California Food Guide

Life Cycle: Normal Infant Feeding (0-12 months)

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What's New?

- Breastfeeding may protect against childhood obesity.
- The American Academy of Pediatrics targets prevention of vitamin D deficiency and sets new guidelines for vitamin D intake for breastfed babies.
- Though infant formula is now widely supplemented with docosahexaenoic acid (DHA) and arachidonic acid (ARA), these supplemental long-chain polyunsaturated fatty acids (LCPUFAs) may not be associated with sustained long-term developmental effects for term and preterm infants.[1, 2, 3]
- The American Academy of Pediatrics recommends no introduction of juice for infants less than six months of age and to limit juice to no more than 2oz./day by cup after six months of age.[4]

Public Health Implications

Healthy People 2010 Objective16-19:[5] The United States 2010 target for increasing the proportion of mothers who breastfeed their babies is 75 percent during the early postpartum period, 50 percent at six months, and 25 percent at one year.

- In 2004, 40.5 percent of women in California reported the intent to exclusively breastfeed their infants when discharged from the hospital after delivery.[6] In 2004, 83.9 percent of women in California reported the intent to provide any breastfeeding to their infants when discharged from the hospital after delivery.[6]

Healthy People 2010 Objective 19-4:[5] The 2010 target of reducing growth retardation among low-income children under age five years is 5 percent.

- In 2004, the prevalence of short stature among low-income children under the age of 5 years living in California was 5.1 percent.[7]

Healthy People 2010 Objective 19-12:[5] The 2010 target for reducing iron deficiency among young children and females of childbearing age is 5 percent for ages 1-2 years of age.

- In 2004, the California anemia prevalence for low-income children under the age of 5 years was 14.0 percent.[7]

Healthy People 2010 Objective 19-3a:[5] The 2010 target for reducing the proportion of children who are overweight or obese is 5 percent for ages 6-11.

- In 2004, the California prevalence for overweight for ages 5-11 years was 22.3 percent.[7]

Definition

Definition of Infant Feeding

Infant feeding is the feeding of a child from birth to one year of age. This section promotes "normal" infant feeding, which is defined as breastfeeding for at least the first year of life and introduction of iron-rich complementary foods around six months of life. For this reason, breastfeeding is the focus of infant feeding and the recommendations that follow.

There is overwhelming scientific evidence that human breast milk is the optimal food for human infants. Numerous professional organizations actively promote breastfeeding including the American Academy of Pediatrics,[8, 9] the American College of Obstetrics and Gynecologists,[10] the American Academy of Family Physicians,[11] Obstetrics and Neonatal Nurses,[12] the American Dietetic Association,[13] the U.S. Department of Health and Human Services,[14] and the American Public Health Association.[15]

Benefits of Breastfeeding

Exclusive breastfeeding during the first six months of life is the most important nutrition intervention a mother can do to improve the immediate and long-term health of her infant (see Tables 1 and 2).

Table 1: Quality of Human Milk[16]

- Human milk is nutritionally complete and provides the nutrients that infants need in the first six months of life.
- Human milk contains a variety of enzymes, proteins, hormones, and hormone-like substances that are not found in infant formula. These bioactive factors support necessary functions in the newborn infant, such as gastrointestinal maturation and immunity to infections.
- Fatty acids found in human milk benefit infant cognitive and neurological development, including a possible increase in intelligence quotient (IQ).

Breast milk contains bioactive substances that optimize the immune system, decrease infections, promote growth of optimal gut flora, and changes over time to meet the specific biological needs of the human infant. Because there is no measuring or preparation of breast milk, issues of over or under dilution, hygienic preparation, and overfeeding are eliminated. There is growing evidence that some of the major chronic diseases, such as obesity, cancer, diabetes, and heart disease faced by Americans as adults can be positively impacted by exclusively breastfeeding in the first six months of life.[15] As more research is being completed on the positive impacts of breastfeeding, the role of professionals and families encouraging and sustaining breastfeeding is clearly an essential support.

Extended breastfeeding reduces the risk of overweight among preschool children.[17] Since obese children are at risk for becoming obese adults, breastfeeding may play a critical role in reducing the prevalence of cardiovascular disease and other adult diseases related to obesity.[9, 18, 19, 20]

Health care plans save money, as well as provide improved care, by supporting and promoting breastfeeding.[21] In a 1995 study to determine the excess cost of health care services for three illnesses (lower respiratory tract illnesses, otitis media, and gastrointestinal illness) in formula-fed infants in the first year of life, adjusting for potential confounders, it was determined that additional health care services cost the managed care health system between $331 and $475 per never-breastfed infant.

Lastly but as important, the act of breastfeeding promotes maternal-infant bonding, which enhances maternal attentiveness and overall parenting.

Table 2: Benefits of Breastfeeding[9, 16, 18, 19, 20, 21, 22]

Benefits of breastfeeding for the infant include:

- Lowered incidence of diarrhea, lower respiratory illnesses, ear infections, and bacterial infections including bacteremia, meningitis, and urinary tract infections
- Lowered incidence of some allergies and infant botulism
- Lowered incidence of Sudden Infant Death syndrome
- No alteration of gut flora
- Shorter gut transit time
- Decreased incidence of “baby-bottle tooth decay” or dental caries in infants.
- Possible decreased incidence of obesity
- Better maternal-infant harmony
- Decreased incidence of some chronic diseases such as diabetes, inflammatory bowel diseases and cancer
- Optimal nutritional composition for central nervous system development

Burden

Consequences of inappropriate infant nutrition in California’s children under the age of five include short stature, iron deficiency anemia, and overweight. These consequences may continue beyond childhood and in particular affect females of childbearing age. Poor nutrition in infancy is one of the primary causes of infant growth retardation and paradoxically excessive infant weight acceleration. Early and persistent iron deficiency anemia is associated with negative developmental impacts in cognitive and motor areas. If it becomes medically necessary to feed an infant formula, the formula should be fortified with iron.[8] See the chapter on Iron Deficiency Anemia for iron-rich food for infants.

Incidence and Prevalence

In California, the 2004 initiation rate of "any" breastfeeding, as reported on the Newborn Screening Test Form, exceeds the Healthy People 2010 Objective16-19[5] of 75 percent. For exclusive breastfeeding initiation rates, the goal of 75 percent is not met by any race or ethnicity (see Table 3). 2004 breastfeeding rates for Asian ethnicity vary substantially when analyzed by ethnic subgroup.[23] Within Asian ethnicity 'any' in-hospital breastfeeding rates range from 54.5 percent (Laotian) to 93.1 percent (Japanese) and 'exclusive' breastfeeding rates range from 17.7 percent (Cambodian) to 61.2 percent (Japanese). Of the nine Asian ethnicity subgroups analyzed, six exceeded the HP2010 goal of 75 percent for 'any' breastfeeding. Japanese and Asian Indian groups have the highest rates of 'any' (93.1 and 92.4) and 'exclusive' (61.2, 57.9) breastfeeding rates, respectively. Southeast Asian ethnic subgroups (Cambodian, Laotian and Vietnamese) have the lowest rates of 'any' and 'exclusive' breastfeeding (any= 59.9 percent, 54.5 percent, 71.2 percent) (exclusive= 17.7 percent, 21.9 percent, 18.2 percent), respectively.

