

Appendices

Individual Counseling Guide – Infants

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The information in these Appendices represents data and recommendations for healthy, full-term infants. The data regarding weight gain, urinary output, bowel movements, and daily breastmilk/formula intakes reflects typical amounts for healthy infants and is intended to be used for assessment and counseling purposes, *not* eligibility purposes. For eligibility criteria, refer to the Infant Diet Recall Form (WIC –42) and the risk codes in the Texas Nutrition Risk Manual.

An infant’s dietary and nutritional assessment involves a number of factors: intake, output, hunger and satiety cues, developmental stage, feeding practices, etc. Therefore, WIC may need to consider multiple factors when making assessments. For example, if formula intake appears excessive, it may or may not be a concern. It’s important to consider other factors and use professional judgement to obtain a more complete assessment. Likewise, staff can gain valuable information by looking at data collected over a period of time (i.e., formula intake over a 3-day period, monthly weight-checks, etc.).

Appendix A

Typical Daily Weight Gain for Infants

The ranges in this chart represent the typical daily weight gains for healthy, full-term infants, and are helpful in assessing weight gain over a short period of time. (Note. Risk code 135 of the Texas Nutrition Risk Manual presents *minimal* weight-gain values for eligibility purposes. Be aware that those minimal weight gain values are *lower* than the typical values presented here.)

Age	Typical Daily Weight Gain ¹
Birth–3 months old <i>Newborns generally loose 6 to 8% of their birth weight. This weight should be regained by 10 to 14 days of age.</i>	25–35 grams/day
3–6 months <i>Infants generally double their birth weight by 4 to 5 months of age.</i>	15–21 grams/day
6–12 months <i>Infants generally triple their birth weight by 12 months of age.</i>	10–13 grams/day

To determine average daily weight gain over a number of days, determine the total grams gained during the time period (1 ounce = 28.35 grams). Then divide by the number of days:

$$\text{ounces gained} \times 28.35 \text{ grams} / \text{number of days} = \text{grams gained/day}$$

Example: Zachary is 4-month-old infant. He gained 10 ounces over a 3-week period. So:

$$10 \text{ ounces} \times 28.35 / 21 \text{ days} = 13.5 \text{ grams/day}$$

This is less than the average daily weight gain for a 4-month-old.

¹Adapted from Guo, S., et al., “Reference data on gains in weight and length during the first two years of life” in *Journal of Pediatrics*, Volume 119; 355-362, 1991.

Appendix B

Urinary Output and Bowel Movements for Infants

Breastfed Infants:

	<u>Average wet diapers/day</u> ¹	<u>Average bowel movements/day</u> ²
By 6 days of age.....	6 (soaked*).....	at least 3

The bowel movements of an exclusively breastfed infant generally look like cottage cheese with the color of mustard (although they may be a darker brown or green color), and have a faintly sweet odor. After 6 weeks of age, the number of bowel movements may decrease in some breastfed infants.

*Urine should be pale yellow or clear without a strong smell. Assessing urine output by counting wet diapers can be somewhat subjective depending on type of diapers used (cloth diapers hold less urine), how often parents check and change diapers, etc. Still it can be a helpful assessment tool.

Formula-fed Infants:

	<u>Average bowel movements/day</u> ²
Birth – 3 months	2
6 – 12 months	1–2

The stools of formula-fed infants are darker and more formed than those of breastfed infants, and they have the characteristic odor of the adult stool.

Regarding urine output, formula-fed infants generally have about 6 wet disposable diapers/day by 6 days of age¹. Urine should be pale yellow or clear without a strong smell.

Other Notes:

- In the first few days after birth, infants eliminate the meconium (excrement in the intestines of the fetus) which is sticky and a very dark color (greenish black).
- The literature regarding inadequate stooling varies widely in terms of quantification; this condition is best diagnosed by a pediatrician or other health care provider.

¹Adapted from Texas Nutrition Risk Manual (rev. 9/99), risk code 603.

²Adapted from “Constipation in Infants and Children: Evaluation and Treatment” in *Journal of Pediatric Gastroenterology and Nutrition*, Volume 29; 612-626,1999.

Appendix C

Average Daily Breastmilk/Formula Daily Intakes (0 – 4 months)

These are average 24-hour intakes for healthy, full-term infants. They may not apply to all infants. If parents respond to a healthy infant's hunger and satiety cues, the infant will generally establish his own feeding pattern.

