Growing Healthy Kids:
A Parents' Guide to Infant and Child Nutrition

Prepared for
THE AMERICAN COUNCIL ON SCIENCE AND HEALTH

by Kristine Napier, M.P.H., R.D.
and Kathleen Meister, M.S.

Project Coordinator
Ruth Kava, Ph.D., R.D.
Director of Nutrition

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THE AMERICAN COUNCIL ON SCIENCE AND HEALTH (ACSH) APPRECIATES THE CONTRIBUTIONS OF THE REVIEWERS NAMED BELOW.

Christine M. Bruhn, Ph.D.  
*University of California, Davis*  

Jill I. Patterson, Ph.D.  
*The Pennsylvania State University*  

Barbara N. Campagne, Ph.D.  
*American College of Sports Medicine*  

William O. Robertson, M.D.  
*University of Washington School of Medicine*  

William Paul Glezen, M.D.  
*Baylor College of Medicine*  

Dale R. Romsos, Ph.D.  
*Michigan State University*  

Richard G. Jansen, Ph.D.  
*Colorado State University*  

Herbert P. Sarett, Ph.D.  
*Sarasota, FL*  

Ruth Kava, Ph.D., R.D.  
*ACSH*  

Sarah Short, Ph.D., Ed.D., R.D.  
*Syracuse University*  

George R. Kerr, M.D.  
*The University of Texas*  

Fredrick J. Stare, M.D., Ph.D.  
*Harvard School of Public Health*  

Cindy F. Kleiman, M.P.H.  
*Sisters of Charity Health Care System*  

Robert D. Steele, Ph.D.  
*The Pennsylvania State University*  

Jane M. Orient, M.D.  
*Tucson, AZ*  

Elizabeth M. Whelan, D.Sc., M.P.H.  
*ACSH*  

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Executive Summary

While good nutrition is important throughout life, it is particularly essential from birth through the growing years, to allow the brain, the other organs, and the bones to reach their full potential. But just what is good nutrition? Experts debate the healthiest amounts and types of foods for infants and children. Reports in the media often contradict one another. And the advice that parents of young children receive from relatives and friends is often a mixture of accurate, up-to-date information and unfounded or outdated notions.

In this report the American Council on Science and Health will describe the developmental and growth-related changes that take place in infants’ and children’s nutritional needs and tell readers how to meet these needs.

The American Council on Science and Health believes that feeding infants and children healthy diets begins with understanding the basics of nutrition and learning to distinguish sound, scientific information from misconceptions and nutrition folklore. Once parents see that the basic principles of nutrition are actually relatively simple, that a wide variety of readily available foods are both wholesome and safe for their children to eat, and that those foods can make a positive nutritional contribution to their children’s diets, they will realize that feeding children can be a pleasure. By introducing foods to young children with a smile and an open mind, parents and caregivers can encourage the development of lifelong healthful eating habits.
**Introduction**

Throughout life, millions of chemical reactions occur in the human body—reactions that make the heart beat, that spur nerve cells to relay messages to and from the brain, that help tissues to replace themselves, and that allow the immune system to repel foreign invaders such as bacteria and viruses. These complex and life-sustaining reactions depend, among other factors, on good nutrition.

To function properly, the human body needs energy (calories); protein; a small amount of certain essential types of fat; 13 vitamins; and at least 24 minerals. But even though we need only minute quantities of some nutrients, each one is critical for good health.

People’s nutritional requirements change as they move through the different stages of life. Infants need much more energy per pound of body weight than do adults, and children under the age of two need more fat in their diets than do older children. Unlike humans in all other stages of life, young infants do not need variety in their diets; their nutritional needs can be met by a single food—breast milk or infant formula.

As these examples demonstrate, infants and children are not simply adults in miniature—and parents and caregivers should take the special nutritional needs of infants and children into consideration when planning their diets.

**I. Infancy: The First Year of Life**

The first year of a baby’s life is a time of extraordinary growth and change. During this year infants usually triple their birth weight and increase their length by one third. They develop the ability to hold up their heads, to use their hands, to sit, to stand, and to crawl. Some even begin to walk before their first birthdays.

Feeding also changes dramatically during the first year, as babies progress through different developmental stages. In the early months breast milk or infant formula—or some combination of the two—should be the infant’s only food. Later, specially prepared infant foods are added to the diet. In the last months of the first year, infants begin to make the transition to an almost adult-style diet, as they develop the ability to eat (and interest in) many of the foods enjoyed by the rest of the family.

Parents of infants should rely on their child’s healthcare provider* for detailed

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* In this report the general term “healthcare provider” is used to refer to the health professional who provides routine medical care for an infant or child. This is usually a pediatrician or family physician. In some settings other health professionals, such as nurse practitioners or physician’s assistants, may provide some types of care, particularly in routine situations. For children with special nutritional needs, the services of a registered dietitian can also be helpful.
advice about feeding during the first year. The general information provided in this booklet is intended to complement the individualized advice of the healthcare provider.

**Getting Started: From Birth to Age Four to Six Months**

Newborn babies may seem helpless, but they have already developed some important capabilities that will enable them to eat and grow. They can seek, grasp, and suck at a nipple. They can communicate their need for food. They can coordinate sucking, swallowing, and breathing in a way that allows them to eat efficiently. They can digest and absorb the nutrients required for growth and development. All of these abilities are crucial to survival. (It is, in fact, the lack of these abilities that makes the feeding of premature infants so difficult.)

During the first four to six months of life, breast milk, iron-fortified infant formula, or some combination of the two should be an infant’s only food. Other foods are not necessary to meet an infant’s nutritional needs; some foods can be difficult for an infant to swallow and digest, because a young infant’s neuromuscular development and gastrointestinal functions may not have matured sufficiently to allow the infant to cope with a more varied diet.

In these early months of life, babies’ physical abilities are quite limited. Neck and trunk control are poor. For the first two months, infants can’t even hold their heads up by themselves. They have no control over their hands until the age of six to eight weeks, when they start to be able to bat at objects. Grasping objects will come later.

It’s important for parents not to jump the gun and start feeding foods other than breast milk or formula before the infant’s healthcare provider advises them to do so. Breast milk or infant formula provides the right amounts and proportions of protein, fat, carbohydrate, and other nutrients for the first half year of life. In addition, because of their limited physical development, infants aren’t ready to handle nonliquid foods until about the age of four months.

Parents sometimes want to introduce cereal into their infants’ diets before the age of four months. They may feel that the infant does not seem to be satisfied after breast or formula feedings, or they may hope that adding cereal to the diet might help the infant sleep through the night. Parents in these situations should discuss the pros and cons with the infant’s healthcare provider rather than simply changing the infant’s diet on their own initiative. There is no scientific evidence that the feeding of cereal or other solid foods improves infants’ sleeping patterns. If the infant seems unsatisfied after feedings, other approaches to the problem may be preferable to the early introduction of cereal. Parents may wish to check with the infants’ healthcare provider to find out if the baby’s weight indicates that he is growing normally. If the baby is gaining weight at the usual rate, it is unlikely that he is undernourished.

**Breast Versus Bottle**

Breast-feeding is the preferred mode of feeding for all infants, except in rare instances where either the mother or the infant has a medical problem that contraindi-
cates breast-feeding. If an infant is not breast-fed, or if breast-feeding is discontinued before the first birthday, the only acceptable alternative is commercial infant formula. Cows’ milk (in any form—whole, reduced-fat, low-fat, or skim), evaporated milk, and homemade formulas should not be fed to infants throughout the entire first year.* Unlike commercial infant formulas, which have been designed to closely resemble human milk, these other types of milk are very different in composition. Serious health problems can result from their use.

Decisions about breast-feeding versus bottle-feeding are a personal and individual matter for each new mother and her family. It’s a good idea for prospective parents to learn about both methods of feeding, so that they can make an informed choice. Once the decision is made, however, the new parents’ decision should be supported. Friends, neighbors, and family members should not try to coerce a woman into choosing a particular feeding method, switching feeding methods, or weaning at a particular time. There is nothing to be gained by making a mother feel guilty about bottle-feeding or making her feel that she is a fanatic because she chooses to breast-feed. Feeding is just one of many aspects of an infant’s early experience. To attribute overwhelming importance to any one aspect of a baby’s life is not only scientifically unwarranted, it may also create anxieties in some parents that can, in turn, prove detrimental to their interaction with their infants.

More About Breast-Feeding

Health authorities endorse breast-feeding as the best method of infant feeding. Ideally, an infant should be breast-fed exclusively for four to six months and then receive an increasing variety of other foods, along with continued breast-feeding, for the remainder of the first year of life (and as long thereafter as is desired by both mother and child).

Human milk is ideally matched to infants’ nutritional needs, is easily digested, and provides immunologic benefits. Breast-fed babies have fewer infectious illnesses (such as respiratory infections and infectious diarrhea) than do bottle-fed babies; this has been demonstrated both in developing societies and in technologically advanced countries such as the United States and Canada.

Breast-feeding also saves money. Although nursing mothers do require extra food, the cost of their increased caloric intake is only about half the cost of purchasing formula. Breast-feeding families thus may save as much as $400 in food costs during the infant’s first year. The cost of healthcare is also lower, since breast-fed babies become ill less frequently.

A breast-fed baby’s protection against infectious diseases starts during the first days of life. For several days after delivery a new mother produces colostrum, rather than milk. Colostrum is a thick, yellow-colored fluid that is richer in protein and antibodies

* The recommendation that infants should be kept on breast milk or formula for a full year is relatively new. Prior to 1992 cows’ milk was allowed once the infant was eating substantial amounts of solid foods. Grandparents and other older caregivers may not be aware of the current recommendation.
than the true breast milk that follows. This antibody-rich formulation gives the newborn baby a boost in fighting the infections he encounters as he enters the world with a relatively immature immune system. Later, breast milk continues to provide infants with antibodies that play an important role in conferring immunity against disease.

Breast milk and colostrum also contain two proteins that contribute to disease prevention: lactoferrin and lysozyme. Lactoferrin inhibits the multiplication of certain bacteria, and lysozyme attacks and destroys some bacteria. Lactoferrin also serves as an intestinal-tract growth factor, helping the digestive tract to develop and mature.