Table 3: California In-Hospital "Any" Breastfeeding Initiation Trend as Reported on the Newborn Screening Test Form: 1992-2004[a, b]

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
African American	50.4%	52%	54.1%	55.2%	58.2%	59.5%	62.5%	63.7%	64.6%	67.1%	67.4%	68.6%	70.1%
American Indian	62.9%	67.2%	66.9%	65.8%	66.9%	72.6%	73.4%	77.5%	73.5%	77.2%	76.4%	77.2%	76.6%
Asian	58.5%	59.9%	63.3%	65.2%	67.9%	71.8%	75.7%	78.5%	78.8%	80.6%	82.3%	82.8%	83.9%
Latino	71.8%	73.5%	74.9%	75.1%	76.6%	78.6%	80.4%	80.8%	81.9%	82.7%	83.6%	83.3%	83.6%
Pacific Islander	53.9%	52.6%	58.5%	59.3%	61.4%	63.8%	66.1%	65.5%	65.6%	68.5%	70.8%	69.5%	68.3%
White	79.2%	79.8%	80%	80.6%	82%	83.3%	84.9%	85.3%	86.6%	87%	86.9%	87.2%	87.2%
Multiple Race/Other	69.4%	70.5%	72.6%	74.4%	75.6%	78%	80.9%	81.2%	82.9%	83.5%	83.7%	83.6%	83.8%
TOTAL	71.9%	73.1%	74.2%	74.7%	76.4%	78.3%	80.3%	81%	82%	82.9%	83.5%	83.6%	83.9%

[a] Data Source: Newborn Screening Database, Genetic Disease Branch, California Department of Health Services, 1992-2004.
[b] There were 536,446 births in 2004 (Feeding type was known in 521,559 births, Unknown: 2.8 percent).

Breastfeeding rates reported in the Maternal and Infant Health Assessment are generally lower at two months duration as indicated in Table 4.

Table 4: Breastfeeding at Two Months Duration as reported in the Maternal Infant Health Assessment by Race: 2004 [a, b, c]

Race/Ethnicity	% Any Breastfeeding	% Exclusive Breastfeeding
African American	56.9%	31.6%
Asian/Pacific Islander	76.6%	42.3%
Latina	66.4%	36.6%
White, non-Hispanic	72.8%	52.9%
TOTAL	**69.1%**	**42.2%**

[a] Data Source: Maternal Infant Health Assessment, Maternal and Child Health Branch, California Department of Health Services.
[b] All percents were weighted to represent all California women.
[c] 3544 respondents

Feeding Trends/Nutrient Patterns

A 2004 national report, Feeding Infants and Toddler Study (FITS), which addresses the nutrient intakes of infants and children between 4-24 months of age indicates some positive feeding patterns and some negative feeding trends.[24, 25]

Positive patterns:

- Infants who are infant formula fed were primarily fed iron-fortified formulas, hence ensuring positive iron status.
- Most infants were introduced to complementary foods at 4-6 months.
- It is now rare to see the inappropriate early introduction of unmodified whole cow's milk to infants less than six months of age.
- Most infants receive adequate nutrients and are at negligible risk for nutrient deficiency.

Negative patterns:

- Breastfeeding rates still do not meet the Healthy People 2010 goals.
- Twenty-three percent of the infants exceeded mean energy intakes in the second half of infancy.
- About half of 7-8 month olds consume some type of dessert, sweet or sweetened beverage and this percentage increases as their age increases.
- French fries are one of the three most common vegetables consumed by infants 9-11 months of age and by 15-18 months, French fries are the most common vegetable.

The California initiation rate of "any" breastfeeding as reported on the Newborn Screening Test Form has increased from 71.9 percent to 83.9 percent between 1992 and 2004. African Americans, who went from 50.4 percent to 70.1 percent, and Asian, who went from 58.5 percent to 83.9 percent, saw the largest increases (see Table 3). The California initiation rate of "exclusive" breastfeeding remained fairly constant

between 1992 and 2004, though there were fluctuations by race or ethnicity (see Table 5).

Table 5: California In-Hospital "Exclusive" Breastfeeding Initiation Trend as Reported on the Newborn Screening Test Form: 1992-2004[a, b]

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
African American	24.9%	26.7%	28.6%	28.1%	29.5%	30.3%	31.3%	30.9%	30.3%	30.6%	30.4%	30.2%	30.5%
American Indian	37.1%	47.5%	48.4%	44.2%	47.6%	49.9%	51.2%	51.1%	50.2%	52.3%	47.7%	48.7%	45.9%
Asian	28.8%	30.3%	32.8%	34%	35.3%	37.6%	39.4%	38.5%	38.1%	39.6%	40.4%	39.3%	40%
Latino	29.8%	31.4%	33.4%	31.7%	30.7%	31.9%	32.1%	31.4%	30.7%	30.1%	29.6%	29.1%	29%
Pacific islander	30.5%	25.5%	28.6%	28.6%	30%	31.9%	30.9%	30%	30.5%	29.1%	32.6%	29.6%	27.4%
White	58.3%	60%	60.1%	61.5%	62.3%	62.9%	63.7%	61.9%	63.5%	64.1%	63.7%	62.7%	61.8%
Multiple Race/Other	44%	46.8%	49%	51.6%	51.8%	53.6%	54.2%	52.9%	53.4%	53.9%	52.7%	52.1%	51.3%
TOTAL	40.3%	41.5%	42.9%	42.2%	41.8%	42.8%	43.5%	42.9%	42.6%	42.2%	41.8%	41.2%	40.5%

[a] Data Source: Newborn Screening Database, Genetic Disease Branch, California Department of Health Services, 1992-2004.
[b] There were 536,446 births in 2004 (Feeding type was known in 521,559 Births, Unknown: 2.8%).