Breastfed Infants (0 – 4 months)¹:

Birth–2 months 8–12+ feedings/24 hours

2 months–4 months 6–10+ feedings/24 hours

Formula-Fed Infants (0 – 4 months)²:

7–8 lbs 17–23 oz (2–4 oz every 2 to 3 hours)

8–10 lbs 21–26 oz (3–5 oz every 3 to 4 hours)

10–12 lbs 24–28 oz (4–6 oz every 3 to 4 hours)

12–16 lbs 29–39 oz (5–8 oz every 3 to 4 hours)

As a general rule, an infant will consume about ½ oz of formula per pound body weight, per feeding, until solid food is established. To help confirm or determine an infant's daily intake, find out from the parent how long a can of formula lasts and compare that to the diet recall.

Infants receiving both breastmilk and formula (0 – 4 months):

To assess the intake of an infant receiving both breastmilk and formula, consider the time spent nursing during the day, as well as the amount of formula taken in per day. If nursing occurs frequently (similar to that of a totally breastfed infant), then formula intake should be relatively low. However, if there are very few nursing sessions, the infant should be taking in a greater amount of formula. It's also important to assess weight gain, number of wet diapers per day, and the parent's awareness of hunger and satiety cues.

¹From Texas Nutrition Risk Manual (rev. 9/99), risk code 418.

²Adapted from Children with Special Health Care Needs: A Community Nutrition Pocket Guide by the Dietetics in Developmental and Psychiatric Disorders and the Pediatric Nutrition Practice Group of the American Dietetic Association and Ross Products Division Abbott Laboratories, p. 15, Table 21, 1997.

Appendix D

Infants' Cues for Hunger and Satiety

An infant has the natural ability to regulate food intake based on hunger, appetite and satiety. Consistently trying to control the amount or timing of feedings may disrupt an infant's ability to control their own food intake, and can lead to either overfeeding or underfeeding.

Often in an effort to control an infant's weight or sleep patterns, parents will try to follow a strict feeding schedule. Instead, parents should pay attention to hunger and satiety cues and allow the infant to establish his own feeding pattern.

Early Hunger cues include:

- rooting reflex (turning head towards nipple),
- sucking on hands or lips,
- small fussing sounds, and
- pre-cry facial grimaces.

Crying is a generally **late cue** from a hungry infant.

Satiety cues include:

- turning head away from nipple or bottle,
- pushing nipple out of mouth,
- closing mouth and sealing lips, and
- showing interest in other things in the room.

Parents may need to wake a **sleepy infant** for feedings, especially if the infant was born premature. They should wake the baby every 3-4 hours for a feeding until the first well-baby check, at about 2 weeks.

Appendix E

Developmental Feeding Cues for Infants		
Age	Developmental Patterns and Skills	Foods to offer
0–4 months	<ul style="list-style-type: none"> - Strong suck/swallow reflex - Tongue thrust reflex - Rooting Reflex - Gag Reflex - Poor control of head, neck and trunk 	Breastmilk or Iron-fortified formula only
4–6 months	<ul style="list-style-type: none"> - Begins to sit with help - Pulls in upper and lower lip as spoon is removed from the mouth - Turns head away when full - Opens mouth for spoon - Can keep most of the cereal in the mouth 	Rice cereal
6–8 months	<ul style="list-style-type: none"> - Sits without help - Starts drinking from a cup with help (some spilling) - Moves food from front to back of mouth - Starts to mash food with gums 	Strained, pureed, or mashed foods
8–12 months	<ul style="list-style-type: none"> - Starts to pick up food with fingers - Drinks from a cup with less spilling - Moves food to sides of mouth and chews - Gradually drinks more from a cup (less from a bottle) 	Finger foods

Appendix F

Helpful Tips for Introducing Solid Foods
<ul style="list-style-type: none"> • When developmentally ready, introduce iron-fortified infant rice cereal, using a spoon. Start with rice cereal since it’s least likely to cause an allergic reaction. • For first cereal feedings: Mix 1–2 teaspoons of cereal with 4 teaspoons of breastmilk or formula (cereal will be thin). If infant refuses cereal, wait a week or two and try again. • After baby learns to move solids to back of mouth, add less milk so that cereal is thicker. Gradually increase cereal thickness and amount. • Introduce one new food at a time. Start with small amounts (1–2 teaspoons), to let the baby experience the new flavor and texture. Then gradually increase the amount. Wait five to seven days between new foods, looking for signs of allergic reaction. Also, introduce mixed foods and juices only after the infant has tried all the foods/juices in the mixture. • Over time, infant should gradually progress to thicker, lumpier foods and chopped foods. • Introducing solid foods too early can interfere with the adequate intake of breastmilk and/or formula, lead to food allergies and increase the risk of choking. Breastmilk and/or iron-fortified infant formula are calorie-dense and offer all the nutrients a young baby needs. Explain to parents that it’s normal for young infants to feed often (including nighttime), as their stomachs are still very small. Also, infants have the natural ability to regulate intake based on hunger, appetite and satiety.