Nursing mothers often wonder whether their babies are getting enough to eat. This usually is not a concern if the infant is receiving at least six feedings a day and producing at least five to six wet diapers daily. (Parents who use disposable diapers should check for heavy diapers rather than wet diapers. Because the newer types of disposable diapers are designed to keep moisture away from the infant’s skin, they may never feel wet, even when they are full of urine.) If the mother is having difficulty getting the infant to nurse, or if the number of wet diapers seems insufficient, the infant should be examined and weighed by the healthcare provider. If the infant is not getting enough milk, serious problems can develop, including failure to thrive (a situation in which a child’s growth slows or stops) and dehydration (especially in hot weather).

There is some evidence that breast-fed babies may have an easier time adjusting to new foods later in infancy. Because the flavors of some foods eaten by a nursing mother pass into her breast milk, the breast-fed infant becomes familiar with new flavors. Some infant nutrition experts, but not all, believe that this exposure helps babies better accept unfamiliar tastes when the time comes to introduce them.

The popularity of breast-feeding in the United States has fluctuated over the years. There was a steady decline in the percentage of breast-fed infants from 1900 to 1970. The popularity of breast-feeding then increased, peaking in the early 1980s. The proportion of mothers who breast-fed declined between 1984 and 1989 and then increased again between 1989 and 1995. The most recent (1995) statistics indicate that 60 percent of U.S. mothers are initiating breast-feeding in the hospital and 22 percent are still breast-feeding when their infants are five to six months of age.

Today’s well-educated, older women in high income brackets are most likely to breast-feed. The greatest increase in breast-feeding in the early 1990s, however, occurred among less educated, lower income, young, nonwhite mothers who worked full time outside the home.

Although breast-feeding is a natural process, it doesn’t always come naturally to the new mother. Many may need help and guidance in order to make breast-feeding a successful and enjoyable experience. Unfortunately, many women cannot turn to their own mothers for advice on breast-feeding difficulties. The decline in breast-feeding several decades ago has led to a loss of traditional knowledge and support; many of today’s grandmothers have had no personal experience with breast-feeding. This may be one reason why some women who initiate breast-feeding do not continue for long.

Women who need help in starting breast-feeding or dealing with any problems that arise shouldn’t hesitate to contact their physician, a lactation consultant, or a nursing support group (such as La Leche League) for help. Many breast-feeding difficul-
ties can be solved without switching to bottle-feeding, if adequate help and support are available.

Rarely do mothers or infants face situations in which breast-feeding is contraindicated for medical reasons. These are some of the situations in which breast-feeding is unwise:

- Women who are HIV positive should not breast-feed because there is a possibility of transmitting the virus to an uninfected infant through breast milk.*
- Women who are at high risk for HIV but who do not know whether they are infected and those who are at high risk of becoming infected during the time they are breast-feeding (e.g., women with HIV-positive sex partners) are also advised to avoid breast-feeding.
- Many experts, including the American Academy of Pediatrics, recommend that women who use illegal drugs should not breast-feed. (The Academy strongly recommends that nursing mothers should not ingest any illegal drugs, both for their infants’ sake and for the protection of their own physical and emotional health.)
- Women with untreated active tuberculosis should not breast-feed.
- Infants with certain metabolic abnormalities, such as galactosemia (a disorder of carbohydrate metabolism), should not be breast-fed; these infants require special formulas that are specifically designed to meet their unusual needs.
- Some newborns who are being treated for jaundice must discontinue breast-feeding temporarily; in this situation, the mother should be given advice on how to maintain her milk supply if she wishes to resume breast-feeding after the problem is resolved (this usually takes only a few days).
- Women who need to take one of the very few medications (such as the radioisotopes used in diagnostic tests) that are incompatible with breast-feeding may also have to discontinue breast-feeding temporarily; they can resume breast-feeding after the medication has been cleared from the body.

Many other special situations are compatible with breast-feeding:

- Women who deliver by cesarean section can breast-feed, even if they require pain medication (these mothers do, however, require more assistance with feedings in the first days after delivery than do other women).
- Women can often continue to breast-feed successfully even after they resume part-time or full-time employment.
- In most instances women who requires medications can continue to nurse, with the guidance of their own and their babies’ healthcare providers.
- Women with noninfectious chronic diseases such as diabetes mellitus or hyper-

* This contraindication is specific to the United States. In developing countries, where infants are at higher risk for potentially fatal infectious diseases and nutritional deficiencies and where sanitary bottle-feeding may not be possible, the risks associated with not breast-feeding may outweigh the risk of transmitting HIV to the infant.
tension can usually breast-feed if they have knowledgeable support and if their medications are chosen carefully.

- Most infants with special needs (babies with cleft palate or Down syndrome, for example) can thrive on human milk, either through direct breast-feeding or through drinking their mothers’ expressed breast milk.

- Premature infants who are capable of sucking at a nipple can be breast-fed; those who are not mature enough or well enough to nurse can be fed expressed breast milk (fortified, if necessary, to help meet their high nutritional needs).

Of course, in all of these special situations, initiating or continuing breast-feeding may require some extra effort. Some mothers choose to make this effort, and they should receive as much help and support as they need in order to be successful. Other mothers decide that in their family’s particular situation, it would be more appropriate to discontinue breast-feeding or to combine partial breast-feeding with partial formula-feeding. These women should also be supported in their decisions. It’s important to remember that no two families’ situations are exactly alike. Even in seemingly similar circumstances (e.g., two mothers who are returning to work at the same office), a variety of factors may prompt two women to make different decisions about infant feeding. No one choice is best suited for everyone.
More About Bottle-Feeding

Prior to the 20th century there was no good substitute for breast milk. People simply didn’t know enough about the composition of human milk to devise an appropriate alternative. Artificially fed infants usually did not thrive, and many of them died.

Scientific discoveries in the late 19th century provided the basis for the development of safe human milk substitutes. The first commercial milk substitute, developed by a German chemist in 1867, consisted of cows’ milk, wheat flour, malt flour, and potassium bicarbonate. Improvements in food-preservation techniques led to the development and widespread use of formulas based on evaporated (reduced-moisture) milk in the early 20th century. Evaporated-milk formulas were sterile and more digestible than whole cows’ milk because the heat-treatment process made the protein easier to digest.

As the 20th century advanced, infant-formula manufacturers changed formulas as knowledge accumulated about the types and amounts of nutrients required by infants and about ways to formulate products with physical characteristics that resembled those of human milk. As a result, modern mothers who cannot or choose not to breast-feed have an option available to them that did not exist in previous centuries—safe, nutritionally adequate infant formulas.

All infant formulas are regulated and classified by the Food and Drug Administration (FDA) as Foods for Special Dietary Use. The Infant Formula Act, passed in 1980, gave the FDA the authority to require that infant formulas contain at least minimum levels of essential nutrients and that they be produced under conditions guaranteeing safety and wholesomeness. The act specifies that infant-formula manufacturers must inform the FDA of any proposed changes in formula composition, must keep production and distribution records for two years, and must notify the agency of any safety problems regarding their products. Every batch of formula is analyzed to make certain it contains proper levels of required nutrients. This tight scrutiny is necessary because formula may be an infant’s sole food for the first several months of life. It is absolutely crucial that formulas meet all of an infant’s nutritional needs.

The safe use of formula at home is not difficult. Parents and caregivers must be careful, however, to mix formula exactly as specified on the package label and to keep all bottles, nipples, and utensils scrupulously clean. The infant’s healthcare provider is the best source of specific instructions on how to prepare and feed infant formula.

Types of formula. The majority of infant formulas are made from a base of non-fat cows’ milk that is modified substantially, both to meet an infant’s unique nutritional needs and to make the milk more digestible. There are also special formulas based on soy protein or protein hydrolysates for infants who cannot tolerate cows’ milk–based formulas. In most instances, the healthcare provider will specify the type of formula to be given to a particular infant.

The use of formulas based on soy protein has increased dramatically in recent years, to the point where these formulas now account for 25 percent of all formula sold in the U.S. Modern soy formulas are nutritionally adequate for full-term infants (they are not usually recommended for premature infants) and are definitely a safe alterna-
tive to cows’ milk–based formulas. Many infants who are receiving soy formula probably have no real need for this special product, however; they could just as well be given milk-based formula. (There is no particular harm in the use of soy, however.)

Contrary to popular belief, soy formulas do not confer any special benefit in the prevention of allergic disease, in the management of colic, or as a supplement for the primarily breast-fed infant who receives occasional formula feedings. Soy formulas are appropriate in cases of permanent or temporary lactose intolerance, of galactosemia (see page 10), or of documented allergy to cows’ milk protein. Soy formulas are also an appropriate choice for families seeking a vegetarian-based diet for a formula-fed full-term infant.

While the vast majority of infants have no problems with cows’ milk–based formulas, about one percent of bottle-fed infants do develop an allergy to it. The symptoms of cows’ milk allergy can include respiratory (breathing) problems, gastrointestinal (stomach and intestinal) problems, or skin problems (such as rashes). If you notice any of these symptoms, check with your baby’s healthcare provider before making formula changes, as the symptoms may be due to something else. If they are due to a true cows’ milk allergy, the symptoms should disappear when an appropriate formula change is made. Even when a cows’ milk allergy does exist, it is often outgrown by age three, at which age most children can drink milk.

Most infant formulas are fortified with iron. The American Academy of Pediatrics recommends that only iron-fortified formulas be used, to avoid the risk of iron deficiency. The increased use of iron-fortified formula is the major factor in the declining prevalence of anemia in U.S. infants. Low-iron formulas are still on the market, however, at least in part because some people have the erroneous impression that iron-fortified formulas cause constipation, regurgitation, or other gastrointestinal
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symptoms. Well-controlled studies have demonstrated no link between iron fortification and digestive problems, however; and a low-iron formula should not be used unless the infant’s healthcare provider specifically recommends it.

**Long-chain fatty acids.** Recently, infant nutrition experts have proposed adding two long-chain fatty acids to formulas, especially those for preterm infants. The two fatty acids, docosahexaenoic acid (DHA) and arachidonic acid (ARA), both occur in breast milk. DHA is necessary for normal eye and brain development and ARA is needed for optimal immune functioning. To date, though, DHA and ARA have not been added to all infant formulas in the U.S. because the body can make both from other essential fatty acids currently in infant formulas. Proponents of adding these fatty acids argue, however, that it is preferable to add them to accommodate the minority of infants (especially preterm infants) who seem not to be able to make them at all or who cannot make them in sufficient quantities.