Dietary Recommendations

Breastfeeding

The 2005 policy statement from the American Academy of Pediatrics, "Breastfeeding and the Use of Human Milk," strongly recommends breastfeeding for all infants. The policy includes the following: "Human milk is species-specific, and all substitute feeding preparations differ markedly from it, making human milk uniquely superior for infant feeding." "In addition, human milk fed premature infants receive significant benefits with respect to host protection and improved developmental outcomes compared with formula-fed premature infants." Note that fortification of breast milk is typically recommended for premature infants who weigh less than 1,800 gms at birth.[3] Exclusive breastfeeding is complete and appropriate nutrition, sufficient to support optimal growth and development for approximately the first six months after birth, except for vitamin D, which is needed in early infancy.[8] See Table 11 for recommendations on vitamin and mineral supplementation. Health care professionals need to provide consistent and appropriate support to assist mothers in initiating and maintaining breastfeeding. They can assist mothers by:

- Encouraging early initiation;
- Encouraging frequent breastfeeding to ensure an adequate milk production and appropriate infant growth;
- Avoiding supplementation during the first six months; and,
- Timely introduction of appropriate complementary foods at around six months of age.

Mothers need support to avoid early weaning to formula or complementary foods. Infants weaned before 12 months of age should not receive cow's milk feedings but should receive iron-fortified infant formula. Gradual introduction of iron-enriched complementary foods in the second half of the first year should complement the breast milk diet.[7, 8] It is recommended that breastfeeding begin within the first hour after birth, continue exclusively for around six months then continue for at least 12 months, and thereafter for as long as mutually desired by mother and child.[26] The California Breastfeeding Promotion Committee's vision is that breastfeeding will be the norm in California for at least the first year of life and preferably longer.[16]

Infant Formula

Table 6 identifies five indications for nourishing infants with formula. Infant formula should be iron-fortified and given in the first 12 months. After 12 months, whole cow's milk is appropriate.

Table 6: Five Indications for the Use of Infant Formula[9]

1) As a substitute for human milk in infants when breast milk is medically contraindicated, such as classic galactosemia, maternal active untreated tuberculosis, and when contraindicated medication or metabolites are in the breast milk.
2) When breastfeeding is medically contraindicated for the mother.
3) As a supplement to support the infant's nutrition while the mother seeks consultation with a lactation specialist to correct problems of low milk supply, inadequate or inappropriate suck and milk transfer or while other medical or non-medical concerns are being corrected. (The occasions for long-term supplementation of the breastfed baby should be rare and include a medical exam for the mother and infant. Most infants who are allowed to self regulate feedings will thrive on human milk.)
4) When the caregiver does not include the biological mother, such as adoption and foster care.
5) As a substitute or supplement for human milk in infants whose mothers, after receiving breastfeeding education and support, choose not to breastfeed or who do not breastfeed exclusively.

When providing infant formula, the American Academy of Pediatrics does not recommend the use of soy-based formulas for:[27]

1. Preterm infants with birth weight less than 1,800 grams or infants born with intrauterine growth restriction. Because these infants are high-risk nutritionally due to depressed growth and organ function, there are three primary reasons for not using soy-based formulas with preterm infants: decreased achievement of growth rates with lower albumin levels, reduced bone mineralization with increased osteopenia, and aluminum toxic effects as a result of reduced renal function.

2. Preventing infantile colic or food allergies. The routine use of isolated soy protein-based formula has no proven value in the prevention or management of infantile colic or in the prevention of atopic disease in healthy or high-risk infants.
3. Infants with cow's milk protein-induced enterocolitis or enteropathy.

However, soy-based infant formula may be an appropriate choice for an infant of a mother who is on a vegetarian diet and is not exclusively breastfeeding.

Commercial infant formulas are available in three forms: ready-to-feed, concentrated liquid, and powder. Directions for the correct preparation of infant formula are included on the label and should be followed. If concerned about the safety of the water supply, refer to **Other Fluids in Infant Feeding** section.

Infant formula manufacturers now supplement the vast majority of infant formula with long chain polyunsaturated fatty acids (LCPUFAs), because of differences in visual acuity and IQ seen between breastfed infants and formula fed infants. The essential fatty acids, alpha linolenic acid (ALA) and linoleic acid (LA) are precursors of LCPUFAs: docosahexaenoic acid (DHA) and arachidonic acid (ARA). These essential or precursor fatty acids historically were contained in infant formula but levels of LCPUFAs were low in infant formula. Conversely, breast milk contains higher amounts of LCPUFAs as well as essential fatty acids. Babies fed breast milk have demonstrated positive visual improvements and higher IQ when compared to infants fed formula.

Two questions have been raised: 1) Are LCPUFAs essential in infancy and 2) are infant formulas supplemented with LCPUFAs improving visual acuity and IQ more than unsupplemented infant formula? Current study results differ and are inconclusive regarding the questions of essential nutrient need and the effects on visual acuity and intellectual development for both term and preterm infants fed LCPUFA supplemented infant formula. The Cochrane Review recently concluded there is not enough evidence to show a long-term benefit of LCPUFA supplementation, but that supplementation is safe for both preterm and term infants. Additionally, for preterm infants, LCPUFA supplementation does not significantly influence their growth.[1, 2]

The type of infant formula used will affect stool frequency, color, and consistency. If infant formula is indicated, parents should be educated on the wide range of normal infant stooling patterns, as well as the increased incidence of feeding intolerance such as crying, spitting up, and gas.[28]

When bottle feeding, it is important to replicate the act of breastfeeding by providing skin-to-skin contact, frequent caregiver-infant contact, and attending to infant hunger cues. Below are some do's and don'ts that promote caregiver-infant bonding when an infant is bottle-fed (see Table 7).

Table 7: Watchfulness when Bottle Feeding

• **DO** hold and cuddle the infant comfortably and securely during feeding. Make sure the head and neck are supported. Hold the head slightly higher than the body. • **DO** alternate sides so the baby looks towards the caregiver in both directions. • **DO** provide skin-to-skin contact between caregiver and baby. Allow the infant to hear the caregiver's heartbeat by holding infant close to chest. • **DO** feed according to an infant's hunger and satiety cues such as lip smacking, slowed sucking, turning away and increased distractibility. • **DO NOT** prop the bottle in the infant's mouth or put the infant to bed with a bottle.

Introducing Complementary Foods

The exact timing for introducing complementary foods should be individually determined. According to the American Academy of Pediatrics, water, juice, and other foods are unnecessary for infants in the first six months.[8] The introduction of complementary foods should take into account the developmental stage and nutritional status of the infant,[9] coexisting medical conditions, social factors, cultural, ethnic, and religious food preferences of the family, financial considerations, and/or any other environmental factors. The optimal timing for the introduction of complementary foods is not well defined. Contrary to many mother's beliefs that early introduction of complementary foods is necessary, most infants do not need any foods other than breast milk or iron-fortified infant formula prior to six months. Mothers may mistakenly associate early introduction of complementary foods with increased satiety, improved sleep patterns or developmental advancement.

