

FOOD AND  
NUTRITION  
TECHNICAL  
ASSISTANCE

**Generating Indicators of  
Appropriate Feeding of  
Children 6 through 23 Months  
from the KPC 2000+**

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## ACRONYMS

CSH	Child Survival and Health
CSHGP	Child Survival and Health Grants Program
DHS	Demographic and Health Surveys
KPC	Knowledge, Practices and Coverage
PVO	Private Voluntary Organization
Rapid CATCH	Core Assessment Tool on Child Health
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WHO	World Health Organization

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## EXECUTIVE SUMMARY

Nutrition interventions designed to improve complementary feeding practices are one component of many child survival and health programs. Program planners and managers need indicators of adequate or optimal complementary feeding for a variety of purposes. For example, indicators are needed to establish the baseline prevalence of key feeding practices and to assess progress towards objectives.

In USAID-funded Child Survival and Health projects, Knowledge, Practices and Coverage (KPC) surveys are used as a tool for gathering quantitative information on a range of practices, including complementary feeding practices. The KPC survey tool also includes a set of tabulation guidelines for recommended indicators. The current KPC questionnaire (KPC 2000+) includes a set of questions about complementary feeding. Respondents are asked about foods and liquids given to the sample child the previous day, and about frequency of feeding.

However, the tabulation plan currently includes only one indicator incorporating this information, for ages 6-9 months only. There are no recommended indicators defined to summarize the information gathered on the *quality* of complementary feeding across the relevant age-range (6-23 months). This document suggests a set of indicators to fill that gap (see Tables A and B on following pages). A total of twenty-five indicators are listed in the Tables. We emphasize throughout the document that this list should be viewed as a menu, from which project managers can select those indicators most relevant to their information needs.

We particularly focus on indicators related to the nutrient content of complementary food for infants and children 6-23 months of age, and suggest indicators for dietary diversity, animal-source foods eaten the previous day, and vitamin A-rich plant foods eaten the previous day. Indicators for appropriate frequency of feeding and for avoidance of bottle use are also proposed.

We also suggest three summary measures: a young child feeding practices score for ages 6-23 months, the prevalence of “good feeding practices” for the same age group, and the prevalence of “good feeding practices” for children ages 0-23 months. The first two summary indicators are constructed by combining scores for continued breastfeeding, age-appropriate frequency of feeding, and dietary diversity to provide a summary of “good” complementary feeding practices. The third, covering a wider age range, assesses whether or not “good practices” are followed both before and after initiation of complementary feeding.

Recent consensus-development work, led by the World Health Organization, has led to the articulation of ten “Guiding Principles” for complementary feeding, based on the best available scientific evidence related to a range of practices (PAHO/WHO, 2003). The Guiding Principles provide the background and organizing framework for the indicators suggested in this document.

In addition to providing a set of indicators, this document includes resources for generating useful descriptive information using the KPC. Definitions and justifications for the suggested indicators are followed by recommendations for minor changes to the KPC questionnaire. The KPC questionnaire is meant to be adapted to local circumstances and priorities. To facilitate

this, we provide recommendations for topics to be covered in pre-survey qualitative work, which will generate information needed both for program planning, and for appropriately adapting the complementary feeding questions on the questionnaire. The last section provides suggestions for descriptive presentations of infant and young child feeding survey results.

A series of Appendices provides specific tools for generating indicators; these tools include model questionnaires, enumerator instructions, instructions for hand tabulation of indicators, and Epi Info data entry programs and analysis programs for generating the indicators.

**Table A. Suggested infant and young child feeding indicators for the KPC 2000+ by Guiding Principle**

<b>Guiding Principle</b>	<b>Suggested indicators and age ranges</b>
1. Duration of breastfeeding and age of introduction of complementary foods	Exclusive breastfeeding rate 0-5 months Complementary feeding rate 6-9 months
2. Maintenance of breastfeeding	Continued breastfeeding 6-11 months Continued breastfeeding 12-17 months Continued breastfeeding 18-23 months
4. Safe preparation and storage of complementary foods	Hand-washing facility 0-23 months Maternal hand washing 0-23 months Bottle use rate 0-11 months
7. Meal frequency and energy density	Frequency of feeding solids/semi solids 6-23 months
8. Nutrient content of complementary foods	Dietary diversity yesterday 6-23 months Animal source foods eaten yesterday 6-23 months: Meat, organ meat, poultry, fish, shellfish Eggs Dairy Non-breastfed children consuming dairy Any animal source food Vitamin A-rich plant foods eaten yesterday 6-23 mos.: Vitamin A-rich orange/yellow vegetables Dark leafy greens Vitamin A-rich fruits Palm oil/palm nut Any vitamin A-rich plant food
9. Use of vitamin-mineral supplements or fortified food products	A series of examples of possible indicators is offered; selection will be context-specific
10. Feeding during and after illness	Increased fluid intake during illness 6-23 months Continued feeding during illness 6-23 months

**Table B. Summary indicators for infant and young child feeding for the KPC 2000+**

Summary indicator	Components and age ranges
Young child feeding practices score 6-23 months	Continued breastfeeding 6-23 months  Frequency of feeding solids/semi-solids 6-23 months  Food-group diversity 6-23 months
Good young child feeding practices prevalence 6-23 months	As above: continued breastfeeding, frequency of feeding and food group diversity, 6-23 months  The good young child feeding practices prevalence tracks the proportion of children with highest possible scores for all three components
Good infant and young child feeding practices prevalence 0-23 months	Exclusive breastfeeding 0-5 months  Continued breastfeeding 6-23 months  Frequency of feeding solids/semi-solids 6-23 months  Food-group diversity 6-23 months