**Some potential problems.** Some problems commonly attributed to bottle-feeding are actually linked more to inappropriate feeding techniques than to bottle-feeding per se. It is sometimes claimed, for example, that bottle-feeding impairs bonding between mother and infant. But if the feeder avoids propping the bottle and emphasizes close, 

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**Do Infants Need a Vitamin/Mineral Supplement?**

Breast-fed babies who have little exposure to sunlight or who have darkly pigmented skin may need a vitamin D supplement. By age four to six months breast-fed babies may also need an iron supplement, unless they are eating substantial amounts of iron-fortified infant cereal. Babies who are breast-fed by mothers following vegan diets (i.e., those who eat no animal products) need a vitamin B₁₂ supplement. If your baby is breast-fed, check with her healthcare provider about the need for supplements. Infants should be given only those supplements prescribed or recommended by the healthcare provider.

Unlike breast-fed babies, formula-fed babies do not need supplements. Formulas are designed to provide all the nutrients they need.

Parents who wean their infants from breast to bottle should mention the weaning to the child’s healthcare provider. It is likely that any supplements the infant was taking can be discontinued.

Until recently the American Dental Association and the American Academy of Pediatrics recommended fluoride supplementation for young infants living in areas with low-fluoride water; for breast-fed infants, who usually drink little water; and for infants receiving ready-to-feed formulas, which are made with low-fluoride water. In 1995, however, the recommendations on fluoride supplementation were modified. Fluoride supplementation now begins at age six months rather than at birth, and the doses used during the first six years of life have been decreased.

The changes in the fluoride-supplementation recommendations were instituted because physicians and dentists had been seeing an increase in the incidence of dental fluorosis—a discoloration of the teeth caused by excess exposure to fluoride—in young children. Apparently, some children had been consuming too much fluoride—possibly because most toothpastes contain fluoride, and children tend to swallow toothpaste when they brush their teeth. The new fluoride-supplementation recommendations are designed to minimize the occurrence of fluorosis while still providing children with enough fluoride to protect them against tooth decay.
affectionate contact during feedings, this need not occur.

Two other problems—dental decay and an increased risk of middle-ear infection—appear to be due more to bottle-propping (and to the practice of letting older babies fall asleep with a bottle) than to bottle-feeding itself. Both problems can be minimized by always holding the baby at feeding time and by not allowing the bottle to be used as a pacifier.

Some studies indicate that formula-fed babies gain weight more rapidly than do breast-fed infants—a trend that some postulate could predispose formula-fed babies to obesity later in life. It’s possible for a formula-fed infant to be overfed if the feeder, rather than the infant, decides when to end a feeding. Many times parents or caregivers will coax infants to finish the last ounce or two of milk in a bottle, even when the baby has lost interest in eating. In contrast, a mother who breast-feeds usually relies on her infant to signal the end of a feeding because she has no way to measure how much the infant has taken. The best advice to parents who bottle-feed is to be attuned to the baby’s signals during feeding sessions. When the baby indicates he has had enough, it’s time to end the feeding.

**Infant Colic**

Between 10 percent and 25 percent of all infants develop a problem called colic, which is characterized by excessive crying with no obvious cause. Babies with colic typically cry for at least 3 hours a day; some may actually cry for as long as 12 to 14 hours on some days. Colic usually develops when the infant is two or three weeks old; it almost always subsides by age four months. The cause of colic is still unknown. Some researchers think it may be due to immaturity of the infant’s digestive tract, but others suspect that oversensitivity to environmental stimulation may be responsible.

Some babies with colic literally shriek. Others cry in a more normal fashion, but for long periods of time. Infants with colic appear to be in pain, with distress that seems to be gastrointestinal in origin. Often, during a colicky episode, they grimace, clench their fists, draw up their legs, and pass gas.

Colic is not a dangerous disease. Physicians don’t even agree on whether it is a disease at all. It doesn’t interfere with an infant’s growth, development, or overall health. Nevertheless, it is extremely distressing and disruptive to the family, and it can interfere with the development of a good relationship between the parents and the baby.

Because the symptoms of colic seem to involve the digestive tract, people have long suspected that a change in the infant’s diet might be helpful. Parents of formula-fed infants often switch formulas in an effort to relieve colic. Nursing mothers often try making changes in their own diets, usually by eliminating foods to which they suspect the infant may be sensitive. There is little evidence, however, to indicate that any dietary changes are effective.

Parents who wish to try dietary changes despite the lack of proof of effectiveness should proceed with care. If the baby is formula-fed, the parents may wish to try a different brand of the same type of formula or may want to try switching from a milk-based to a soy-based formula. Neither of these changes is harmful to the infant. Parents
should not switch an infant from an iron-fortified formula to a low-iron formula, however, unless specifically advised to do so by the infant’s healthcare provider. Such a change could lead to iron deficiency.

It is unwise to switch breast-fed babies to formula in an effort to treat colic. There is no evidence that such a dietary change is effective, and it does not make sense to permanently deprive an infant of the optimal form of nutrition in an effort to relieve a short-term problem that is not medically serious.

A nursing mother needs a nutritious diet, both to meet her own nutritional needs and to allow for milk production. She should not compromise her nutrition by drastically restricting her diet in an effort to relieve her baby’s colic. Minor changes in the mother’s eating habits—avoidance of a nutritionally unimportant food such as chocolate, for example—are not likely to cause any problems; but a nursing mother should not eliminate whole food groups—such as all dairy products—from her diet unless she receives counseling from a health professional on how to compensate for the resulting nutritional deficit.

Nondietary approaches to colic are likely to be more successful than dietary changes. If you suspect your baby has colic, the first step in dealing with the problem should be a visit to the baby’s healthcare provider. Persistent crying is sometimes due to a readily treatable problem—such as an ear infection—rather than to colic.

If the healthcare provider rules out other causes of crying, you may find it helpful to try different ways of responding to and comforting your baby. In one study some parents of colicky babies were asked to respond to their infants’ crying with a specific pattern of comfort measures, while others were asked to change their infants’ diets. The comfort measures were more effective than the dietary changes in reducing crying. (The comfort measures used in this study were a sequence of five different tactics—feeding, holding, offering a pacifier, stimulation, and putting the baby down to sleep. Parents were told to try one response at a time, quickly moving to the next tactic if the crying did not stop.) Additional comfort measures that may be helpful for some infants include swaddling, carrying the infant in a front carrier, and taking the infant for a ride in the car.

Support for the parents is very important in the management of colic. Caring for a colicky baby can be stressful and exhausting. It may help if parents take turns caring for the baby or if friends and family members offer to care for the baby for short periods of time so the parents can take a break and rest.

**From Four Months to One Year: Learning to Eat**

By the age of four to six months, most infants have doubled their birth weight, and breast milk or infant formula alone may no longer be sufficient to meet their nutritional needs. By this point infants have also developed enough head and neck control to enable them to hold up their heads while lying on their stomachs and to sit with support. They have lost the extrusion reflex that causes newborns to push food out of their mouths with their tongues, and they are capable of swallowing nonliquid foods. Their ability to digest foods other than milk and absorb the nutrients from those foods into
the bloodstream has matured greatly, and their kidneys are now capable of handling greater demands than can be dealt with by a newborn’s excretory system. All of these changes, acting together, make the infant ready for the introduction of foods other than breast milk or formula. These new foods should be added to the infant’s milk-based diet; they should not be substituted for breast milk or formula.

**Starting Solids: Four to Six Months**

The foods that are added to an infant’s diet at age four to six months are called “solid” foods but are actually thin, semisolid purees. Parents should follow the instructions of the infant’s healthcare provider about when to start feeding solids, how much to offer, and what foods to introduce in what order. The information presented here is intended for general guidance only; it should not replace appropriate, individualized advice.

For at least the first few months of solid feeding, parents should choose foods that consist of a single ingredient, and they should wait several days after introducing one new food before introducing another. This procedure makes it easier to detect food intolerances. The exact order in which solid foods are introduced is not particularly important. Commercial infant cereal should be started fairly early, however, because of its iron content. A variety of pureed fruits, vegetables, and meats (either commercial or home-prepared) can also be offered.

**Foods to Avoid**

Spinach, beets, turnips, carrots, and collard greens should not be home-prepared during the early months of solid feeding because they may contain excessive amounts of nitrate; parents who home-prepare baby food should ask the infant’s healthcare provider about when it is safe to use these vegetables. (Commercial versions of these vegetables are prepared from varieties low in nitrate and are safe to use.)

Certain foods—such as wheat, eggs, nuts, and citrus fruits—are particularly likely
Growing Healthy Kids:

**Teething**

Your baby’s teeth have been developing since before she was born. In most cases, however, the first teeth don’t make an appearance until the age of five to seven months. (There are exceptions to this rule. Teeth appear much earlier or much later in a few infants.) The first teeth to appear are usually the two lower central incisors (front teeth), followed by the two upper central incisors. Later in the first year the lower and upper lateral incisors (the teeth on either side of the front teeth) appear. Many babies have all of their eight incisors by their first birthdays, and their molars may be starting to come in as well.

Teething is a source of great distress for some infants. Chewing seems to help—which is one reason why babies put everything into their mouths. You can give your baby teething rings and other safe toys to chew on. Some babies also like to chew on a cold, wet washcloth.

Be cautious about using foods as teething aids. Although there is a long tradition of giving babies hard foods such as teething biscuits or frozen bagels to gnaw on to relieve discomfort, these foods can be a choking hazard if pieces break off in the baby’s mouth. It is safer to try other ways of relieving teething discomfort or at least to supervise your baby very closely when she is chewing on foods of this sort.

Even if your baby obviously has new teeth coming in, it’s important not to make the mistake of automatically attributing all symptoms to teething. If your baby’s crankiness and night waking are accompanied by fever, diarrhea, coughing, or other symptoms that may be due to illness, a visit to baby’s healthcare provider is in order.

to provoke an allergic response. They are best avoided during the early months of solid feeding. (Nuts and nut butters are also inappropriate because infants can choke on them.)