At six months of age, iron-fortified complementary foods should be introduced to meet the increased nutrient needs of the infant, which are no longer completely met by breast milk or infant formula.[8, 9]

Feeding guidance should be family-based and adhere to the AAP infant feeding recommendations.[9] The first year of life is the time when habits and preferences are beginning to be formed, and it is important to foster healthy eating habits early. Parental and caregiver feeding beliefs and practices directly affect the quality and quantity of their infant's nutrition intake. When parents and caregivers respond to infant cues, they will tend to feed their infant appropriately. Parents and caregivers frequently need education to:

1) Understand the normal feeding progression of the developing child.
2) Building trust by establishing a healthy feeding relationship.
3) Meet the nutritional needs of growth and prevent future chronic diseases.

Some effective parental and caregiver practices include:

- Having nutritious foods readily available.
- Establishing regular mealtimes and eat together.
- Feeding according to age appropriate level.
- Feeding when infant wants to eat; ending the feeding when the infant is ready.
- Creating a supportive atmosphere for enjoyable eating.[29]

For detailed information on developmental stages and feeding recommendations for healthy full-term infants, refer to Table 8. Developmental delays in infant feeding skills due to medical conditions, prematurity, multiple hospitalizations, low birth weight, depression, failure to thrive, neuromuscular delay, physical and emotional abuse, and/or not having oral feeding for extended periods of time, might necessitate a delay in the introduction of complementary foods (see Table 9) and/or modifications in food texture and nutritional density. In these situations, medical management is indicated.

The introduction of complementary foods and liquids other than breast milk, infant formula or water should be determined by the infant's development and nutrient needs. Infants who are introduced to complementary foods too early or before they are developmentally ready may choke on the food, consume excessive calories, develop a feeding aversion, and/or consume less than the appropriate amount of breast milk or infant formula thereby compromising their nutrient intake.

Infants who are fed complementary foods too late or after they are developmentally ready, may not consume an adequate variety and/or amount of complementary food to meet their caloric and other nutritional needs and thereby compromise growth and nutrient status, particularly iron status. Furthermore, infants may develop negative feeding behaviors, such as, rejecting age appropriate foods and textures, delaying independent eating skills, and resisting a mealtime routine.

Table 8 identifies appropriate feeding recommendations according to developmental stages of healthy infants. By matching an infant's development with an appropriate feeding approach, infants and caregivers experience feeding in a positive way and equally enjoy the feeding experience. Mealtime should be a social and pleasant family activity, not a solitary "shovel food quickly into the baby" experience. Parents can avoid food battles by offering new interesting options. At the same time, food, especially desserts, should not be used as a "reward."

Table 8 also lists specific foods, which are based on an infant's nutritional needs and developmental readiness, as well as, health and safety concerns. For instance, infants should not be given foods that can precipitate choking, such as raw carrots and whole grapes.

Table 8: Feeding Recommendations for Healthy Full Term Infants According to Developmental Stage and Nutrient Needs[29-34]

Developmental Stage	Approximate Age	Feeding Recommendations to Meet Nutrient Needs
• Rooting reflex will gradually diminish • Sucks and swallows liquids • May push food out with tongue	Birth to 6 months	• Exclusive breastfeeding until about 6 months of age. • If not breastfeeding, use iron fortified infant formula. Watch for infant's cues of satiety. • Feed when the infant shows early signs of hunger, note: crying is a late sign of hunger. • Breastfeed about 10-12 times in 24 hours, including some cluster feedings (on-demand feeding). • No complementary foods at this time. • No other fluids such as water, tea, and juice.
• Sits with support • Holds head steady • Keeps food in mouth and swallows it	6 months	• Continue to breastfeed or provide iron-fortified infant formula on demand. Breast milk or infant formula is still the primary source of nutrients. • Introduce complementary foods. New foods can be introduced every 2-4 days. The order of foods is not critical, although high iron foods are recommended. Introduce a small amount (1 to 2 tsp.) of a new food once or twice per day. (Remember to be patient and pleasantly offer new foods; you are creating a positive new experience). • 2-3 small meals per day, with snacks optional. • Feed with a spoon in a seated position • Plain iron fortified infant cereal. Cereal can be mixed with breast milk or infant formula. • A strainer, blender, or baby food grinder can be used to make baby food. • Cooked vegetables and soft fruits should be strained or pureed. • Meat, chicken, eggs, or cooked beans should be strained or pureed; tofu should be mashed. • **DO NOT** feed large predatory fish, such as shark and swordfish. • **DO NOT** put cereal or other foods in the bottle. • **DO NOT** force feed or extend feeding time beyond a half hour. • **DO NOT** feed too much complementary foods, for instance no more than one half cup of complementary food at a sitting.
• Grasps and holds onto things • Sits with ease and without support • Begins to chew • Uses a cup with help •May self feed finger foods.	7 to 8 months foods	• Continue to breastfeed or provide iron-fortified infant formula by cup. • Continue to offer a variety of new soft foods. • Start teaching how to drink water from a small cup. • If desired, offer 100% fruit juice **in a cup**. Limit to 2 ounces of diluted fruit juice (dilute with equal parts of water) per day. • Encourage and explore self-feeding by using soft foods for finger feeding. • **Limit** adding sugar, salt or spices to food. • **DO NOT** force feed or extend feeding time beyond a half hour.

		• **DO NOT** leave child alone during feeding. • Avoid foods in a form that may cause choking (i.e., items that have a shape and/or consistency that may cause them to become lodged in the trachea, such as whole nuts, whole grapes, pieces of hot dog, popcorn, raw vegetables, whole or in pieces).
• Takes a bite of food • Self feeds finger foods • Uses a cup without help or with minimal help	8 to 10 Months	• Continue to breastfeed or provide iron-fortified infant formula. • Continue to offer a variety of new foods. • Provide soft, baby size pieces of complementary foods for self-feeding. • Finger foods such as soft cheese, unsalted crackers or small pieces of tortilla, tofu, or toasted whole grain or white breads. Avoid breads with nuts or large seeds. • Avoid foods in a form that may cause choking (i.e., items that have a shape and/or consistency that may cause them to become lodged in the trachea, such as whole nuts, whole grapes, and raw carrots, whole or in pieces). • For families with a history of atopic disease, because of concern for allergies, **NO** eggs until 2 years of age; and no peanuts, nuts, and fish until 3 years of age.
• Starts to use a spoon to self feed	10 to 12 Months	• Continue to breastfeed or provide iron-fortified infant formula. Start giving fluids in a cup. • Provide 3-4 meals per day, with snacks to meet nutritional needs. • Provide small pieces of cooked or soft table foods. • Begin to structure feeding times with family members to create mealtime socialization. • **Avoid** excessive use of sweets, salty, and fatty foods.
• Uses a spoon without help • Begins to use a fork	1 year old	• Continue to breastfeed. Offer all other liquids in a cup. • If bottle feeding, complete transition from bottle to cup. • Provide 3-4 meals per day, with snacks. • Provide whole milk, offer 2-4 ounces in a cup. When accustomed to whole milk, offer 4 ounces in a cup, 4 times a day with meals or snacks. Do not exceed 24 ounces per day.