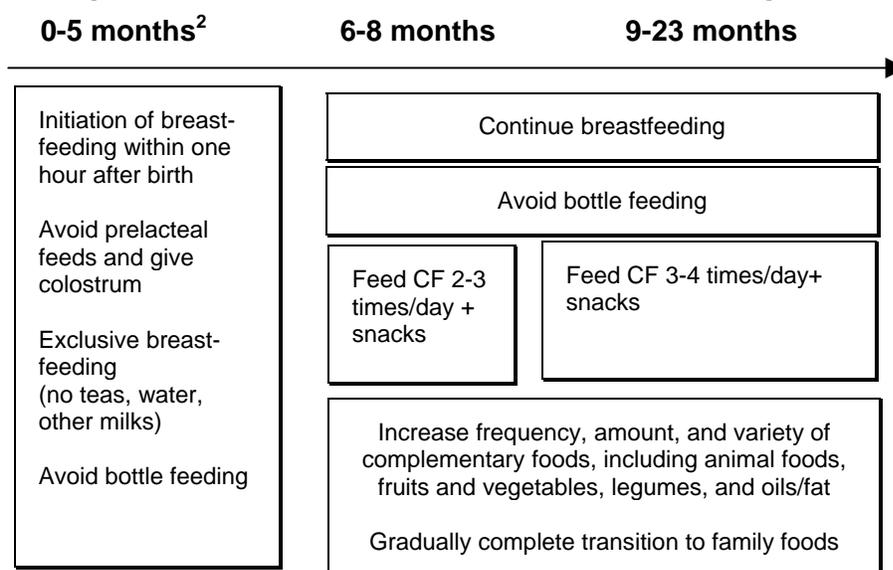
## 1. INTRODUCTION

Infancy and early childhood are critical, vulnerable periods when adequate nutrition is essential for growth and development. In addition to prenatal interventions, early interventions in the first two years of life show the most promise for promoting child growth, health, and development. During these first two years, the linked effects of poverty, inadequate household access to food, infectious disease, and inadequate breastfeeding and complementary feeding practices can result in illness, growth faltering, nutrient deficiencies, delayed development, and death.

Complementary feeding starts when breastmilk alone cannot meet the infant's nutritional needs, and other foods and liquids are needed in addition to breastmilk.<sup>1</sup> While complementary feeding practices alone cannot ensure health and development, good practices can help ensure adequate nutritional intake (Caulfield, Huffman, and Piwoz 1999).

Appropriate feeding practices are age-specific, and they are also defined within narrow age ranges. They follow a continuum from exclusive breastfeeding, starting soon after birth, to the point where the child receives only the same family food as older family members, with no special modifications or additions. As seen in Figure 1, exclusive breastfeeding is the key feeding practice of concern up to 6 months of age. After this, frequency of feeding, and the quantity and quality of complementary foods are also critical. Both the introduction of complementary foods (starting at 6 months) and the transition from special foods to the family diet should ideally be accomplished gradually.

**Figure 1. The continuum of infant and child feeding**



CF: Complementary Foods

Source: Adapted from Ruel and Menon (2002) and Linkages (1999) to reflect new PAHO/WHO Guiding Principles (2003)

<sup>1</sup> Complementary feeding, by definition, only occurs along with continued breastfeeding or formula feeding. If the infant or child is not breastfed, the foods and liquids given to the child are referred to as "replacement feeding." (for definitions, see e.g., WHO/UNAIDS/UNICEF *HIV and Infant Feeding: Guidelines for Decision-Makers*, June, 1998, pp. 2-3).

<sup>2</sup> Where age ranges are mentioned, the following convention is used: 0-5 months means 0-5.9 months, 6-9 months means 6-9.9 months, etc. This same widely used convention is also used in KPC documents.

Child Survival and Health (CSH) projects frequently include nutrition components aimed at improving infant and young child feeding practices. In order to assess feeding practices at baseline and in later surveys, project managers need indicators of optimal or adequate feeding practices. Indicators describing optimal breastfeeding practices have been available for some time (WHO, 1991), and there is considerable consensus about the meaning and use of these indicators; in contrast, consistent indicators for optimal or adequate complementary feeding have been lacking (Piwoz, Huffman, and Quinn, 2003).

USAID-funded Child Survival and Health Grants Projects usually employ KPC surveys (Knowledge-Practices-Coverage surveys), with accompanying indicator tabulation guidelines, as one component of baseline assessments and of evaluation designs. The current version of the KPC (the KPC 2000+) consists of a series of modules, with each module relating to a common component of CSH projects. Module 2 covers breastfeeding and infant and child nutrition, and includes several detailed questions on complementary foods eaten by the child the previous day.

However, though complementary feeding data are collected, the current tabulation guidelines for Module 2 include only one complementary feeding indicator; this indicator assesses the proportion of infants aged 6-9 months who are breastfed and given any solids/semi-solids. There are no recommended indicators defined to reflect the quality or adequacy of complementary feeding across the relevant age-range (6-23 months). This document suggests a set of indicators to fill that gap.