Feeding Guidelines for Infants (0 – 12 months)

Infants should progress to each new feeding stage only after displaying the appropriate developmental feeding cues.

<u>Age</u>	<u>Breastmilk/Formula</u>	<u>Grain Products</u>	<u>Juices</u>	<u>Vegetables</u>	<u>Fruits</u>	<u>Protein Foods</u>
0 – 4 months	See Appendix C for average intakes	None	None	None	None	None
4–6 months	Breastfed: 6–8+ feedings/day Formula fed: 6–8 ounces, four to six times/day (27–49*ounces/day)	1–2 servings/day of iron-fortified infant cereal (total of about 1–8 tablespoons/day)	None (Not until infant can drink from a cup with help, usually at about 6 months)	None	None	None
6–8 months	Breastfed: 4–6 feedings/day Formula fed: 6–8 ounces, three to five times/day (27–32 ounces/day)	2 servings/day of iron-fortified infant cereal (total of about 4–8 tablespoons/day) At about 8 months, can begin trying crackers, small pieces of toast, zwieback, etc.	2–4 ounces/day of infant juices or regular 100% fruit or vegetable juice with vitamin C, only in a cup	1–2 servings/day of plain, cooked vegetables (strained or pureed). Start with small amounts; slowly increase to about 4–8+ tablespoons/day	1–2 servings/day of plain, fresh or cooked fruits (strained or pureed). Start with small amounts; slowly increase to about 4–8+ tablespoons/day	Protein foods may be introduced, such as plain meats (strained or pureed), or tofu. See notes
8–12 months	Breastfed: 4–6 feedings/day Formula fed: 6–8 ounces, three to four times/day (24–32 ounces/day)	1–2 servings/day of iron-fortified infant cereal (total of about 4–8+ tablespoons/ day). Continue iron-fortified infant cereal after 12 months. 2–3 servings/day of other grain products (bread, noodles, mashed rice, soft tortillas, etc.),	2–4 ounces/day of infant juices or regular 100% fruit or vegetable juice with vitamin C, only in a cup	2 servings/day of plain, cooked vegetables (mashed, pureed or chopped), total of about 6–8+ tablespoons/day	2 servings/day of plain, fresh or cooked fruits (mashed, pureed or chopped), (total of about 6–8+ tablespoons/day)	By 12 months, offer a total of about 2–8 tablespoons/day (or 1–2 oz per day), of protein sources such as: - Plain meats (strained, pureed or finely chopped); - Egg <u>yolk</u> (wait until 1 year to offer egg white); - Yogurt and cheese - Mashed beans or peas
Notes	<i>For bottle-fed infants, try to wean entirely off bottle and onto a cup by 12 months.</i> <i>Plain water (4–8 oz/day) is recommended after infant is eating a variety of solid foods.</i> <i>*Some normal, healthy infants may typically take in amounts defined as “excessive” on the infant Diet Recall Form (>40 oz.).</i>	<i>Pre-mixed infant cereal in jars has more sugar and calories and is more expensive than dry, boxed reconstituted infant cereals.</i> <i>Rice cereal is the least likely to cause an allergic reaction. After giving rice cereal, parent can offer oat and barley cereals (at 1 wk. intervals). Wait until 8 months to add wheat cereal (it’s more likely to cause an allergic reaction).</i>	<i>Offer juice only from a cup, not a bottle.</i> <i>Use fruit juice with vitamin C. Choose 100% fruit juice rather than non-fortified fruit drinks or punches.</i> <i>Watch for reactions to citrus, pineapple and tomato juices.</i> <i>Mix juice with iron fortified cereal to increase iron absorption.</i>	<i>No need to add, salt, seasonings, butter, oil, etc.</i> <i>Avoid vegetables that may cause choking: raw vegetable pieces, hard pieces of partially cooked vegetables, corn, etc.</i>	<i>Plain fruit is preferred over fruit desserts and canned fruit in syrup. No need to add sugar or syrups, and never add honey.</i> <i>Remove seeds and pits. Avoid fruits that may cause choking: whole pieces of canned fruit, whole grapes, berries or cherries, uncooked dried fruit, hard pieces of fresh fruit, etc.</i>	<i>Plain commercial baby food meats offer more protein and iron than baby food “mixed dinners.” Parents can mix plain meats with vegetables or fruits for added flavor.</i> <i>Do not give peanut butter until 2 years of age.</i> <i>Do not offer shellfish before 1 year; avoid choking hazards: hot dogs; nuts, seeds, nut butters; tough meat, cheese chunks, etc.</i>