Sources: See reference citations as listed in the table title above.

Food Sensitivity

Major types of adverse reactions to food include food hypersensitivity (allergy) and food intolerance. A food hypersensitivity is an immunologic reaction resulting from the ingestion of a food or food additive. Food intolerance is an abnormal physiologic response to an ingested food or food additive.[8]

Food hypersensitivity or intolerance may cause any of the following symptoms: diarrhea, vomiting, coughing and wheezing, respiratory symptoms, ear infections, abdominal pain, gas, hives, skin rashes and less commonly systemic reactions (anaphylactic shock, failure to thrive). Food allergies are most commonly associated

with consumption of cow's milk, whole eggs (or egg white), wheat, tree nuts, finfish and shellfish, legumes, and peanuts.[8]

The following prevention guidelines for at risk infants are: (1) no maternal dietary restrictions during pregnancy; (2) exclusive breastfeeding for approximately six months of life or use of a hypoallergenic infant formula if breastfeeding is not possible or supplementation is required; (3) delay introduction of complementary foods until after approximately six months of age; and (4) delay introduction of cow's milk products until one year of age; eggs until two years; and peanuts, nuts, and fish until three years of age.[35, 36] Caregivers should stop feeding any food that causes an adverse reaction and should consult their health care provider immediately.

Other Fluids in Infant Feeding

Supplementary fluids are not needed in healthy exclusively breastfed infants or infant formula fed infants[9] (see Table 9). Young breastfed infants who receive supplementary fluids have a lower intake of breast milk than if they are exclusively breastfed and are also more likely to be breastfed for shorter periods. In addition, supplementary fluids, such as fruit juice may be linked to excessive bottle use and increased risk of dental caries. Cup use, which can be started around six months of age, is the preferred feeding method if supplementary fluids are provided.

Fluoride supplementation to prevent dental caries should be based on the amount of fluoride in the drinking water consumed by the breastfeeding mother or in the preparation of infant formula. Supplementary fluoride should not be provided during the first 6 months of life to reduce the risk of enamel fluorosis. Supplementation is needed when the fluoride concentration in drinking water is <0.3-0.6 ppm.[9] To check the status of local water fluoridation refer to the CDHS Division of Drinking Water and Environmental Management website: http://www.dhs.ca.gov/ps/ddwem/Fluoridation/Fluoridetable2002.PDF.

Water safety should be taken into consideration when choosing to use powdered or concentrated infant formula, which requires water in its preparation. Contaminants such as harmful microorganisms, lead, nitrates and copper are potential health hazards.[8] If water is boiled to kill microorganisms, it should be boiled for at least one minute. A covered top should be used to avoid concentrating contaminants and minerals. If the safety of the water supply is questionable, caregivers should contact their local health department or the U.S. Environmental Protection Agency (EPA) Safe Drinking Water Hotline at 1-800-426-4791.

Table 9: Fluids During Infant Feeding[4, 8, 37, 38]

Fluids	Cautions during Infant Feeding
Water	• Healthy infants do not require plain water added to their diet in the first 6 months of life. Infants in hot climates lose water by perspiring. Exclusively breastfed infants can meet their water requirements from breast milk alone even in hot, dry, or humid climates. • Water and electrolyte needs may be increased during some medical circumstances such as vomiting or diarrhea. In this case, a medical provider should medically manage the infant. Breast milk helps prevent dehydration through periods of vomiting and diarrhea and should not be considered "milk" when an infant is to stop taking "milk products" (i.e. infant formula, cow's milk, cheese, etc.) **Water intoxication as well as malnutrition may occur if infants are fed excessive amounts of water or if infant formula is prepared improperly by over diluting.**
Teas	Caregivers in some cultures may offer water and/or herbal teas to young infants, frequently from the first week of life, in the belief that these fluids will relieve pain associated with colic and earache, prevent and treat colds and constipation, soothe fretfulness, and quench thirst. Teas (herbal or others) are not recommended for any infants because certain herbs may be dangerous and they replace nutritious foods. The March of Dimes does not recommend the use of herbal supplements by pregnant women, infants, and children because the safety and effectiveness of many herbs have not been demonstrated. Herbal and other tea use may point to parental concerns about underlying conditions that need to be addressed by the health care practitioner.
Fruit Juice	Fruit juice is not a necessary component of infant feeding; however, diluted 100% fruit juice may be introduced between 6 and 7 months, when the infant can drink from a cup. If fruit juices are given to infants after six months, limit the volume to 2 ounces/day of juice. Dilute fruit juice with an equal amount of water. Macronutrient imbalances are associated with excessive fruit juice or other excessive simple carbohydrate consumption and may lead to overweight, diarrhea, poor weight gain, failure to thrive, and early childhood caries.
Cow or goat milk, chocolate milk, cocoa, coffee, Gatorade®, Kool-Aid®, soft drinks, or sweetened fruit drinks	These are NOT appropriate beverages to offer to infants.

Sources: See reference citations as listed in the table title above.

Micronutrient Recommendations

Table 10 provides micronutrient recommendations for selected nutrients for infants in two age categories: 0-6 months and 7-12 months of age. Nutrient needs generally increase as the infant gets older because their nutrient needs increase with accelerated growth. Note the difference between nutrient needs of the 0-6 month vs. the 7-12 month infant. The specific values below are obtained from the most current scientific publication from the Food and Nutrition Board, Institute of Medicine, National Academy of Sciences (NAS). The NAS has updated and expanded the Recommended Dietary Allowances (RDA), which are now referred to as Dietary Reference Intakes (DRIs). When sufficient evidence is not available to determine an RDA or DRI, a reference intake, Adequate Intake (AI) is provided as a recommended intake for individuals. For infants this is based on adequate intakes of healthy breast fed infants. This level of intake should reduce the risk of developing a negative functional outcome. The AI may not meet requirements for clinical conditions or medical diseases.

Table 10:Selected Vitamin and Mineral Adequate Intakes[a] for Infants[b,39]

Age (mo.)	Calcium (mg/d)	Phosphorous (mg/d)	Magnesium (mg/d)	Vitamin D (μg/d)	Fluoride (mg/d)	Thiamin (mg/d)	Riboflavin (mg/d)
0-6	210	100	30	5	0.01	0.2	0.3
7-12	270	275	75	5	0.5	0.3	0.4

Age (mo.)	Niacin (mg/d)	Vitamin B_6 (mg/d)	Folate (μg/d)	Vitamin K (μg/d)	Vitamin B_{12} (mcg/d)	Pantothenic Acid (mg/d)	Biotin (μg/d)	Choline (mg/d)
0-6	2	0.1	65	2	0.4	1.7	5	125
7-12	4	0.3	80	2.5	0.5	1.8	6	150

[a] For healthy breastfeed infants, the Adequate Intakes (AI) is the mean intake and is a goal for individual intake. The AI is believed to cover the needs of all individuals in an age group, but lack of data or uncertainty in the data prevent being able to specify with confidence the percentage of infants covered by this intake.