Following a brief background section (Section 2), we provide suggestions for additional complementary feeding indicators for Module 2 of the KPC 2000+. The document also includes additional resources for generating useful descriptive information using the KPC. Definitions and justifications for the suggested indicators (Section 3) are followed by recommendations for minor changes to the KPC questionnaire (Section 4). The KPC questionnaire is meant to be adapted to local circumstances and priorities. To facilitate this, Section 5 provides recommendations for topics to be covered in pre-survey qualitative work, which will generate information needed both for program planning, and for appropriately adapting the complementary feeding questions on the questionnaire. The last section provides suggestions for descriptive presentation of infant and child feeding survey results.

A number of Appendices follow: Appendix 1 provides a description of the process used to gather input from Private Voluntary Organization (PVO) users of the KPC, and a summary of input received; Appendix 2 gives a list of contacts who were interviewed and/or who commented on previous drafts of this document. Appendix 3 provides a brief discussion of sample size issues related to the indicators.

Finally, additional Appendices provide specific tools for generating indicators; these tools include model questionnaires (Appendix 4), enumerator instructions (Appendix 5), instructions for hand tabulation of indicators (Appendix 6), Epi Info data entry programs (Appendix 7), Epi Info analysis programs for generating the indicators (Appendix 8), and codebooks for the Epi Info data sets (Appendix 9).

## 2. BACKGROUND

### The KPC survey

KPC surveys are used by most USAID-funded Child Survival and Health projects. At the request of USAID, the KPC survey was developed by the Johns Hopkins University Child Survival Support Program (Johns Hopkins University 1993). The objective was to provide a simple, standardized and quantitative survey tool, useful both for baseline assessments and for assessments of outputs and outcomes of CSH projects.<sup>3</sup>

The KPC – as the name implies – provides data on knowledge and practices related to child survival, and on coverage (e.g., of immunization, supplementation, etc.). In many CSH projects, objectives include improvements in health-related knowledge and practices, in order to achieve longer-range impacts on the health and survival of children in targeted communities. Acceptable levels of coverage for project activities are also necessary in order to achieve short- and long-range objectives.

In the years since the KPC was initially developed, several groups have been involved in refining and improving the surveys. The Child Survival Technical Support Project (CSTS)<sup>4</sup> and the Child Survival Collaborations and Resources Group (CORE)<sup>5</sup> – and, in particular, the CORE Monitoring and Evaluation Working Group – collaborated in a major revision of the KPC, resulting in the current, modular version, called the KPC 2000+.

The KPC 2000+ consists of the *Rapid CATCH* (Core Assessment Tool on Child Health), and a series of modules that correspond to specific child survival interventions. Private voluntary organizations (PVOs) undertaking surveys are strongly encouraged to use the *Rapid CATCH*, which consists of a selection of key questions and indicators useful for a basic description of infant and child health in the project area. Beyond the *Rapid CATCH*, PVOs are encouraged to select and adapt questions and indicators from those modules that are relevant to their specific interventions (see Table 1):

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<sup>3</sup> Initially, KPC surveys were required for all USAID-funded CSH projects. This is no longer the case, but most CSH projects continue to use the KPC. In addition, Title II-funded food security projects and other projects adapt and use the KPC tool.

<sup>4</sup> The Child Survival Technical Support Project (CSTS) assists private voluntary organizations (PVOs) funded through the Child Survival and Health Grants Program within the Office of Health, Infectious Disease and Nutrition of the Bureau for Global Health at USAID. The technical support CSTS provides to PVOs is targeted specifically towards increasing their capacity to achieve sustainable service delivery in public health interventions. (see CSTS website: [www.childsurvival.com](http://www.childsurvival.com)). CSTS is a project of ORC Macro/Macro International ([www.macoint.com](http://www.macoint.com)).

<sup>5</sup> “The Child Survival Collaborations and Resources Group (The CORE Group) is a network of more than 35 nonprofit organizations working together to promote and improve primary health care programs for women and children and the communities in which they live. Collectively, its member organizations have presence in more than 140 countries. All members have participated in USAID’s Child Survival Grants Program” (from CORE website: [www.coregroup.org](http://www.coregroup.org)).

**Table 1. KPC 2000+ modules**

Module #	Module name
1A	Household water and sanitation
1B	Respondent background information
2	Breastfeeding and infant/child nutrition
3	Growth monitoring and maternal/child anthropometry
4A	Childhood immunization
4B	Sick child
4C	Diarrhea
4D	Acute respiratory illness
4E	Malaria
5A	Prenatal care
5B	Delivery and immediate newborn care
6	Postpartum care
7	HIV and other sexually transmitted diseases
8	Health contacts and sources of information

The complementary feeding questions in the KPC 2000+ version of Module 2 differ from earlier versions in several ways. In earlier versions, mothers were asked a series of questions about whether they gave their infant/young child various foods. The questions did not refer to any particular time period. For example, mothers were asked:

- Are you giving (name of child) cow milk, goat milk, or formula?
- Are you giving (name of child) fruits?
- Are you giving (name of child) meat or fish?

These questions have been revised to be more specific in the KPC 2000+ and now ask about foods and liquids eaten by the child the previous day and night.

In addition to using a defined time period, the questions now include a revised set of food groups. The food groups listed in the KPC 2000+ are identical to those used in the Demographic and Health Surveys (*DHS+*).<sup>6</sup> In the KPC 2000+, mothers are asked first about liquids, then about solids/semi-solids (see Box 1). PVOs are encouraged to adapt Question 8 by identifying and listing only the locally available foods that fall into each liquid or food group.