Honey should not be fed during the first year of life because it sometimes contains spores of the bacterium *Clostridium botulinum*, which can cause serious illness in infants. Corn syrup is also best avoided, since there is at least a theoretical concern about possible contamination with the same bacterium. It is usually unnecessary to add any sweetener to baby foods. If one is needed (if the parent is home-preparing a very tart fruit, for example), table sugar is the safest choice.

Salt is an acquired taste. Infants do not have a preference for it, and too much salt in their food can strain their kidneys. It is unnecessary to add salt to an infant’s food. If an infant is going to eat a pureed version of a dish being served to the rest of the family, it is a good idea to set aside the infant’s portion before adding salt or other seasonings to the portions to be served to other family members.

**Six to Nine Months**

As babies move into the second half of the first year, the balance between breast milk or formula and solids will shift toward more solid foods. Dietary variety can increase, and mixed-ingredient foods can be introduced when the healthcare provider says it is appropriate to do so. During this time period babies begin to sit independently. They can begin to eat thicker purees and sometimes even slightly lumpy foods. Hand-to-eye coordination improves fairly rapidly during this period, and the infant will learn to guide a spoon full of food to her mouth—though not always with exem-
plary accuracy.

**What to Drink?**

Throughout the first year of life, breast milk is the best liquid food and formula is the best alternative. In general, babies should not be switched to cows’ milk until after their first birthdays. Fruit juice may be introduced during the first year (although it is not really necessary), but the quantity should be strictly limited, because juice is less nutritious than breast milk or formula. Most healthcare providers recommend that infants drink no more than four ounces of full-strength juice per day. If the infant is thirsty—especially in hot weather—water is a better choice than juice for quenching thirst.

Between the ages of six and nine months, or perhaps even earlier, the formula-fed baby may learn to hold her own bottle. This is fine, but it’s important to continue to give the baby a bottle *only* when she is in an adult’s lap or a high chair. As the baby’s mobility and independence increase, she may want to carry a bottle around with her or take one to bed at night. These practices should not be allowed. Babies who fall asleep with a bottle or suck on one frequently during the day or at night can develop a severe form of tooth decay called “baby-bottle tooth decay” or “nursing-bottle caries.” (Rarely, the same problem can also occur in breast-fed babies who nurse very frequently during the night.) If a baby or child needs something to suck on for comfort between feedings or at bedtime, a pacifier or thumb is better than a bottle. (If baby absolutely must have a bottle, fill it with plain water only.)

It’s a good idea to introduce a cup sometime between the ages of six and nine months, although it will probably take a while for the baby to catch on to the idea.

**What? No Bottle?**

If a baby continues to breast-feed through the second half of the first year, there is no need to introduce a bottle into his life, and there may be an important advantage in avoiding it. If the baby never drinks from a bottle, he can never develop the habit of relying on a bottle for comfort. The often difficult struggle to wean a baby from the bottle can be completely eliminated.

It’s possible for babies to drink nothing but breast milk until they are ready to learn cup drinking. Babies do not need juice at any age, and breast-fed babies do not need extra water until they are eating a substantial amount of solid food—by which time they’re usually ready for a cup anyway.

Parents of breast-fed babies can also completely avoid the expense of buying formula. It’s not really necessary to mix infant cereals with formula; parents can use water or juice instead. (Some nursing mothers prefer to mix cereal with expressed breast milk. This is fine for women who can express breast milk easily, but those who find the process tedious or difficult need not bother with it.) When the time comes to introduce a cup, parents can fill it with water, juice, or expressed breast milk rather than formula. After baby’s first birthday, whole milk can be offered in a cup. Formula is necessary only if breast-feeding is discontinued before the age of one year.
Many families prefer to use the type of cup that has a lid and a spout, to help reduce the inevitable mess. Some parents wait until the baby is ready for a cup before introducing fruit juice and then serve juice only in a cup. Since most babies love juice, this practice may encourage cup drinking.

**The Last Months of the First Year**

During the last months of the first year, babies go through astonishing developmental changes that dramatically change their own—and their parents’—lifestyles. Speedy and skillful mobility soon becomes a major feature of the baby’s life. Older infants rapidly go from scooting on their bottoms or knees to true crawling. Soon, they are pulling themselves to a standing position, “cruising” with the help of furniture, and walking with assistance. Some babies walk independently by the end of the first year. Those who don’t walk are no less mobile; they can crawl rapidly and get into things (and into trouble) as easily as do their ambulatory contemporaries.

These rapid changes in mobility in the last months of the first year are accompanied by improved hand-to-eye coordination. Babies can now manipulate small pieces of semisolid food between the thumb and fingers, hold their own cups, and perhaps begin to feed themselves from a spoon. This is an exciting time for them, as they gain the skills to control what they eat. Chewing ability also develops during this time, regardless of whether a particular infant has few teeth or many. The older infant learns how to move food from one side of the mouth to the other to mash it.

During the last months of the first year, babies progress from finely pureed foods to the coarser, somewhat lumpier commercial foods marketed for older babies and to mashed or finely chopped table foods. As babies near their first birthdays, some of their meals may be almost identical to those served to the rest of the family—except that baby’s food is a little softer, cut into smaller pieces, or mashed. If the family is having roast chicken, mashed potatoes, and cooked carrots, for example, baby can have the same; but baby’s chicken should be cut into tiny, bite-sized pieces and her carrots should be cooked until they are very soft and then chopped or mashed. (On the other hand, if the family is having five-alarm chili, tortilla chips, and a raw vegetable salad, baby will need an entirely different meal—probably one consisting of commercial foods marketed for older babies.)

**Finger Foods**

Older babies can learn to eat “finger foods”: small pieces of soft foods (or those that become soft in the mouth) that they can pick up by themselves. Ask your infant’s healthcare provider about what types of finger foods to introduce. Choices that are commonly considered acceptable include the ever-popular O-shaped oat cereals; small pieces of soft, cooked vegetables; banana slices; small pieces of canned peach or pear; cut-up processed cheese slices; small pieces of soft fish (with the bones carefully removed); crumbled, thoroughly cooked hamburger; and pieces of crackers or toast.

Some babies are so fond of finger foods that they refuse to eat anything offered on a spoon after finger foods are introduced. If this happens with your baby, mention it to the baby’s healthcare provider.
Choking Hazards

Once infants move beyond finely pureed foods, choking on food becomes an important hazard. An infant or young child should not be allowed to eat anything unless he is closely supervised by an adult, and parents should learn correct first-aid procedures to deal with a choking incident. Foods that pose a particularly high risk of choking should not be fed to infants or children under the age of three years (some people think the age should be extended to five or six). These high-risk foods include:

- nuts;
- hot dogs;
- raisins;
- raw carrot pieces;
- popcorn;
- hard candy;
- whole grapes;
- chewing gum;
- thick, sticky foods such as peanut butter.

It’s Not Too Early to Encourage Good Eating Habits

When a baby reaches the age when she begins to share the family’s meals, the parents’ food preferences begin to affect the baby. Without consciously knowing it, parents may limit their babies’ food experiences because of their own preferences. Parents who don’t like certain vegetables, for example, may never offer those vegetables to their children. To help your child develop a taste for a wide variety of foods (one of the secrets to eating healthfully throughout life), be sure not to limit her to your own favorites. Both of you can benefit from trying a broad range of foods.

II. Toddlerhood: The Second Year of Life

After 12 months of age growth slows down considerably. In the second year of life, toddlers typically gain about seven to eight pounds. They need considerably less energy for growing than do infants but need more energy for their seemingly constant activity.

The developing toddler is becoming increasingly independent. He wants to feed himself without any assistance. What appears simply as play—banging, waving and mouthing a spoon—is actually a normal and necessary part of development. This “play” helps the toddler learn how to handle the spoon properly and efficiently.

During the second year of life, the toddler also gains more teeth—another developmental milestone that will help him become a more independent eater. Hand-to-eye coordination also improves dramatically. Not only does he have an easier time getting food to his mouth without making a mess, but he can also control how far back in the mouth he places large pieces of food. The toddler can therefore eat a
wider variety of foods without gagging.

By nature toddlers have smaller and more erratic appetites than do infants. This should not be a cause for concern. Because growth slows so drastically, toddlers may seem not to need as many calories as they did during their first year, when growth was more rapid. As long as a child continues to grow normally (as indicated by the length and weight measurements obtained at his regular checkups), parents can rest assured that he is getting enough to eat.

One-year-olds can eat most things adults do, just in smaller quantities and cut into smaller pieces. Foods that frequently cause choking must still be avoided during the second year, however. For many foods an appropriate serving size for young children is one tablespoon for each year of age. Finger foods are often preferred at this age. Make sure to offer your toddler a wide variety of fruits, vegetables, grains, and protein foods. Offering variety sets the stage for excellent eating habits later in life and helps the child learn to like different foods and flavors.

**Cows’ Milk, Weaning, and the Cup**

After 12 months toddlers may drink whole cows’ milk. Because children at this age need the fat in whole milk, toddlers should not drink reduced-fat or skim milk. If a child has been drinking formula, it is not necessary to switch him abruptly to whole milk after his first birthday. The change can be made gradually by mixing increasing proportions of whole milk with decreasing proportions of formula to accustom the child to the new taste.

The fact that whole milk is recommended at one year of age does not mean that toddlers who are still breast-feeding must be weaned at this time. It is perfectly acceptable for breast-feeding to continue. The duration of breast-feeding is a highly individual matter. There is no one best time to wean a child from the breast. The “right” time is the one that works for both mother and child.

Even if a child is still breast-feeding, however, it is a good idea to provide opportunities for him to learn to drink from a cup. If a toddler still nurses frequently, it may not be necessary to offer him milk in a cup, but his feeder can serve him water and juice this way. If a toddler has cut back on breast-feeding (if he only nurses before his nap and before bedtime, for example), he may not be getting enough milk from the breast alone. To increase his milk intake, parents can offer him whole milk in a cup at mealtime, even though he still nurses at other times.

Breast-feeding can be very important for some children as a source of emotional comfort long after its nutritional significance has diminished. Some children continue to nurse until the age of two or three—some, occasionally, even longer. This is not abnormal or even undesirable, and it should not be criticized by friends or family members.

**Baby-Bottle Tooth Decay Is Still a Concern**

During the second year of life, children should generally drink milk and other beverages from a cup rather than from a bottle. If a child resists weaning from bottle to cup, the parents should insist that the bottle be used only at meal or snack times. As
discussed in more detail earlier in this booklet (see page 19), children who sip constantly at a bottle of milk, formula, or juice or who take a bottle to bed are at risk for baby-bottle tooth decay, a severe dental problem that is very expensive to treat.