[b] Healthy infants do not normally require supplements, with the exceptions listed in Table 12. Infants with special health care needs, which include chronic medical conditions, may require additional supplements.

Source: Food and Nutrition Board, Institute of Medicine, National Academy of Sciences *Dietary Reference Intakes: Recommended Levels for Individual Intake*. Revised 1998.

Table 11: Vitamin and Mineral Supplement Recommendations for Healthy Full-Term Infants from Birth through One Year of Age[8, 9]

The following nutrients require routine supplementation of all infants.

Nutrient	Age	Dosage	Special Instructions
Vitamin K	Birth	0.5 to 1.0 mg	Vitamin K is usually given as a single intramuscular dose after the first feeding is completed and within the first 6 hours of life for prophylaxis against hemorrhagic disease of the newborn.
Vitamin D		5 μg/d	Diets of breastfed infants should be supplemented with vitamin D, unless consuming 500 mL per day of vitamin D-fortified infant formula.[37] It is recommended by the American Academy of

			Pediatrics that: • All infants, including those who are exclusively breastfed, have a minimum intake of 200 IU of vitamin D per day beginning during the first 2 months of life. • Premature infants receive a multivitamin supplement that includes vitamin D. Iron supplementation may also be indicated. • Exclusively breastfed, full-term infants living in climates with reduced sunlight, especially in winter, or who are not taken outside, and darker skinned infants have been noted to be at a higher risk for rickets.
Fluoride	+6 mo.	0.25 mg/d	Fluoride supplementation is recommended after 6 months of age where the water supply is not adequately fluoridated (0.3 ppm fluoride). Please note the dosage of fluoride can vary with the concentration of fluoride in the drinking water and the age of the child. The AAP states that where the water is adequately treated with fluoride, the breastfed infant should not be supplemented with fluoride. The AAP endorses and accepts as its policy the Recommendations for Using Fluoride to Prevent and Control Dental Caries in the US.
Vitamin B_{12}		0.3 to 0.5 μg/d	Vitamin B_{12} supplementation is recommended for infants whose breastfeeding mothers eat a vegan diet and do not take vitamin B_{12} supplements.

Sources: See reference citations as listed in the table title above.

Infants Breastfed by Mothers Who Are Vegetarian:
The following recommendations pertain to feeding an infant of a mother on a vegetarian diet:

- Breastfeed infants for at least 12 months.
- According to the American Academy of Pediatrics, the diets of all breastfed infants should be supplemented with 200 International Units (IU) per day of vitamin D during the first two months of life, unless consuming 500 mL per day of vitamin D-fortified infant formula.[40]
- Mothers who are total vegetarians (vegan) and breastfeed should consult with their health care providers about consuming a vitamin B_{12} supplement in a food or pill form.
- Complementary foods should be introduced with special attention to providing calorically dense foods so the increased bulk of a vegetarian diet does not interfere with adequate consumption of energy, protein, and other essential nutrients. Adding additional fat sources may be needed in order to provide sufficient energy and to create satiation.

Total vegetarian (vegan) and other vegetarian practices, such as lacto-ovo vegetarianism, are not the same. Total vegetarian dietary practice is less common and more restrictive. Without proper dietary planning, there is increased potential for significant nutritional deficiencies during accelerated growth, such as infancy. Both the vegan and vegetarian infant should be evaluated by their health care providers for adequacy of nutrients associated with growth such as protein, B12, vitamin D, iron, zinc,

and calcium intake in order to prevent childhood nutrition disorders such as anemia, growth delays, and poor bone mineralization.[41]

Honey
Honey, including that used in cooked or baked products, should never be fed to infants. Honey may be contaminated with Clostridium botulinum spores. **When consumed by an infant, these bacterial spores can grow in the intestinal tract and produce a toxin, resulting in the life-threatening paralytic illness, infant botulism**.[42]

Food Insecure Households
Food insecure households especially benefit from ready access to breast milk, no need for preparation, no refrigeration or equipment, and the low cost of breast milk. For caregivers who are not breastfeeding and who experience difficulty in purchasing adequate amounts of infant formula, referrals should be made to community food assistance resources, such as WIC, food banks, the public health department, or a pediatric dietitian.

Barriers to Implementation/Myths

Barriers to Breastfeeding[16]

- Lack of basic knowledge about breastfeeding coupled with the lack of role models or access to mother-to-mother support groups leave many new mothers with no one to turn to for advice and support during an important transitional time.
- Hospital policies such as separation of mother and baby, gifts of free infant formula, early discharge, inadequate follow-up and support in the early days of breastfeeding have been shown to shorten the duration of breastfeeding.
- Lack of workplace and community friendly breastfeeding environments, in spite of California Lactation Accommodation Law (Assembly Bill 1025).
- Very few health care professionals have received the training (knowledge or clinical skills) needed to support and assist women and their infants with breastfeeding basics.
- Limited maternity leave and lack of workplace feeding or pumping facilities are common barriers faced by working mothers.
- Lack of support from one’s peers and family members has an even greater impact on the decision to breastfeed than advice from health care providers, with one of the greatest influences often being a woman’s partner.
- Embarrassment, lack of confidence, lack of desire, poor previous breastfeeding experience, fear of change in lifestyle, or concerns about their physical appearance, dietary or other health practices, such as smoking and drinking inhibit some women from breastfeeding.

Opportunities for Improvement

Breastfeeding is encouraged and supported for all infants in California.

- Support breastfeeding as the norm in California.
- Counsel women during their pregnancy, along with family members, on appropriate infant feeding practices including the risks of infant formula. Before discharge from hospitals, postpartum women and their families should be provided the following: culturally appropriate information and referrals that operate round the clock, such as mother-to-mother support; lactation consultants; WIC agencies and appropriate referrals for providers that prescribe durable medical equipment for overcoming any problems that may arise. In addition, there should be access to after-hours and weekend support, when necessary.
- All California perinatal and pediatric health care providers should be trained with current information about policies, procedures, and clinical skills that support lactation success as well as other appropriate infant feeding practices.
- Worksites in California should be encouraged to be supportive of breastfeeding by providing employee time and a safe, clean place to pump and store breast milk.

