

Current Research

Feeding Infants and Toddlers Study (FITS): Development of the FITS Survey in Comparison to Other Dietary Survey Methods

PAULA ZIEGLER, PhD, RD; RONETTE BRIEFEL, DrPH, RD; NANCY CLUSEN, MS; BARBARA DEVANEY, PhD

Web site exclusive!

Editor's note: Appendixes 1-4 that accompany this article are available online at www.adajournal.org.

ABSTRACT

Objective This article describes the steps in the planning and development of the 2002 Feeding Infants and Toddlers Study.

Methods We describe the study's rationale, sampling methodology, survey questionnaire development, dietary methodology, field data collection, and data processing and analysis. A brief review of existing national nutrition surveys and studies of infants and toddlers, and available study designs and dietary methods, is also included.

Subjects/setting Most national studies have been cross-sectional and assessed breastfeeding rates, dietary intake, and nutritional status among general and high-risk populations. Other specialized studies have been longitudinal and tracked dietary intake and nutritional status from infancy to the preschool years, or focused on studying a specific research topic, such as the relationship between fluoride intake and dental caries.

Conclusions The 2002 Feeding Infants and Toddlers Study has advanced the knowledge base on infant and toddler nutrition by using state-of-the-art methodology and by providing researchers with updated information to develop further research questions. Our findings can be used by child health and nutrition organizations to develop dietary recommendations and improved nutrition

education materials. Clinicians and practitioners in the fields of public health and wellness can use the information to provide practical advice to parents in a variety of settings to help give children a more healthful start. *J Am Diet Assoc.* 2006;106:S12-S27.

The Feeding Infants and Toddlers Study (FITS) was a study to collect and analyze data on a broad range of topics related to infant and toddler nutrition. The FITS data set is a unique and rich data source that has supported, and continues to support, in-depth analyses of infant and toddler food and nutrient intakes, feeding practices and transitions, and ethnic differences in food choices. Ongoing concerns about the increasing rates of overweight and obesity among children in the United States have heightened interest in learning more about early childhood eating practices and how to prevent excessive consumption while achieving healthful diets (1-6). As a result, there is a lot of interest from the field in FITS—from dietetics professionals, researchers, health care professionals, and policy makers (7). This article documents the FITS study methods and procedures and places it in the larger context of previous studies of infant and toddler nutrition. For documentation purposes, FITS survey instruments and data collection tools are available on the Internet (www.adajournal.org).

National studies of the nutrient intake, breastfeeding practices, dietary supplement use, and developmental skills of infants and toddlers have been limited to inclusion of the target population in general US population surveys and specialized studies of infants and toddlers. The most recent general population studies include the ongoing National Health and Nutrition Examination Survey (NHANES), and the 1994-1996 and 1998 Continuing Survey of Food Intakes by Individuals (CSFII) (8-12). Periodic studies targeting the infant and toddler populations include the Food and Drug Administration's Infant Feeding Practices Survey, conducted in 2004-2005 and 1993-1994, surveys sponsored by Gerber Products Co in 1994 and in 2002, FITS, the Ross Laboratories Mothers Survey in 2001, the National Immunization Survey beginning in 1994, and the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) Infant Feeding Practices Study in 1997 (13-18).

Ongoing monitoring of the nutritional status of low-income and high-risk infants and toddlers comes from the state-based Pediatric Nutrition Surveillance System and studies by WIC (18-21). Additional information on the

P. Ziegler is an adjunct, assistant professor, Department of Foods and Nutrition, College of Saint Elizabeth, Morristown, NJ; at the time of the study, she was a principal scientist, Gerber Products Co, Parsippany, NJ.

R. Briefel is a senior fellow, N. Clusen is a statistician, and B. Devaney is vice president and director of Human Services Research, Mathematica Policy Research, Inc, Washington, DC.

Address correspondence to: Ronette Briefel, DrPH, RD, Senior Fellow, Mathematica Policy Research, Inc, 600 Maryland Ave SW, Suite 550, Washington, DC 20024-2512. E-mail: rbriefel@mathematica-mpr.com

Copyright © 2006 by the American Dietetic Association.

0002-8223/06/10601-1010\$32.00/0

doi: 10.1016/j.jada.2005.09.033

diets and nutritional status of infants and toddlers has been made available from several studies focused on answering specific research questions among nonrepresentative samples of infants and toddlers (see Figure 1).

The relative lack of information on infants' and toddlers' diets has become a concern because overweight and obesity is on the rise in children as well as adults (7). Finding ways to prevent serious health problems such as heart disease, diabetes, cancer, and stroke—which develop hand in hand with these conditions—and ensuring good nutrition have become pressing concerns. Across the country, schools are limiting or banning sales of soft drinks and other sweetened beverages and high-energy snack foods (22,23). Little attention has been paid to the problem in infants and toddlers, and large-scale comprehensive dietary intake studies of the younger than age 2 years group are lacking.

The FITS data set is a unique and rich data source that has supported, and continues to support, in-depth analyses of infant and toddler food and nutrient intakes, feeding practices and transitions, and ethnic differences in food choices.

Existing databases do not have adequate samples of children younger than age 2 years to support detailed analyses of food and nutrient intakes of infants and toddlers. FITS data, first published as a supplement to the *Journal of the American Dietetic Association* in 2004, was crucial because there was a need for up-to-date and reliable data on usual nutrient intake to determine if nutrient requirements of infants and toddlers were being met, based on the newly released Dietary Reference Intakes from the Institute of Medicine (24,25). FITS represented the first time the Dietary Reference Intakes were used to assess usual energy and nutrient intakes on a large scale in children younger than age 2 years (24-26).

In this article, we provide a brief review of the US national studies and other relevant studies of infants and toddlers and an in-depth look at how FITS was developed, including a release of the FITS questionnaires (recruitment and household interview, dietary intake interviews, and survey tools such as the food measurement aids used to collect amounts of foods and beverages consumed by infants and toddlers). FITS serves as a bridge over the data gaps in existing surveys and provides a benchmark for other researchers, especially with the release of new findings in this supplement, the FITS II Supplement.

METHODS

The development of a survey of infants and toddlers takes several steps. The first critical steps are to establish the survey goals and research questions, to identify the target population, and to select and design the survey methods of collecting dietary intake and other critical information needed to meet the study's goals and research

objectives. Key to the latter step is a review of existing studies and an assessment of their strengths and weaknesses, including the survey design, sample size, and methods.

Review of Existing National Surveys and Studies of Infant and Toddler Nutrition

Figure 1 summarizes the data collected in national surveys and other large-scale studies that include information on the food and dietary supplement intakes, feeding practices, and/or nutritional status of infants and toddlers living in the United States (8-16,19,27-39). We reviewed approximately 30 surveys or studies and limited our detailed review to 10 national surveys and eight studies that had sample sizes of approximately 100 or more infants and toddlers. A sample size of 100 or more was an arbitrary cutoff based on the minimum sample size needed for an estimate of the distribution of usual nutrient intake. Figure 1 provides an overview of each survey's or study's design, sample, year of data collection, dietary methodology, and the types of data reported. The most recent cross-sectional national surveys of diet in the United States are the ongoing NHANES, and the 1994-1996/1998 CSFII (8-10). The CSFII was last conducted in 1994-1996 with a supplemental sample in 1998 of children age birth through 8 years to assess exposure to pesticides in the diets of infants and children (9,10). Two days of dietary recall per sample person were collected in the CSFII 1994-96/1998 survey using an in-person, interviewer-administered methodology.

NHANES became an annual survey in 1999 and provides a continuous annual sample design (8,11,19). The survey includes oversampling of African Americans, Mexican Americans, adolescents, older people, and pregnant women. Targeted sampling of low-income whites began in 2000, to provide reliable estimates for these population groups and for comparison in health conditions and the prevalence of risk factors between race/ethnicity groups. NHANES dietary intake is related to health status, in the same people, with emphasis on racial determinants of health. Twenty-four-hour dietary recalls are collected by interviewers in an examination center, and beginning in 2002, a second day's intake is collected by telephone for all sampled people (in earlier years of NHANES, a second day's intake was collected in-person on a subsample).

Both the CSFII and the NHANES have included 24-hour dietary recalls to assess food and nutrient intake and survey questions on dietary supplements, although NHANES questions on supplements are more extensive than those asked in the CSFII. In addition, the CSFII has now merged with NHANES, so NHANES is the primary nutrition survey monitoring infants' and toddlers' diets and nutrition status (8).

The surveys sponsored by Gerber Products Co in 1994 and 2004 also used a cross-sectional approach (14,15). The 1994 survey collected 4-day food diaries from 1,658 mothers of infants and toddlers by mail (14). The 2002 FITS differed in that mothers of 3,022 infants and toddlers were interviewed by telephone to collect a 24-hour dietary recall, including dietary supplements on the day of the recall. This was followed 3 to 10 days later by a second 24-hour recall interview on a random subsample

Survey or study	Sample	Design	Dietary intake and survey methodology	Type(s) of nutrition data collected
National surveys				
Feeding Infants and Toddlers Study 2002 (14)	3,022 infants and toddlers aged 4-24 mo	Cross-sectional, national oversampling of ages 4-6 mo and 9-11 mo	Telephone, 24-h recall, 2-d intake for 703 of sample (23% subsample); mailed food measurement booklet ahead of call; automated data collection and coding (NDS-R ^a)	Energy and nutrient intake from foods and dietary supplements, intake at child care, breastfeeding and infant feeding practices, developmental skills
National Health and Nutrition Examination Survey 1999-ongoing (8,9,11)	111 breastfed and 291 infants and 14 breastfed and 441 toddlers in 1999-2000	Annual, cross-sectional, oversampling of Mexican Americans, African Americans, low-income persons, adolescents, and pregnant women	24-h recall, interviewer-administered, in-person, 1-day recall in 1999; 10% subsample for Day 2 recall in 2000; 100% with 2 d of intake beginning in 2002 (Day 2 by telephone); interviewer-administered questions on brand name, type, frequency, and amount of dietary supplement(s) used in the past month supplement questionnaire	Food and nutrient intake, detailed dietary supplement usage for the past month, supplement information, foods and physical activity, nutrient biomarkers, chemical exposures
National Immunization Survey, 1994 (16)	30,000 children aged 19 to 35 mo	Cross-sectional, list-assisted random digit dial survey	Random digit dial telephone survey of parents	Breastfeeding rates beginning in 2001
Continuing Survey of Food Intakes by Individuals 1994-96 and 1998 (10,11)	425 breastfed infants and 1,021 infants and 68 breastfed and 2,118 toddlers	Cross-sectional, oversampling of low-income persons	Two 24-h recalls, in-person, interviewer administered	Food and nutrient intakes, diet and health knowledge of adults, dietary supplement type(s) used
Gerber Products Company, 1994 Survey (13)	1,658 infants and toddlers up to age 24 mo	Cross-sectional study in fall, 1972, 1979	Mailed, 4-d food diaries	Energy and 11 nutrients, breast milk intake, supplement use and intake at child care
Ross Laboratories Mothers Survey 2001 (15)	Over 33,000 per mo	Longitudinal study (probability sample from a commercial database)	Mailed questionnaire monthly from 1-12 mo	Type of milk infant consumed in hospital, at 1 wk of age, in past month, and most often in past week
Food and Drug Administration Infant Feeding Practices Survey II (2004-2005) and I (1992-1993) (12)	New mothers and healthy, full-term infants; expect 3,500 pregnant women and 2,250 to be surveyed in later infant ages; 1,200 in 1992-1993 survey	Longitudinal from birth to 1 y, selected from a commercial mail panel	Mailed questionnaires sent prenatally and monthly from 1-7 mo, 9 mo, and 12 mo; National Cancer Institute Dietary History Questionnaire on a subsample covering the past month's diet	Breastfeeding; infant-feeding practices; child care; food and nutrient intake of mothers; dietary supplement use by mothers
Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) Infant Feeding Practices Study 1997 (27)	874 maternal-infant pairs, representative of WIC program participants	Longitudinal	Computer-assisted telephone interviews (or in-person interview at households without telephones) monthly from 1 to 7 mo, and at 9 mo and 12 mo	Breastfeeding rates and practices; introduction of complementary foods and beverages; child care
Study of WIC Participant and Program Characteristics, 2000, 2002, 2004 (28,29)	8,016,918 records in 2002	Near census of WIC participants; biennial survey last conducted in 2004	Mailed survey to WIC participants; record abstractions at local WIC service sites	Anthropometric and hematologic measures; birth weight; breastfeeding
Pediatric Nutrition Surveillance System (19)	Low-income, high-risk children, birth to 5 y in publicly funded programs; >5,000,000 records age 0-5 y in 2003	Continuous surveillance since 1973; coverage reflects the number of clinic visits in participating programs in 36 states and District of Columbia, Puerto Rico, and 6 tribal governments	Client interviews and clinic medical records	Anthropometric and hematologic measures; birth weight

(continued)

Survey or study	Sample	Design	Dietary intake and survey methodology	Type(s) of nutrition data collected
Other studies				
Screening for Iron Deficiency Anemia Study, 1997-1998 (30)	282 toddlers age 9 to 30 mo, ethnically diverse, low-income in Baltimore, MD	Cross-sectional, sampled from visits to well-child clinics	Self-administered diet and health-history questionnaire	Food and beverage intake; dietary supplement use; WIC participation; hematologic determinations for iron deficiency anemia
Iowa Fluoride Study, 1992-1995 (31)	642 infants	Longitudinal from birth through age 5 y	3-d food records collected at 1.5, 3, 6, 9, and 12 mo of age; quarterly from age 1 to 3 y; and every 6 mo from 3 to 5 y, food frequency questionnaire on beverages and dietary supplements	Energy and 21 nutrients; food intake focusing on beverage intake to link to dental caries, fluoride supplement use
Iowa Fluoride Study, 1992-1995 (32)	1,230 children from birth through age 2 y in Iowa (n=397 with all 8 follow-up questionnaires)	Longitudinal from birth through age 2 y	Mailed, 3-d food diary at 6 wk, and 3, 6, 9, 12, 16, 20, and 24 mo; questionnaire on breastfeeding episodes and vitamin and mineral supplements	Intake of 18 vitamins and minerals from foods and supplements; breastfeeding status, supplement use
The Bogalusa Newborn–Infant Cohort Study January 1, 1974–June 30, 1975 (33)	440 infants born in 1974-1975	Longitudinal, ethnically diverse	Mailed questionnaire (food checklist) monthly from 1 to 4 mo; five 24-h recalls, interviewer-administered at 6 mo, 12 mo, 24 mo, 3 y, and 4 y	Food, energy, and 11 nutrients; birth weight; anthropometric measurements; serum lipids; blood pressure
The DARLING Study, California, 1986-1989 (34)	119 infants (completed with 119 toddlers)	Longitudinal	4-d weighed food records and breast milk intake collected and weighed for 24 h along with questionnaire on sleep and activity	Sleep and activity assessment, milk intake and composition, energy and protein intake
Skinner and colleagues, 1997 (35); Carruth and colleagues, Tennessee, 2000 (36) 1992	94 infants (completed with 94 toddlers), full-term, white, in Tennessee	Longitudinal, followed until 24 mo of age	Ten 24-hour recalls and usual intake interviews in the home collected monthly from 2-4 mo, bimonthly from 6-12 mo, and quarterly from 12-24 mo	Food intake, energy and nutrient intake, introduction of complementary foods, picky eater status, food likes and dislikes
The Leiden Preschool Survey (37) 1979-1980	124 infants (completed 124 toddlers)	Longitudinal	Three 24-h recalls	Energy and 13 nutrients and growth
Sanjur and coworkers, Colorado, 1990 (38)	90 toddlers, low-income in Denver, CO	Longitudinal	3-d food records, supplement information	Energy and nutrient intake; meal patterns
Kattelman and colleagues, 2001 (39)	175 recruited; 133 formula-fed infants in Cincinnati, OH area	Longitudinal	Diet histories at 12, 24, and 36 mo	Complementary foods; iron and zinc status

Figure 1. National surveys and studies of infants and toddlers in the United States. ^aNDS-R=Nutrition Data System for Research (version 4.03, 2001, University of Minnesota Nutrition Coordinating Center, Minneapolis).

of the population (23% of the initial sample) to estimate usual nutrient intakes.

Other national surveys, like the longitudinal Ross Laboratories Mothers Survey, have focused on the types of milk fed to infants from birth to age 1 year (14,16). The Ross study has been used to track national health objectives on breastfeeding (40). The cross-sectional National Immunization Survey was first conducted in 1994 to study immunization coverage among children aged 19 to 35 months, and has included a retrospective recall of the child's initiation and duration of breastfeeding since 2001 (41).

The US Food and Drug Administration's Infant Feeding Practices Study is a consumer study of pregnant women and new mothers designed to collect information about mothers' breastfeeding success, infant feeding practices, dietary intake and dietary supplement usage, and knowledge of infant nutrition and feeding (13). This is a longitudinal study conducted through the mail that tracks new mothers' infant feeding practices and dietary habits until their infant reaches 1 year of age (13).

Surveys and surveillance systems that continuously collect health and nutrition measurements are important for monitoring trends over time, progress toward meeting national health objectives, and generating reference distributions (19). Indicators of nutritional status in low-income and high-risk infants and children are monitored through the Pediatric Nutrition Surveillance System, a state-based surveillance system conducted by the Centers for Disease Control and Prevention (20). The Pediatric Nutrition Surveillance System covers infants and toddlers visiting publicly funded nutrition and health programs like WIC. The US Department of Agriculture has sponsored several studies of the WIC population, including the longitudinal WIC Infant Feeding Practices Study in 1977 and the WIC Participant and Program Characteristics Study, which is conducted every 2 years (27-29). The latter WIC study reports information on anemia, weight status, birth weight, television watching, and breastfeeding collected in the reporting system used by state WIC agencies (28). Smaller studies of WIC participants have also been conducted and are summarized in the Institute of Medicine's report *Dietary Risk Assessment in the WIC Program* (42). These studies have addressed topics such as food insecurity, fruit and vegetable intake, consumption of foods, and nutrient intakes among WIC infants and children and have compared findings among low-income racial/ethnic groups participating in WIC.

Two other studies that were based on US populations were the Davis Area Research on Lactation, Infant Nutrition and Growth study conducted in California, and the Skinner and Carruth studies conducted in Tennessee (34-36). The Davis Area Research on Lactation, Infant Nutrition and Growth study was designed to document nutrient growth longitudinally, morbidity, and activity of matched cohorts of infants who were either breastfed or formula-fed for greater than 12 months. At 3, 6, 9, 12, 15, and 18 months, mothers were asked to complete 4-day weighed food records and breast milk intake records along with a questionnaire on sleep and activity. In contrast, the Skinner and Carruth studies (35,36) followed 94 full-term white infants until age 24 months. Ten 24-

hour recalls and usual intake interviews were collected monthly between months 2 and 4, bimonthly between 6 and 12 months, and quarterly between 12 and 24 months. This longitudinal study provided a wealth of information about food intake, energy and nutrient intake, introduction of complementary foods, and overall likes and dislikes of the infants and toddlers (35,36).

Review of Existing Study Designs

Figure 1 shows that both cross-sectional and longitudinal designs have been used in national surveys of infants and toddlers in the United States. Large-scale, general-purpose population surveys are typically conducted cross-sectionally, whereas studies aimed at specific ages (eg, infancy through age 2 years) can more easily be conducted longitudinally. The other studies conducted with smaller sample sizes in specific locations or populations have primarily used a longitudinal study design. This section briefly describes the strengths and weaknesses of cross-sectional and longitudinal designs for nutrition studies.

Cross-Sectional Studies

Cross-sectional studies include ongoing and periodic national population surveys of food and nutrient consumption and health and nutritional status indicators. These surveys give descriptive epidemiologic data on nutrition at a single point in time. They identify nutrition needs in the population, and form a basis for health promotion and disease prevention programs (19,43,44). Repeated surveys become the basis for monitoring population trends in nutrition. Cross-sectional studies are used to identify associations between diet and health or disease status. However, the interpretation of these associations identified through such analyses is limited because of the concomitant measurement of disease status and dietary exposures characteristic of this design.

One distinct advantage of cross-sectional research is that it is more economical in time and cost than other designs. For the participant, there is only one period of data collection. For the researcher, there is no difficulty and cost associated with maintaining contact with participants over a long period of time. A significant disadvantage of cross-sectional designs is the inability to directly assess intraperson change and to directly link diet and health outcomes.

Longitudinal Studies

Longitudinal designs can be defined as following one or more groups of participants and collecting data at several points in time, generally following a cohort to investigate developmental variables. The same participants can, or must be, observed for developmental assessments at specific age levels, with repeated measures for each variable at each age level. Data are compared among and between participants at each age level to assess interperson and intraperson change. The two primary purposes of longitudinal research are to describe patterns of change and to describe the direction and magnitude of causal relationships between variables (43,44).