Adapted from *Infant Nutrition and Feeding, A Reference Handbook for Nutrition and Health Counselors in the WIC and CSF Programs*, USDA, FNS, FNS-288, pp. 108-109, 9/93.

Appendix H

Food Lists – Sources of Various Nutrients for Infants

Note: Various foods should be offered according to feeding guidelines (see Appendix G). Parents should strain, puree, mash or chop foods according to the infant's developmental feeding skills. Likewise, It's important to remove seeds, pits, skin, gristle, and bone and avoid potential choking hazards.

<p><u>High Calorie-Dense Foods:</u></p> <ul style="list-style-type: none"> - Yogurt (not low-fat or fat-free) - Cheese - Egg yolks - Meats - Dry beans and peas <p><u>Medium Calorie-Dense Foods:</u></p> <ul style="list-style-type: none"> - Breads - Cereal - Rice - Pasta - Vegetables <p><u>High-Fiber Foods</u></p> <ul style="list-style-type: none"> - Broccoli - Carrots - Cauliflower - Bananas - Blueberries - Dried beans - Peas - Lentils - Strawberries - Whole grain or other breads with ≥ 2 grams fiber/slice 	<p><u>High-Protein Foods</u></p> <ul style="list-style-type: none"> - Cheese - Yogurt - Beef - Chicken - Fish - Pork - Dried beans - Peas - Lentils - Tofu <p><u>Iron-Rich Foods</u></p> <ul style="list-style-type: none"> - Beef - Chicken - Turkey - Pork - Dried beans - Peas - Lentils - Greens - Tofu - Enriched grain products 	<p><u>Vitamin C-Rich Foods</u></p> <ul style="list-style-type: none"> - Most commercially-prepared baby food fruits and juices - Orange juice* - Grapefruit juice* - Vitamin C-fortified juices* - Oranges* - Cantaloupe - Mango - Papaya - Strawberries - Guavas - Cabbage - Green peppers - Fresh tomatoes - Broccoli - Brussels sprouts - Cauliflower 	<p><u>Calcium-Rich Foods</u></p> <ul style="list-style-type: none"> - Yogurt - Hard cheese (Swiss, mozzarella, cheddar) - Processed cheese <p><u>Good Sources of Calcium that are Milk Protein-Free and Lactose-Free</u></p> <ul style="list-style-type: none"> - Calcium-fortified orange juice* or apple juice - Spinach and other greens - Bok choy - Corn tortillas made with lime-processed corn - Broccoli - Rhubarb - Okra - Firm tofu made with calcium sulfate - Various brands of breads, bagels, pancake mixes, etc. Look for brands that have least 10% the DV (daily value) for calcium per serving.
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* Caregivers should delay introducing citrus, pineapple or tomato juices until the infant is 6 months old or older since they cause allergic reactions in some infants.

Appendix I

Tips for Preventing Choking in Infants

1. Introduce solid foods only when a baby is developmentally ready for them. A young infant’s feeding skills are specifically designed for sucking breastmilk (or formula) from a nipple. They have strong rooting, sucking and gag reflexes, a strong tongue thrust reflex, and poor head and neck control. Until they are 4 to 6 months old, most infants aren’t ready for solid foods.

2. Don’t feed food or cereal from a bottle, infant feeding or syringe-type feeder. These techniques allow a slurry of food to quickly flow into the baby’s mouth. This type of force-feeding makes it hard for the infant to swallow properly and increases the chances of choking.

3. Have baby sitting up straight in a comfortable high chair. An infant who is lying down with food or eating while playing, walking or crawling can easily choke.

4. Don’t feed an infant who is crying, laughing or coughing. Also, don’t feed an infant too quickly.

5. Closely supervise any infant or toddler while they’re eating. Learn about giving first aid to a child who is choking and always be prepared for an emergency.