Resources/Web Sites

Academy of Breastfeeding Medicine
ABM Executive Office
191 Clarksville Road
Princeton Junction, NJ 08550
Toll free: 1-877-836-9947 ext. 25
Local/International: (609) 799-6327
Fax: (609) 799-7032
Email: abm@bfmed.org
http://www.bfmed.org/

American Academy of Pediatrics (AAP)
National Headquarters
141 Northwest Point Boulevard
Elk Grove Village, IL 60007-1098
(847) 434-4000
http://www.aap.org/

Best Start
4809 E. Busch Blvd., Suite 104
Tampa, FL 33617
Toll free: (800) 277-4975
Fax: (813) 971-2280
Email: beststart@beststartinc.org
http://www.beststartinc.org

Breastfeeding and Human Lactation Study Center
University of Rochester School of Medicine and Dentistry
Department of Pediatrics, Box 777
Rochester, NY 14642
Telephone: (585) 275-0088
Fax: (585) 461-3614

Centers for Disease Control and Prevention (CDC)
(800) 311-3435
http://www.cdc.gov/

Ellyn Satter Associates
4226 Mandan Crescent, Madison, WI 53715
Phone: 608-271-7976, 800-808-7976
Fax: 866-724-1631
Email: info@ellynsatter.com

Food and Nutrition Information Center, Agricultural Research Service, USDA
National Agriculture Library, Room 105
10301 Baltimore Ave.
Beltsville, MD 20705
Phone: (301) 504-5719
Fax: (301) 504-6409
Email: fnic@nal.usda.gov
http://www.nal.usda.gov/fnic

Healthy Mothers, Healthy Babies Coalition (HMHB)
121 North Washington Street Suite 300
Alexandria, VA 22314
Phone: (703) 836-6110
Fax: (703) 836-3470
http://www.hmhb.org/

Human Milk Banking Association of North America, Inc
1500 Sunday Drive, Suite 102
Raleigh, NC 27607
http://www.hmbana.org/

Institute of Medicine (IOM)
500 Fifth Street, NW
Washington, D.C. 20001
Phone: (202) 334-2352
Fax: (202) 334-1412
http://www.iom.edu/

International Food Information Council
1100 Connecticut Avenue, NW Suite 430
Washington, D.C. 20036
Phone: (202) 296-6540
Fax: (202) 296-6547
http://www.ific.org/

International Lactation Consultant Association
1500 Sunday Drive, Suite 102
Raleigh, NC 27607
Phone: (919) 861-5577
Fax (919) 787-4916
E-mail: info@ilca.org
http://www.ilca.org/

Lactation Institute
16430 Ventura Boulevard Suite 303
Encino, CA 91436
Phone: (818) 995-1913
Fax: (818) 995-0634
http://www.lactationinstitute.org

Lactation Training Program, UCLA Extension
UCLA Extension
Department of Humanities, Sciences, Social Sciences, and Health Sciences
10995 Le Conte Avenue, Room 711
Los Angeles, CA 90024
Phone: (310) 825-8423
Email: hlthsci@uclaextension.edu
http://www.uclaextension.edu/

Lactation Training Program
UCSD Extension- Health Care and Behavioral Sciences
9500 Gilman Drive, Dept. 0170E
La Jolla, Ca 92093-0170
Phone: (858) 964-1010
www.extension.ucsd.edu/programs

La Leche League International
1400 N. Meacham Road
Schaumburg, IL 60173-4808
Phone: (847) 519-7730
http://www.lalecheleague.org

National Network for Child Care
Iowa State University Extension

1094 LeBaron Hall
Ames, IA 50001
http://www.nncc.org/homepage.html

HRSA Information Center
Health Resources and Services Administration
U.S. Department of Health and Human Services
Parklawn Building
5600 Fishers Lane
Rockville, Maryland 20857
http://www.ask.hrsa.gov/

Promotion for Mother's Milk, Inc.
1133 Broadway, Suite 706
New York, NY 10010
http://www.promom.org/

San Diego Breastfeeding Coalition
c/o Children's Hospital and Health Center
3020 Children's Way, MC 5073
San Diego, CA 92123-4282
Toll free: 1-800-371-MILK
Email: sdcbc@breastfeeding.org
http://www.breastfeeding.org

U.S. Breastfeeding Committee (USBC)
2025 M Street, NW, Suite 800,
Washington, D.C. 20036
Phone: (202) 367-1132
Email:info@usbreastfeeding.org
http://www.usbreastfeeding.org/

Wellstart International
P.O. Box 80877
San Diego, CA 92138-0877
Phone: (619) 295-5192
Email: info@wellstart.org

World Health Organization (WHO)
Department of Child and Adolescent Health and Development (CAH)
Avenue Appia 20, CH-1211 Geneva 27, Switzerland
Phone: (+00 41 22) 791 21 11
Fax: (+00 41 22) 791 48 53
Email: cah@who.int
http://www.who.int/child-adolescent-health/NUTRITION/complementary.htm
http://www.who.int/child-adolescent-health/New_Publications/NUTRITION/guiding_principles.pdf

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References

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1. Simmer K, Patole S. Longchain polyunsaturated fatty acid supplementation in preterm infants. *The Cochrane Database of Systematic Reviews*. Chichester, UK: John Wiley & Sons, Ltd. The Cochrane Collaboration; 2005:Issue 3.

2. Simmer K. Longchain polyunsaturated fatty acid supplementation in infants born at term. *The Cochrane Database of Systematic Reviews*. Chichester, UK: John Wiley & Sons, Ltd. The Cochrane Collaboration; 2005:Issue 3.

3. Schanler RJ. The use of human milk for premature infants. *Pediatr Clin North Am*. 2001;48:207–219.

4. American Academy of Pediatrics, Committee on Nutrition. The use and misuse of fruit juice in pediatrics. *Pediatrics*. 2001;107(5):1210-1213.

5. US Department of Health and Human Services. *Healthy People 2010* (Conference Edition, in Two Volumes). Washington, DC: January 2000.

6. Data Source: Newborn Screening Database. Genetic Disease Branch, California Department of Health Services.

7. Children's Medical Services (CMS) Branch, PedNSS Annual Reports for Calendar Year 2004, CHDP Information Notice 05-D. http://www.dhs.ca.gov/pcfh/cms/onlinearchive/pdf/chdp/informationnotices/2005/chdpin05d/contents.htm

8. American Academy of Pediatrics, Committee on Nutrition. *Pediatric Nutrition Handbook Fifth Edition*. Elk Grove Village, IL: American Academy of Pediatrics; 2004.

9. American Academy of Pediatrics, Section on Breastfeeding. Breastfeeding and the use of human milk. *Pediatrics*. 2005;115:496-506.

10. American College of Obstetricians and Gynecologists and Committees on Health Care for Underserved Women and Obstetric Practice. *Breastfeeding: Maternal and Infant Aspects.* ACOG Educational Bulletin. Queenan, J. T. Washington, DC: The American College of Obstetricians and Gynecologists; 2000.258:1-15.

11. The American Academy of Family Physicians. *Family Physicians Supporting Breastfeeding: Breastfeeding Position Paper 2002*. The American Academy of Family Physicians. Compendium of AAFP positions on selected health issues. Kansas City, MO: The American Academy of Physicians; 2002. Available at http://www.aafp.org/policy.xml. Accessed February 9, 2006.