Longitudinal designs, by their nature (ie, the length of

data collection), pose several disadvantages and challenges. The greatest challenge of longitudinal research is participant attrition. Maintaining contact with, and the commitment of, participants in the study can be very costly in terms of time, money, and research personnel. Large numbers of research personnel may be needed to maintain contact and collect data from participants, and to analyze the data. Measures used at the beginning of a study may become outdated as more effective and updated measures become available outside the study. If measures are changed to accommodate such advancements, it may not be possible to compare results from different years with each other. Similarly, the state-of-the-art data collection and analytic methodologies used at the beginning of a study may no longer be available or may have substantially changed over the course of a long-term study (44). Longitudinal research conducted over a long period of time requires bridging studies when methods or measures are changed or updated.

Review of Existing Dietary Collection Methods

There are four general types of dietary methods available to collect information on food and nutrient intakes: 24-hour dietary recalls, food records or diaries, diet histories, and food frequencies. With 24-hour dietary recalls, interviewers obtain information on all food and beverage items consumed during the past 24 hours, the previous day, or a defined 24-hour period. Food records or food diaries require respondents or participants to weigh, measure, or estimate amounts and record all foods consumed over a specified period of time, usually 3 to 7 consecutive days or multiple periods within a year. The diet history method of assessing dietary intake ascertains a person's food intake by collecting descriptive detail and amount information about individual foods or food groups. Diet history questionnaires may include questions on meal patterns, lists of commonly consumed foods, groups of generic foods, and/or multiple days of food records. On a food frequency questionnaire (FFQ), respondents are asked to report their usual frequency of consumption of each food for a specific period of time. Some FFQs also inquire about the portion size of each food consumed or specify a standard portion size.

There is no single diet data collection method suitable for all food consumption surveys, epidemiologic studies of nutritional status, and clinical investigations. Selection of a data collection method is dependent upon the purpose of the study, the precision needed, the population of interest, the period of interest (past or current), and the available resources. Several articles have been published concerning the selection of diet data collection methods for studies of populations, including the 24-hour recall, food record or diary, diet history, and FFQ (45-52). Figure 2 summarizes the most important uses and limitations of these methods for estimating food and nutrient intakes among infants and toddlers. We briefly discuss issues related to the administration of these commonly used methods with the parents and caretakers of infants and toddlers.

Twenty-Four-Hour Dietary Recall. Recalls may be administered face to face or by telephone with similar results (46,52-56). Visual aids, such as two-dimensional or three-

dimensional food models, geometric models, photographs, or household measuring utensils may be useful to help parents/respondents estimate quantities consumed (45-51,55). The dietary information may be recorded and coded in the traditional way (ie, on a form), or be recorded with the assistance of a computer program. Direct coding of the foods reported during the interview is possible using automated software that specifies the information needed for clarifying and coding each response. When group assessment is the objective, the 24-hour recall interviews should be scheduled on various days of the week to account for daily variation in food choices, particularly between weekdays and weekends, as well as between weeks and seasons of the year (25,50,53).

The 24-hour dietary recall method is labor intensive for researchers or dietetics professionals, who must receive training, interview respondents, and review and resolve issues that arise with coding the recalls. Other challenges include determining breast milk intake and obtaining intake from multiple respondents who may have cared for the child on a given day (42-51). However, respondents are generally willing to respond to the interviewer, and refusals are less likely to occur than in other, more demanding requests for dietary information. In addition, parents are often familiar with their infant's and toddler's schedule, and the amounts of beverages and jarred baby foods served, thereby improving the estimation of amounts consumed.

Food Record or Food Diary. Food records or diaries are often used in studies or clinical settings that require estimates of the food and nutrient intake of individual respondents, rather than groups. The food record or diary method requires good instructions, adequate demonstrations, and ideally, some observations. Generally, people who agree to participate are dedicated, highly motivated, literate subjects and, thus, may not be representative of the general population (42-51). Although parents or respondents are asked to follow their usual infant or toddler feeding practices, they may modify their feeding practices or alter the foods recorded (eg, not recording an item considered unhealthy, like candy).

The 24-hour dietary recall method is labor intensive for researchers or dietetics professionals, who must receive training, interview respondents, and review and resolve issues that arise with coding the recalls.

The major strength of dietary records is that they do not rely on memory and, because parents or caregivers keep the records, they are relatively inexpensive to administer. However, there are serious limitations: the particular time period may be atypical if the infant or child is sick or teething; dietary intake may be altered due to the record-keeping itself; it may be considered too burdensome and time-consuming by respondents or parents,

	24-Hour dietary recall	Food record or diary	Dietary history	Food frequency questionnaire
Appropriate data uses	<p>Provides valid mean nutrient intake for groups</p> <p>Provides quantitative estimates of foods and nutrients for groups</p> <p>Captures dietary supplement use on the day of recall</p> <p>Identifies foods that contribute to nutrient intakes, and mean portion size of foods consumed (among population groups)</p> <p>Provides usual nutrient intake if more than 1 d of intake collected on a subsample</p> <p>Provides detailed information on food preparation and food details for a single day of intake</p>	<p>Identifies food items that contribute to nutrient intake of an individual over a period longer than 1 d</p> <p>Captures average portion size of foods consumed by a person, especially if weighed</p> <p>Captures meal patterns and weekday/weekend patterns of a person</p>	<p>Captures meal and dietary patterns of a person for the past</p> <p>Captures dietary changes over time, depending on the methods and questions included</p>	<p>Provides qualitative information on usual intake of foods</p> <p>Identifies foods commonly consumed</p> <p>Can be used to estimate nutrient intakes if portion sizes and assumptions are made to rank person's intakes</p>
Data limitations	<p>Not valid for estimating usual nutrient intake of an individual</p> <p>Cannot be used to estimate usual <i>food</i> intake</p> <p>Not reliable for daily intake of a person</p> <p>Tends to underestimate usual energy intake, but may also be subject to overreporting of infants' and toddlers' intakes</p> <p>May be difficult to complete if more than one respondent needed (eg, parent and day-care provider)</p> <p>Covers short time period</p> <p>Data are limited to current diet</p>	<p>Period recorded may be atypical due to illness, or meals consumed away from home (eg, at day care)</p> <p>Tends to underestimate usual energy intake</p> <p>Data are limited to current diet</p> <p>A single record of 3-7 consecutive d does not reflect person's true variability in diet</p> <p>Covers short time periods</p> <p>May require multiple respondents, leading to incomplete records</p>	<p>May be difficult for a respondent to accurately estimate an infant's or toddler's intake for a longer period of time</p> <p>Difficult to interpret diet over a longer period when infant's and toddler's diet changes due to growth and developmental stages</p> <p>Tends to overestimate energy and nutrient intakes</p> <p>Quantification difficult due to lack of standardized portion aids and day-to-day variability in infants' and toddlers' diets</p> <p>May be difficult for parent or other proxy respondent to estimate intake</p>	<p>Provides little information or details on food preparation or specific foods (such as brand names)</p> <p>Less standardized or tested for infants and young children</p> <p>Tends to overestimate energy intake and intake of some nutrients</p> <p>Difficult to estimate intake when foods are grouped in a list</p>
Major applications of the dietary method	National dietary studies (population-based) such as National Health and Nutrition Examination Survey and Continuing Survey of Food Intakes by Individuals; nutrition intervention studies	Nutrition intervention studies; individual counseling	Nutrition epidemiology studies; individual counseling	Nutrition epidemiology studies; individual counseling

Figure 2. Comparison of dietary methods for estimating food and nutrient intakes of infants and toddlers.

especially for frequent feedings; and it cannot be used to measure milk intake from the breast (42-51). In addition, food records entail the same resources for coding and processing as do 24-hour dietary recalls.

Diet History Questionnaire. Diet histories are typically collected by an interviewer, either in person or by telephone, but can also be self-administered on hard copy or on the Internet. The objectives are to obtain valid and reproducible estimates of a person's usual intake of foods, nutrients, and other dietary components. This information can be used in studies to rank or categorize intakes, and to test for associations of diet and disease. Precision is sacrificed to obtain data covering the longer time interval (42-50). In a clinical setting, a diet history can be used to assess a person's diet and to plan a dietary intervention to improve the diet.

FFQ. The FFQ is another method often used in dietary surveillance systems requiring brief methods and in nutritional epidemiology studies. The FFQ assessment method has been used to estimate the frequency of consumption of foods and to estimate nutrient intake based on frequency, and reported or standard portion sizes of each food item or food group in the list of foods. More limited applications, like the infant food frequency used in NHANES III, is to simply identify if foods have been introduced to the diet or are consumed at all. FFQs provide descriptive information on dietary patterns over a specific period of time. In addition, a number of FFQs include summary food group questions, questions on restaurant eating and use of fat in cooking or added at the table, and use of dietary supplements, as well as health-related questions (42-50).

The advantages of the FFQ method for assessing the diets of infants and toddlers are that it is relatively inexpensive; may reflect typical diet when weekly consumption is considered; may be used to screen high or low consumers of different foods; and may be designed to focus on certain foods, such as infant formula or foods commonly consumed only by infants (eg, jarred baby foods). Limitations of this method are that it does not provide specific nutrient information or estimates of absolute intakes unless serving sizes are considered, it cannot be used to measure milk intake from the breast, and is subject to respondent difficulties in accurately estimating the frequency of consumption or adding single foods together to respond to a question about a series of foods or food group.

In-Depth Look At FITS

How and Why the Study Was Conducted. FITS was the culmination of a year-long design phase during which the multidisciplinary research team confronted multiple challenges. Of utmost importance was ensuring that the methods used were scientifically valid and could stand up to scrutiny in the future. Techniques such as oversampling of the ages at which children typically transition to certain types of foods helped strengthen the design for analytic purposes. This helped ensure that the survey data would increase our knowledge about American infants' and toddlers' diets and identify dietary practices that could be improved for better health and nutrition in early childhood. This section provides detailed informa-

Activity	Dates
Early stages of study planning	December 2000-June 2001
Determine sample design and sampling plan	July-September 2001
Develop survey instruments and visual aide for dietary interview	July-October 2001
Conduct pilot test	
Conduct cognitive test of visual aide for dietary recall	October 2001
Conduct cognitive pretest of hard copy survey questionnaires	October 2001
Conduct computer-assisted pilot test	December 2001-January 2002
Conduct dry run of survey	February 2002
Conduct full study	
Recruit sample and conduct household interviews	January-April 2002
Conduct dietary recalls, Day 1 and Day 2 interviews	February-April 2002
Develop sample weights for analysis	April-June 2002
Prepare data files	December 2001-June 2002
Analyze and report data	June 2002-ongoing

Figure 3. Timeline for planning and implementing the 2002 Feeding Infants and Toddlers Study.

tion on our decision-making and planning process for the survey, and expands on the information on methodology previously described by Devaney and colleagues (15).

The overall goal of FITS was to update our knowledge of the food and nutrient intakes of American infants and toddlers using the strongest science-based methodology. The five primary research objectives addressed were:

- Identification of nutrient intakes of infants and toddlers at ages 4 to 24 months.
- Determination of what foods are eaten by infants and toddlers and the food sources of nutrients by age groups.
- Identification of the extent of self-feeding by age and food type, and the nutrient influence of self-feeding.
- Examination of eating and feeding patterns and their influence on nutrient intake.
- Assessment of how nutrient intake, food choices, and feeding practices of breastfeeding babies compare with those of non-breastfeeding babies.

We reviewed the literature on US national surveys focused on infants and toddlers and designed FITS, a cross-sectional survey. FITS was the first large-scale study to use the Institute of Medicine's Dietary Reference Intakes to assess the nutrient adequacy of the diets of infants and toddlers. Figure 3 shows the overall timeline of the study, including the planning stages, data collection and analysis, and release of study findings.

Sampling Methodology

We selected a cross-sectional design to collect information about feeding practices, food consumption, and usual nutrient intake of US infants and toddlers at specific ages. The biggest challenge in designing the FITS sample was to select an appropriate sample frame for the target population, which was all children aged 4 to 24 months living in the 50 US states and the District of Columbia. Unfortunately, an ideal sample frame does not exist. That is, there is no list or mechanism available to create a list of all infants and toddlers in a timely manner. Three possible frames were discussed: random digit dial, the vital registration system, and a commercial marketing list. Each frame had cost and error trade-offs that were carefully considered.

A random digit dial frame could cover all children in households with telephones, with a slight bias toward more affluent households. However, this frame would require a large screening effort to find eligible households because of the low prevalence of infants and toddlers aged 4 to 24 months. For example, we know from the National Immunization Survey that only 3.7% of households contain a child aged 19 to 35 months (57). Therefore, the cost of using this frame was prohibitive.

Use of vital records includes identifying certified birth certificates for live births within each state. Because of strict confidentiality policies, these data are not typically made available to researchers. Moreover, these files are available only with considerable delay and may not cover the youngest infants in our target population. The difficulty in gaining access to these records and the potential undercoverage of the target population led us to exclude this sample frame alternative.

The overall goal of FITS was to update our knowledge of the food and nutrient intakes of American infants and toddlers using the strongest science-based methodology.

Last, we considered commercial databases containing the names and contact information of new parents. These databases compile records from numerous sources, including baby and maternity clothing stores, hospital photographers, baby furniture suppliers, diaper companies, hospital welcome gift packs, birth class registrations, bank surveys, and other public and proprietary sources. These files are often updated weekly and contain the birth month and year of the child, which could be used for stratification. We examined three databases for our list frame: a 2001 Equifax Newborns and Prenatals List (Equifax Direct Marketing Solutions, Inc, Atlanta, GA), the February through May 2002 Experian's New Parents Database (Experian, Lincoln, NE), and Survey Sampling International's (SSI-LITE) 2001 Newborn Baby Database (Survey Sampling International, Fairfield, CT). We compared record counts to the number of children younger than age 1 year as reported in the Statistical Abstract of

the United States (58). On the basis of this comparison, we estimated that Experian had the highest coverage rate of the target population and selected its listing as the sample frame. Because older children have had more time to be entered into the databases, we estimated that the frame covered older children better than younger, and covered 55% to 61% of all children, based on a comparison of the frame with Vital Statistics reports (59).

Of those sampled households that could be located and had a child in the eligible age range, the cooperation rate for the recruitment interview was 84%. Despite considerable effort, approximately 37% of sampled households could not be located. Of those households that were located, 41% did not have a child in the eligible age range. Overall, we were able to determine eligibility for 58% of sampled households. The overall response rate for the intake interview was 45%, which is the product of the eligibility determination rate, the recruitment cooperation rate, and the intake cooperation rate. This response rate is comparable with response rates from other telephone surveys or telephone dietary studies (54-56,60-62).

The next challenge in selecting the sample for FITS was how to capture dietary intake before the child became age ineligible. Because of the time needed to locate a telephone number, mail advance material, and make contact with the sampled household, we selected some children who were too young to be eligible at the time of sampling, but who became eligible during the field period. Therefore, we selected children who were aged 2 to 22 months at the time of sampling and collected data for children aged 4 to 24 months.

We also selected a sample stratified by age of the child. This design allowed us to control the distribution of sample by age. We grouped the children into six age categories, defined at the time of the intake interview: 4-6 months, 7-8 months, 9-11 months, 12-14 months, 15-18 months, and 19-24 months. To meet analytic goals, we oversampled two age groups: children aged 4-6 months and children aged 9-11 months. These two age groups typically experience significant transitions in infant feeding patterns and practices, most notably the introduction of complementary foods in the 4- to 6-month age period, and transitions to table foods in the 9- to 11-month age period. The sample size requirements were based on wanting a statistical precision design that provided a 95% confidence interval for the estimate of proportions to be within ± 5 percentage points for each age subgroup (63).

Furthermore, we drew four independent samples at four different points in time. Because records are continuously added to the Experian database, drawing more than one sample gave these newly added children a chance for selection and improved the sample frame coverage of the target population. Multiple samples also provided greater control over meeting the target sample sizes for each age group, because for later samples, we could change the number of selected children per strata based on the number of completes from earlier samples. The samples were selected at approximately 1-month intervals. It was possible that households had multiple children in the target age. We collected information only about the sampled child whose record was selected from the frame. We assumed that each age-eligible child in such households had a record on the sampling frame and

a chance of selection. We had no evidence that within-household coverage was a problem.

Development of Survey Questionnaires

The development of the study content took several months (Figure 3). Initially we reviewed the questionnaires available from national surveys and the other studies of infants and toddlers to identify survey questions that addressed important issues for this population group (eg, breastfeeding; total fluid intake, including water, juice, formula, breast milk, and cow's milk; introduction of complementary foods; dietary supplements; food allergies and special health concerns; and child care arrangements). We developed a basic set of questions using the previous Gerber-sponsored Infant Nutrition Survey, national surveys, and other survey questions available in the literature (8,10,11,14) or obtainable from researchers. We also considered frequently asked questions from parents and health care professionals who called the Gerber consumer hotline. Further, we held meetings with marketing, product development, and key investigators in the area of infant and child nutrition to incorporate the ideas of the team. On several occasions we included our public relation agencies in the team meeting to moderate and present emerging issues in infant and child nutrition based on consumer trends. We prioritized the questions based on the objectives of the study and findings from other studies. Other studies were important to identify emerging research issues and available data for comparisons of findings across studies.

Draft instruments were developed in English and Spanish. The translation process involves several stages: the original English version is reviewed by the translator to clarify content, wording, and intent; a draft of the instrument is translated into Spanish by a translator certified by the American Translators Association; the translated version is proofread for correct Spanish syntax and grammar, and reviewed in comparison with the English version by another expert translator; and any questions or changes needed are adjudicated by the two expert translators. The questionnaires were pilot tested in English. The Spanish questionnaires were available, but no respondent requested to be interviewed in Spanish. Following the pilot test, revisions were made to improve question wording and some questions were dropped to minimize respondent burden.

Selection of the Dietary Method

There is an extensive literature on the advantages and disadvantages of different dietary collection methods (25,42-56). Based on the literature, we selected the 24-hour dietary recall as the dietary collection method for FITS. The 24-hour recall provided a standardized methodology; minimal respondent burden; and detailed probes on brand names, types, and quantities of foods and beverages consumed. The 24-hour dietary recall is the most widely used dietary method in population studies requiring quantitative intake of foods and nutrients and is the primary method currently used for national nutrition monitoring (8-11,19,56).

We selected the Nutrition Data System for Research

(version 4.03, 2001, University of Minnesota Nutrition Coordinating Center, Minneapolis) software to collect the 24-hour dietary recalls because it includes a well-tested, computerized 24-hour dietary recall data collection linked to a comprehensive food and nutrient database. The database had recently been updated for baby foods and also included bottled waters and dietary supplements, which were important considerations for a dietary study of infants and toddlers. Researchers worked with the Nutrition Coordinating Center staff to identify and add new food items and baby food products to the study's database for food and nutrient coding.

To assist parents and caregivers in accurately estimating quantities of foods their infants and toddlers consumed, the information package contained a two-dimensional food measurement booklet customized to infant and toddler feeding utensils. Mathematica Policy Research, Inc researchers, with the aid of a graphic designer, created the booklet through focus group pilot testing with mothers of infants and toddlers. In designing the booklet "Food Measurement Aids for Infants and Toddlers," nutritionists researched and purchased a variety of feeding utensils commercially available (eg, cups, spoons, bowls, sippy cups, and toddler cups) and used them in the cognitive testing and in designing the booklet to accurately depict feeding utensils and their amounts (see online Appendix 4, available at www.adajournal.org). The guide included the following, drawn to scale: eight pictures of popular toddler sippy cups; four pictures of different spoons; two pictures of bowls; a circle diagram of concentric circles ranging from 1-inch to 8-inch diameters for use in estimating the diameter of round foods, such as cookies or pancakes; a 5-inch×5-inch grid to help estimate the size of square and rectangular foods, such as bread and crackers; and a list of frequently forgotten foods. The booklet was tested using cognitive interviewing techniques with nine English-speaking parents (for the visual aid testing). The participants included full-time working parents and full-time homemakers whose level of education and income varied. The cognitive testing resulted in improved overall layout, content, and usability.

Implementation of Data Collection Plans

We conducted a pilot test before the full study. The pilot test included four components: a cognitive test of the visual aid for the 24-hour dietary recall, a cognitive pretest of the survey questionnaires, a test of the computer-assisted telephone interviewing questionnaires, and a dry run of the entire survey process.

Respondents for the testing of the visual aid and hard copy instruments were English-speaking mothers of infants and toddlers from varied income levels. We conducted a cognitive pretest of the hard copy survey instruments with 10 English-speaking mothers of varied education and income levels. The sample for the test of the computer-assisted telephone interviewing instruments and the dry run was drawn from the Experian database. For the pilot, we limited the sample to households with an 8-month-old or an 18-month-old child, and selected 101 cases for locating and recruitment. We mailed advance letters to 51 of the 101 sample members for the pilot, and completed 25 recruitment interviews (23

mothers, 1 grandmother, and 1 father). One respondent of the recruitment sample was Spanish-speaking. Of the 25 households who agreed to participate in the pilot study, 11 interviews were completed (all were mothers). On the basis of the pilot test, we made final decisions on incentive payments and made changes to the questionnaires to reduce respondent burden. The target administration times were 10 minutes for the recruitment interview and 30 minutes for the dietary interview.