**Too Much Milk?**

Parents should follow the guidance of their child’s healthcare provider about how much milk to offer to their child each day. Some toddlers tend to drink too much milk; occasionally it may be necessary to limit their milk intake in order to leave them with an appetite for other foods and to reduce the risk of iron deficiency. In this situation it’s helpful to limit the amount of milk the child drinks between meals. You can offer water instead if your toddler is thirsty.

**Avoiding Juice Abuse**

Like infants, toddlers don’t really need juice. If they do drink it, the amount should be limited so the child will have an appetite for more nutritious foods. Excessive consumption of juice has been associated with “failure to thrive” (see page 9) in young children. It may also cause diarrhea because some of the sugars in fruit juice may not be completely absorbed from the gastrointestinal tract into the bloodstream.

When it comes to choosing between juice and milk at meals, milk should win hands down. If a child doesn’t drink milk, there is almost no way he can get enough calcium and vitamin D. Calcium and vitamin D needs remain high all through the growing years. Helping a child form a good milk-drinking habit early in life will help him form the densest bones possible.

Many parents wonder about giving their children soft drinks, coffee, tea, or other beverages. These other beverages have no place in the diet of young children.

**Getting Enough Essential Nutrients**
According to surveys three nutrients often turn up short in the toddler’s diet: iron, calcium, and zinc.

At least one third of American toddlers aged 12 to 18 months get less than two thirds of the Recommended Dietary Allowance for iron. Low iron intake increases the risk of iron-deficiency anemia. It is important to avoid iron-deficiency anemia because this condition can lead to cognitive and social deficits and can contribute to delays in body-balance coordination and in motor skills such as standing and walking. Drinking too much milk to the exclusion of other foods that are richer in iron could increase a child’s risk of becoming iron deficient.

The best source of iron is meat. One advantage to getting iron from meat is that some of the iron in meat is in a form that the body absorbs very easily—a form called “heme iron.” The iron in plant-based foods is in another form, called non-heme iron. The body cannot absorb non-heme iron as readily as it does heme iron; but we can give the body a boost in absorbing more non-heme iron by consuming non-heme iron along with foods high in vitamin C—foods such as oranges, grapefruit, and strawberries. Also, eating a little bit of heme iron along with non-heme iron improves the absorption of the non-heme iron.

Zinc is essential for immune-system function and for normal growth; some research suggests that zinc is also necessary for normal behavioral development. Experts estimate that two thirds of children aged 12 to 18 months don’t get the recommended amount of zinc. Meat, especially beef, is the best source of zinc for young children. Dairy products, including milk, along with eggs and whole-grain cereals, are also good sources of zinc. (Wheat germ, organ meats, and shellfish also provide zinc; but these foods are not commonly fed to young children in the U.S.)

Bones grow rapidly during the first two years of life, and rapid bone growth leads to a strong need for the mineral calcium. About one third of toddlers aged 12 to 18 months get less than two thirds of the recommended amount of calcium in their diets. One of the most significant risk factors for not getting enough calcium is drinking other beverages in place of milk. If a child consistently refuses to drink milk or drinks very little milk, his parents should consult with his healthcare provider—and, if necessary, with a registered dietitian—to plan a diet that will supply enough calcium and vitamin D to meet the child’s needs.

**Fat, Fiber, Salt, and Sugar**

Toddlers’ nutritional priorities are very different from those of older children or adults, especially when it comes to dietary fat and fiber.

During the first two years of life, babies and toddlers need proportionately more fat than do older children and adults. That’s because babies and toddlers have small stomachs relative to their high energy needs. Because fat has more than twice as many calories as does an equal amount of protein or carbohydrate, including some fat in the diets of babies and toddlers is an easy way to assure that these young children can meet their energy needs. In addition, babies and toddlers need certain fatty acids in order to grow normally and in order to form brain and nervous-system tissue. In general, there’s no reason to limit the fat intake of children under the age of two years.
Deliberate efforts to increase the fiber intake of children under the age of two years are also unwise. While adults should strive to consume a higher fiber diet, this dietary goal isn’t appropriate for children under two. A high-fiber diet is filling but provides relatively few calories. This poses a problem for young children, whose active, growing little bodies have a tough time taking in enough calories in the relatively small volume of food they can handle.

Strictly limiting a toddler’s salt intake is not desirable, because sodium is essential for normal growth. Large amounts of very salty foods should be avoided, however, to establish good eating practices. An easy way to strike this balance is to emphasize foods as they come from nature—lots of fruits, vegetables, and grains and a wide variety of protein foods.

It is also unnecessary to strictly limit a toddler’s sugar intake. As with salt, moderation is the best guide. There is no need to limit the use of nutritious foods that are naturally sweet—fruits or sweet-tasting vegetables such as sweet potatoes, for example—and there is no harm in giving a toddler an occasional sweet treat. Foods such as cakes, cookies, and candies that are high in sugars should not form a major part of a child’s diet, however. It’s not the sugar per se that’s the problem here; it’s the fact that these “treat” foods are low in other nutrients. If a child overindulges in treats, he may cut down drastically on his nutrient intake.

Understanding Food Allergies

Although many parents think their children have allergies to food, only two to four percent of children have a true food allergy; moreover, fortunately, many of these children will outgrow their problems. (Nonallergic food sensitivities, such as the lactose intolerance seen among older children and adults of non–European heritage, are more common and less likely to be outgrown.)

The most common symptoms of true food allergies are swelling or itching of the lips, mouth, and/or throat. Offending foods can also cause nausea, vomiting, cramp-
Growing Healthy Kids:

Food allergies can also aggravate asthma, and children whose asthma is aggravated by food allergies are more likely to suffer anaphylaxis.

Food-allergy symptoms generally occur within minutes to hours of eating the offending food. Some people react immediately on putting the food in their mouths. A few very sensitive individuals may develop symptoms even if they only smell or touch the food to which they are allergic.

Parents who suspect that their child has a food allergy should consult the child’s healthcare provider. Diagnostic tests and a careful history will be needed to determine whether the child’s symptoms are attributable to a food allergy or to another problem. It is not a good idea for parents to restrict a child’s diet on their own initiative; excessive or poorly planned dietary restrictions can lead to malnutrition.

Protecting Your Toddler’s Teeth

Dental experts recommend starting children early on a program of good dental hygiene. This includes wiping a baby’s teeth with wet gauze, a soft toothbrush, or a cotton swab as soon as the first teeth erupt. At around 18 to 24 months of age, many children insist on “brushing” their own teeth. It’s okay to give them the opportunity to try, but parents should follow up with a more thorough brushing.

Good eating habits can also help protect your toddler’s teeth. Frequent snacking on carbohydrate-rich foods—a category that includes such nutritious foods as crackers and fruit as well as sugary snacks—promotes the production of harmful acid by the bacteria that cause tooth decay. Since toddlers have small stomachs and need to eat frequently, it’s not reasonable to try to eliminate all snacking. It’s a good idea, however, to limit a child’s eating to established meal and snack times rather than allowing her to nibble constantly.

Rickets in New Jersey Children

Many people think nutritional-deficiency diseases such as rickets are a thing of the past in the United States. But diseases of this type can still occur if the principles of good nutrition are not followed.

In 1994 seven cases of rickets were reported in New Jersey children between the ages of one and three years. All of the children had been breast-fed without vitamin D supplementation, and four of the seven were eating vegetarian diets. These things might not have mattered if the children had had adequate exposure to sunlight (which promotes the synthesis of vitamin D in the skin), but these children had not. All had dark skin and all lived in northern, industrialized areas. In addition, four of the seven were born to Muslim families, who follow customs of dress that involve covering almost all of the skin.

Modern Americans are not immune to “old-fashioned” nutritional deficiencies. If appropriate measures (such as vitamin D supplementation for dark-skinned, breast-fed infants) are not followed, today’s children can still develop yesterday’s diseases.
Nontraditional Diets

Families who follow nontraditional diets, such as strict vegetarian diets, should be cautious about feeding those diets to young children. If vegetarian or other restricted diets are not planned carefully, serious nutritional deficiencies and growth failure can result. The more restricted the diet, the higher the risk that health problems will develop. Malnutrition is much more likely to occur in young children on vegan diets (i.e., diets that exclude all animal products) than in children on lacto-ovo-vegetarian diets (i.e., diets that include dairy products and eggs as well as foods of plant origin).

Parents who wish to feed their child a nontraditional diet should discuss the situation with the child’s healthcare provider and seek professional guidance in planning the child’s diet. The services of a registered dietitian can be very helpful in such situations.

For more information on vegetarian diets and children, please refer to the ACSH booklet Vegetarianism.

III. Age Two and Beyond: The Preschool Years

As your child enters the third year of life, expect a host of new developments. Two-year-olds are known—in fact, infamous for—their outbursts of independence. Irregular and erratic eating habits are the norm rather than the exception. Young children may exhibit single-food preferences—or “food jags,” as parents often call them. Similarly, there will be times when children seem to eat next to nothing. This, too, is normal.

During the preschool years parents and other caregivers usually have full control over what foods a child chooses from—although not over the quantity. Take advantage of this by offering healthful choices; you’ll be setting the stage for your child to make sensible selections when she begins to make her own choices. Remember, too, that children learn by example. That’s why it’s important to cook the same healthful meals for the whole family. It’s not reasonable to expect a young child to eat healthful meals while the rest of the family does not.

Preschool children are rapidly developing social and language skills. At this age meals are an important social event and a learning opportunity as well as a source of nutrition. Children will benefit if their families can maintain a relatively relaxed and pleasant attitude toward mealtimes.