12. Association of Women's Health, Obstetric, and Neonatal Nurses. Position Statements – Issue: Breastfeeding. Approved by the AWHONN Board, June 1999. Available at http://www.awhonn.org/awhonn/?pg=875-4730-7240. Accessed February 9, 2006.

13. American Dietetic Association. Position of the American Dietetic Association: Promoting and Supporting Breastfeeding. *J Am Diet Assoc*. 2005;105:810-818.

14. US Department of Health and Human Services. *HHS Blueprint for Action on Breastfeeding*. Washington, DC: US Department of Health and Human Services, Office on Women's Health; 2000.

15. American Public Health Association Resolution No. 200114: *APHA Supports the Health and Human Services Blueprint for Action on Breastfeeding* (2001). APHA Public Policy Statements, 1948 to present, cumulative. Available at http://www.apha.org/legislative/policy/policysearch/. Accessed February 9, 2006.

16. *Breastfeeding: Investing in California's Future*. Breastfeeding Promotion Committee Report to the California Department of Health Services, Primary Care and Family Health; 1996.

17. Rüdiger VK, Berthold K, Thorsten S, et al. Breastfeeding and obesity: cross sectional study. *BMJ*. 1999;319:147-50.

18. Dewey KG. Is breastfeeding protective against child obesity? *J Hum Lact.* 2003; 19(1):9-18.

19. Dietz WH. Breastfeeding may help prevent childhood overweight. *JAMA.* 2001; 285(19):2506-7.

20. Grummer-Strawn LM, Mei Z. Does breastfeeding protect against childhood overweight? Analysis of longitudinal data from the Centers for Disease Control and Prevention Pediatric Nutrition Surveillance system. *Pediatrics*. 2004;113(2):81-6.

21. Ball TM, Wright AL. Health care costs of formula-feeding in the first year of life. *Pediatrics*. 1999;103(4 Pt 2):870-6.

22. Weimer JP. *The Economic Benefits of Breastfeeding, a Review and Analysis.* Food and Rural Economics Division, Economic Research Services, US Department of Agriculture; 2001 Mar. Food Assistance and Nutrition Research Report No. 13.

23. Newborn Screening Database, Genetic Disease Branch, California Department of Health Services, 2004.

24. Devaney B, Ziegler P, Pac S, Karwe V, Barr S. Nutrient intakes of infants and toddlers. *J Am Diet Assoc*. 2004;104(1 Suppl 1):S14-S21.

25. Fox MK, Pac S, Devaney B, Jankowski L. Feeding infant and toddler study: what foods are infants and toddlers eating? *J Am Diet Assoc*. 2004;104(1 Suppl 1):S22-S30.

26. Philipp BL, Chantry CJ, Howard CR. The Academy of Breastfeeding Medicine Protocol Committee. *Clinical Protocol Number 7: Model Breastfeeding Policy*. 2/20/04. Available at http://www.bfmed.org/. Accessed February 9, 2006.

27. American Academy of Pediatrics, Committee on Nutrition. Soy protein-based formulas: Recommendations for use in infant feeding. *Pediatrics*. 1998;01(1):48-153.

28. University of California Cooperative Extension Department of Nutrition, Davis. *Stool Characteristics of Young Infants Fed Different Formulas or Breast Milk*. Maternal and Infant Nutrition Briefs;September/October 1995.

29. Satter E. *How To Get Your Kid to Eat…But Not Too Much: From Birth to Adolescence.* Palo Alto, CA: Bull Publishing Company;1987.

30. Butte N, Cobb K, Dwyer J, et al. The start healthy feeding guidelines for infants and toddlers. *J Am Diet Assoc.* 2004 Mar;104(3):442-454.

31. Pac S, McMahon K, Ripple M, et al. Development of the start healthy feeding guidelines for infants and toddlers. *J Am Diet Assoc.* 2004 Mar;104(3):455-462.

32. Pan American Health Organization/World Health Organization. *Guiding Principles for Complementary Feeding of the Breastfed Child.* Washington DC:PAHO;2003.

33. American Academy of Pediatrics. Section on Breastfeeding. Breastfeeding and the Use of Human Milk. *Pediatrics.* 2005;115:496-506.

34. Environmental Health Investigations Branch, Topic:Fish. Available at: http://www.ehib.org/cma/topic.jsp?topic_key=8. Accessed February 9, 2006.

35. American Academy of Pediatrics. Hypoallergenic infant formulas. *Pediatrics*. 2000;106(2):346-348.

36. Collier S, Fulhan J, Duggan C. Nutrition for the pediatric office: update on vitamins, infant feeding and food allergies. *Curr Pediatr*. 2004;16:314-320.

37. Mattison D. Herbal supplements: their safety, a concern for health care providers. Available at http://search.marchofdimes.com/cgi-bin/MsmGo.exe?grab_id=7&EXTRA_ARG=GRAB_ID%3D270%00%26PAGE_ID%3D14420224%00%26HIWORD%3DHerbal%2BSUPPLEMENT%2BSUPPLEMENTAL%2BSU&host_id=42&page_id=3804416&query=Herbal+SUPPLEMENTs+their+safety&hiword=their+THEIRS+SAFET+SUPPLEMENTING+Herbal+SUPPLEMENT+safety+SUPPLEMENTAL+SUPPLEMENTATION+SUPPLEMENTED+SUPPLEMENTs+. Accessed February 9, 2006.

38. World Health Organization, Division of Child Health and Development. *Breastfeeding and the Use of Water and Teas*. Update;1991:9.

39. Food and Nutrition Board, Institute of Medicine, National Academy of Sciences *Dietary Reference Intakes: Recommended Levels for Individual Intake*. Revised 1998.

40. American Academy of Pediatrics, Section on Breastfeeding and Committee on Nutrition. Prevention of rickets and vitamin D deficiency: New guidelines for vitamin D intake. *Pediatrics.* 2003;111(4):908-910.

41. Mangels AR, Messina V. Considerations in planning vegan diets: Infants. *J Am Diet Assoc.* 2001;101(6):670-7.

42. Arnon, SS. Infant Botulism. In: Feigin RD, Cherry JD, eds. *Textbook of Pediatric Infectious Disease, fourth edition*. Philadelphia: W.B. Saunders Company;1998:1570-1577.

43. What You Need to Know about Mercury in Fish and Shellfish: 2004 EPA and FDA Advice for Women Who Might Become Pregnant, Women who are Pregnant, Nursing Mothers, and Young Children. Available at http://www.epa.gov/waterscience/fishadvice/advice.html http://www.epa.gov/waterscience/fish/MethylmercuryBrochure.pdf. Accessed February 9, 2006.