The survey was conducted from March through July 2002 to collect data on nutrient intakes of more than 3,000 infants and toddlers who were aged 4 to 24 months, their food choices, feeding practices and patterns, and growth and developmental milestones (Figure 3). The survey consisted of a brief recruitment and household interview; a 24-hour dietary recall, including dietary supplement intake on the day of the recall, with additional survey questions on infant and toddler growth, developmental milestones, and feeding patterns and transitions; and a second 24-hour dietary recall interview with a random subsample of respondents. Figure 4 provides a detailed description of the processes used to implement each of these components of the survey, and online Appendixes 1 through 4 (available at www.adajournal.org) include the survey instruments used in household interview.

The goals of the recruitment interview were to confirm that the household was eligible for the study; that is, had an infant or toddler between age 4 and 24 months; recruit the household for inclusion in the study; collect household characteristics, such as income and employment status of parents, and household composition; determine if the child spent part of his or her day in nonparental care; and determine the most knowledgeable adult with regard to the child's food intake for future interviews. Any adult living in the household could complete the recruitment interview; however, only the adult most knowledgeable about what the child ate could complete the dietary intake interview. The respondent to the recruitment interview was asked to identify the sampled child's primary female caregiver or the most knowledgeable adult. In most cases the most knowledgeable adult was the child's mother; in some cases it was another female caregiver or a male caregiver, typically the father.

The appropriate adult for the dietary intake interview (referred to as the most knowledgeable adult) was mailed a packet of information about the study that included a letter from the study's principal investigator, a brochure describing the study, a food measurement aid booklet (see online Appendix 4, available at www.adajournal.org), a permission form for child care providers, and an incentive check for \$20. All materials were written in both English and Spanish. The letter thanked respondents for their willingness to participate and explained that an interviewer would call them in about a week to ask questions about the types and quantities of foods that their child ate during a 24-hour period. The letter also inquired if the child attended child care, and if so, asked that they inform the provider about the possibility of needing help to determine the foods consumed by the child while in child care. In an effort not to bias results, there was no mention of the company as the survey sponsor in any of the materials or scripts used.

One week to 10 days after sending the information packet, an interviewer called the household to conduct the 24-hour dietary recall and ask additional questions related to breastfeeding, introduction of foods, growth and development of the child, and child care. Figure 4 shows the steps that were followed once the sample from Experian was drawn and provided to interviewers. Interviewers asked parents (or the most knowledgeable adult) about all foods and liquids that the infant or child consumed from midnight through midnight on the previous day. The dietary recall recorded the use of vitamin and mineral supplements as well as other dietary supplements. For breastfed infants, interviewers documented the duration of each feeding in minutes. Interviewers used a special protocol when the parent was unable to provide information about foods his or her child ate while under the care of someone else (see Figure 4 for details).

After completing the 24-hour dietary recall, the parent or caregiver responded to a set of additional questions as part of the interview. The questionnaire included sections on the child's characteristics and circumstances, such as birth weight, length or height, weight, child care use, WIC participation, breastfeeding status and history, use of infant formula and cow's milk, initiation of solid foods, motor development (including items about self-feeding), how often the parent tried new foods before giving up, and if the parent considered the child to be a picky eater. Finally, a random subset of respondents was selected to complete a second 24-hour dietary recall 3 to 10 days after the first recall to calculate usual nutrient intake distributions and to assess the adequacy of the nutrient intakes of infants and toddlers. This interview consisted of a dietary recall only, and a few questions to identify the respondent and the need for a follow-up call for data retrieval (eg, foods consumed at day care).

Each interviewer received 1 week of training, including supervised practice using the Nutrition Data System for Research program. Mathematica Policy Research, Inc research nutritionists and survey methodologists designed and conducted the interviewer training. Bilingual interviewers received training for respondents who preferred to complete the recall and interview in Spanish. The training included teaching interviewers how to help respondents estimate quantities using the food measurement booklet provided.

All data collection instruments and procedures were reviewed and approved by Mathematica's Institutional Review Board compliance officer and quality assurance system. All participants received written information on the study, understood that participation in the study was voluntary, and were assured of the confidentiality of the data. We obtained consent from each respondent before proceeding with the study interviews.

Weighting the Sample

The final challenge to the FITS design was calculating analysis weights so that estimates based on FITS accounted for possible bias due to nonresponse and undercoverage. If nonrespondents are different from respondents with respect to a measure of interest, then the survey estimates obtained from respondent data may be biased with respect to describing the characteristics of the population. The same is true if children not on the

Recruitment and household interview Experienced interviewers, bilingual in English and Spanish, called households sampled from the Experian sample frame to recruit the household and collect information on family demographic and socioeconomic characteristics (see [Appendix 1](#) [available online at www.adajournal.org] for Recruitment Interview).

The interview starts by verifying that the telephone number belongs to the person listed on the sample selection list.

Having established that the correct household has been reached, the interviewer informs the respondent that his or her household has been selected to participate in a study about what children eat.

The interviewer confirms that an infant between age 4 and 24 months lives in the household by asking if there is a child in the household who was born in a specific 3-month period. The 3-month period was determined by subtracting 1 month and adding 1 month to the month given as the birthdate in the sample file.

If there is more than one child in the eligible age range, a software program randomly selects one child for the study.

The interviewer gathers additional information about the sampled (target) child and his/her primary caregiver(s).

At the end of the recruitment interview, the interviewer informs the respondent that he or she would like to call back to ask about all the foods that their child ate over a 24-hour period. The respondent is told they will receive additional materials from Mathematica Policy Research, Inc. (MPR) and a thank you check for participating in the study. They are also told that the next interview would take about a half hour of time and that they would be called "sometime next week." They also confirm that the respondent from the recruitment interview is the person who knows the most about what the sampled child eats.

Complete contact information on the primary caregiver is gathered for subsequent telephone interviews.

Dietary intake interview Interviewers called the primary caregiver, typically the mother, to conduct the 24-hour dietary recall and to ask questions about growth and developmental milestones (see [Appendix 2](#) [available online at www.adajournal.org] for recall script).

On the day following the completed recruitment interview, a packet of materials is sent from MPR that includes a cover letter, brochure, food measurement guide, a check for \$20, and a permission form to call and collect information from day-care providers. The packet was sent out US priority mail in an oversized red, white, and blue envelope.

Respondents were first called 1 week (7 days) after completing the recruitment interview and asked to do the dietary intake interview. Additional calls are made, if necessary, until the intake interview is completed. MPR staff kept track of the day of the week on which intake interviews were completed, to ensure that each day of the week was adequately represented in the sample.

Interviewers were instructed to leave messages on answering machines on the fourth and eighth attempts, reminding respondents about the study and the reason for our call. The toll-free number is left as part of these messages.

In some cases, respondents took advantage of the toll-free number provided in the letter and called MPR to complete the intake interview before the scheduled day on which we planned to call. We completed these interviews on the day that the respondent called in.

In some cases, the child was in the care of someone else for a portion of the day and the respondent was unaware of what the child consumed during that time period. At the end of the 24-hour dietary recall interview, interviewers asked the respondent if they could contact the day-care provider to complete the dietary recall. Respondents were instructed about what information to gather and a specific time for a call back was established. For the most part, caregivers called the day care provider and obtained the missing food information.

If the respondent says they would rather not contact the day-care provider, the interviewer asked if MPR could contact the provider directly and obtain contact information for the other caregiver(s).

Once an intake interview is started (at least the 24-hour dietary recall portion), it needs to be completed within 48 hours (allowing time for contacting day care providers to complete the entire day's intake). If the entire 24-hour recall is not completed within 48 hours, then the interviewer was instructed to collect a new recall using the most recent 24-hour period.

Second dietary intake interview Interviewers called the household to collect a second 24-hour dietary recall on a subsample of the population (see [Appendix 3](#) [available online at www.adajournal.org]).

Approximately one-quarter of the sample is preidentified for a second 24-hour dietary intake interview and flagged in the interviewing system. If the respondent who completed the first dietary intake interview is sampled for a second dietary recall, a special set of questions is asked at the end of the first intake interview. Respondents are told that MPR would like to contact them again in the next week or two to ask a few more questions about what the child eats. They are told that this interview will take about half as long as the first intake interview.

Willing respondents are called back 3 to 10 days after the first intake interview. Interviewers are instructed that they can not complete the second day's intake on the same day of the week as the first day's intake.

Upon completing the second day's intake interview, respondents are sent \$5 in coupons for baby products produced by Gerber. In some cases, this information was told to the respondent at the start of the second intake interview if it appeared that the respondent might be reluctant to complete the second 24-hour dietary recall.

The same procedures used for the first day's intake are used for the second day's intake; interviews needed to be completed within a 48-hour period.

Thank-you cards with coupons are sent out after completion of the second day's intake interviews.

Figure 4. Interviewing procedures for the 2002 Feeding Infants and Toddlers Study.

sample frame are different from children on the sample frame. To account for possible nonresponse and coverage error, we calculated weighting class adjustments.

The samples were selected in four waves independently, where each wave-specific sample represents the sample target population. Thus, weighting calculations were done within each wave independently. For each wave, steps involved in adjusting the sample weight included poststratification adjustments for frame coverage, adjustment for unknown eligibility, nonresponse adjustments for the recruitment interview, and nonresponse adjustments for the food intake interview. For each wave, these adjustments were made within classes defined by the child's age in months at the time of the intake interview collapsed into six age groups.

In the final step, instead of dividing individual wave-specific weights by a factor of four, we calculated poststratification adjustments to account for multiplicity. The final multiplicity adjustment was calculated within cells defined by age group and mother's race, which was defined as white and nonwhite. Occasionally, the mother's race was missing from the household interview. If the mother's race was unknown, then we used the race of the child as a proxy. For cases where both the mother's race and the child's race were known, there was 90% agreement between the mother and child's race. For 10 cases (of the 3,224 household interviews), neither the mother's race nor the child's race was known. Therefore, to calculate the sample weights for these 10 cases, we randomly assigned the cases to one of the two race groups. We used the observed proportion white in the sample where race was not missing. In this case we assigned 80% to white and 20% to nonwhite, for poststratification adjustments (cases with missing race were excluded in any analyses reported by race).

For the poststratification adjustments, population counts were as of April 2001. The data used were the most recent available birth data: total births for December 1999 through December 2000 from the National Vital Statistics Reports (59). Deaths were not subtracted from the population counts because adequate death rates for children in our age categories were not available. One study limitation was the lack of information on deaths and the inability to adjust for deaths in the poststratification adjustments.

Data Processing and Analysis

We reviewed the survey questionnaire data for completeness and inconsistencies (eg, breast milk reported on the 24-hour dietary recall, but breastfeeding not reported on the questionnaire) and prepared data files for analysis. We also reviewed and coded missing foods by obtaining nutrient information and adding them to the Nutrition Data System for Research database. For missing amounts or reported consumption, we used standardized default amounts and coding guidelines. Usual nutrient intake, including the contribution of supplements, was based on 2 days of intake. The prevalence of dietary supplement use was based on 1 day of intake, and the adjusted prevalence was based on 2 days of intake. Because each sampled child did not have 2 days of intake, the mean percentage consuming foods and the mean

characteristics of supplements users were based on 1 day of intake data.

Dietetics practitioners can use FITS data to develop recommendations with organizations as well as create better nutrition education materials and advice to provide a more healthful start for children.

Food and nutrient analyses can be conducted at the ingredient level, food level, meal or snack level, and daily total level. Because of the large day-to-day variance in food and nutrient intakes, we used methods to calculate usual nutrient intake proposed by Nusser and colleagues (63). These methods remove the day-to-day variation in intakes so that estimates of the adequacy of nutrient intake are based on what infants and toddlers usually eat, not simply on what they eat on a given day. We used the personal computer version of the Software of Intake Distribution Estimation (version 1.02, 2001, Iowa State University, Ames) to estimate percentiles of usual nutrient intake distributions based on reported intake of foods and dietary supplements, and to estimate the proportion below or above defined cutoff values (25). The program is available to the nutrition research community (25,64).

Dissemination of Key Findings

FITS was designed to use the most scientifically sound and up-to-date methods to fill a gap in the existing knowledge base about the food and nutrient intakes of US infants and toddlers. National dietary intake surveys such as the NHANES can be used to track dietary intake and nutrition and health status of the population and major subgroups, but do not always have sufficient sample sizes or detailed content to address all of the data needs on recommended infant feeding practices and toddler nutrition. The research team analyzed FITS data and released the initial findings to a variety of audiences and through various print and public forums, such as presentations, briefings, and conferences.

CONCLUSIONS

- Many dietetics professionals do not have adequate information about what their patients are eating. FITS provides much-needed information to fill this gap, yet it also points out that there is still much to learn.
- Dietetics practitioners can use FITS data to develop recommendations with organizations as well as create better nutrition education materials and advice to provide a more healthful start for children. They can also work with researchers to conduct additional studies and extend our analyses to examine important issues such as food intakes in child-care settings, nutrition education in WIC, and the effect of maternal knowledge and attitudes on infants' and toddlers' eating habits.
- This study has helped advance the knowledge base on

infant and toddler nutrition. It used the most current standards in the fields of nutrition and health as well as state-of-the-art data collection methodologies. Researchers and clinicians in the fields of public health, obesity, and pediatric nutrition can use these results with confidence.

The authors thank Teresa Zavitsky for assistance in development and pilot testing of the food measurement guide; Kathryn Downey Sargent, Laura Kalb, Susan Pac, and Kathleen Reidy for survey questionnaire development; and Laura Kalb for survey development and oversight of field operations.

This research project was funded by Gerber Products Company. This research project was a collaborative effort among Mathematica Policy Research, Inc staff (authors Briefel, Clusen, and Devaney) and staff (author Ziegler) for the Gerber Products Company.

The opinions or views expressed in this supplement are those of the authors and do not necessarily reflect the opinions or recommendations of Gerber.

References

1. American Academy of Pediatrics, Committee on Nutrition. Cultural considerations in feeding children. In: Kleinman RE, ed. *Pediatric Nutrition Handbook*. 5th ed. Elk Grove Village, IL: American Academy of Pediatrics; 2004:37-148.
2. Butte N, Cobb K, Dwyer J, Graney L, Heird W, Rickard K. The start healthy feeding guidelines for infants and toddlers. *J Am Diet Assoc*. 2004;104:442-454.
3. Pac S, McMahon K, Ripple M, Reidy R, Ziegler P, Myers E. Development of the start healthy feeding guidelines for infants and toddlers. *J Am Diet Assoc*. 2004;104:455-467.
4. Skinner JD, Carruth BR, Bounds W, Ziegler P. Children's food preferences: A longitudinal analysis. *J Am Diet Assoc*. 2002;102:1638-1647.
5. Skinner JD, Carruth BR, Bounds W, Ziegler P, Reidy K. Do food-related experiences in the first 2 years of life predict dietary variety in school-aged children? *J Nutr Educ Behav*. 2002;34:310-315.
6. Birch LL, Fisher JO. Development of eating behaviors among children and adolescents. *Pediatrics*. 1998;101:539-549.
7. Lederman SA, Akabas SR, Moore BJ, Bentley ME, Devaney B, Gillman MW, et al. Summary of the presentations at the Conference on Preventing Childhood Obesity, December 8, 2003. *Pediatrics*. 2004; 114:1146-1173.
8. National Center for Health Statistics. DHHS-USDA Dietary Survey Integration—What we eat in America. Available at: <http://www.cdc.gov/nchs/about/major/nhanes/faqs.htm>. Accessed March 30, 2005.
9. Dwyer J, Picciano MF, Raiten DJ. Future directions for the integrated CSFII-NHANES: What we eat in America-NHANES. *J Nutr*. 2003;133(suppl 2):S576-S581.
10. Tippet S, Enns CW, Moshfegh A. Food consumption surveys in the US Department of Agriculture. *Nutr Today*. 1999;34:33-46.
11. Dwyer J, Picciano MF, Raiten DJ, Members of the Steering Committee. Collection of food and dietary supplement intake data: What we eat in America-NHANES. *J Nutr*. 2003;133(suppl 2):S590-S600.
12. Hediger ML, Overpeck MD, Troendle JF. Early infant feeding and growth status of US-born infants and children aged 4-71 mo: Analyses from the third National Health and Nutrition Examination Survey, 1988-94. *Am J Clin Nutr*. 2000;72:159-167.
13. Food and Drug Administration. Notice. Infant Feeding Practices Study II. *Federal Register*. October 1, 2004, vol. 69, no. 190, pp 58915-58928, docket no. 2004N-0166.
14. Ryan C, Dwyer J, Ziegler P, Yang E, Moore L, Song WO. What do infants really eat? *Nutr Today*. 2002; 37:50-56.
15. Devaney B, Kalb L, Briefel R, Zavitsky-Novak T, Clusen N, Ziegler P. FITS: Feeding Infants And Toddlers Study: Overview of the study design. *J Am Diet Assoc*. 2004;104(suppl 1):S8-S13.
16. Ryan AS, Wenjun Z, Acosta A. Breastfeeding continues to increase into the new millennium. *Pediatrics*. 2002;110:1103-1109.
17. National Center for Health Statistics. The National Immunization Survey. Available at: <http://www.cdc.gov/nis/>. Accessed June 17, 2005.
18. Baydar N, McCann M, Williams R, Vesper E, McKinney P. WIC Infant Feeding Practices Study. Summary of findings. Available at: <http://www.fns.usda.gov/oane/MENU/Published/WIC/WIC.htm>. Accessed August 3, 2005.
19. Briefel RR, Bialostosky K. Interpretation and utilization of data from the National Nutrition Monitoring and Related Research Program. In: Monsen ER, ed. *Research. Successful Approaches*. 2nd ed. Chicago, IL: American Dietetic Association; 2003:185-208.
20. Centers for Disease Control and Prevention. Pediatric and pregnancy nutrition surveillance system. Available at: <http://www.cdc.gov/pednss/>. Accessed May 17, 2005.
21. Polhamus B, Dalenius K, Thompson D, Scanlon K, Borland E, Smith B, Grummer-Strawn L. *Pediatric Nutrition Surveillance Report 2003*. Atlanta, GA: Department of Health and Human Services, Centers for Disease Control and Prevention; 2004.
22. Position of the American Dietetic Association, Society for Nutrition Education, and American School Food Service Association. Nutrition Services: An essential component of comprehensive school health programs. *J Am Diet Assoc*. 2003;103:505-514.
23. Kramer-Atwood JL, Dwyer J, Hoelscher DM, Nicklas TA, Johnson RK, Schulz GK. Fostering healthy food consumption in schools: Focusing on the challenges of competitive foods. *J Am Diet Assoc*. 2002;102:1228-1233.
24. Devaney B, Ziegler P, Pac S, Karwe V, Barr SI. Nutrient intakes of infants and toddlers. *J Am Diet Assoc*. 2004;104(suppl 1):S14-S21.
25. Institute of Medicine, Food and Nutrition Board. *Dietary Reference Intakes: Applications in Dietary Assessment*. Washington, DC: National Academy Press; 2000.
26. Dwyer JT, Sutor CW, Hendricks K. FITS: New in-