<sup>6</sup> The DHS are nationally representative surveys that have been conducted in 67 countries over the last 18 years (DHS I, DHS II, and *DHS+*). The DHS program is funded by USAID and implemented by Macro International Inc. Planners and managers often compare project-level survey results to country- or region-level DHS statistics. Summary statistics (e.g., prevalence of exclusive breastfeeding by country), country reports, and datasets are all available at [www.measuredhs.com](http://www.measuredhs.com).

In contrast to the KPC 2000+, in the current version of the *DHS+* mothers are asked first about the last seven days and then about yesterday. Mothers are asked to tell how many days out of the last seven and how many times during the last day the child has had each liquid or food group. This version of the question – including two recall periods, and including the number of days and number of times eaten – was field-tested by CORE PVOs during the process leading up to the KPC 2000+ version. Summaries of the field-test phase concluded that many PVOs found these questions to be problematic. (*KPC<sub>2000</sub> Update – January through June 2000*, provided by Donna Espeut, and Haggerty, P. (Oct., 2000) *Review of Health and Nutrition Project Baseline Research Methods of Title II Funded PVO*, available at the Food Aid Management web site: [www.foodaidmanagement.org](http://www.foodaidmanagement.org).) A number of PVOs modified the questions to include only one recall period (yesterday), and to ask (as in the current version) only if the child had had the liquid or food, and not how many times; this simpler version was therefore included in the final draft of the KPC 2000+.

In addition to questions about liquids and solids the child had yesterday, the KPC 2000+ version also includes a new question on the number of times the child was given semi-solid food the previous day (see Box 1; this question is similar, but not identical to the question used on the DHS+; the DHS+ question includes solids as well as semi-solids).

**Box 1. Complementary feeding questions on the KPC 2000+ Module 2**

Q8. Now I would like to ask you about the types of liquids [NAME] drank yesterday during the day or at night.

Did [NAME] drink any of the following liquids yesterday during the day or at night?

- A Breastmilk?
- B Plain water?
- C Commercially produced infant formula?
- D Any other milk such as tinned, powdered, or fresh animal milk?
- E Fruit juice?
- F Any other liquids such as sugar water, tea, coffee, carbonated drinks or soup broth?

---

Now I would like to ask you about the types of foods [NAME] ate yesterday during the day and at night

Did [NAME] eat any of the following foods yesterday during the day or at night?

- G Any foods made from grains [e.g., millet, sorghum, maize, rice, wheat, porridge, or other local grains]?
- H Pumpkin, red or yellow yams or squash, carrots, or red sweet potatoes?
- I Any other food made from roots or tubers [e.g., white potatoes, white yams, manioc, cassava, or other local roots/tubers]?
- J Any green leafy vegetables?
- K Mango, papaya [or other local Vitamin A rich fruits]?
- L Any other fruits and vegetables [e.g., bananas, apples/sauce, avocados, tomatoes]?
- M Meat, poultry, fish, shellfish, or eggs?
- N Any foods made from legumes [e.g., lentils, beans, soybeans, pulses, or peanuts]?
- O Cheese or yogurt?
- P Any food made with oil, fat, or butter?

---

Q9. How many times did (NAME) eat semi-solid (mashed or pureed) food yesterday during the day or at night?

IF 7 OR MORE TIMES, RECORD "7"

Several other KPC 2000+ modules include questions related to feeding: Module 1A (Household Water and Sanitation) includes an open question about hand washing, with response categories for “before food preparation” and “before feeding children,” among others. Hand washing and other practices related to food safety and sanitation are considered to be one component of

optimal complementary feeding (PAHO/WHO 2003). Module 4C (Diarrhea) includes questions about liquids and solids given to the sick child (less, the same, or more than usual). The other disease-specific modules (malaria, acute respiratory infections) do not.

The *Rapid CATCH* contains three infant and child feeding questions; two are breastfeeding questions (ever breastfed, and time first put to breast) and one asks about solids/semi-solids, but not about specific foods/groups or frequency of feeding (see Box 2). The *Rapid CATCH* also includes questions about feeding sick children.

**Box 2. Complementary feeding question on the KPC 2000+ *Rapid CATCH***

Q13. I would like to ask you about the types of liquids or foods that (NAME) consumed yesterday during the day or at night. Did (NAME) have...

- A. Breastmilk?
- B. Plain water?
- C. Other liquids?
- D. Mashed, pureed, solid, or semi-solid foods?
- E. Anything else? SPECIFY: \_\_\_\_\_

**New International Complementary Feeding Guiding Principles**

There has been growing recognition of the need for improved indicators for assessing complementary feeding. Ideally, indicator definitions should be based on clear, internationally accepted recommendations for complementary feeding practices. A recent analysis contrasted success in promoting optimal breastfeeding with lack of success in improving complementary feeding practices. The authors find that a lack of consensus both on recommended practices and on measurement tools and indicators have been among the factors hampering progress in improving complementary feeding (Piwoz, Huffman, and Quinn, 2003).

Recently, WHO has led a consensus-building process, with the objective of developing and disseminating consistent, internationally accepted guidelines for breastfeeding and complementary feeding. Several documents (Dewey and Brown, 2003; WHO/UNICEF 1998) provide comprehensive reviews of scientific knowledge regarding complementary feeding, and also provide the scientific basis for the new guidelines. These include 10 “Guiding Principles”, covering all aspects of complementary feeding for breastfed children (PAHO/WHO 2003). The Guiding Principles are presented in Box 3.