Planning a Nutritious Diet for Your Preschooler

The United States Department of Agriculture’s Food Guide Pyramid (see Figure 1, page 28) provides a good outline of the basics of a healthful diet for preschoolers. Remember, though, that young children need smaller servings than those specified in the pyramid for adults. An approximate portion guide is about one quarter to one third
Figure 1: The Food Guide Pyramid
A Guide to Daily Food Choices

KEY

Fat (naturally occurring and added)

These symbols show fats, oils, and added sugars in food

Fats, Oils & Sweets
USE SPARINGLY

Milk, Yogurt & Cheese Group
2–3 SERVINGS

Vegetable Group
3–5 SERVINGS

Meat, Poultry, Fish, Dry Beans, Eggs & Nuts Group
2–3 SERVINGS

Fruit Group
2–4 SERVINGS

Bread, Cereals, Rice & Pasta Group
6–11 SERVINGS

Source: U.S. Department of Agriculture

SERVING SIZES FOR FOOD GROUPS IN THE FOOD GUIDE PYRAMID

FOOD GROUP

BREAD, CEREALS, RICE, AND PASTA
1 slice bread; 1/2 cup cooked rice or pasta

VEGETABLES
1/2 cup chopped, raw or cooked; 1 cup of leafy raw vegetables

FRUITS
1 piece of fruit or melon wedge; 3/4 cup (6 oz) juice; 1/2 cup canned fruit; 1/4 cup dried fruit

MILK, YOGURT, AND CHEESE
1 cup (8 oz) milk or yogurt; 1 1/2–2 oz cheese or cereal; 1 oz ready-to-eat cereal

MEAT, POULTRY, FISH, DRY BEANS, EGGS, AND NUTS
2 1/2–3 oz cooked lean meat, poultry or fish; 1/2 cup cooked beans or 1 egg or 2 tbs peanut butter is equivalent to 1 oz lean meat (about 1/3 serving).
of an adult portion, or one tablespoon per year of age. The appropriate amount of milk for a young child is about 16 ounces a day.

Children can be switched from whole to reduced-fat milk after the second birthday. Other reduced-fat dairy products also become acceptable at this time. The foods offered from the “bread, cereal, rice, and pasta” group should include some whole-grain choices, but high-fiber foods should not be emphasized to the exclusion of other foods. To help meet the preschooler’s iron and zinc needs, it’s helpful if at least some red meat is included in her diet, but red meat does not have to be offered to the exclusion of other foods in the “meat, poultry, fish, dry beans, eggs, and nuts” food group. Fruit-juice intake should be kept below 12 fluid ounces per day, to avoid displacing other foods from the diet.

Children do not have some innate wisdom that tells them to select nutritious foods instead of nutrient-poor snack foods. The amount of low-nutrient treats offered to young children should be limited. Parents should make sure that practically all of the foods offered to their young children are nutritious foods and that all of the major food groups are included in the child’s meals every day. A child can usually be allowed to choose the amount of food that she consumes, however. The parent or healthcare provider needs to intervene only in extreme situations (if a child consistently refuses to drink any milk at all, for example).

Two Outdated Notions

Some of today’s parents and grandparents grew up at a time when children were expected to eat only at mealtimes and to “clean their plates” at every meal. Both of these practices are no longer recommended, however.

Because children have small stomachs and high nutritional needs, it is difficult for them to get enough to eat if they are limited to three eating occasions per day. Children need snacks.

Requiring a child to “clean her plate” is not recommended because to do so can promote overeating and obesity. A child should be allowed to “listen” to her own body’s cues about when she has had enough to eat, rather than being forced to eat a specific amount determined by others. (It’s actually a good idea for people of all ages to stop eating when they are no longer hungry—it’s a valuable habit that can be learned in childhood.)

Managing Mealtime Problems

During the preschool years many parents find that they need to develop a reasonably consistent way of responding to situations in which a child refuses to eat the foods served at a family meal. Some parents do not object to providing an alternative meal for the child; others do. A reasonable compromise that works well for some families is to offer the child two choices: the meal served to the rest of the family or a single, readily available alternative that requires almost no preparation (such as cereal with milk).

Parents are often perplexed about how to handle their child’s mealtime temper tantrums and defiance. Experts advise a firm, though not controlling, demeanor. Remaining calm when a child doesn’t eat properly is difficult, but it’s very important. Don’t give in to constant whining for ice pops at nine in the morning or cookies at four
Growing Healthy Kids: Food Safety and Food Safety and Your Child

Safe food preparation and storage practices are important for everyone’s health, but they are especially crucial for children, who are at high risk for serious or even fatal complications if they develop a foodborne illness. To keep foods safe and prevent the growth of microorganisms that can cause illness, always

- Wash your hands before preparing food, and make sure that your child washes his hands before eating.
- Store foods correctly. Always store perishable foods in the refrigerator or freezer, not at room temperature, and keep them for only a few days.
- Cook foods thoroughly.
- Thaw frozen foods in the refrigerator or microwave, not on the kitchen counter.
- Refrigerate leftovers promptly. Discard foods that have been left at room temperature for more than two hours.
- Make sure that juices from raw meat, poultry, and seafood do not contaminate other foods.
- Wash hands and utensils thoroughly after using them to handle raw meat, poultry, seafood, or eggs.

Certain types of raw or lightly cooked foods may contain dangerous microorganisms. Some of these foods were traditionally considered safe to eat but are now known to be hazardous. Although some adults may wish to take the risks involved in eating these foods, children should never eat them. Foods to avoid include:

- raw fish;
- raw shellfish;
- lightly cooked ground beef;
  (Cook hamburgers, meatballs, meat loaves, and other dishes made with ground beef until their internal temperature reaches 160°F. Use a meat thermometer to check the temperature of ground-beef dishes whenever possible. If this is not possible, it will be necessary to judge by color—although this method is not absolutely reliable. Usually, if a hamburger or other ground-beef dish is cooked until no pink color remains and the juices run clear, it has been cooked sufficiently to kill harmful microorganisms. If any part of the meat is pink, the meat is undercooked and should not be eaten. Before offering a hamburger to a child, the parent should cut it in half and make sure that it is not pink on the inside.)
- unpasteurized milk or cheeses made from it;
- unpasteurized apple juice or cider;
  (The types of juice and cider that are sold in glass bottles or drink boxes and that can be stored at room temperature until opened are safe for children. The types of juice and cider that must be stored in the refrigerator or freezer—including frozen concentrates—are safe for children only if the product label states that they have been pasteurized.)
- raw or lightly cooked eggs or foods made with them;
  (Hard-cooked eggs, firm scrambled eggs, and fried eggs that have been thoroughly cooked on both sides are safe for children; soft-cooked eggs, lightly scrambled eggs, and sunny-side-up fried eggs are not. Pasta dishes made with cheese-and-egg mixtures—such as lasagna or baked ziti—should be cooked until all portions of the pan are thoroughly heated. Cake batter and cookie dough that contain raw eggs should not be eaten. Certain foods are sometimes made with raw or undercooked eggs: meringues and meringue-type icings, key lime pie, Caesar salad, French toast, hollandaise sauce,
in the afternoon; giving in will only make the next encounter more difficult. Instead, continue to offer your child healthful meals and snacks in a relaxed manner and on a appropriate schedule.

Surprisingly, if you maintain control over the menu, your child will generally eat well enough to stay healthy. Fortunately, as a child approaches school age, these meal-time struggles become less prevalent—especially if the parents have stood their ground during the preschool years.

Preschoolers Are Not Little Adults

Although the Dietary Guidelines for Americans (see Appendix A, page 41) and other pieces of dietary advice aimed at the prevention of chronic diseases are supposedly intended for all healthy people aged two and older, parents should be cautious about strictly applying adult dietary principles to young children. A gradual progression toward an adult-style diet over a period of years is more appropriate than an abrupt change to a strict low-fat, high-fiber diet on the day after the child’s second birthday. It’s important to remember that the top nutritional priority for children is getting enough calories and nutrients for normal growth and development. Overzealous dietary restriction can interfere with this goal.

Research studies have shown that carefully planned low-fat, high-fiber diets can allow for normal growth and development in children. Many parents, however, do not have sufficient time, expertise, or control over their children’s eating habits to ensure

Do Preschool and School-Age Children Need Supplements?

As a general rule preschool and school-age children eating reasonably good diets don’t need dietary supplements. (An exception: Children living in areas with low-fluoride water may need fluoride supplements. See pages 14 and 25.) If, however, a family follows a restricted diet (a vegetarian diet, for example), or if a child has consistently poor eating habits and his parents are unable to correct the situation, the parents should discuss the possible need for supplementation with the child’s healthcare provider.

Most nutrition experts agree that food, rather than supplements, should be the main source of nutrients; and efforts to improve a child’s eating habits are usually preferable
Growing Healthy Kids:

Too Much of a Good Thing

Although vitamin supplements can have a place in a child’s nutrition, they should be used with caution. Parents should never give a child supplements in doses greater than those specified on the product label or those recommended by the child’s healthcare provider. And all supplements should be stored in a safe place, out of the child’s reach.

Overdoses of some vitamins can cause serious illness. (To cite just one case, a child in New York state became very sick from vitamin A toxicity after a caregiver repeatedly gave the child excessive amounts of vitamin supplements.)

And vitamin A isn’t the only vitamin that can be harmful in excessive doses. Even vitamin D, vitamin B₆, and niacin can cause serious toxicity. Many supplemental minerals—especially iron—are also toxic when consumed in large quantities. So remember:

When it comes to vitamins and minerals, it is possible to get too much of a good thing.

Choking Is Still a Concern

Foods that can cause choking (see list on page 21) should be avoided until at least the age of three. Individual children develop the ability to cope with these foods at different ages. Even if you are sure that your own child can safely eat a high-risk food such as popcorn or grapes, don’t offer these foods to a visiting preschooler or send them to school with your child as a snack for his nursery-school (or even kindergarten) class.

Teaching Children About Food Safety

Although most schools teach children about nutrition, fewer teach the principles of safe food handling in a systematic way.

Some parents think their school-age children don’t need to know about food safety because the children are not allowed to cook unless supervised by an adult. Elementary-school children sometimes find themselves in situations in which they need some knowledge of food safety, however. For example:

- The fifth-grader who attends a cookout at a friend’s house needs to know that he should cut his hamburger in half to see whether it is pink on the inside, and that if it is pink, he should refuse to eat it.
- The third-grader who is allowed to pour her own milk needs to know that she should return the milk carton promptly to the refrigerator.
- The first-grader who loses his bag lunch on Monday and finds it on Thursday needs to know that he shouldn’t eat it.