- sights and lessons learned. *J Am Diet Assoc.* 104(suppl 1):2004;S5-S7.
27. Baydar N, McCann M, Williams R, Vesper E, McKinney P. WIC Infant Feeding Practices Study. Summary of findings. Available at: <http://www.fns.usda.gov/oane/MENU/Published/WIC/FILES/ifps.pdf>. Accessed June 17, 2005.
 28. Food and Nutrition Service. WIC Program studies. Available at: <http://www.fns.usda.gov/oane/MENU/Published/WIC/WIC.htm>. Accessed June 17, 2005.
 29. Food and Nutrition Service. WIC participant and program characteristics. 2002. Available at: <http://www.fns.usda.gov/oane/MENU?published/WIC/FILES/PC2002.htm>. Accessed June 20, 2005.
 30. Bogen DL, Duggan AK, Dover GJ, Wilson MH. Screening for iron deficiency anemia by dietary history in a high-risk population. *Pediatrics.* 2000;105:1254-1259.
 31. Marshall TA, Levy SM, Broffitt B, Warren JJ, Eichenberger-Gilmore JM, Burns TL, Stumbo PJ. Dental caries and beverage consumption in young children. *Pediatrics.* 2003;112:E184-E191.
 32. Eichenberger JM, Hong L, Broffitt B, Levey S. Longitudinal patterns of vitamin and mineral supplement use in young white children. *J Am Diet Assoc.* 2005;105:763-772.
 33. Webber LS, Frank GC, Smoak CG, Freedman DS, Berenson GS. Cardiovascular risk factors from birth to 7 years of age: The Bogalusa Heart Study. Design and participation. *Pediatrics.* 1987;80:767-778.
 34. Heinig MJ, Nommsen LA, Peerson JM, Lonnerdal B, Dewey KG. Energy and protein intakes of breast-fed and formula-fed infants during the first year of life and their association with growth velocity: The DARLING Study. *Am J Clin Nutr.* 1993;58:152-161.
 35. Skinner JD, Carruth BR, Houck K, Coletta F, Cotter R, Ott D, McLeod M. Longitudinal study of nutrient and food intakes of infants aged 2 to 24 months. *J Am Diet Assoc.* 1997;97:496-504.
 36. Carruth BR, Skinner JD, Houck KS, Moran JD III. Addition of supplementary foods and infant growth (2 to 24 months). *J Am Coll Nutr.* 2000;19:405-412.
 37. Hoffmans MD, Obermann-De Boer GL, Florack EI, Kampen-Donker M, Krombout D. Energy, nutrient and food intake during infancy and early childhood. The Leiden Preschool Children Study. *Hum Nutr Appl Nutr.* 1986;40:421-430.
 38. Sanjur D, Garcia A, Aguilar R, Furumoto R, Mort M. Dietary patterns and nutrient intakes of toddlers from low-income families in Denver, Colorado. *J Am Diet Assoc.* 1990;90:823-829.
 39. Kattelman KK, Ho M, Specker BL. Effect of introduction of complementary foods on iron and zinc status of formula fed infants at 12, 24 and 36 months of age. *J Am Diet Assoc.* 2001;101:443-447.
 40. *Healthy People 2010: Understanding and Improving Health.* 2nd ed. Washington, DC: US Government Printing Office; 2000.
 41. Li R, Zhao Z, Mokdad A, Barker L, Grummer-Strawn L. Prevalence of breastfeeding in the United States: The 2001 National Immunization Survey. *Pediatrics.* 2003;111:1198-1201.
 42. Institute of Medicine. *Dietary Risk Assessment in the WIC Program. A Report of the Committee on Dietary Risk Assessment in the WIC Program.* Washington, DC: National Academy Press; 2002.
 43. Tarasuk V. Nutritional Epidemiology. In: Ziegler EE, Filer LJ Jr, eds. *Present Knowledge in Nutrition.* Washington, DC: ILSI Press; 1996:508-516.
 44. King Mary P. Cross-sectional and longitudinal research design issues in the studies of human development. *Grad Res Nurs.* 2001;3:1-7.
 45. Hankin JH. Dietary intake methodology. In: Monsen ER, ed. *Research. Successful Approaches.* Chicago, IL: American Dietetic Association; 1992:73-194.
 46. Johnson RK, Hankin JH. Dietary assessment and validation. In: Monsen ER, ed. *Research. Successful Approaches.* 2nd ed. Chicago, IL: American Dietetic Association; 2003:227-242.
 47. Patterson RE. Methods and tools for dietary intake assessment in individuals vs groups. In: Berdanier CD, ed. *Handbook of Nutrition and Food.* New York, NY: CRC Press; 2002: 523-538.
 48. Pao EM, Cypel YS. Estimation of dietary intake. In: Ziegler EE, Filer LJ Jr, eds. *Present Knowledge in Nutrition.* Washington, DC: ILSI Press; 1996:498-507.
 49. Dwyer JT. Dietary assessment. In: Shils ME, Olson JA, Shike M, Ross AC, eds. *Modern Nutrition in Health and Disease.* 9th ed. Baltimore, MD: Williams and Wilkins; 1999:937-959.
 50. Bingham SA. The dietary assessment of individuals: Methods, accuracy, new techniques, and recommendations. *Nutr Abstr.* 1987;57:705-742.
 51. Buzzard IM, Faucett CL, Jeffery RW, McBane L, McGovern P, Baxter JS, Shapiro AC, Blackburn GL, Chlebowski RT, Elashoff RM, Wynder EL. Monitoring dietary change in a low-fat diet intervention study: Advantages of using 24-hour dietary recalls vs food records. *J Am Diet Assoc.* 1996;96:574-579.
 52. Fox TA. Telephone surveys as a method for obtaining dietary information: A review. *J Am Diet Assoc.* 1992;92:729-732.
 53. Morgan KJ, Johnson SR, Rizek RL, Reese R, Stampley GL. Collection of food intake data: An evaluation of methods. *J Am Diet Assoc.* 1987;87:888-896.
 54. Bogle M, Stuff J, Davis L, Forrester I, Strickland E, Casey PH, Ryan D, Champagne C, McGee B, Mellad K, Neal E, Zaghoul S, Yadrick K, Horton J. Validity of a telephone-administered 24-hour dietary recall in telephone and non-telephone households in the rural Lower Mississippi Delta Region. *J Am Diet Assoc.* 2001;101:216-222.
 55. Yanek LR, Moy TF, Raqueno JV, Becker DM. Comparison of the effectiveness of a telephone 24-hour dietary recall vs an in-person method among urban African-American women. *J Am Diet Assoc.* 2000;100:1172-1177.
 56. Casey PH, Goolsby SL, Lensing SY, Perloff BP, Bogle ML. The use of telephone interview methodology to obtain 24-hour dietary recalls. *J Am Diet Assoc.* 1999;99:1406-1411.
 57. Srinath KP, Battaglia MP, Cardoni J, Crawford C, Snyder R, Wright RA. Balancing cost and mean squared error in RDD telephone surveys: The Na-

- tional Immunization Survey. In: *2001 Proceedings of the American Statistical Association, Survey Research Methods Section*. Alexandria, VA: American Statistical Association; 2001.
58. US Census Bureau. Statistical abstract of the United States, 2000-2001. Available at: <http://www.census.gov/prod/www/abs/statab.html>. Accessed August 5, 2005.
 59. Martin JA, Hamilton BE, Ventura SJ. Births: Preliminary data for 2000. Available at: http://www.cdc.gov/nchs/data/nvsr/nvsr49/nvsr49_05.pdf. Accessed August 5, 2005.
 60. Brennan M, Benson S, Kearns Z. The effect of introductions on telephone survey participation rates. *Int J Market Res*. 2005;47:65-75.
 61. Tuckel P, O'Neill H. Survey methodology—The vanishing respondent in telephone surveys. *J Advert Res*. 2002;42:26-49.
 62. Federation of American Societies for Experimental Biology, Life Sciences Research Office. *Third Report on Nutrition Monitoring in the United States*. Washington, DC: US Government Printing Office; 1995.
 63. Nusser SM, Carriquiry AL, Dodd KW, Fuller WA. A semiparametric transformation approach to estimating usual daily intake distributions. *J Am Stat Assoc*. 1996;91:1440-1449.
 64. Carriquiry AL. Assessing the prevalence of nutrient inadequacy. In: Gibney F, ed. *Public Health Nutrition*. Malden, MA: Blackwell Science; 1999.

Appendix 1. Feeding Infants and Toddlers Study Recruitment and Household Interview

NOTE: Notes to Programmers in bold, parentheses, and all caps.

	ADVANCE LETTER SENT?	
	NO	00
	YES	01
	INTRODUCTION/SCREENING	
S1.	Hello, my name is _____.	
	May I please speak to (FILL PARENT'S NAME)?	
	CONTACT IS ON THE PHONE (GOTO S3a)	01
	CONTACT COMING TO THE PHONE (GOTO S2)	02
	CONTACT UNAVAILABLE (GOTO S3)	03
S2.	Hello, my name is _____. Is this (FILL PARENT'S NAME)?	
	CONTACT IS ON THE PHONE (GOTO S3a)	01
	CONTACT COMING TO THE PHONE (REPEAT S2 ONCE)	02
	CONTACT UNAVAILABLE (GOTO S3)	03
	OTHER (GOTO STATUS CODE)	04
S3.	I'd like to ask you, then, some questions about people in the household. We can talk to any adult over the age of 18 who lives in the household for the study.	
	CONTINUE, ADULT	01
	ADULT COMING TO PHONE*	02
S3a.	INTERVIEWER: IS THIS (FILL PARENT'S NAME) OR SOMEONE ELSE?	
	PARENT LISTED ON SAMPLE (SET FLAG RESP TO 01)	01
	SOMEONE ELSE (SET FLAG RESP TO 02)	02
	(PROGRAMMER: NOTE PRONOUN CHANGES TO S4b BASED ON WHETHER FLAG RESP = 01 OR 02.)	
S4a.	ASK IF NO ADVANCE LETTER SENT:	
	Your household has been selected to participate in a study about what children eat. We call this the Feeding Infants and Toddlers Study. We would like your help with this important study and want to hear how the child is doing.	
	CONTINUE (GOTO S5)	01
	NOT AVAILABLE NOW (SCHEDULE TIME)	02
S4b.	ASK IF ADVANCE LETTER SENT:	
	We recently sent a letter, along with five dollars cash, to (IF FLAG RESP = 01 – FILL WITH 'YOU'; OTHERWISE – FILL WITH PARENT'S NAME) . The letter explains that (IF FLAG RESP = 01 – FILL WITH 'YOU HAVE'; OTHERWISE – FILL WITH 'HE/SHE HAS') been selected to participate in a study about what children eat. We call this the Feeding Infants and Toddlers Study. We would like your help with this important study and want to hear how the child is doing.	
	Do you remember seeing a letter about the study? It had Mathematica in red at the top. It was with a colorful brochure that explained the study. Also, five dollars was put in the envelope.	
	YES, CONTINUE WITH SURVEY (GOTO S5)	01
	DID NOT RECEIVE LETTER (GOTO S4c)	02
	(cases where there is someone else on the phone will be marked "don't know")	
S4c.	The letter explained that the purpose of this nationwide study is to better understand what children aged 4 to 24 months are eating and when. We'll use this information to help make children as healthy as possible. We would like to include you in this study. I can mail you another letter and brochure if you'd like. I would like to do today's brief interview with you now while I have you on the phone if that's okay.	
	May I please speak to (FILL PARENT'S NAME)?	
	CONTINUE (GOTO S5)	01
	CALL BACK AFTER LETTER RESENT (VERIFY NAME AND ADDRESS INFORMATION. SCHEDULE CALL BACK)	02
S4d.	Can you please verify the mailing address? I have (FILL SAMPLE ADDRESS, CITY, STATE AND ZIP) . Is this address correct?	
	ADDRESS CORRECT	01
	ADDRESS INCORRECT (GOTO S4add)	02
S4ADD.	Please give me the correct street address. [INTERVIEWER: WHEN FILLING IN ADDRESS, REPEAT BACK TO RESPONDENT TO VERIFY SPELLING.]	
S4CITY.	And what city is that in? _____	
S4STATE.	May I have the state? _____	
S4ZIP.	And the zip code? _____	
S4e.	INTERVIEWER: PLEASE SCHEDULE AN APPOINTMENT FOR 1 WEEK FROM TODAY.	
	PRESS 1 TO CONTINUE	01
	The first few questions are about your household.	
S5.	How many people live in your household? By household I mean people who live together and share living expenses.	
	Please include yourself in this count.	
	INTERVIEWER: IF DON'T KNOW OR REFUSED, RESCHEDULE.	

	INTERVIEWER: VERIFY THAT THE RESPONDENT HAS INCLUDED HIMSELF OR HERSELF IN THE COUNT. ENTER NUMBER _____	
	DON'T KNOW	DK
	REFUSED	RF
	(ASK ONLY IF S5 SPECIFY > 1; IF S5 = DK OR RF, RESCHEDULE; OTHERWISE (S5 = 01), GO TO TERMINATE #1)	
S6.	How many children or adolescents up to age 18 live in your household? ENTER NUMBER _____	
	NONE	00
	DON'T KNOW	DK
	REFUSED	RF
	(ERROR CHECK IF S6 < S5, INTERVIEWER SHOULD GO BACK TO S5)	
	(ASK ONLY IF S6 > 00; IF S6 = 0, GO TO TERMINATE # 1; IF S6 = DK OR RF, GO TO S8. INTERVIEWER SHOULD GO BACK TO S5.)	
S7.	What are the ages of the child(ren) or adolescent(s)? [INTERVIEWER: IF THE CHILD IS YOUNGER THAN 12 MONTHS OLD, CODE AS "0". IF THE CHILD IS BETWEEN 12 AND 23 MONTHS OLD, CODE AS "1".] (PROGRAMMER: ALLOW SPACES FOR NUMBER OF CHILDREN SPECIFIED IN S6.) ENTER AGES _____	
	DON'T KNOW	DK
	REFUSED	RF
S7[1] – S7[12].	Enter ages for each child specified in S6. ENTER AGES _____	
	DON'T KNOW	DK
	REFUSED	RF
S8.	Do you have a child in the household that was born between (FILL BIRTH MONTH – 1) and (FILL BIRTH MONTH + 1) of (FILL BIRTH YEAR) ? [INTERVIEWER: THIS CHILD WAS BORN IN (FILL MONTH).] NO (GO TO TERMINATE # 1)	00
	YES, EXACT MONTH CORRECT	01
	YES, RIGHT RANGE, BUT INCORRECT MONTH (ALLOW FOR CORRECTION AS S8A)	02
	CHILD HAS DIED (GO TO TERMINATE # 2)	03
	DON'T KNOW	DK
	REFUSED	RF
S8a.	RECORD/VERIFY CORRECT MONTH (FILL FROM SAMPLE IS S8=2), IF NECESSARY ASK: What month was your child born in? SPECIFY CORRECT MONTH	01 to 12
S9.	We would like to talk about what your children eat and drink, specifically for the child in your household born in (FILL MONTH OF BIRTH FROM S8A) of (FILL YEAR OF BIRTH) . What day of the month was this child born? ENTER DAY OF MONTH _____	
	REFUSED	RF
S10.	Is there more than one child in the household born on (FILL MONTH FROM S8A, DAY, AND YEAR) ? NO (GO TO A1)	00
	YES	01
	REFUSED	RF
S11.	How many are there? SPECIFY NUMBER _____	
	REFUSED	RF
S12.	(PROGRAMMER: SET UP RANDOMIZATION) We would like to talk about (FILL NUMBER OF CHILD RANDOMLY SELECTED) born on (FILL DATE, MONTH, AND DAY) . INTERVIEWER: CHILD # 1 IS THE OLDEST CHILD, CHILD # 2 IS THE SECOND OLDEST, ETC. CONTINUE	01
	CHILD'S BACKGROUND AND ELIGIBILITY	
A1.	We would like to have the child's name since we will refer to him/her throughout our interview. What is the first name of the child born on (FILL CHILD'S BIRTHDATE FROM S8A AND S9 MONTH/DAY) ? ENTER FIRST NAME _____	
	REFUSED	RF
A2.	(ASK IF A1 = RF) If you would rather not give us a name, can you give us his or her initials? ENTER INITIALS _____	
	REFUSED	RF
A2a.	[INTERVIEWER: ASK IF THEY HAVE NOT ALREADY MENTIONED CHILD'S SEX.] Is (FILL IN CHILD'S FIRST NAME) male or female? MALE	01
	FEMALE	02
	REFUSED	RF

A2b.	[INTERVIEWER: ASK ONLY IF CAN'T TELL PERSON'S GENDER OVER THE PHONE:] For this study, I'd like to know whether you are male or female.	
	MALE	01
	FEMALE	02
	REFUSED	RF
A2c.	Does (FILL IN CHILD'S FIRST NAME) have at least one primary caregiver who is female?	
	NO	00
	YES	01
	DON'T KNOW	DK
	REFUSED	RF
(ASK ONLY IF A2C= 1 AND A2B = 02 OR RF)		
A2d.	Are you the primary female caregiver?	
	NO	00
	YES	01
	DON'T KNOW	DK
	REFUSED	RF
(ASK ONLY IF A2C = 1 AND A2D = EMPTY OR NO)		
A2e.	What is the primary female caregiver's relationship to (FILL CHILD'S NAME) ? Is she (FILL CHILD'S NAME) 's	
	mother (SET FLAG MOM TO 01)	01
	stepmother	02
	aunt	03
	grandparent	04
	sibling	05
	legal guardian (SET FLAG GUARDIAN)	06
	Other (SPECIFY) _____	07
	REFUSED	RF
(NOTE: IF A2D = 1, THEN FILL B3, B4, B5, B15 WITH "YOU"; IF A2D = 0, THEN FILL RESPONSE FROM A2E)		
(ASK ONLY IF A2B = 02 OR RF)		
A2f.	What is your relationship to (FILL CHILD'S NAME) ? Are you (FILL CHILD'S NAME) 's . . .	
	mother (SET FLAG MOM TO 01)	01
	stepmother	02
	aunt	03
	grandparent	04
	sibling	05
	legal guardian (SET FLAG GUARDIAN)	06
	Other (SPECIFY) _____	07
	REFUSED	RF
A2f_oth.	Please specify _____ (20 characters)	
A3a.	Does (FILL IN CHILD'S FIRST NAME) have at least one primary caregiver who is male?	
	NO	00
	YES	01
	DON'T KNOW	DK
	REFUSED	RF
(ASK ONLY IF A3A= 1 AND A2B = 01 OR RF)		
A3b.	Are you the primary male caregiver?	
	NO	00
	YES	01
	DON'T KNOW	DK
	REFUSED	RF
(ASK ONLY IF A3A = 1 AND A3B = EMPTY OR NO)		
A3c.	What is the primary caregiver's relationship to (FILL CHILD'S NAME) ? Is he (FILL CHILD'S NAME) 's . . .	
	father (SET FLAG DAD TO 01)	01
	stepfather	02
	uncle	03
	grandparent	04
	sibling	05
	legal guardian (SET FLAG GUARDIAN)	06
	Other (SPECIFY) _____	07
	REFUSED	RF
(NOTE: IF A3B = 1, THEN FILL B7, B8, B9, B16 WITH "YOU"; IF A3B = 0, THEN FILL RESPONSE FROM A3C)		
A3c_oth.	Please specify _____	

(20 characters)

(ASK ONLY IF A2B = 01 OR RF)

A3d. What is your relationship to **(FILL CHILD'S NAME)**? Are you **(FILL CHILD'S NAME)'s** . . .

father (SET FLAG DAD TO 01)	01
stepfather	02
uncle	03
grandparent	04
sibling	05
legal guardian (SET FLAG GUARDIAN)	06
Other	07
REFUSED	RF

(ERROR CHECK – IF A2C = 0 AND A3A = 0, VERIFY)

(ASK ONLY IF S5 SPECIFY > OR = 3)

A4. Besides **(FILL IN CHILD'S FIRST NAME)** and yourself, how are the other people who live in your household related to **(FILL IN CHILD'S FIRST NAME)**?
[INTERVIEWER: MARK ALL THAT APPLY]

(FILL IN CHILD'S FIRST NAME)'S SIBLINGS 01

(FILL IN CHILD'S FIRST NAME)'S MOTHER 02

(FILL IN CHILD'S FIRST NAME)'S FATHER 03

(FILL IN CHILD'S FIRST NAME)'S STEPMOTHER 04

STEPFATHER 05

GRANDPARENTS 06

OTHER RELATIVE(S) 07

NON-RELATIVE(S) 08

REFUSED RF

A5. How many pounds did **(FILL CHILD'S FIRST NAME)** weigh at birth?
[INTERVIEWER: RECORD POUNDS HERE AND OUNCES IN THE NEXT QUESTION. 1 KILOGRAM = 2.2 POUNDS.]

ENTER POUNDS _____

ENTER KILOGRAMS _____

DON'T KNOW DK

REFUSED RF

(ASK ONLY IF SPECIFIED OUNCES)

A6. And how many ounces?
ENTER OUNCES _____

DON'T KNOW DK

REFUSED RF

(ASK ONLY IF A5 and A6 ARE DON'T KNOW OR REFUSED)

A7. Your best estimate is fine. Was **(FILL IN CHILD'S FIRST NAME)**
[INTERVIEWER: 2.2 KILOGRAM = 5 POUNDS]

More than 5 pounds or 01

5 pounds or less at birth? 02

DON'T KNOW DK

REFUSED RF

A8. Has **(FILL IN CHILD'S FIRST NAME)** been diagnosed by a doctor as having food allergies? **(IF ASKED: cow's milk, soy, wheat, fish, shellfish, peanuts, tree nuts (hazelnuts), or eggs.)**

NO 00

YES (SPECIFY) 01

(ASK ONLY IF A8 = 01)

A8a. What type of allergy is it? [MARK ALL THAT APPLY]

Cow's milk 01

Soy 02

Wheat 03

Fish 04

Shellfish 05

Peanuts 06

Tree nuts, like hazelnuts 07

Eggs 08

Other (SPECIFY) 09

A8a1. Specify other allergy.
(SPECIFY) _____

A9. Does **(FILL IN CHILD'S FIRST NAME)** have any other current special needs or long-term medical problems that affect what (HE/SHE) eats?

[INTERVIEWER: SPECIAL NEEDS INCLUDE DIETARY MODIFICATIONS FOR DIABETES, METABOLIC DISORDERS, GASTROINTESTINAL PROBLEMS – THINGS THAT AFFECT THE CHILD'S ABILITY TO EAT AND SWALLOW.]

NO 00
 YES (**SPECIFY**) 01

A9a. Specify special needs or medical problems.

