: Responsiveness to Satiation

IFSQ: Restrict Amount
Lesson Plan Five:
Parent Provides, Baby Decides

Getting Ready .................. 3
Teaching the Lesson .......... 5
For Your Information .......... 29

My Plan for Feeding My Baby

Appropriate food consistencies by age

<table>
<thead>
<tr>
<th></th>
<th>Six months</th>
<th>Nine months</th>
<th>One-year-old</th>
</tr>
</thead>
<tbody>
<tr>
<td>baby</td>
<td>pureed baby food fruit</td>
<td>mashed fruit</td>
<td>small pieces of soft fruit</td>
</tr>
<tr>
<td>cereal</td>
<td>baby cereal</td>
<td>oat-O’s cereal</td>
<td>oatmeal with fruit</td>
</tr>
<tr>
<td></td>
<td>formula</td>
<td>yogurt</td>
<td>whole milk</td>
</tr>
<tr>
<td></td>
<td>baby food meat</td>
<td>small pieces of meat</td>
<td>mixed meat dish (e.g. chicken and rice)</td>
</tr>
</tbody>
</table>

Cut all foods for your 6-12 month old baby to ½ inch or smaller so your baby doesn’t choke.
Eating Smart, Being Active

Feeding Your New Baby

Feeding Your Baby Solid Foods

http://www.ext.colostate.edu/esba/
Fact sheets

http://bookstore.msue.msu.edu/

Search: Olson
Where do we end up?!

Family meals with family foods (....and snacks)
Protein

- Cow’s milk formula feeding
  - Protein greater to meet human amino acid requirements
  - Breastfed babies leaner at one year vs. FF infants (not length differences)
- Protein intakes >> than requirements
- ?Increase risk of overweight/obesity?
Allergies

- Rethinking of prevention
  - Exposure in “window” vs. avoidance
  - Role of breastfeeding
- Breastfeeding
  - Exclusive to at least four, possibly six months
  - Solid food introduction with continued breastfeeding
- Foods introduced > 4-6 months; delay not generally beneficial—maybe harmful

American Academy of Allergy, Asthma & Immunology
American Academy of Pediatrics
Questions?