The critical issue of appropriate replacement feeding for non-breastfed children deserves additional attention; the Guiding Principles do not address this. A separate, related effort is currently underway and will result in updated guidance for non-breastfed children; this guidance is expected to be available later in 2003.<sup>7</sup>

<sup>7</sup> Dr. P. Henderson, WHO, personal communication.

The Guiding Principles reflect a global consensus, built on an extensive review of available scientific evidence. They therefore provide the strongest possible starting point for programmatic work in the area of complementary feeding. However, guidelines are only a starting point. In order to reach the objective of improved nutrition and health for young children, program planners will need a thorough and well-grounded understanding of local feeding practices. Program planners and evaluators will also need indicators, to provide quantitative estimates of the prevalence of various practices. Estimates of prevalence are needed in order to prioritize activities and in order to evaluate the effectiveness of these activities. The consensus-building process that led to the development of the Guiding Principles is continuing, with additional tasks. One task is the development of a set of indicators to allow assessment of feeding practices in the context of surveys. A technical meeting to discuss indicators for complementary feeding was convened in December, 2002, and a number of indicators were proposed for discussion, field testing, and validation (Ruel, Brown, and Caulfield, 2003). Our current proposals for possible new KPC indicators for complementary feeding reflect the WHO process up to this point in time but cannot yet reflect the final results of that process.

**Box 3. PAHO/WHO Guiding Principles for complementary feeding of the breastfed child<sup>a</sup>**

**1. Duration of exclusive breastfeeding & age of introduction of complementary foods**

Practice exclusive breastfeeding from birth to 6 months of age, and introduce complementary foods at 6 months of age while continuing to breastfeed.

**2. Maintenance of breastfeeding**

Continue frequent, on-demand breastfeeding until 2 years of age or beyond.

**3. Responsive feeding**

Practice responsive feeding, applying the principles of psycho-social care. Specifically: a) feed infants directly and assist older children when they feed themselves, being sensitive to their hunger and satiety cues; b) feed slowly and patiently, and encourage children to eat, but do not force them; c) if children refuse many foods, experiment with different food combinations, tastes, textures and methods of encouragement; e) minimize distractions during meals if the child loses interest easily; f) remember that feeding times are periods of learning and love - talk to children during feeding, with eye to eye contact.

**4. Safe preparation and storage of complementary foods**

Practice good hygiene and proper food handling by a) washing caregivers' and children's hands before food preparation and eating, b) storing foods safely and serving foods immediately after preparation, c) using clean utensils to prepare and serve food, d) using clean cups and bowls when feeding children, and e) avoiding the use of feeding bottles, which are difficult to keep clean.

(continued)

<sup>a</sup> Excerpted from PAHO/WHO (2003) "Guiding principles for complementary feeding of the breastfed child."

**Box 3. PAHO/WHO Guiding Principles for complementary feeding of the breastfed child, continued**

**5. Amount of complementary food**

Start at six months of age with small amounts of food and increase the quantity as the child gets older, while maintaining frequent breastfeeding. The energy needs from complementary foods for infants with average breastmilk intake in developing countries are approximately 200 kcal per day at 6-8 months of age, 300 kcal per day at 9-11 months of age, and 550 kcal per day at 12-23 months of age. In industrialized countries these estimates differ somewhat (130, 310 and 580 kcal/d at 6-8, 9-11 and 12-23 months, respectively) because of differences in average breastmilk intake.

**6. Food consistency**

Gradually increase food consistency and variety as the infant gets older, adapting to the infant's requirements and abilities. Infants can eat pureed, mashed and semi-solid foods beginning at six months. By 8 months most infants can also eat "finger foods" (snacks that can be eaten by children alone). By 12 months, most children can eat the same types of foods as consumed by the rest of the family (keeping in mind the need for nutrient-dense foods, as explained in #8 below). Avoid foods that may cause choking (i.e., items that have a shape and/or consistency that may cause them to become lodged in the trachea, such as nuts, grapes, raw carrots).

**7. Meal frequency and energy density**

Increase the number of times that the child is fed complementary foods as he/she gets older. The appropriate number of feedings depends on the energy density of the local foods and the usual amounts consumed at each feeding. For the average healthy breastfed infant, meals of complementary foods should be provided 2-3 times per day at 6-8 months of age and 3-4 times per day at 9-11 and 12-24 months of age, with additional nutritious snacks (such as a piece of fruit or bread or chapatti with nut paste) offered 1-2 times per day, as desired. Snacks are defined as foods eaten between meals-usually self-fed, convenient and easy to prepare. If energy density or amount of food per meal is low, or the child is no longer breastfed, more frequent meals may be required.

**8. Nutrient content of complementary foods**

Feed a variety of foods to ensure that nutrient needs are met. Meat, poultry, fish or eggs should be eaten daily, or as often as possible. Vegetarian diets cannot meet nutrient needs at this age unless nutrient supplements or fortified products are used (see #9 below). Vitamin A-rich fruits and vegetables should be eaten daily. Provide diets with adequate fat content. Avoid giving drinks with low nutrient value, such as tea, coffee and sugary drinks such as soda. Limit the amount of juice offered so as to avoid displacing more nutrient-rich foods.

**9. Use of vitamin-mineral supplements or fortified products for infant and mother**

Use fortified complementary foods or vitamin-mineral supplements for the infant, as needed. In some populations, breastfeeding mothers may also need vitamin-mineral supplements or fortified products, both for their own health and to ensure normal concentrations of certain nutrients (particularly vitamins) in their breastmilk. [Such products may also be beneficial for pre-pregnant and pregnant women].