(40 characters)

HOUSEHOLD INFORMATION

(ASK ONLY IF S6 SPECIFY > 1)

B1. Is this (**FILL IN CHILD'S FIRST NAME**)'S MOTHER'S/YOUR) first child?
(PROGRAMMER: NOTE PRONOUN CHANGES BASED ON FLAG MOM; IF A2c = 0, THEN PUT "WAS THIS MOTHER'S FIRST CHILD.)

NO 00
 YES 01
 DON'T KNOW DK
 REFUSED RF

Note: If child's female caretaker is on the phone, use "your." If child's female caretaker is not in the household, use the response from A2e to fill in who we are talking about.

(IF NO FEMALE CARETAKER, A2C = NO, THEN GO TO B7)

B3. What is (**YOUR/(FILL IN CHILD'S FIRST NAME)'S/(FILL RESPONSE FROM A2e)**) current marital status? (**ARE YOU/IS SHE**) now married, divorced, separated, widowed, never married, or living with a partner?

MARRIED 01
 SEPARATED OR DIVORCED 02
 WIDOWED 03
 NEVER MARRIED 04
 LIVING WITH PARTNER 05
 DON'T KNOW DK
 REFUSED RF

B4. The next questions are about (**YOUR/(FILL IN CHILD'S NAME)'S/(FILL RESPONSE FROM A2e)**) current job or business? (**WERE YOU/WAS SHE**) working in the last 30 days?

NO 00
 YES 01
 DON'T KNOW DK
 REFUSED RF

B5. **(ASK ONLY IF B4 = 00)**
 (Were you/Was she) . . .

With a job or business but not at work (such as vacation) 01
 Looking for work 02
 Attending school full-time 03
 A full-time stay-at-home female caregiver 04
 Other (SPECIFY) 05
 DON'T KNOW DK
 REFUSED RF

B5a. Specify other activity

(50 characters)

DON'T KNOW DK
 REFUSED RF

B6. **(ASK ONLY IF B4= 01)**
 On average, how many hours per week (**DO YOU/DOES SHE**) usually work?
 ENTER NUMBER OF HOURS PER WEEK _____ (**PROGRAMMER: SOFT EDIT TO 70 H; SET HARD EDIT TO 120**)

DON'T KNOW DK
 REFUSED RF

Note: If child's male caretaker is on the phone, use "your". If child's male caretaker is not in the household, use the response from A3C to fill in who we are talking about.

(IF NO MALE CARETAKER, A3A = NO, THEN GO TO B10)

B7. The next questions are about (**YOUR/(FILL IN CHILD'S FIRST NAME)'S (FILL RESPONSE FROM A3C)**) current job or business. (Were you/was he) working in the last 30 days?

NO 00
 YES 01
 DON'T KNOW DK
 REFUSED RF

B8.	(ASK ONLY IF B7 = 00) (Were you/Was he) . . .	
	With a job or business but not at work (such as vacation)	01
	Looking for work	02
	Attending school full-time	03
	A full-time stay-at-home Dad	04
	Other (SPECIFY)	05
	DON'T KNOW	DK
	REFUSED	RF
B8a.	Specify other activity. _____	
	(50 characters)	
B9.	(ASK ONLY IF B7 = 01) On average, how many hours per week (DO YOU/DOES HE) usually work? ENTER NUMBER OF HOURS PER WEEK _____ (PROGRAMMER: SOFT EDIT TO 70 H; SET HARD EDIT TO 120)	
	DON'T KNOW	DK
	REFUSED	RF
B10.	Does (FILL CHILD'S FIRST NAME) currently spend part of the day at child care or with a babysitter or someone else who is not (HIS/HER) parent?	
	NO	00
	YES	01
	DON'T KNOW	DK
	REFUSED	RF
	(ASK ONLY IF B10 = 01)	
B11.	Who takes care of (FILL IN CHILD'S FIRST NAME) most often while (YOU/(HIS/HER) PARENTS OR GUARDIANS) aren't with (HIM/HER) ? [INTERVIEWER: MARK ALL THAT APPLY]	
	A CHILD CARE CENTER	01
	AN UNRELATED BABYSITTER OR IN-HOME PROVIDER	02
	YOUR RELATIVES OR IN-LAWS	03
	OTHER (SPECIFY)	04
	DON'T KNOW	DK
	REFUSED	RF
B11a.	Specify other caregiver? ENTER OTHER CAREGIVER _____	
	(ASK ONLY IF B10 = 01)	
B12.	In the last week, how many days did (FILL IN CHILD'S FIRST NAME) spend at (FILL RESPONSES TO B11) ? If (HE/SHE) stayed with more than one person, please give me the total number of days. ENTER NUMBER OF DAYS _____	
	DON'T KNOW	DK
	REFUSED	RF
B13.	(ASK ONLY IF B10 = 01) In the last week, what was the average number of hours per weekday (FILL IN CHILD'S FIRST NAME) spent at (FILL RESPONSES TO B11) ? If (HE/SHE) stayed with more than one person, please average across both. ENTER NUMBER OF HOURS _____	
	DON'T KNOW	DK
	REFUSED	RF
B14.	(ASK ONLY IF B10 = 01) Was last week typical in the number of hours (FILL IN CHILD'S FIRST NAME) spent at (FILL RESPONSES TO B11) ?	
	NO	00
	YES	01
	DON'T KNOW	DK
	REFUSED	RF
	(ASK ONLY IF A2C = YES)	
B15.	What is the highest year or grade (YOU/(FILL IN CHILD'S FIRST NAME)'s (FILL RESPONSE FROM A2E)) finished in school? [INTERVIEWER: READ LIST IF NECESSARY]	
	NEVER ATTENDED SCHOOL	00
	GRADES 1 TO 11, ENTER NUMBER	01 to 11
	High school diploma or GED	12
	Some college/some postsecondary vocational courses	13
	2-year or 3-year college degree (AA degree) or Vocational school diploma	14

	4-year college degree (BA, BS degree)	15
	Some graduate work/no graduate degree	16
	Doctoral or graduate degree (MA, MBA, Ph.D., JD, MD)	17
	SPECIAL EDUCATION	18
	DON'T KNOW	DK
	REFUSED	RF
(ASK ONLY IF A3a = YES)		
B16.	What is the highest year or grade (YOU/FILL IN CHILD'S FIRST NAME)'s (FILL IN RESPONSE FROM A3C) finished in school? [INTERVIEWER: READ LIST IF NECESSARY]	
	NEVER ATTENDED SCHOOL	00
	GRADES 1 TO 11, ENTER NUMBER	01 to 11
	High school diploma or GED	12
	Some college/some postsecondary vocational courses	13
	2-year or 3-year college degree (AA degree) or vocational school diploma	14
	4-year college degree (BA, BS degree)	15
	Some graduate work/no graduate degree	16
	Doctoral or graduate degree (MA, MBA, PhD, JD, MD)	17
	SPECIAL EDUCATION	18
	DON'T KNOW	DK
	REFUSED	RF
B17.	What language do you use most often when talking to (FILL IN CHILD'S FIRST NAME)?	
	ENGLISH	01
	SPANISH	02
	OTHER (SPECIFY)	03
	BOTH ENGLISH AND SPANISH EQUALLY	04
	DON'T KNOW	DK
	REFUSED	RF
(ASK ONLY IF B17 = 03)		
B17a.	What other language is that? ENTER LANGUAGE _____	
	DON'T KNOW	DK
	REFUSED	RF
B18.	Is (FILL IN CHILD'S FIRST NAME) Spanish, Hispanic, or Latino?	
	NO, NOT HISPANIC OR LATINO	00
	YES, HISPANIC OR LATINO	01
	DON'T KNOW	DK
	REFUSED	RF
B19.	What is (FILL IN CHILD'S FIRST NAME)'s race? [MARK ALL THAT APPLY; READ IF NECESSARY]	
	White	01
	Black or African American	02
	American Indian or Native Alaskan	03
	Asian, Native Hawaiian, or Pacific Islander	04
	Some other race (specify)	05
	DON'T KNOW	DK
	REFUSED	RF
B19a.	Specify other race? ENTER OTHER RACE _____	
	DON'T KNOW	DK
	REFUSED	RF
B20a.	I would like to know the total combined income of all members of this household during 2001. This includes money from jobs and farms, and money from other income such as rent, pensions, dividends, and social security payments. This is for any household members who are 15 years of age or older. Is your household income above \$35,000?	
	NO	00
	YES	01
	DON'T KNOW	DK
	REFUSED	RF
(ASK ONLY IF B20a = 00)		
B20b.	Is your household income between \$25,000 and \$34,999?	
	NO	00
	YES	01

	DON'T KNOW	DK
	REFUSED	RF
(ASK ONLY IF B20b = 00)		
B20c.	Is your household income between \$15,000 and \$24,999?	
	NO	00
	YES	01
	DON'T KNOW	DK
	REFUSED	RF
(ASK ONLY IF B20C = 00)		
B20d.	Is your household income between \$10,000 and \$14,999?	
	NO	00
	YES	01
	DON'T KNOW	DK
	REFUSED	RF
(ASK ONLY IF B20D = 00)		
B20e.	Is your household income less than \$10,000?	
	NO	00
	YES	01
	DON'T KNOW	DK
	REFUSED	RF
(ASK ONLY IF B20A = 01)		
B20f.	Is your household income between \$35,000 and \$49,999?	
	NO	00
	YES	01
	DON'T KNOW	DK
	REFUSED	RF
(ASK ONLY IF B20F = 00)		
B20g.	Is your household income between \$50,000 and \$74,999?	
	NO	00
	YES	01
	DON'T KNOW	DK
	REFUSED	RF
(ASK ONLY IF B20G = 00)		
B20h.	Is your household income between \$75,000 and \$99,999?	
	NO	00
	YES	01
	DON'T KNOW	DK
	REFUSED	RF
(ASK ONLY IF B20H = 00)		
B20i.	Is your household income over \$100,000?	
	NO	00
	YES	01
	DON'T KNOW	DK
	REFUSED	RF
CLOSING QUESTIONS		
C1.	We really appreciate your help with our study. We only have a couple more questions. We would like to call again to talk more about what (FILL IN CHILD'S FIRST NAME) ate.	
	During that call we will be asking about all the foods (FILL CHILD'S FIRST NAME) ate over a 24-hour period of time. In order to help complete that interview we will also be sending additional materials in the mail with a "Thank You" check for participating in the study. This interview will take about a half hour. For our interview sometime next week, it is really important that we talk to the person who knows the most about what (FILL IN CHILD'S FIRST NAME) eats and when.	
	Are you this person?	
	NO - ANOTHER PERSON	00
	YES - PERSON ON THE PHONE NOW	01
	DON'T KNOW	DK
	REFUSED	RF
(ASK ONLY IF C1 = 00)		
C1a.	What is this person's relationship to (FILL IN CHILD'S FIRST NAME) ?	
	CHILD'S MOTHER/STEPMOTHER	01
	CHILD'S FATHER/STEPFATHER	02
	CHILD'S AUNT	03
	CHILD'S UNCLE	04

	CHILD'S GRANDPARENT	05
	CHILD'S SIBLING	06
	CHILD'S LEGAL GUARDIAN	07
	OTHER (SPECIFY) _____	08
	DON'T KNOW	DK
	REFUSED	RF
(ASK ONLY IF C1 = 00)		
C2.	What is the person's first name? [INTERVIEWER: REPEAT NAME BACK TO RESPONDENT TO VERIFY SPELLING.]	
	SPECIFY	01
	DON'T KNOW	DK
	REFUSED	RF
(ASK ONLY IF C1 = 00)		
C3.	What is the person's last name? [INTERVIEWER: REPEAT NAME BACK TO RESPONDENT TO VERIFY SPELLING.]	
	SPECIFY	01
	DON'T KNOW	DK
	REFUSED	RF
(PROGRAMMER: SET MKA ON C2 and C3 FOR INTAKE INTERVIEW.)		
(ASK ONLY IF S3A=02 OR S3A=EMPTY AND C1=00)		
C3b1.	May I please have your first name?	
	[IF ASKED: We would like to have your name in case we call for a follow-up.]	
	SPECIFY	01
	REFUSED	RF
C3b2.	And your last name?	
	SPECIFY	01
	REFUSED	RF
(IF C1 = 01 READ FIRST PHRASE, IF NOT TALKING TO MKA (C1 = 00), READ SECOND PHRASE)		
C5.	Can you please verify your name and mailing address? I have . . . / Can I get this person's mailing address?	
	NAME _____	
	STREET _____	
	CITY _____	
	STATE _____ ZIP _____	
	[INTERVIEWER: WHEN FILLING IN ADDRESS, REPEAT BACK TO RESPONDENT TO VERIFY SPELLING.]	
	Is this address correct?	
	ADDRESS CORRECT	01
	ADDRESS INCORRECT (ALLOW FOR CORRECTION)	02
	DON'T KNOW	DK
	REFUSED	RF
C5b.	Can you please verify that I reached you today at (FILL PHONE NUMBER) ?	
	PHONE NUMBER CORRECT	01
	PHONE NUMBER INCORRECT (ALLOW FOR CORRECTION)	02
	DON'T KNOW	DK
	REFUSED	RF
C5NAME.	May I have your first and last name?	
	SPECIFY	01
	DON'T KNOW	DK
	REFUSED	RF
C5ADD.	Please give me the correct address.	
	SPECIFY	01
	REFUSED	RF
C5APT.	Is there an apartment number?	
	SPECIFY	01
	REFUSED	RF
C5CITY.	And what city is that in?	
	SPECIFY	01
	REFUSED	RF
C5STATE.	May I have the state?	
	SPECIFY	01
	REFUSED	RF
C5ZIP.	And the zip code?	
	SPECIFY	01
	REFUSED	RF
(IF C1 = 00, ASK; OTHERWISE, GO TO C5B)		

C5a.	Please also tell me their phone number. [INTERVIEWER: PLEASE REPEAT BACK PHONE NUMBER TO VERIFY.]	
	NO	00
	YES (SPECIFY)	01
	DON'T KNOW	DK
	REFUSED	RF
C5a1.	INTERVIEWER: ENTER PHONE NUMBER BELOW. ENTER PHONE # _____	
(ASK ONLY IF C1 = 01, DK, RF)		
C5b.	Can you please verify that I called/reached you today at (FILL NUMBER AUTODIALED) ?	
	PHONE NUMBER CORRECT	01
	PHONE NUMBER INCORRECT (ALLOW FOR CORRECTION)	02
	DON'T KNOW	DK
	REFUSED	RF
C5b1.	May I have the correct phone number? ENTER CORRECT PHONE # _____	
C5c.	And is this the number I should call for the interview next week?	
	NO (RECORD NEW NUMBER)	00
	YES	01
	DON'T KNOW	DK
	REFUSED	RF
C5c1.	May I have the correct phone number? ENTER CORRECT PHONE # _____	
C6.	(STATE IF PERSON IS MKA, C1=00) Again, we will be calling in a week or so to talk about what (FILL CHILD'S NAME) eats. Please do not change (HIS/HER) diet this week. (STATE IF PERSON IS NOT THE MKA, C1=00) Again, we will be calling in a week or so to talk about what (FILL CHILD'S NAME) eats. Please tell the person that you said was most knowledgeable about what (FILL CHILD'S NAME) eats that you completed this interview and that we will be sending materials and calling to talk with them in about a week. Also, please tell him or her to not change (FILL CHILD'S NAME)'s diet.	

CLOSING.

Thank you very much for your time. You have helped us greatly with this important study.

This completes the survey!

TERMINATE SCREENS

Terminate # 1

Thank you very much for your time. We are trying to reach the parent of a specific child that we have on our list.

Terminate # 2

I am very sorry to hear this. Please accept our condolences. Thank you.

© 2006 Gerber Products Company

Appendix 2. Feeding Infants and Toddlers Study Dietary Intake Interview

NOTE: Notes to Programmers in bold, parentheses, and all caps.

INTRODUCTION

S1.	Hello, my name is _____. May I please speak with (MKA) ?	
	(IF MKA REFUSED OR NOT KNOWN) Hello, my name is _____. May I please speak with the (FILL RECRUITMENT C3b1 and C3b2; OTHERWISE, FILL NAME OF SAMPLE) of (FILL CHILD'S FIRST NAME)?	
	MKA OR PARENT ON THE PHONE (GO TO S2)	01
	MKA OR PARENT COMING TO THE PHONE (REPEAT S1 ONCE)	02
	MKA OR PARENT UNAVAILABLE	03
S2.	We talked with (SOMEONE IN YOUR HOUSEHOLD / YOU – BASED ON C1 EITHER 01 OR 00) briefly last week about the Feeding Infants and Toddlers Study. We are calling back now to do the next part of the interview to learn more about what (FILL CHILD'S FIRST NAME) eats.	
	CONTINUE	01
S2a1.	(IF INTERVIEWEE FOR RECRUITMENT DOES NOT EQUAL MKA: CONTINUE / IF INTERVIEWEE WAS MKA: GO TO S3/ IF MKA REFUSED OR NOT KNOWN, GO TO S2A2)	
	[INSERT CHILD'S FIRST AND LAST (IF KNOWN) NAME]'s family has been selected to participate in a nationwide survey about what young children eat. It is a very important study, and would like your help.	
	During the first interview your name was given as the person who knew the most about what [FILL CHILD'S FIRST NAME] eats.	
	IF CORRECT, MKA (GO TO S3a)	01
	NOT MOST KNOWLEDGEABLE ADULT	02
	CHILD DIED (GO TO TERMINATE # 1)	03
S2a2.	May I please have the name of the person who is most knowledgeable about what (FILL CHILD'S FIRST NAME) ate yesterday? [INTERVIEWER: IF REFUSE – SET CALLBACK.]	
	YES (SPECIFY)	01
	REFUSED	RF
S2b.	What is the person's first name? [INTERVIEWER: REPEAT NAME BACK TO RESPONDENT TO VERIFY SPELLING.]	
	SPECIFY	01
	DON'T KNOW	DK
	REFUSED	RF
S2c.	What is the person's last name? [INTERVIEWER: REPEAT NAME BACK TO RESPONDENT TO VERIFY SPELLING.]	
	SPECIFY	01
	DON'T KNOW	DK
	REFUSED	RF
	(PROGRAMMER: SET FLAG MKA ON S2b AND S2C FOR INTAKE INTERVIEW).	
S2d.	What is his/her relationship to (FILL IN CHILD'S FIRST NAME)?	
	mother (SET FLAG MOM TO 01)	01
	father (SET FLAG DAD TO 01)	02
	stepmother	03
	stepfather	04
	aunt	05
	uncle	06
	grandparent	07
	sibling	08
	Other (SPECIFY) _____	09
	REFUSED	RF
S2dOther.	Other relationship?	
	SPECIFY RELATIONSHIP _____	
	DON'T KNOW	DK
	REFUSED	RF
S2e.	Is that person available?	
	NO	00
	YES	01
S2f.	Hello, my name is _____. I was told you know the most about what (FILL CHILD'S FIRST NAME) eats. We recently sent a package, along with a check for \$20 to (FILL WITH ORIGINAL PARENT'S NAME) explaining that a child from the family has been selected to participate in a study we call the Feeding Infants and Toddlers Study. It is a very important study. We will be asking questions about what (FILL CHILD'S FIRST NAME) eats. It would be helpful if you could get the booklet that had pictures showing different measurement guides such as feeding spoons and cups.	
	GETTING GUIDE/CONTINUE (GO TO A1)	01
	CAN'T GET/DIDN'T RECEIVE (GO TO S3b)	00
	REFUSED TO DO INTERVIEW	RF

S3a.	You should have received a package in the mail last week. It contained a booklet with pictures showing different measuring guides, such as feeding spoons, and cups. It would be helpful to have it in front of you during this part of the interview. I can wait if you need to go get it. HAS IT/GETTING IT/CONTINUE 01 CANNOT FIND/DID NOT RECEIVE 02	
S3b.	(ASK ONLY IF S3A=02 OR S2f=00) It is okay if you don't have it in front of you. We can discuss what (FILL CHILD'S FIRST NAME) eats without it. CONTINUE 01	
NDS (START OF RECALL)		
A2.	I'm going to collect a 24-hour dietary recall, which is a list of the foods and drinks that (FILL FIRST CHILD'S NAME) ate yesterday. That is, from 12 midnight on (FILL DAY OF WEEK MINUS TWO DAYS) , which was the night before last, to 12 midnight last night. Be sure to include all meals, snacks, drinks, including water, as well as small tastes or samplings of foods. I'll also ask you about any vitamin, mineral, or other supplements that (HE/SHE) may have taken. Then, I'll go through the list and I'll ask you questions about the preparation and amounts of foods or drinks. Finally, we'll go through the list one more time to make certain we haven't missed anything. CONTINUE 01	
A3a.	It will just take me a minute to put some information about (FILL FIRST CHILD'S NAME) into our dietary recall system. INTERVIEWER: GO TO NDS AND PUT IN INFORMATION FOR HEADER PAGE: ANYTHING SHADED IN YELLOW. THEN, COME BACK TO THE CATI SCREEN. CONTINUE 01	
A3b.	(ASK IF CHILD IS LESS THAN 12 MONTHS OF AGE) Is (FILL CHILD'S FIRST NAME) currently exclusively breastfed, meaning no other food or water are given to (HIM/HER) ? NO 00 YES 01 DON'T KNOW DK REFUSED RF	
(ASK ONLY IF A3B = 00, DK, OR RF)		
A3c.	Okay. Take a moment to think about yesterday, what you did, where you and (FILL CHILD'S FIRST NAME) went and so forth. This can help you to remember what and when (FILL CHILD'S FIRST NAME) ate. As you list the foods and drinks, tell me the approximate time (HE/SHE) ate the foods. For example, "at 7 am, (HE/SHE) had milk, at 8:30 (HE/SHE) had cereal and juice." CONTINUE 01	
(ASK ONLY IF A3B = 00, DK, OR RF)		
A4.	INTERVIEWER: CONDUCT NDS. CLICK ON CONTINUE RECALL. START WITH THE QUICKLIST WINDOW AND SAY: "After midnight, what was the first time that (FILL CHILD'S FIRST NAME) had something to eat or drink?" CONTINUE 01	
(ASK ONLY IF A3B = 01)		
A4a.	INTERVIEWER: CONDUCT NDS. START WITH THE QUICKLIST WINDOW AND SAY: "After midnight, what was the first time that (FILL CHILD'S FIRST NAME) was given breastmilk?" CONTINUE 01	
CONDUCT ALL OF NDS		
A5.	INTERVIEWER: WAS DIETARY RECALL COMPLETE, THAT IS, NO MISSING MEALS? SOME MEALS MISSING 00 YES, COMPLETE (GO TO A8) 01	
A8.	Did (FILL CHILD'S FIRST NAME) take any vitamin, mineral, or other dietary or herbal supplements yesterday? INTERVIEWER: SUPPLEMENTS INCLUDE HERBAL SUPPLEMENTS AND MEAL REPLACEMENT BARS OR DRINKS. NO (GO TO A13) 00 YES 01 DON'T KNOW (GO TO A13) DK REFUSED (GO TO A13) RF	
A9.	I have a few questions about the supplement. It might be helpful if you can get the bottle. I can wait while you go get it. INTERVIEWER: ASK THE NAME OF THE SUPPLEMENT, GO TO NDS, ADD AS A MEAL (NOT A FOOD) AND FOLLOW THE NDS PROMPTS REGARDING SUPPLEMENTS. CONTINUE, BUT DOES NOT HAVE SUPPLEMENTS IN FRONT OF HIM/HER 01 CONTINUE, DOES HAVE SUPPLEMENTS IN FRONT OF HIM/HER 02	
A13.	Was (FILL CHILD'S FIRST NAME) at child care or with a babysitter or someone else part of the day yesterday? NO 00 YES 01 DON'T KNOW DK REFUSED RF	
A14.	(ASK ONLY IF A13 = YES) What meals or snacks did (HE/SHE) eat on (FILL RECALL DAY) that you did not give (HIM/HER) ?	