Parents should make a point of discussing food safety with their school-age children and demonstrating the types of precautions (especially basic ones like frequent hand-washing) that everyone must take to prevent foodborne illness.
Table 1. **Ages and Stages: What Your Child May Be Doing—and Eating—During the First Three Years of Life**

<table>
<thead>
<tr>
<th>Age</th>
<th>What Your Child May Be Doing</th>
<th>What Your Child Should Be Eating and Drinking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birth to age 4–6 months</td>
<td>Communicating needs by crying; turning head; wiggling, squirming; batting at objects with hands. By the end of this period baby may be able to roll over.</td>
<td>Breast milk, iron-fortified infant formula, or some combination of the two; no solid foods yet.</td>
</tr>
<tr>
<td>Age 4–6 months to age 8–10 months</td>
<td>Holding head up without support; sitting up, first with support and later without it; starting to teethe; grasping objects; starting to learn to drink from a cup toward the end of this period.</td>
<td>Breast milk, iron-fortified infant formula, or some combination of the two; iron-fortified infant cereal; single-ingredient pureed foods followed by mixed-ingredient pureed foods; limited amounts of juice (if any).</td>
</tr>
<tr>
<td>Age 8–10 months to 1 year</td>
<td>Crawling; pulling to a standing position; “cruising” on furniture; standing alone; walking with support (and perhaps even without it); picking up small objects with thumb and fingers; starting to chew foods; drinking from a cup.</td>
<td>Breast milk, iron-fortified infant formula, or some combination of the two (no cows’ milk yet); iron-fortified infant cereal; coarse purees and mashed or finely chopped table foods; appropriate “finger foods,” but not those especially likely to cause choking; limited amounts of juice (if any). Some babies may now be sufficiently skillful at cup drinking to get most or all of their fluids in this way.</td>
</tr>
<tr>
<td>Age 1 year to 2 years</td>
<td>Walking, running, climbing stairs; starting to speak intelligible words; saying “no” (constantly); playing with food (instead of eating it); using spoon and cup (with considerable messiness); scribbling with a crayon (or, perhaps, trying to eat it); playing with blocks and other toys.</td>
<td>Breast milk or whole cows’ milk (no reduced-fat milk yet); bite-size, cut-up table foods; appropriate “finger” foods (but not those especially likely to cause choking); limited amounts of juice (if any); fluids preferably drunk from a cup rather than a bottle.</td>
</tr>
<tr>
<td>Age 2 years to 3 years</td>
<td>Climbing, jumping, throwing a ball (but not catching it); playing near (and eventually with) other children; dressing and undressing (but not necessarily at the desired times and places); following directions (sometimes); combining words into sentences; starting to use the toilet (maybe).</td>
<td>Reduced-fat or skim milk rather than whole milk if healthcare provider approves; the same or almost the same meals as those served to older family members; probably three meals and two snacks daily. Juice should still be limited; foods especially likely to cause choking should still be avoided.</td>
</tr>
</tbody>
</table>
Some young children may not be as skillful as your own child when it comes to carefully chewing and swallowing these foods. In addition, the hilarity and horseplay that often occur when young children eat together can increase the risk of choking even for skillful eaters. Preschool children should always be supervised while eating, and parents and others who care for preschoolers should know how to deal with a choking incident.

Table 1 (page 33) presents an overview of the developmental stages and corresponding foods that children up to three years of age can handle.

**IV. The School Years**

When children start school, they begin to be away from home for increasing periods of time and to have greater freedom in their lives. This means that they are also in a position to make their own food choices—at school, at friends’ homes, and in restaurants. One third of children in this age group get more than 40 percent of their daily calorie intake from sources outside the home; very often, these out-of-home food choices are under the children’s control rather than the parents’.

Another important change that takes place in the school years is that children become ready to learn about nutrition in a more deliberate way. Parents can now teach their children about good eating habits by explaining and discussing them as well as by setting a good example. Parents can also try to reinforce the nutrition lessons their children are taught in school.

**What Influences Children’s Food Choices?**

Early parental influences are important determinants of children’s food choices. One study found that children with the strongest preferences for high-fat foods and the highest total fat intakes had heavier parents. Are children imitating the parents in eating the same foods? Do children like the same foods simply because of repeated exposure to them? Or do parents and children share some genetically determined preference for such foods? Most likely, each of these factors has some influence.

Peer pressure and television advertising may also reinforce children’s preferences for high-fat foods and sweets. Parents and school personnel need to stress the importance of healthy food choices in order to offset these influences.

**Using the Food Guide Pyramid**

The Food Guide Pyramid (see page 28) provides a good outline of a nutritious diet for school-age children, just as it does for younger children. Many school-age children are taught about the Pyramid during their health or science lessons at school. Parents can also talk about the Pyramid at home and show their children how the Pyramid can be used as a guide to planning family meals. With a parent’s help, an elementary-school child may be able to review a day’s meals to see how close they come to the Pyramid’s recommendations.

Breakfast is an important meal for school-age children. Children who skip breakfast often feel hungry well before lunchtime; their hunger may be so distracting that it interferes with their ability to learn their lessons. Parents should offer their school-age
children a nutritious breakfast and should make sure the children get out of bed early enough to give them time to eat it. (As an alternative, parents can sign their children up for the school breakfast program, if one is available.)

It is not necessary to force a child to eat breakfast, however. If, on a given morning, a child is nervous about an upcoming examination and feels that she cannot eat her breakfast, it is safe to let her skip the meal. (In this situation, the parent may want to send a larger-than-usual lunch to school with the child in case she is unusually hungry later.) Mealtimes should not turn into struggles between parents and their children.

Many children want a snack after school, and they should be allowed to have one. Children need an afternoon snack to replenish the energy used during the afternoon in school. Parents or other caregivers should control the type of foods their children consume at snack time, however, to make sure those snacks are nutritious. Some examples of nutritious snacks include cheese and crackers, baked corn chips, fortified breakfast cereal with low-fat milk, and yogurt with fruit. It is best to let a child eat a snack immediately after she returns from school, so that eating the snack will not prevent her from having a good appetite for dinner. Those children who go to after-school day care are usually allowed to bring a snack with them, and it’s a good idea for a parent or caregiver to provide one. Because this snack must be stored without refrigeration during the school day, it should consist of nonperishable foods.

Sugar Substitutes

Some parents of children with a “sweet tooth” wonder whether they should give their children foods sweetened with Nutrasweet or other substitute sweeteners instead of sugar-sweetened foods. Others wonder whether their children should avoid alternative sweeteners completely because of safety concerns.

In truth, most children have no need for substitute sweeteners. These substances are usually added to a product because they help to decrease its calorie content—an important advantage for some adults, but not necessarily for children, who usually have no need to count calories.

On the other hand, it is certainly not necessary to avoid the use of alternative sweeteners. These substances are not dangerous to children. If a child happens to eat or drink something with a substitute sweetener in it while visiting a friend’s house, for example, there is no cause for concern.

Many parents and dentists do prefer that children use one group of products made with substitute sweeteners rather than similar, sugar-sweetened products: sugarless chewing gums. Chewing gum usually remains in the mouth for a long time; if it’s the sugar-sweetened kind, it bathes the teeth in cavity-promoting carbohydrate. Sugarless gum is preferable to sugar-sweetened gum because it does not promote tooth decay.

Milk Is Still Important

Milk is still the beverage of choice for school-age children. Because a child’s bones are still growing in length and in bulk, the child’s need for an ample intake of calcium continues. From about age five through puberty, three and then four eight-
Growing Healthy Kids:

Ounce glasses of milk per day become the healthy goal. In some school-age children, however—and especially in those not of northern European heritage—drinking this much milk can lead to gastrointestinal symptoms such as gas, bloating, or diarrhea. These children have inherited a gene that causes them to lose the ability to digest lactose (the sugar in milk) as they mature. This is not

Eating at School

Many parents are understandably concerned about whether their children are getting healthful meals at school. Parents who pack their children’s lunches usually make an effort to plan a nutritious meal, and the meals served by school lunch programs must meet nutritional guidelines. For a variety of reasons, however, children at school sometimes don’t eat a good meal.

- Some children don’t know how to select food from a cafeteria line; some lose their lunches (or lunch money or lunch tickets) before lunchtime.
- Some children manage to obtain the food but lack the skills needed to consume it, such as the ability to open a milk carton or peel an orange. (And even if adult assistance is available in the school cafeteria, children may not know how to ask for help or may be embarrassed to do so.)
- Children with loose or missing teeth may be unable to eat some of the foods served to them, such as apples or hard bagels.
- Some children are so worried about classwork, so intimidated by the crowded, noisy cafeteria, so eager to talk to their friends, or so preoccupied with their plans for after-lunch recess that they eat little or nothing.
- Some children have difficulties at lunchtime because their religious beliefs require them to say grace at meals, and they are afraid that this may not be allowed at school. (It is, in fact, perfectly legal for a child to pray in a public-school cafeteria, but school personnel may not be aware of this. If your child needs to say grace, make sure the school principal tells the cafeteria staff that saying grace should not be criticized or forbidden.)
- A few children don’t eat because they have been taught that they must always wash their hands before meals and brush their teeth afterwards, and neither of these things may be practical at school.
- And, of course, many children trade their carrot sticks for other people’s cookies, eat only desserts, or buy potato chips or baseball cards with their milk money, even though they know that they are not supposed to do any of these things.

It’s a good idea for parents to talk with their children from time to time about their experiences in the school cafeteria, to find out whether the children are having any difficulties. If there are problems, parents and school personnel may need to work together to solve them. Parents must remember, however, that school personnel cannot require a child to eat.

Many schools offer a choice of whole, reduced-fat, or skim milk, but some elementary-school children (especially those who can’t read yet) have no idea which is which. If your child’s healthcare provider has specified that she should drink a particular type of milk and you want her to get that type of milk at school, ask school personnel about the colors of the milk cartons. Many schools consistently buy their milk from the same dairy, and most dairies color-code their cartons. Even a child who can’t read can select a carton by color.
an illness: It is, in fact, the norm for most human beings (and other mammals) to lose the ability to digest lactose after the age of weaning.