**10. Feeding during and after illness**

Increase fluid intake during illness, including more frequent breastfeeding, and encourage the child to eat soft, varied, appetizing, favorite foods. After illness, give food more often than usual and encourage the child to eat more.

### 3. SUGGESTED INDICATORS

The KPC 2000+ can provide information on some, but not all of the practices related to the 10 Guiding Principles. Table 2 lists the 10 principles, shows which guidelines are reflected in current indicators and notes where changes are suggested. Tables 3 and 4 list all indicators suggested in this document. The tables include a large number of indicators; *we emphasize that project staff should view this list as menu, and select those indicators directly relevant to project activities.*

Following Table 4, we focus on each guideline in turn, describe current and suggested indicators, and give the rationale for any suggested changes in indicators. Unless otherwise stated, all “current” indicators are from Module 2 of the KPC 2000+. Following the rationale for suggested changes, this section concludes with summary tables (Tables 11 and 12), which provide details on each current and suggested indicator.

**Table 2. Current KPC 2000+ indicators and suggested changes**

Guiding Principle	Current indicator(s)	Suggested change(s)
1. Duration of exclusive breastfeeding and age of introduction of complementary foods	Exclusive breastfeeding rate (0-5 months) Complementary feeding rate (6-9 months)	No change suggested
2. Maintenance of breastfeeding	Median duration of breastfeeding Continued breastfeeding (20-23 months)	New indicators are suggested
3. Responsive feeding	None	None
4. Safe preparation and storage of complementary foods	Hand-washing facility Maternal hand washing	Additional indicator suggested
5. Amount of complementary foods	None	None, suggest inquiry at community/project level
6. Food consistency	None	None, suggest inquiry at community/project level
7. Meal frequency and energy density	None	Meal frequency: new indicator suggested Energy density: suggest inquiry at community/project level
8. Nutrient content of complementary foods	None	New indicators suggested
9. Use of vitamin-mineral supplements or fortified food products	No indicators, but questions are available on KPC for projects with this focus	No change suggested; examples of indicators are provided
10. Feeding during and after illness	Increased fluid intake during a diarrheal episode Increased food intake during a diarrheal episode	Fluids: Change in current indicator Food: Change suggested
Summary of practices	Complementary feeding rate (ages 6-9 months only)	Three new summary indicators, covering wider age ranges, are suggested

**Table 3. Suggested infant and young child feeding indicators for the KPC 2000+**

<b>Guiding Principle</b>	<b>Suggested indicators and age ranges</b>
1. Duration of breastfeeding and age of introduction of complementary foods	Exclusive breastfeeding rate 0-5 months Complementary feeding rate 6-9 months
2. Maintenance of breastfeeding	Continued breastfeeding 6-11 months Continued breastfeeding 12-17 months Continued breastfeeding 18-23 months
4. Safe preparation and storage of complementary foods	Hand-washing facility 0-23 months Maternal hand washing 0-23 months Bottle use rate 0-11 months
7. Meal frequency and energy density	Frequency of feeding solids/semisolids 6-23 months
8. Nutrient content of complementary foods	Dietary diversity yesterday 6-23 months Animal source foods eaten yesterday 6-23 months: Meat, organ meat, poultry, fish, shellfish Eggs Dairy Non-breastfed children consuming dairy Any animal source food  Vitamin A-rich plant foods eaten yesterday 6-23 mos.: Vitamin A-rich orange/yellow vegetables Dark leafy greens Vitamin A-rich fruits Palm oil/palm nut Any vitamin A-rich plant food
9. Use of vitamin-mineral supplements or fortified food products	A series of examples of possible indicators is offered; selection will be context-specific
10. Feeding during and after illness	Increased fluid intake during illness 6-23 months Continued feeding during illness 6-23 months

**Table 4. Summary indicators for infant and young child feeding for the KPC 2000+**

Summary indicators	Components and age ranges
Young child feeding practices score 6-23 months	Continued breastfeeding 6-23 months  Frequency of feeding solids/semi-solids 6-23 months  Food-group diversity yesterday 6-23 months
Good young child feeding practices prevalence 6-23 months	As above: continued breastfeeding, frequency of feeding and food group diversity, 6-23 months  The good young child feeding practices prevalence tracks the proportion of children with highest possible scores for all three components
Good infant and young child feeding practices prevalence 0-23 months	Exclusive breastfeeding 0-5 months  Continued breastfeeding 6-23 months  Frequency of feeding solids/semi-solids 6-23 months  Food-group diversity 6-23 months

**Guiding Principle #1:** *Duration of exclusive breastfeeding and age of introduction of complementary foods*

Current indicator: **Exclusive breastfeeding rate**  
Percent of infants 0-5<sup>8</sup> months who were fed only breastmilk in the last 24 hours

No change is suggested; the current KPC definition and tabulation plan for this indicator follow international standards. In addition, PVO representatives consulted during our input-gathering process did not report any problems with tabulating this indicator.<sup>9</sup>

<sup>8</sup> Where age ranges are mentioned, the following convention is used: 0-5 months means 0-5.9 months, 6-9 months means 6-9.9 months, etc. This same widely used convention is also used in KPC documents.

<sup>9</sup> See Appendix 1 for a summary of input received from PVO representatives and other experts.