	INTERVIEWER: A PORTION OF A MEAL SHOULD BE CODED AS "OTHER."	
	INTERVIEWER: INFANT FEEDINGS (FORMULA, BREASTMILK, ETC.) SHOULD BE CODED AS "OTHER."	
	BREAKFAST	01
	MORNING SNACK	02
	LUNCH	03
	AFTERNOON SNACK	04
	DINNER/SUPPER	05
	BEVERAGE	06
	EVENING SNACK	07
	OTHER (SPECIFY)	08
	NONE	09
	DON'T KNOW	DK
	REFUSED	RF
A14a.	Specify other meal or snack (SPECIFY) _____	
	DON'T KNOW	DK
	REFUSED	RF
	BREAST FEEDING AND INITIATION OF FOODS	
B1_INTRO	Now I am going to ask you some general questions about your child's eating habits.	
	CONTINUE	01
	(IF A3B = 01, GO TO C1; OTHERWISE, CONTINUE)	
B1.	INTERVIEWER: CODE WITHOUT ASKING IF KNOWN. Was (FILL CHILD'S FIRST NAME) ever breastfed or fed breast milk?	
	NO	00
	YES	01
	DON'T KNOW	DK
	REFUSED	RF
	(ASK ONLY IF EVER B1 = 01)	
B2.	INTERVIEWER: CODE WITHOUT ASKING IF KNOWN. Are you currently breast feeding (FILL IN CHILD'S FIRST NAME) ?	
	NO	00
	YES	01
	DON'T KNOW	DK
	REFUSED	RF
	(ASK ONLY IF CURRENT B2 = 00 and B1 = 01)	
B3.	How old was (FILL IN CHILD'S FIRST NAME) when you stopped breast feeding? [INTERVIEWER: PLEASE PROBE FOR WEEKS IF BETWEEN 4 TO 6 MONTHS OLD. IF LESS THAN ONE WEEK, ROUND TO ONE WEEK.]	
	ENTER AGE IN WEEKS	01
	ENTER AGE IN MONTHS	02
	DON'T KNOW	DK
	REFUSED	RF
	(PROGRAMMER: NEED RANGE VERIFICATION AGAINST AGE FROM RECRUITMENT)	
	(PROGRAMMER: THIS SHOULD BE THREE SETS OF RESPONSES - 1) THE ABOVE LIST, THEN 2) A LIST OF UNITS - WEEKS = 01, MONTHS = 02, THEN 3) SPACES TO SPECIFY THE NUMBER OF DAYS/WEEKS/MONTHS/YEARS. PLEASE USE THIS FORMAT FOR THESE QUESTIONS.)	
B3b.	ENTER NUMBER OF WEEKS HERE WEEKS _____	
B3c.	ENTER NUMBER OF MONTHS HERE MONTHS _____	
B4.	INTERVIEWER: CODE WITHOUT ASKING IF KNOWN. Has (FILL IN CHILD'S FIRST NAME) ever been fed formula?	
	NO	00
	YES	01
	DON'T KNOW	DK
	REFUSED	RF
B5a.	(ASK ONLY IF B4 = 01) How old was (FILL IN CHILD'S FIRST NAME) when (HE/SHE) was first fed formula on a daily basis?	
	ENTER AGE IN WEEKS	01
	ENTER AGE IN MONTHS	02
	SINCE BIRTH	03
	NEVER ON A DAILY BASIS	00
	DON'T KNOW	DK

	REFUSED	RF
B5b.	ENTER NUMBER OF WEEKS HERE SPECIFY WEEKS _____	
B5c.	ENTER NUMBER OF MONTHS HERE SPECIFY MONTHS _____	
B6.	Has (FILL IN CHILD'S FIRST NAME) ever been fed milk other than breast milk or formula – like cow's milk, whole milk, or Lactaid milk? INTERVIEWER: THIS INCLUDES DRINKING MILK OR PUTTING MILK IN CEREAL. THIS DOES NOT INCLUDE USING MILK IN RECIPES.	
	NO	00
	YES	01
	DON'T KNOW	DK
	REFUSED	RF
B7a.	(ASK ONLY IF B6 = 01) How old was (FILL IN CHILD'S FIRST NAME) when (HE/SHE) was first fed cow's milk, not breastmilk or formula, on a daily basis? ENTER AGE IN WEEKS	01
	ENTER AGE IN MONTHS	02
	NEVER ON A DAILY BASIS	00
	DON'T KNOW	DK
	REFUSED	RF
B7b.	ENTER NUMBER OF WEEKS HERE SPECIFY WEEKS _____	
B7c.	ENTER NUMBER OF MONTHS HERE SPECIFY MONTHS _____	
B8a.	And how old was (HE/SHE) when (HE/SHE) was first fed cereal, including baby cereal, on a daily basis? ENTER AGE IN WEEKS	01
	ENTER AGE IN MONTHS	02
	NEVER ON A DAILY BASIS	00
	DON'T KNOW	DK
	REFUSED	RF
B8b.	ENTER NUMBER OF WEEKS HERE SPECIFY WEEKS _____	
B8c.	ENTER NUMBER OF MONTHS HERE SPECIFY MONTHS _____	
B9a.	How old was (FILL IN CHILD'S FIRST NAME) when (HE/SHE) was first fed pureed baby food on a daily basis? INTERVIEWER: THIS INCLUDES COMMERCIAL OR HOMEMADE BABY FOOD. ENTER AGE IN WEEKS	01
	ENTER AGE IN MONTHS	02
	NEVER ON A DAILY BASIS	00
	DON'T KNOW	DK
	REFUSED	RF
B9b.	ENTER NUMBER OF WEEKS HERE SPECIFY WEEKS _____	
B9c.	ENTER NUMBER OF MONTHS HERE SPECIFY MONTHS _____	
B10.	Who is the main person who chooses (FILL IN CHILD'S FIRST NAME) 's foods on a daily basis? INTERVIEWER: IF THE MKA SAYS "ME" OR "I DO" VERIFY THE RELATIONSHIP TO CHILD.	
	MOTHER	01
	FATHER	02
	STEPMOTHER	03
	STEPFATHER	04
	AUNT	05
	UNCLE	06
	GRANDPARENT	07
	SIBLING	08
	DAYCARE PROVIDER OR SITTING	09
	OTHER (SPECIFY)	10
	RESPONSIBILITY SPLIT EQUALLY WITH OTHERS	11
	DON'T KNOW	DK
	REFUSED	RF
B10a.	SPECIFY THE OTHER PERSON	

DON'T KNOW DK
 REFUSED RF

MOTOR DEVELOPMENT

- C1. The following questions are about various things children do at different ages. For each, please tell me "yes" if **(FILL CHILD'S FIRST NAME)** does that activity or "no" if **(HE/SHE)** does not.
 CONTINUE 01
- C1a. **(ASK IF CHILD IS BETWEEN 4-8 MONTHS)** Does **(FILL IN CHILD'S FIRST NAME)** lift and support **(HIS/HER)** head without help?
 NO 00
 YES 01
 DON'T KNOW DK
 REFUSED RF
- C2. **(ASK IF CHILD IS BETWEEN 4-8 MONTHS)** Does **(HE/SHE)** roll over on **(HIS/HER)** own on purpose?
 NO 00
 YES 01
 DON'T KNOW DK
 REFUSED RF
- C3. **(ASK IF C2 = 01)** Is **(HE/SHE)** rolling from front to back or back to front or both?
 FRONT TO BACK 01
 BACK TO FRONT 02
 BOTH 03
 DON'T KNOW DK
 REFUSED RF
- C4. **(ASK IF CHILD IS BETWEEN 4-11 MONTHS)** Does **(FILL IN CHILD'S FIRST NAME)** sit alone without support?
 NO 00
 YES 01
 DON'T KNOW DK
 REFUSED RF
- C5. **(ASK IF CHILD IS BETWEEN 4-11 MONTHS OLD)** Does **(HE/SHE)** grasp food with **(HIS/HER)** hand?
 NO 00
 YES 01
 DON'T KNOW DK
 REFUSED RF
- C6. **(ASK IF CHILD IS BETWEEN 4-11 MONTHS OLD)** Does **(FILL IN CHILD'S FIRST NAME)** need help to feed **(HIMSELF/HERSELF)** any food with **(HIS/HER)** fingers?
 NO 00
 YES 01
 DON'T KNOW DK
 REFUSED RF
- C7. **(ASK IF CHILD IS BETWEEN 4-14 MONTHS OLD)** Does **(FILL IN CHILD'S FIRST NAME)** crawl when left lying on **(HIS/HER)** stomach?
 NO 00
 YES 01
 DON'T KNOW DK
 REFUSED RF
- C7a. **(ASK IF CHILD IS BETWEEN 4-24 MONTHS)** When **(HE/SHE)** is being fed, does **(FILL IN CHILD'S FIRST NAME)** usually remove food from a spoon using **(HIS/HER)** top lip or do you usually have to scrape the spoon into **(HIS/HER)** mouth?
 USES TOP LIP 01
 HAVE TO SCRAPE FOOD 02
 DON'T KNOW DK
 REFUSED RF
- C8. **(ASK IF CHILD IS BETWEEN 7-24 MONTHS)** Does **(FILL IN CHILD'S FIRST NAME)** feed **(HIMSELF/HERSELF)** with a spoon without spilling much?
 NO 00
 YES 01
 DON'T KNOW DK
 REFUSED RF
- C9. **(ASK IF CHILD IS BETWEEN 7-24 MONTHS)** Does **(HE/SHE)** feed **(HIMSELF/HERSELF)** with a fork without spilling much?
 NO 00
 YES 01
 DON'T KNOW DK

	REFUSED	RF
C10.	Does (FILL IN CHILD'S FIRST NAME) drink from a sippy cup without help? (IF ASKED: A sippy cup is a cup with a plastic cover that has a spout.)	
	NO	00
	YES	01
	DON'T KNOW	DK
	REFUSED	RF
C11.	Does (HE/SHE) drink from a regular cup without help—that is, a cup without a lid?	
	NO	00
	YES	01
	DON'T KNOW	DK
	REFUSED	RF
C12.	(ASK IF CHILD IS BETWEEN 7-24 MONTHS) Does (FILL IN CHILD'S FIRST NAME) eat foods that require chewing?	
	NO	00
	YES	01
	DON'T KNOW	DK
	REFUSED	RF
C13.	(ASK IF CHILD IS BETWEEN 7-24 MONTHS) Does (FILL IN CHILD'S FIRST NAME) pull (HIMSELF/HERSELF) to a standing position without help from another person?	
	NO	00
	YES	01
	DON'T KNOW	DK
	REFUSED	RF
C14.	(ASK IF CHILD IS BETWEEN 7-24 MONTHS) Does (FILL IN CHILD'S FIRST NAME) walk at least 2 steps with one hand held by someone or holding onto something?	
	NO (GO TO C16)	00
	YES	01
	DON'T KNOW	DK
	REFUSED	RF
C15.	(ASK IF CHILD IS BETWEEN 7-24 MONTHS) Does (HE/SHE) walk at least 2 steps WITHOUT holding on to anything or another person?	
	NO (GO TO C16)	00
	YES	01
	DON'T KNOW	DK
	REFUSED	RF
C15a.	(ASK IF CHILD IS BETWEEN 7-24 MONTHS) Does (HE/SHE) walk across the room WITHOUT holding on to anything or another person?	
	NO	00
	YES	01
	DON'T KNOW	DK
	REFUSED	RF
C16.	(ASK ONLY IF A3B = 00 OR DK OR RF) Do you consider (FILL IN CHILD'S NAME) . . .	
	A very picky eater,	01
	A somewhat picky eater, or	02
	Not a picky eater?	03
	DON'T KNOW	DK
	REFUSED	RF
C16a.	(ASK ONLY IF A3B = 00 OR DK OR RF) How many times do you offer a new food before you decide (FILL IN CHILD'S FIRST NAME) does not like it?	
	Once	01
	Twice	02
	Three to five times	03
	Six to ten times	04
	More than ten times?	05
	LIKES EVERYTHING	06
	DON'T KNOW	DK
	REFUSED	RF
C17.	Does (FILL IN CHILD'S FIRST NAME) show a strong preference to using (HIS/HER) right or left hand or doesn't (HE/SHE) show a preference?	
	NO PREFERENCE	00
	SHOWS PREFERENCE/RIGHT OR LEFT	01
	DON'T KNOW	DK

	REFUSED	RF
C18.	(ASK ONLY IF A3B = 00 OR DK OR RF) Does (FILL IN CHILD'S FIRST NAME) usually feed (HIMSELF/HERSELF) ?	
	YES, CHILD FEEDS SELF	01
	NO, ADULT FEEDS	02
	BOTH/SWITCH OFF	03
	DON'T KNOW	DK
	REFUSED	RF

INFORMATION ABOUT CHILD

D1.	What is (FILL IN CHILD'S FIRST NAME) 's current weight in pounds and ounces?	
	ENTER WEIGHT IN POUNDS AND OUNCES	01
	ENTER WEIGHT IN KILOGRAMS	02
	DON'T KNOW	DK
	REFUSED	RF

D1_LB ENTER WEIGHT IN POUNDS
 SPECIFY POUNDS _____

D1_OZ ENTER WEIGHT IN OUNCES
 SPECIFY OUNCES _____

D1_KILO ENTER WEIGHT IN KILOGRAMS
 SPECIFY WEEKS _____

D2.	And what is (HIS/HER) current length or height in inches? Please round.	
	ENTER HEIGHT IN INCHES	01
	ENTER HEIGHT IN CENTIMETERS	02
	DON'T KNOW	DK
	REFUSED	RF

D2_INCH ENTER HEIGHT IN INCHES
 SPECIFY INCHES _____

D2_CENT ENTER HEIGHT IN CENTIMETERS
 SPECIFY CENTIMETERS _____

D2a.	How recent are these measurements?	
	TAKEN WITHIN LAST 7 DAYS (one week)	01
	TAKEN BETWEEN 8 AND 30 DAYS	02
	MORE THAN 30 DAYS (4 WEEKS) AGO	03
	DON'T KNOW	DK
	REFUSED	RF

D3.	How many teeth does (FILL IN CHILD'S FIRST NAME) have?	
	[INTERVIEWER: A FULL SET OF BABY TEETH EQUALS 20 TEETH. ONLY INCLUDE THOSE THAT HAVE BROKEN THROUGH THE GUMS.]	
	ENTER NUMBER OF TEETH	01
	NONE SO FAR	00
	DON'T KNOW	DK
	REFUSED	RF

D4.	(ASK ONLY IF D3 GREATER THAN 3, – HAS MORE THAN 3 TEETH)	
	Does (HE/SHE) have any molars (back teeth)?	
	[INTERVIEWER: ONLY INCLUDE THOSE THAT HAVE BROKEN THROUGH THE GUMS.]	
	NO	00
	YES	01
	DON'T KNOW	DK
	REFUSED	RF

(ASK ONLY IF B10=01 – FROM RECRUITMENT INTERVIEW; OTHERWISE, GO TO D7)

D6.	Under your regular arrangements, who usually supplies the food that (FILL IN CHILD'S FIRST NAME) eats or drinks while at child care or with a babysitter or someone else? If your answer is different for different providers, answer for the one who feeds (HIM/HER) the most times per week.	
	THE PERSON KEEPING THE CHILD	01
	YOU/PARENT	02
	ANOTHER FAMILY MEMBER NOT KEEPING THE CHILD	03
	RESPONSIBILITY SPLIT EQUALLY WITH OTHERS	04
	DON'T KNOW	DK
	REFUSED	RF

INFORMATION ABOUT PARENTS AND WATER SUPPLY

These next questions are about you and your household.