If you suspect that your child is lactose intolerant, discuss this matter with the child’s healthcare provider. It is important to plan a diet that will meet the child’s needs for calcium, vitamin D, and the other nutrients usually provided by milk without causing the child gastrointestinal distress. In most cases the child will not need to avoid dairy products entirely. Many lactose-intolerant children can drink as much as eight ounces of milk at a time without experiencing symptoms. Most lactose-intolerant children can eat yogurt (which seems to be more digestible than milk) and cheese (from which most of the lactose has been removed during the manufacturing process). Milk that has been treated to reduce its lactose content is commercially available, and it can be useful for children who are so intolerant of lactose that they have difficulty consuming ordinary dairy products.

What Are American Children Eating?

Armed with an understanding of how children should eat, let’s take a look at the results of surveys showing what’s really happening in America today. Unfortunately, those results are troubling. Here’s what the surveys reveal:

• American children’s caloric intake hasn’t changed, but their physical activity has declined substantially—which means that the incidence of childhood obesity is increasing.
• American children are at most risk for marginal or low intakes of iron, calcium, and zinc.
• Children’s fruit and vegetable consumption is declining: Surveys reveal that 25 percent of American schoolchildren don’t eat fruits or vegetables on a daily basis.
• Nearly 25 percent of the vegetables consumed by American children are potatoes in the form of French fries and potato chips.

Obesity

As a nation we overconsume food and exercise too little, and this is as true for our children as for their elders. More American children are obese today than ever before, regardless of income level. Childhood obesity can develop into a lifelong problem; and the younger a child is when he becomes obese, the greater the likelihood that the obesity will persist into adulthood.

But the consequences of childhood obesity go beyond the physical. The psychosocial cost is also great—and also begins in childhood. Many heavy children won’t participate in sports because they feel too slow or too clumsy, or because they are the last ones picked for teams because of their weight. This sets up a vicious circle of persistent inactivity. Many overweight children won’t go to a beach or pool simply because they are embarrassed to take off their clothes. So they stay at home—watching more television and eating more snacks—rather than becoming involved in physical activity.

Obesity is a complex issue. Poor nutritional choices, genetics, family history, and
physical inactivity are all significant contributing factors. And studies confirm that if both parents are obese, a child’s chance of becoming obese is about 80 percent.

Physical inactivity is especially important today. One of the biggest roadblocks to getting exercise is television watching. National surveys have shown that those boys and girls who spend the most time watching television tend to be fatter than their contemporaries who watch less TV.

And there’s another problem with so much television watching: It exposes children to a barrage of food advertisements that entice them to make unhealthy food choices. The average child sees three hours of television advertising each week—that’s about 19 to 20 thousand commercials in the course of a year! One study found that 71 percent of the commercials airing during Saturday morning cartoon programming were for food products—and 80 percent of them were for foods of low nutritional value.

If your child appears to be obese, discuss the situation with the child’s healthcare provider. In some instances a child’s chunkiness may be a temporary situation. Children’s growth patterns are sometimes irregular: A child may put on a lot of weight one year and get the height to go with it the follow-

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### Figure 2. Sample Food Label

<table>
<thead>
<tr>
<th>Nutrition Facts</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Serving Size</strong> 1/2 cup (114g)</td>
</tr>
<tr>
<td><strong>Serving Per Container</strong> 4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Amount Per Serving</th>
<th>Calories</th>
<th>Calories from Fat</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Fat</strong></td>
<td>3g</td>
<td>5%</td>
</tr>
<tr>
<td>Saturated Fat</td>
<td>0g</td>
<td>0%</td>
</tr>
<tr>
<td><strong>Cholesterol</strong></td>
<td>0mg</td>
<td>0%</td>
</tr>
<tr>
<td><strong>Sodium</strong></td>
<td>300mg</td>
<td>13%</td>
</tr>
<tr>
<td><strong>Total Carbohydrate</strong></td>
<td>13g</td>
<td>4%</td>
</tr>
<tr>
<td>Dietary Fiber</td>
<td>3g</td>
<td>12%</td>
</tr>
<tr>
<td>Sugars</td>
<td>3g</td>
<td></td>
</tr>
<tr>
<td><strong>Protein</strong></td>
<td>3g</td>
<td></td>
</tr>
</tbody>
</table>

Vitamin A 80% • Vitamin C 60%
Calcium 4% • Iron 4%

* Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:

<table>
<thead>
<tr>
<th>Calories:</th>
<th>2,000</th>
<th>2,500</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Fat</td>
<td>Less than 65g</td>
<td>80g</td>
</tr>
<tr>
<td>Sat Fat</td>
<td>Less than 20g</td>
<td>25g</td>
</tr>
<tr>
<td>Cholesterol</td>
<td>Less than 300mg</td>
<td>300mg</td>
</tr>
<tr>
<td>Sodium</td>
<td>Less than 2,400mg</td>
<td>2,400mg</td>
</tr>
<tr>
<td>Total Carbohydrate</td>
<td>300g</td>
<td>375g</td>
</tr>
<tr>
<td>Dietary Fiber</td>
<td>25g</td>
<td>30g</td>
</tr>
</tbody>
</table>

Calories per gram:
Fat 9 • Carbohydrate 4 • Protein 4
ing year. In other instances, though, a child’s greater-than-usual weight gain may be an indication of a problem that could become serious if not dealt with appropriately.

Childhood obesity is a potentially serious problem, but remember: Children should not be placed on a restrictive diet to lose weight or be allowed to diet on their own. Growth and development can be impaired by dieting in childhood; and improperly dieting children can develop long-term destructive eating habits, including eating disorders.

Appropriate treatment of childhood obesity is multifactorial. It includes efforts to improve the child’s eating habits, efforts to increase his physical activity, and conscientious attempts to address family dynamics and self-esteem issues—all with the guidance of a health professional.

The family factor is especially important, since obesity is commonly a family problem. If one child in a family is not eating appropriately, the parents must question whether anyone else in the family is doing so. Getting the whole family on a healthy eating and activity plan is the beginning of a lifelong solution to obesity.

In the case of a child who is still growing, helping the child grow into his weight is often the best approach to the problem of obesity. With such an approach, the overweight child won’t actually lose weight, but with a little guidance and a little hope, he won’t gain weight as he grows, either. His excess weight will be taken up by the demands growing taller makes on his body. This is a far healthier approach to take than trying to achieve weight loss in a growing child.

*Fat, Fiber, and Other Adult Dietary Concerns*

For children in their school years, getting enough nutrients for normal growth and development is still the top nutritional priority. At this point, however, children can also learn about—and start to follow—at least some of the dietary guidelines recommended for adults. The “Nutrition Facts” label found on most food products (see Figure 2, page 38) can be a handy resource for teaching children about adult nutrition concerns. Curious children are often interested in labels, and a few sessions of label-reading may prompt family discussions of such terms as “saturated fat” and “dietary fiber.” Some children
enjoy studying the Nutrition Facts labels and using them to compare different foods found at home or at the supermarket: The facts on the food labels become the dietary equivalent of the statistics on the backs of baseball cards.

Children can limit their fat intake in the same ways that adults do: by using reduced-fat dairy products, removing the skin from poultry, trimming fat from meat, and limiting their consumption of fried foods, high-fat spreads, and high-fat snacks. Children can increase their fiber intake by eating plenty of vegetables and fruits and—at least sometimes—by choosing whole fruit rather than fruit juice and by eating whole-grain products rather than refined grains. The goal of consuming “five-a-day” of fruits and vegetables is appropriate for children as well as adults, although children’s serving sizes will be smaller. Strict efforts to limit children’s fat intake and increase their fiber intake are not appropriate, however, unless such efforts have been recommended by a healthcare provider for a specific medical reason.

The key ideas for parents to remember are, first, to teach their children about the types of nutrition issues they will need to know about later in life and, second, to help them establish healthful, adult-style dietary patterns. A healthful diet is one that includes a wide variety of different foods (as indicated by the Food Guide Pyramid), consumed in moderate amounts. Finally, the idea that there are “good” and “bad” foods is passé. Any age-appropriate food may be incorporated into a child’s healthful diet when the basic principles of balance, variety, and moderation are observed.

**Conclusions**

Good nutrition is crucial to normal development in infants and children. Understanding the changing nutritional needs of your infant or child can give her a nutrition advantage that can last a lifetime.

Here are some key points that parents should remember:

- Eating should be a pleasurable, relaxing family experience.
- Although breast-feeding remains the gold standard in terms of infant nutrition, formula-feeding is certainly entirely nutritionally adequate. Parents who choose this route should be supported in their decision.
- Breast milk or formula should be continued throughout the first 12 months of life. Breast-feeding may continue past the first birthday if desired.
- One-year-olds should drink whole milk (or breast milk) rather than reduced-fat or skim milk.
- To prevent baby-bottle tooth decay, infants and children should not be allowed to go to bed with a bottle of milk, formula, or juice and should not be allowed to carry a bottle around during the day. Weaning bottle-fed children to a cup as soon as possible will also help.
- While moderating fat intake may be a good idea for adults, babies and young children need a significant portion of their calories as fat in order to grow properly.
- Although fruits, vegetables, and grain products make important contributions to
children’s diets, parents should avoid overzealous efforts to increase their children’s fiber intake.

- Choking on certain foods remains a significant risk until a child is at least three years of age.
- Safe food-handling practices are even more crucial to children’s health than they are for adults, because children are at especially high risk of serious complications if they eat contaminated food and develop a foodborne illness.
- Feeding children overly restrictive vegetarian diets can lead to nutrient deficiencies and growth problems. If parents plan to feed their children nontraditional diets, they should plan those diets carefully with the help of the child’s healthcare provider and/or a registered dietitian.
- American children are joining the nation’s trend toward increasing obesity. Help your child avoid this potentially lifelong problem by practicing healthy family eat-

### Appendix A

#### The 1995 Dietary Guidelines for Americans*

- Eat a variety of foods.
- Balance the food you eat with physical activity—maintain or improve your weight.
- Choose a diet with plenty of grain products, vegetables, and fruits.
- Choose a diet low in fat, saturated fat, and cholesterol.
- Choose a diet moderate in sugars.
- Choose a diet moderate in salt and sodium.
- If you drink alcoholic beverages, do so in moderation.

ing habits and regular physical activity. If your child is already obese, seek the advice of her healthcare provider rather than attempting to treat the problem on your own.

- As children grow older, they have increasing opportunities to make their own food choices. Parents have the responsibility of encouraging healthy choices, both by teaching their children the principles of good nutrition and by setting an appropriate example.
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*Toddlers, Preschoolers, and School-Age Children*