While the exclusive breastfeeding rate will continue to be very useful, PVO staff and others did emphasize the limitations of an indicator based on a 24-hour recall when the concern is assessing risk of mother-to-child-transmission of HIV.<sup>10</sup>

Current indicator: **Complementary feeding rate** (summarizes two practices)  
Module 2: Percent of infants 6-9 months still breastfed and also receiving any of the food groups (not liquid) on the 24-hour food group recall  
*Rapid CATCH*: Percent of infants 6-9 months still breastfed and also receiving “mashed, pureed, solid, or semi-solid foods” in the last 24 hours

This is a widely used indicator (e.g., by DHS, UNICEF and WHO) and thus can be valuable if program managers would like to compare prevalence in the program/project area to other available information (e.g., UNICEF or DHS reports). We do not suggest changes to this indicator, but we do suggest that program managers assess whether or not there is an adequate sample size in the narrow age range of this indicator.

UNICEF multiple-indicator surveys and DHS surveys generally have much larger sample sizes than KPC surveys. In the past, KPCs have typically involved cluster samples of about 300 children. When this is the case, the number of children aged 6-9 months is quite small (e.g., in seven KPC surveys, the sample size for this indicator ranged from 43-65 children (Weiss 1998)). This may result in very wide confidence intervals around estimates of prevalence.<sup>11</sup> Newer methods of sampling, such as LQAS and parallel sampling, can improve the precision of estimates of prevalence.

We do not suggest that PVO staff necessarily estimate confidence intervals for all indicators, but rather that recommended indicators should have the potential to be reasonably precise, given typical sample sizes and sample designs.<sup>12</sup> Very imprecise indicators are useful neither for prioritizing project activities, nor for assessing progress towards objectives. This issue is further discussed in Appendix 3.

**Guiding Principle #2:** *Maintenance of breastfeeding*

Current indicator: **Median duration of breastfeeding**  
Among those already weaned, age in months at which half have stopped breastfeeding

<sup>10</sup> Infants who were fed nothing but breastmilk the previous day often have been fed other liquids or solids on other, previous days. Mixed feeding (giving other liquids/foods in addition to breastfeeding) in early infancy greatly increases the risk of transmission of HIV, as compared to exclusive breastfeeding from birth (or no breastfeeding) (Coutsoudis et al., 2001).

<sup>11</sup> The precision of the estimate may be acceptable if design effects are very small and/or if the true prevalence is near 100 percent or near zero. But design effects are usually not known, and, in the case of this indicator, the need for precise estimates will be greatest when true prevalence is *not* near 100%, i.e., when delayed complementary feeding is a problem (for this indicator, prevalence near zero is extremely unlikely). See Appendix 3 for further discussion.

<sup>12</sup> Currently, PVOs are asked to calculate confidence intervals for indicators in the *Rapid CATCH*.

The tabulation plan for this indicator incorporates information only for those children who have already stopped breastfeeding. Because of this, it does not truly represent the median duration of breastfeeding. There are methods for calculating the median duration of breastfeeding from KPC data, but they are more complex than the approach in the current tabulation plan. These more complex methods may or may not be justified, depending on why program managers want this information. If comparison with national or other estimates of the median duration of breastfeeding is definitely required, managers can estimate the median duration of breastfeeding using Epi Info 2002.<sup>13</sup> If this type of comparison is not required, we suggest alternatives below.

Current indicator:       **Continued breastfeeding**  
Percent of children 20-23 months still breastfed

This indicator definition is once again consistent with the UNICEF indicator. When program managers want to compare program-area results with other, larger surveys (e.g., UNICEF Multiple Indicator Cluster Surveys (MICS)), this indicator may be needed. Note that UNICEF indicators also include the percent of children 12-15 months who are still breastfeeding; this combination of two UNICEF indicators gives a more complete picture of when breastfeeding declines. However, the sample size issue described above for infants aged 6-9 months also applies to this indicator, which also uses a four-month age group.

Suggested alternative:   Replace the two current indicators with the following three indicators:

**Continued breastfeeding 6-11 months**  
                                  Percent of infants 6-11 months still breastfed

**Continued breastfeeding 12-17 months**  
                                  Percent of children 12-17 months still breastfed

**Continued breastfeeding 18-23 months**  
                                  Percent of children 18-23 months still breastfed

This set of indicators should provide managers with a more complete picture of breastfeeding patterns, and, in particular, should help managers pinpoint the age range where breastfeeding declines. Sample size issues may still be a concern (see Appendix 3) but subsamples with a 6-month age range will provide a more precise estimate than subsamples with a 4-month age range. These suggested indicators represent a compromise between the need for precision (attainable with larger subsamples, e.g., of 6-23 months) and the need to pinpoint where breastfeeding declines.

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<sup>13</sup> “Epi Info 2002 is a public domain software package designed for the global community of public health practitioners and researchers. It provides for easy form and database construction, data entry, and analysis with epidemiologic statistics, maps, and graphs” (from Epi Info website: [www.cdc.gov/epiinfo/](http://www.cdc.gov/epiinfo/)). The Analysis module includes appropriate methods for calculating the median duration of breastfeeding from cross-sectional data (see advanced statistics, Kaplan-Meier survival analysis). This statistical technique is available in Windows versions of Epi Info only (2000 and 2002) and not in Epi Info 6.04 for DOS.