E1aa.	Is (FILL CHILD'S FIRST NAME) now receiving benefits from the Women, Infants, and Children Program? This is sometimes called WIC.	
-------	---	--

	NO	00
	YES	01
	DON'T KNOW	DK
	REFUSED	RF
E1a.	What is your date of birth? Please tell me the month.	
	JANUARY	01
	FEBRUARY	02
	MARCH	03
	APRIL	04
	MAY	05
	JUNE	06
	JULY	07
	AUGUST	08
	SEPTEMBER	09
	OCTOBER	10
	NOVEMBER	11
	DECEMBER	12
	DON'T KNOW	DK
	REFUSED	RF
E1b.	Please tell me the day.	
	ENTER DAY _____	
E1c.	And, what year were you born?	
	ENTER YEAR _____	
	DON'T KNOW	DK
	REFUSED	RF
E2.	Are you Spanish or Hispanic or Latino?	
	NO, NOT SPANISH OR HISPANIC OR LATINO	00
	YES, AM SPANISH OR HISPANIC OR LATINO	01
	DON'T KNOW	DK
	REFUSED	RF
E3.	What is your race? [MARK ALL THAT APPLY; READ IF NECESSARY]	
	WHITE	01
	BLACK OR AFRICAN AMERICAN	02
	AMERICAN INDIAN OR ALASKA NATIVE	03
	ASIAN, NATIVE HAWAIIAN OR OTHER PACIFIC ISLANDER	04
	SOME OTHER RACE (SPECIFY)	05
	DON'T KNOW	DK
	REFUSED	RF
E3_SP	SPECIFY RACE	
	ENTER RACE _____	
	DON'T KNOW	DK
	REFUSED	RF
E4.	What is the source of the water supply in your home?	
	Municipal or city water, or	01
	Private or public well water	02
	Other	03
	DON'T KNOW	DK
	REFUSED	RF
E5.	(ASK ONLY IF E4 = 01)	
	Does your water supply contain fluoride?	
	NO	00
	YES	01
	DON'T KNOW	DK
	REFUSED	RF
	CLOSING REMARKS	
F2.	Earlier you told me that [FILL CHILD'S FIRST NAME] was fed by someone else for part of [FILL RECALL DAY] . I also remember that there were some meals that you were unsure about when we did the dietary recall portion of the interview. Can you find out what [FILL CHILD'S FIRST NAME] ate for [INSERT ALL MEALS LISTED IN A14] [FILL RECALL DAY] ?	
	NO/CAN'T GET INFORMATION (GO TO F2C)	00
	YES	01
	DON'T KNOW	DK
	REFUSED	RF

F2a.	You should try to find out each food item and beverage that [FILL CHILD'S FIRST NAME] ate as a meal or snack. If possible, we would like to know the brand name of the food and how much [FILL CHILD'S FIRST NAME] ate. If you can't find out the brand name or if the food was homemade, try to get as much information as possible about how it was prepared and how much was eaten. If you decide to meet with the person who fed [FILL CHILD'S FIRST NAME] , it might be helpful to take the measurement booklet with you to help estimate the amounts of food eaten. CONTINUE	01
(ASK ONLY IF F2 = YES-01)		
F2b.	What is a good time to call you in order to find out this missing information? INTERVIEWER: WRITE TIME ON CONTACT SHEET AND CALL IF TIME OCCURS DURING YOUR SHIFT. SPECIFY TIME (SET CALLBACK TIME; GO TO F5)	01
	DON'T KNOW (SET UNSCHEDULE APPT. TIME; GO TO F5)	DK
	REFUSED (CONTINUE)	RF
F2c.	Can we call the person who fed (FILL CHILD'S FIRST NAME) on (FILL RECALL DATE) in order to ask questions about what (HE/SHE) ate? NO (REFUSE) (GO TO F5)	00
	YES	01
F3.	May we have the name of that person? INTERVIEWER: WRITE THIS INFORMATION IN SPACE 1 ON THE CALL SHEET. NO	00
	YES	01
F3_SP	ENTER THE NAME ENTER NAME _____ [INTERVIEWER: REPEAT BACK NAME TO VERIFY SPELLING. IF THE NAME OF THE PERSON IS NOT KNOWN AND IT IS A DAY CARE CENTER, ASK FOR THE GENERAL PERSON OR TEACHER THAT PARENT TALKS TO.]	
F4.	May we have the telephone number (with area code) of the person? INTERVIEWER: WRITE THIS INFORMATION IN SPACE 2 ON THE CALL SHEET. NO	00
	YES	01
F4_SP	ENTER THE TELEPHONE NUMBER ENTER TELEPHONE NUMBER _____ INTERVIEWER: REPEAT BACK PHONE NUMBER TO VERIFY	
F4a.	May we have the last name for (FILL IN CHILD'S FIRST NAME) for when we call that person? NO	00
	YES	01
F4a_SP	What is (FILL IN CHILD'S FIRST NAME) 's last name? ENTER LAST NAME _____	
F4b.	We would like to call the person who fed your child yesterday, before he or she forgets anything. Can you call that person today, and let them know about the study and that I will be calling them tomorrow (or after the weekend)? If you think it is necessary, you can complete the permission form that was included in the package we sent you. RESPONDENT WILL CALL	01
	RESPONDENT SAYS A CALL IS NOT NECESSARY, CALL OURSELVES	02
	RESPONDENT WON'T CALL	03
	DON'T KNOW	DK
	REFUSED	RF
F5.	(PROGRAMMER: IF CASE HAS BEEN SELECTED FOR THE REINTERVIEW, PLEASE PUT THE FOLLOWING; IF NOT SELECTED, PLEASE GO TO F6) We may call again in another week or two to ask a few more similar questions about what (FILL IN CHILD'S FIRST NAME) eats. This next call should be about half as long as today's. Please keep the booklet containing pictures of food measurement aids for the next time we talk. CONTINUE	00
	REFUSE NEXT INTERVIEW	01
	WANTS ANOTHER PERSON TO DO SECOND INTERVIEW (GET CONTACT INFORMATION)	02
F5b.	INTERVIEWER: WILL THE RESPONDENT DO THE NEXT INTERVIEW? YES, CONTINUE	00
	REFUSE NEXT INTERVIEW	01
	WANTS ANOTHER PERSON TO DO SECOND INTERVIEW (GET CONTACT INFORMATION)	02
F6.	Thank you very much for your help in this important study! Have a great day/night. CONTINUE	01
F7.	INTERVIEWER: DID RESPONDENT USE MEASUREMENT BOOKLET DURING DIETARY RECALL? NO	00
	YES	01
F8.	(ONLY IF A14 = 01)	

	[INTERVIEWER: LEAVE A NOTE IN THE "NOTE" FIELD ON THE NDS HEADER PAGE AS TO WHAT IS MISSING. THE NEXT INTERVIEWER WILL LOOK HERE FOR A LIST OF THE MISSING INFORMATION.]	
F9.	CONTINUE	01
	INTERVIEWER: PLEASE RECORD THE FOLLOWING INFORMATION ON THE CONTACT SHEET.	
	NAME OF CHILD CARE CONTACT: (FILL CHILD CARE CONTACT NAME)	
	PHONE # OF CHILD CARE CONTACT: (FILL CONTACT TELEPHONE)	
	MISSING MEALS: (FILL MISSING MEALS)	
	CHILD'S NAME: (FILL CHILD'S FIRST AND LAST NAME)	
F10.	CONTINUE	01
	STATUS OF INTERVIEW	
	INTERVIEWER: USE CODE 1 IF YOU COMPLETED BOTH INTAKE AND NDS SECTIONS, IF A CALLBACK IS REQUIRED TO COMPLETE THE NDS DIETARY RECALL, USE CODE 02	
	COMPLETED INTAKE AND DIETARY RECALL IN THIS CALL	01
	COMPLETED INTAKE, CALLBACK NEEDED TO COMPLETE DIETARY RECALL	02
	COMPLETED INTAKE AND DIETARY RECALL – SEPARATE/ADDITIONAL CALLS	03
	COMPLETED INTAKE, BUT CANNOT COMPLETE DIETARY RECALL	04

TERMINATE SCREENS

Terminate # 1

I'm terribly sorry to hear that! We will not continue to contact you. Please accept our deepest sympathy. Goodbye. (PROGRAMMER: MARK AS 'BABY DIED' AND DO NOT RELEASE)

© 2006 Gerber Products Company

Appendix 3. Feeding Infants and Toddlers Study Dietary Intake Day 2 Interview

NOTE: Notes to Programmers in bold, parentheses, and all caps. Changes since last draft are marked in underline or strikeout.

INTRODUCTION/SCREENING	
S1.	Hello, my name is _____. May I please speak with (MKA) ? (IF MKA REFUSED OR NOT KNOWN) Hello, my name is _____. May I please speak with the (FILL RECRUITMENT A3) of (FILL CHILD'S NAME) ? MKA ON THE PHONE (GO TO S2) 01 MKA COMING TO THE PHONE (REPEAT S1) 02 MKA UNAVAILABLE (GOTO RESCHEDULER) 03
S2.	We talked with you last week about what (FILL IN CHILD'S FIRST NAME) eats. Your help was greatly appreciated and it is only through the generosity of people like you that we can do this project. CONTINUE 01
S2a1.	You have been selected for a follow-up interview. This call is to discuss what (FILL IN CHILD'S FIRST NAME) ate yesterday. It will be shorter than our interview last week. You are very important to this study and this second interview will help us know more about what children eat over time. CONTINUE (GO TO S3) 01 NOT MOST KNOWLEDGEABLE ADULT 02 CHILD DIED (GO TO TERMINATE # 1) 03
S2a2.	May I please have the name of the person who knows the most about what (FILL CHILD'S NAME) ate yesterday? INTERVIEWER: IF REFUSE TO GIVE NAME OF MKA, SCHEDULE A CALL BACK. YES 01 REFUSED (GO TO STATUS CODE) RF
S2b.	What is the person's first name? [INTERVIEWER: REPEAT NAME BACK TO RESPONDENT TO VERIFY SPELLING.] SPECIFY 01 DON'T KNOW DK REFUSED RF
S2c.	What is the person's last name? [INTERVIEWER: REPEAT NAME BACK TO RESPONDENT TO VERIFY SPELLING.] SPECIFY 01 DON'T KNOW DK REFUSED RF
(PROGRAMMER: SET FLAG MKA ON S2b AND S2c FOR REINTERVIEW).	
S2d.	What is his/her relationship to (FILL IN CHILD'S FIRST NAME) ? MOTHER (SET FLAG MOM TO 01) 01 FATHER (SET FLAG DAD TO 01) 02 STEPMOTHER 03 STEPFATHER 04 AUNT 05 UNCLE 06 GRANDPARENT 07 SIBLING 08 OTHER (SPECIFY) 09 REFUSED RF
S2dOther	Please specify other. SPECIFY _____ DON'T KNOW DK REFUSED RF
S2e.	Is that person available? INTERVIEWER: PLEASE SET CALL BACK IF NOT AVAILABLE. YES 01 DON'T KNOW DK REFUSED RF
S2f.	Hello, my name is _____. I was told you know the most about what (FILL CHILD'S NAME) eats. We recently sent a package, along with a check for \$20 to (FILL FIRST NAME OF MKA) explaining that a child from the family has been selected to participate in a study we call the Feeding Infants and Toddlers Study. It is a very important study. We will be asking questions about what (FILL CHILD'S FIRST NAME) eats. It would help if you could get the booklet that had pictures showing different measurement guides such as feeding spoons and cups. GETTING THE GUIDE (GO TO A1) 01 CAN'T GET/DIDN'T RECEIVE THE GUIDE 02 THEY REFUSE TO DO INTERVIEW 03

S3a.	We sent you a package in the mail two weeks ago. It contained a booklet with pictures showing different measuring guides, such as feeding spoons and cups. We will call this the measurement booklet. If you received the booklet, please have it in front of you during our interview. I can wait if you need to go get it. HAS IT/GETTING IT/CONTINUE (GO TO A1) 01 CANNOT FIND/DID NOT RECEIVE 02
S3b.	(ASK ONLY IF S3A=02) It is okay if you don't have it in front of you. We can discuss what (FILL CHILD'S FIRST NAME) eats without it. CONTINUE 01 DON'T KNOW DK REFUSED RF
INTRODUCTION/SCREENING	
A2.	First I'll ask you to list all the foods and drinks that (FILL CHILD'S NAME) ate yesterday. That is, from 12 midnight on (FILL DAY OF WEEK MINUS TWO DAYS), which was the night before last, to 12 midnight last night. Be sure to include all meals, snacks, drinks, including water, as well as small tastes or samplings of foods. I'll also ask you about any vitamin, mineral, or other supplements that (HE/SHE) may have taken. Then, I'll go through the list and I'll ask you questions about the preparation and amounts of foods or drinks. Finally, we'll go through the list one more time to make certain we haven't missed anything. CONTINUE 01
A3a.	It will just take me a minute to put some information about (FILL CHILD'S NAME) into our dietary recall system. INTERVIEWER: GO TO NDS AND PUT IN INFORMATION FOR HEADER PAGE – ANYTHING SHADED IN YELLOW. THEN, COME BACK TO THE CATI SCREEN. CONTINUE 01
A3b.	(ASK IF CHILD IS LESS THAN 12 MONTHS OF AGE) Is (FILL CHILD'S NAME) currently exclusively breastfed, meaning no other foods or water are given to (HIM/HER)? NO 00 YES (GO TO A4a) 01 DON'T KNOW DK REFUSED RF
(ASK ONLY IF A3B = 00, DK, OR RF)	
A3c.	Take a moment to think about yesterday, what you did, where you and (FILL CHILD'S NAME) went, and so forth. Thinking about the events of the day can help you to remember what and when (FILL CHILD'S NAME) ate. As you list the foods and drinks, tell me the approximate time (HE/SHE) ate the foods. For example, "at 7 am, (HE/SHE) had milk, at 8:30 (HE/SHE) had cereal and juice." CONTINUE 01 DON'T KNOW DK REFUSED RF
(ASK ONLY IF A3B = 00, DK, OR RF)	
A4.	INTERVIEWER: CONDUCT NDS. START WITH THE QUICKLIST WINDOW AND SAY: "After midnight, what was the first time that (FILL CHILD'S NAME) had something to eat or drink?" CONTINUE 01 DON'T KNOW DK REFUSED RF
(ASK ONLY IF A3B = 01)	
A4a.	INTERVIEWER: CONDUCT NDS. START WITH THE QUICKLIST WINDOW AND SAY: "After midnight, what was the first time that (FILL CHILD'S NAME) was given breastmilk?" CONTINUE 01 DON'T KNOW DK REFUSED RF
A5.	INTERVIEWER: WAS DIETARY RECALL COMPLETE, THAT IS, NO MISSING MEALS? SOME MEALS MISSING 00 YES, COMPLETE 01
A8.	Did (FILL CHILD'S NAME) take any vitamin, mineral, or other dietary or herbal supplements yesterday? INTERVIEWER: SUPPLEMENTS INCLUDE HERBAL SUPPLEMENTS AND MEAL REPLACEMENT BARS OR DRINKS. NO (GO TO A13) 00 YES 01 DON'T KNOW (GO TO A13) DK REFUSED (GO TO A13) RF
A9.	I have a few questions about the supplement. It might be helpful if you could get the bottle. I can wait while you go get it. INTERVIEWER: ASK THE NAME OF THE SUPPLEMENT, GO TO NDS, ADD AS A MEAL (NOT A FOOD) AND FOLLOW THE NDS PROMPTS REGARDING SUPPLEMENTS. CONTINUE, BUT DOES NOT HAVE SUPPLEMENTS IN FRONT OF HIM/HER 01

	CONTINUE, DOES HAVE SUPPLEMENTS IN FRONT OF HIM/HER	02
A13.	Was (HE/SHE) at child care or with a babysitter or someone else part of the day yesterday?	
	NO	00
	YES	01
	DON'T KNOW	DK
	REFUSED	RF
A14.	(ASK ONLY IF A13 = YES)	
	What meals or snacks did (FILL CHILD'S NAME) eat on (FILL RECALL DAY) that you did not give (HIM/HER) ?	
	INTERVIEWER: A PORTION OF A MEAL SHOULD BE CODED AS "OTHER."	
	INTERVIEWER: INFANT FEEDINGS (FORMULA, BREASTMILK, ETC.) SHOULD ALSO BE CODED AS "OTHER."	
	BREAKFAST	01
	MORNING SNACK	02
	LUNCH	03
	AFTERNOON SNACK	04
	DINNER/SUPPER	05
	BEVERAGE	06
	OTHER (SPECIFY)	07
	NONE	08
	DON'T KNOW	DK
	REFUSED	RF
A14a.	Specify other meal or snack	
	SPECIFY _____	
	DON'T KNOW	DK
	REFUSED	RF
	CLOSING REMARKS	
F2.	(ASK IF A13 = 01; OTHERWISE GO TO F2a)	
	Earlier you told me that [FILL CHILD'S FIRST NAME] was fed by someone else for part of [FILL RECALL DAY] . I also remember that there were some meals that you were unsure about when we did the dietary recall portion of the interview. Can you find out what [FILL CHILD'S FIRST NAME] ate for [INSERT ALL MEALS LISTED IN A14] [FILL RECALL DAY] ?	
	NO – CAN'T GET INFORMATION (GO TO F2C)	00
	YES	01
	DON'T KNOW	DK
	REFUSED	RF
F2a.	You should try to find out each food item and beverage that [FILL CHILD'S FIRST NAME] ate as a meal or snack. If possible, we would like to know the brand name of the food and how much [FILL CHILD'S FIRST NAME] ate. If you can't find out the brand name or if the food was homemade, try to get as much information as possible about how it was prepared and how much was eaten. If you decide to meet with the person who fed [FILL CHILD'S FIRST NAME] , it might be helpful to take the measurement booklet with you to help estimate the amounts of food eaten.	
	CONTINUE	01
F2b.	What is a good time to call you in order to find out this missing information?	
	INTERVIEWER: WRITE TIME ON CONTACT SHEET AND CALL IF TIME OCCURS DURING YOUR SHIFT.	
	SPECIFY TIME (SET CALLBACK TIME; GO TO F5) _____	
	DON'T KNOW (SET UNSCHEDULE APPT. TIME; GO TO F5)	DK
	REFUSED (CONTINUE)	RF
F2c.	Can we call the person who fed (FILL CHILD'S NAME) (FILL RECALL DAY) in order to ask questions about what (HE/SHE) ate yesterday? We will only ask about what (HE/SHE) ate.	
	NO (GO TO F5)	00
	YES	01
	DON'T KNOW	DK
	REFUSED	RF
F3.	May we have the name of that person?	
	NO	00
	YES (SPECIFY)	01
	DON'T KNOW	DK
	REFUSED	RF
F3_SP	ENTER THE NAME	
	INTERVIEWER: REPEAT BACK NAME TO VERIFY SPELLING. IF THE NAME OF THE PERSON IS NOT KNOWN AND IT IS A DAY CARE CENTER, ASK FOR THE GENERAL PERSON OR TEACHER THAT PARENT TALKS TO.	
	SPECIFY _____	
	DON'T KNOW	DK
	REFUSED	RF

F4.	May we have the telephone number (with area code) of that person?	
	NO	00
	YES (SPECIFY)	01
	DON'T KNOW	DK
	REFUSED	RF
F4_SP	ENTER THE TELEPHONE NUMBER INTERVIEWER: REPEAT BACK PHONE NUMBER TO VERIFY. SPECIFY _____	
	DON'T KNOW	DK
	REFUSED	RF
F4b.	We would like to call the person who fed your child yesterday before he or she forgets anything. Can you call that person today and let them know about the study and that I will be calling them tomorrow (or after the weekend)? INTERVIEWER: MAKE A NOTE ON CONTACT SHEET WHETHER MKA WILL CALL.	
	RESPONDENT WILL CALL	01
	RESPONDENT SAYS A CALL IS NOT NECESSARY, CALL OURSELVES	02
	RESPONDENT WON'T CALL	03
	DON'T KNOW	DK
	REFUSED	RF
F6.	Thank you very much for your help in this important study! We will be mailing your thank you coupon in the next six to eight weeks. Have a great day/night. (ONLY IF A15 = 01) INTERVIEWER: LEAVE A NOTE IN THE "NOTE" FIELD ON THE NDS HEADER PAGE AS TO WHAT IS MISSING. THE NEXT INTERVIEWER WILL LOOK HERE FOR A LIST OF THE MISSING INFORMATION.	
F7.	INTERVIEWER: DID RESPONDENT USE MEASUREMENT BOOKLET DURING DIETARY RECALL?	
	NO	00
	YES	01
	DON'T KNOW	DK
	REFUSED	RF
F8.	(ONLY IF A14 = 01) INTERVIEWER: LEAVE A NOTE IN THE "NOTE" FIELD ON THE NDS HEADER PAGE AS TO WHAT IS MISSING. THE NEXT INTERVIEWER WILL LOOK HERE FOR A LIST OF THE MISSING INFORMATION.	
	CONTINUE	01
F9.	INTERVIEWER: PLEASE RECORD THE FOLLOWING INFORMATION ON THE CONTACT SHEET. NAME OF CHILD CARE CONTACT: (FILL CHILD CARE CONTACT NAME) PHONE # OF CHILD CARE CONTACT: (FILL CONTACT TELEPHONE) MISSING MEALS: (FILL MISSING MEALS) CHILD'S NAME: (FILL CHILD'S FIRST AND LAST NAME)	
	CONTINUE	01
F10.	STATUS OF INTERVIEW INTERVIEWER: USE CODE 1 IF YOU COMPLETED BOTH INTAKE AND NDS SECTIONS, IF A CALLBACK IS REQUIRED TO COMPLETE THE NDS DIETARY RECALL, USE CODE 02	
	COMPLETED INTAKE AND DIETARY RECALL IN THIS CALL	01
	COMPLETED INTAKE, CALLBACK NEEDED TO COMPLETE DIETARY RECALL	02
	COMPLETED INTAKE AND DIETARY RECALL – SEPARATE/ADDITIONAL CALLS	03
	COMPLETED INTAKE, BUT CANNOT COMPLETE DIETARY RECALL	04

STATUS CODE

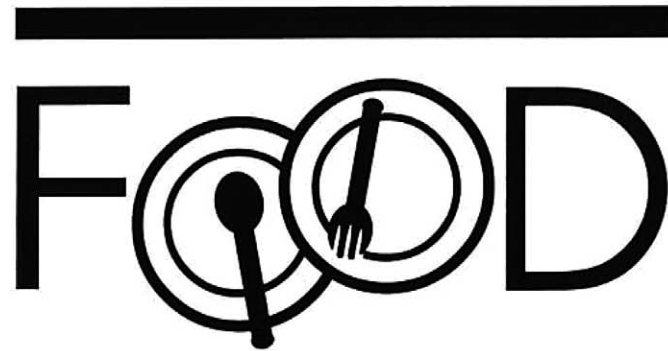
TERMINATE SCREENS

Terminate # 1

I'm terribly sorry to hear that! We will not continue to contact you. Please accept our deepest sympathy. Goodbye. (PROGRAMMER: MARK AS 'BABY DIED' AND DO NOT RELEASE)

© 2006 Gerber Products Company

Appendix 4. Food Measurement Aids for Infants and Toddlers used in the Feeding Infants and Toddlers Study