6. Avoid or modify foods that are more likely to cause choking. Consider the size, shape and texture of a food. The following types of foods are more likely to cause choking:

- Small, hard pieces of food such as nuts and seeds, small pieces of raw, hard vegetables are hard to chew so it’s easy for a child to swallow them whole and get the items caught in the airway.
- Larger pieces of food are also difficult to chew and can completely block the airway.
- Spherical or cylindrical foods are more likely to completely block the airway compared to other shapes. Examples include whole grapes, hot dog-shaped products, and round candies.
- Firm, smooth or slick foods can easily slip down the throat (hard candy, whole grapes, nuts, hot dog-like products, large pieces of fruit with skin, whole pieces of canned fruit and raw peas).
- Sticky or tough foods like peanut butter, dried fruit, tough meat and sticky candy may not break apart easily and may be hard to remove from the airway.

Appendix J

Foods to Avoid to Prevent Choking

- Peanuts and other nuts
- Seeds
- Peanut and other nut/seed butters
- Whole kernel corn
- Whole grapes, berries or cherries
- Raisins and other dried fruit
- Whole pieces of canned fruit
- Large chunks of cheese
- Fruit with pits
- Hard pieces of partially cooked vegetables
- Tough meats
- Hard candy
- Chewing gum
- Popcorn
- Hot dogs
- Sausages
- Potato/corn chips
- Fish with bones
- Marshmallows
- Plain wheat germ
- Cookies
- Whole beans
- Raw carrots and other raw vegetables
- Cooked vegetables that are stringy or hard to chew

** While most of these items should be avoided, parents can modify some foods by cutting them into small pieces that are less likely to cause choking.*

Appendix K

Vegan Diets During Infancy

Breastfeeding is recommended until 1 year of age. Parents should avoid early weaning from breastmilk or formula to a vegan diet because vegan diets are often very low in caloric density and high in bulk and volume.

Protein

Breastmilk meets an infant's protein needs during the first 6 months. After 6 months, additional sources of protein should be added to the diet, including:

- legumes
- grains
- soy products such as tofu

Vitamin B-12

Vitamin B-12 is lower in the milk of vegan women who breastfeed. It is usually adequate for the first few months of life. After the first 4 - 6 months, breastfed infants of vegan mothers need a vitamin B-12 supplement if the mother's diet is not supplemented.

Vitamin D

All vegan infants should receive a vitamin D supplement if sun exposure is limited.

Iron

Breastmilk meets an infant's need for iron from birth - 6 months. After 6 months of age, additional iron sources should be added to the diet, such as:

- iron-fortified infant cereal
- whole grains
- dried beans, peas and lentils
- cooking in iron pots and skillets
- mix vitamin C-rich juices with iron-fortified cereal to increase iron absorption.

Calcium

Breastmilk meets an infant's calcium needs during the first 6 months. After 6 months, additional sources of calcium should be added to the diet. Examples include:

- calcium-fortified orange or apple juice
- spinach and other greens
- bok choy
- corn tortillas
- broccoli
- rhubarb
- okra
- figs
- firm tofu made with calcium sulfate
- various brands of breads, bagels, pancake mixes, etc. Look for brands that have least 10% the DV (daily value) for calcium per serving.

Zinc

Breastmilk meets an infant's need for zinc from birth to 6 months. After 6 months of age, additional zinc sources should be added to the diet, such as:

- whole grains
- wheat germ
- dried beans, peas and lentils
- spinach and other greens
- miso

Appendix L

Citations for Staff Resources

Breastfeeding Kardex: Guidance for Counseling the Breastfeeding Mom, Office of the Maryland WIC Program, 1998. 410-767-5242.

The Breastfeeding Answerbook, La Leche League International, Revised Edition, January 1997. 847-519-9585 or go to: www.lalecheleague.org.

Powers and Moore's Food-Medication Interactions, 11th ed., Zaneta N. Pronsky, MS, RD, FADA, Published by Food-Medication Interactions, December, 2000. For information, call 800-746-2324 or go to www.foodmedinteractions.com.

Bright Futures in Practice: Nutrition, Story, Mary, Holt, K., Sofka, D, eds. Arlington, VA: National Center for Education in Maternal and Child Health, 2000. For information, call (888) 434-4MCH or go to www.nmchc.org/html/cf/catalog.cfm.

Appendices K and L



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