MEASUREMENT AIDS
FOR INFANTS AND TODDLERS

Medidores de Alimentos para infantes y bebés que caminan

© 2006 Gerber Products Company

FREQUENTLY FORGOTTEN FOODS

- Water, juice, milk, soft drinks, other beverages
- Granola bars, cereal bars, ready-to-eat cereals
- "Finger" foods such as crackers, breads, teething biscuits
- Cookies, candy, ice cream, other sweets
- Cooked or soft fruits and vegetables
- Chopped or ground meats
- Cheeses

MEAL OCCASIONS

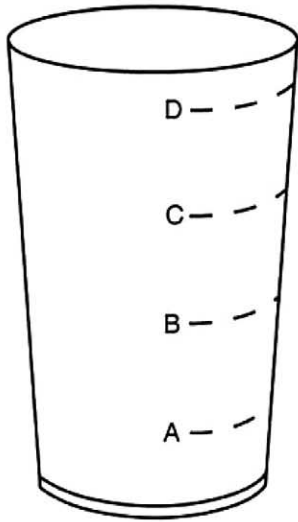
- Breakfast
- Lunch
- Dinner/Supper
- Snack
- Other

COMIDAS O ALIMENTOS QUE SON FRECUENTEMENTE OLVIDADAS

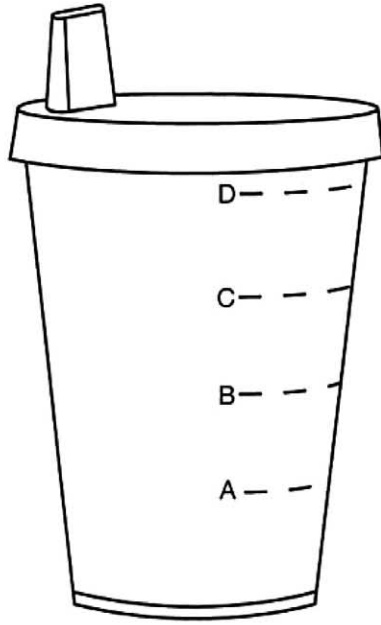
- Agua, jugos, leche, refrescos, otras bebidas
- Galletas o barras de Granola, cereales listos para comer
- Alimentos para comer con las manos, tales como galletas saladas o "crackers," pan, galletitas para bebés (teething biscuits)
- Galletas, caramelos, helados, otros dulces
- Frutas y verduras o legumbres cocinadas o suaves
- Carnes picada
- Quesos

OCASIONES DE COMIDAS

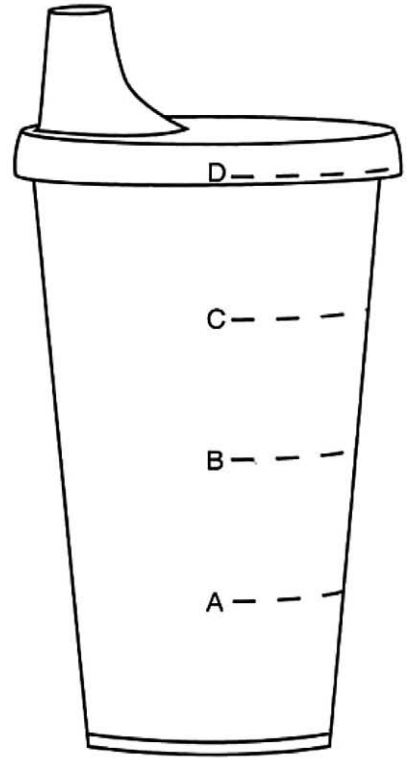
- Desayuno
- Almuerzo
- Cena
- Merienda o lonche
- Otro



C1

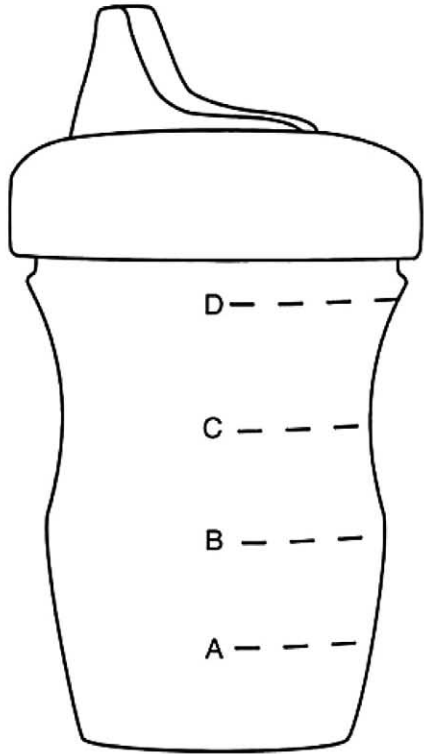


C2

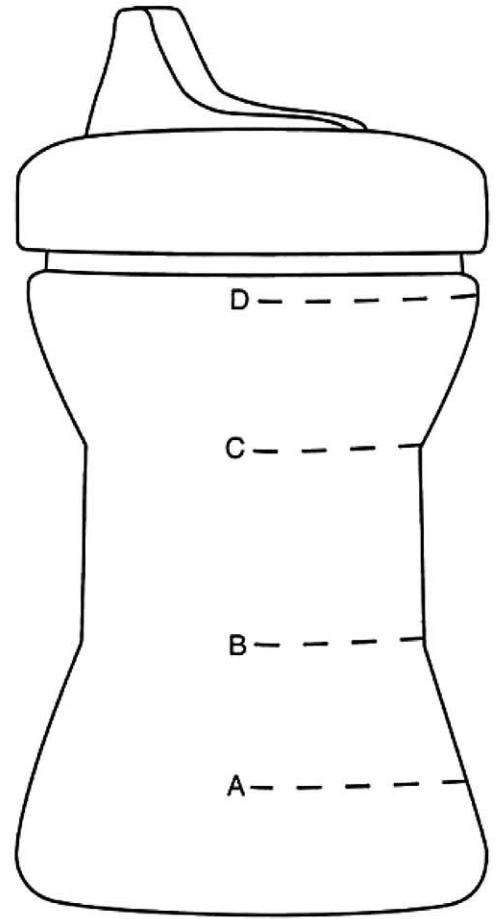


C3

© 2006 Gerber Products Company

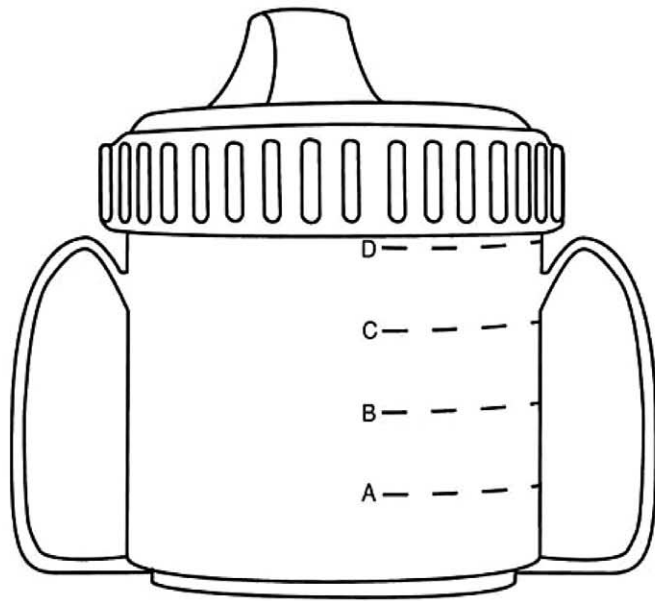


C4

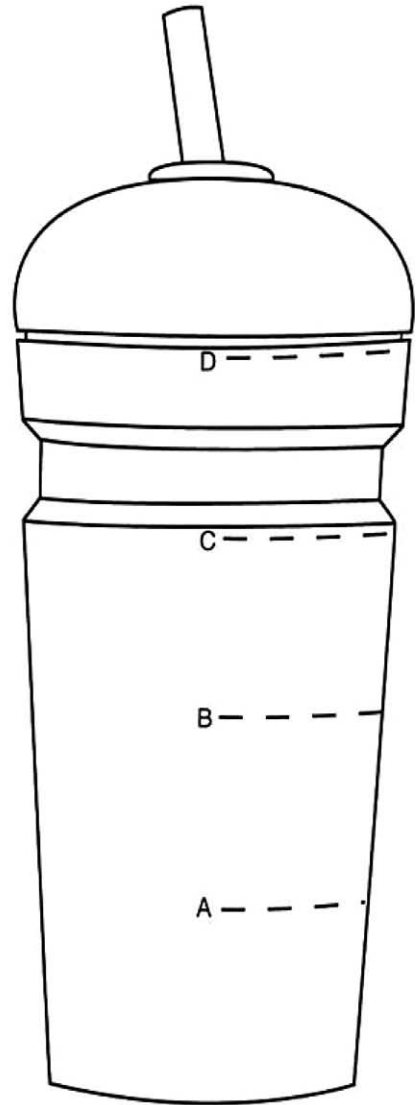


C5

© 2006 Gerber Products Company



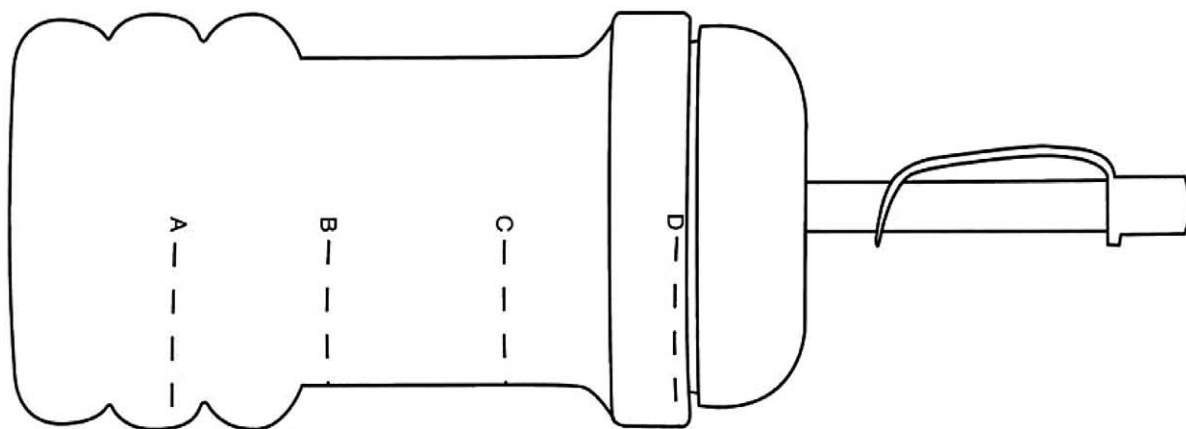
C6



C7

© 2006 Gerber Products Company

8C



© 2006 Gerber Products Company



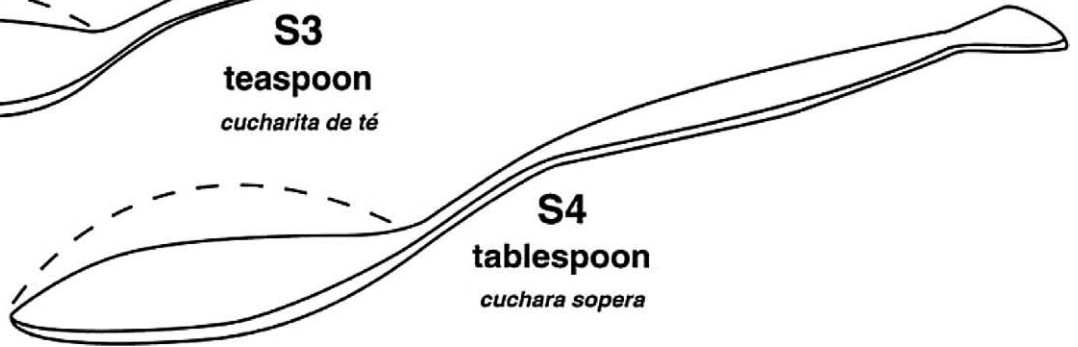
S1
infant feeding spoon
cuchara para alimentar a bebés



S2
toddler feeding spoon
cuchara para alimentar a bebés que caminan

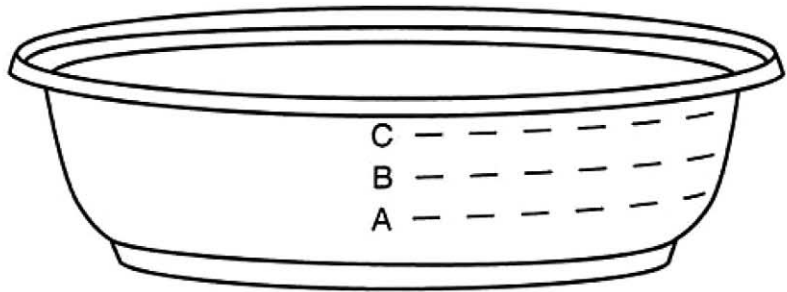


S3
teaspoon
cucharita de té

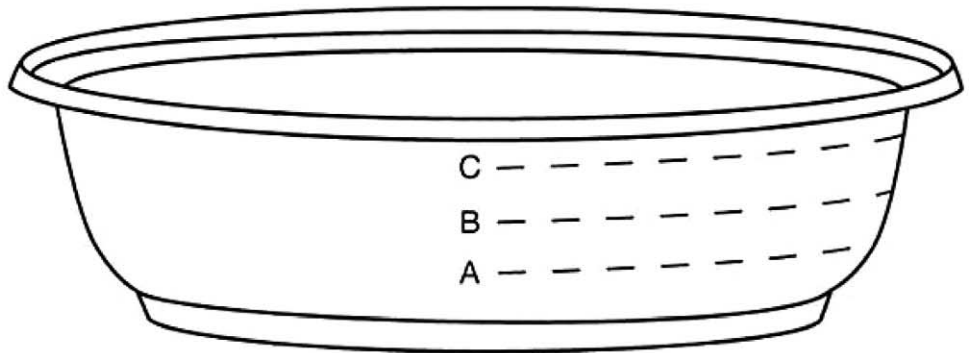


S4
tablespoon
cuchara sopera

© 2006 Gerber Products Company

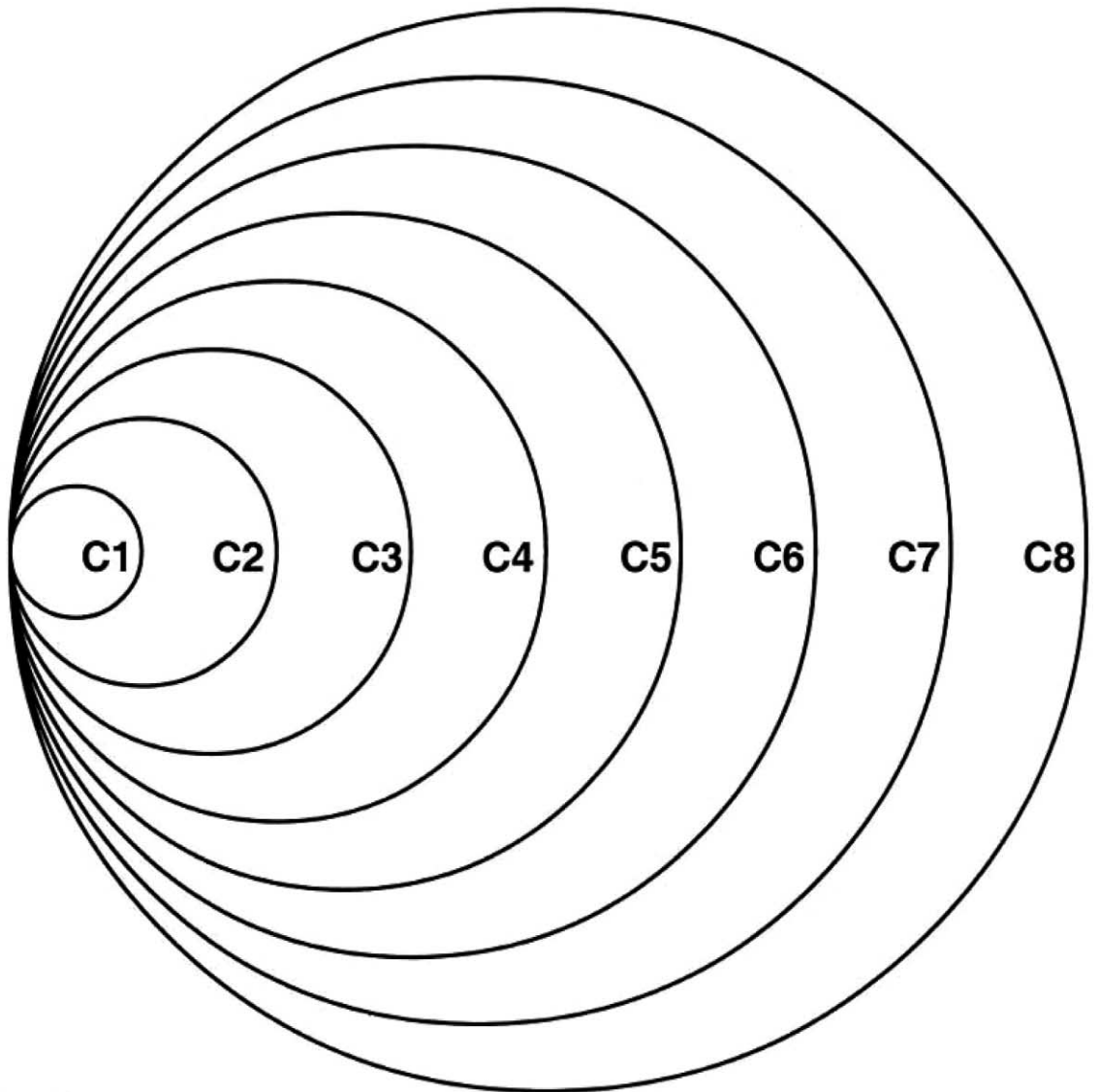


D1

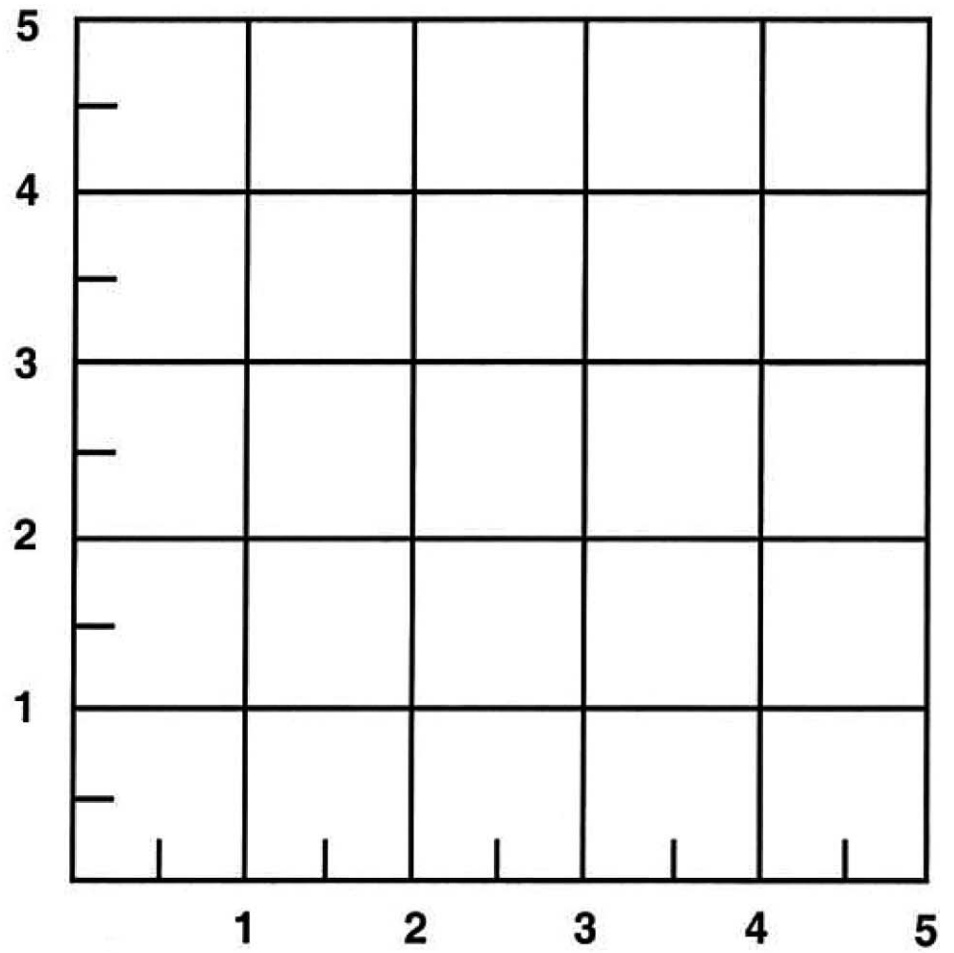


D2

© 2006 Gerber Products Company



© 2006 Gerber Products Company



© 2006 Gerber Products Company