**Guiding Principle #3:**      *Responsive feeding*

Current indicator:              No current indicator

We do not suggest any KPC indicators to reflect responsive feeding. While there is a strong theoretical basis for the responsive feeding practices advocated in the Guiding Principles, simple survey questions for assessing responsive feeding have not been developed or validated. Because feeding interactions are very complex, and because there are cultural variations in the specific ways responsive feeding may be accomplished, developing survey questions for global use will be challenging. UNICEF is currently leading an initiative to develop and test survey indicators for psychosocial care practices for child development; this will include some aspects of responsive feeding. A separate WHO/UNICEF initiative to develop and validate measures of responsive complementary feeding is also underway. Both of these processes should yield globally applicable indicators of responsive feeding practices in the future.

**Guiding Principle #4:**      *Safe preparation and storage of complementary foods*

Current indicator:              **Hand-washing facility**

Modules 1A & 4C:              Percent of households with a special place for hand washing

Current indicator:              **Maternal hand washing**

Modules 1A & 4C  
& *Rapid CATCH*:              Percent of mothers who report washing their hands with soap/ash for all of the following: before food preparation; before infant and child feeding; after defecation; after attending to a child who has defecated

This paper focuses on Module 2 indicators; the hand-washing indicators are described here for completeness, because they relate to one of the new complementary feeding guidelines. We did not gather input about these modules and are not proposing any changes, but we note that hygiene questions based on maternal recall may produce biased responses.<sup>14</sup> We do suggest an additional indicator relating to food safety:

Suggested indicator:        **Bottle use rate**

<sup>14</sup> While hygiene questions based on maternal recall are widely used, they are also widely criticized as being particularly likely to produce biased responses, with respondents over-reporting desirable practices such as handwashing. See, e.g., Stanton et al., 1987; Curtis et al., 1993; Odujinrin et al., 1993, and Manun'Ebo et al., 1997. Therefore post-intervention surveys showing increases in self-reported good practices may reflect changes in knowledge of desirable practices, rather than changes in actual practices.

Percent of infants 0-11 months who were given anything by bottle in the last 24 hours

The age range for this indicator was selected for consistency with the WHO-recommended indicator (WHO 1991). The rationale for including this indicator is that bottle use continues to be a threat to the health of infants in many countries. All KPC indicators are optional and should be selected for local relevance. In some areas this indicator may not be relevant (e.g., many rural areas in Africa) and will not be selected. But we suggest that the question be included in Module 2 and tabulation guidelines be provided so that the indicator is available for use in those areas where bottle use is common. In addition, in areas where replacement feeding is increasing, e.g., due to the HIV/AIDS pandemic, it is important to monitor trends in bottle use.

<b><i>Guiding Principle #5:</i></b> <i>Amount of complementary food</i>
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Current indicator:                      No current indicator

We do not suggest any KPC indicators to capture the amount of food infants or children are fed. It is not possible to estimate quantities without a much more time-consuming data collection process. At the community- or project-level, qualitative research prior to the KPC can provide some relevant information on how infants and young children are fed (e.g., from common pot, with cup, bowl, etc.) and on how caregivers decide how much to feed (until child is full/refuses, set amount, how often the size of the child's portion is constrained by food scarcity, etc.). Section 5 provides some suggestions for questions to include in qualitative inquiries.

Information on typical quantities fed, and on what determines the quantity fed, can be useful in a number of ways. For example, recommendations on frequency of feeding are based on the idea that the child is fed to his/her gastric capacity at each "feed" (i.e., an amount similar to the actual volume of a child's stomach). If this is not so, children need to be fed even more frequently, or strategies must be found to increase the amount fed, or the energy and nutrient density of the diet.

<b><i>Guiding Principle #6:</i></b> <i>Food consistency</i>
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Current indicator:                      No current indicator

Once again, and for the same reason, we do not suggest any KPC indicators to capture the consistency of complementary foods. Depending on how many basic staple foods are fed to children in the project area, and on how variable preparation is, community- or project-level information may once again be very useful. Project staff can ask women to demonstrate preparation of typical gruels, porridges, etc., as well as any other special foods given to infants/young children. If very thin gruels or porridges are commonly given, project staff may choose to focus on this in later household trials (for example, through testing the feasibility and

acceptability of new recipes for thicker, more energy- and nutrient-dense porridges). See Section 5 for suggestions for gathering information on this topic.

**Guiding Principle #7:** *Meal frequency and energy density*

Current indicator: No current indicators

We do not suggest a survey indicator for energy density. As with consistency of food, if recipes are gathered and/or prepared in recipe trials, the energy density of typical complementary foods can be calculated (see, e.g., Dickin, Griffiths, and Piwoz 1997). This will be most meaningful if there are only a small number of typical recipes for the foods infants and children receive, and if there is little variation between households in the way these foods are prepared (Ruel, Brown, and Caulfield, 2003).

The frequency of feeding recommendation in the guidelines is based on complementary foods with an energy density  $\geq 0.8$  kcals/gram (PAHO/WHO, 2003). When the main complementary foods have energy densities of less than 0.8 kcals/gram, projects may want to focus on raising energy density through recipe modifications or substitutions.

With the exception of thin soups, the energy density of the main “family foods” eaten at meals is generally adequate, while energy density of porridges and other special complementary foods may not be. The energy density of gruels and porridges depends critically on the amount of water used in preparation. There may be a number of reasons why caregivers make thin gruels or porridges. In some cases, the caregiver may want to use a feeding bottle for ease and speed of feeding; as noted, the use of feeding bottles is not recommended. In other cases mothers may believe infants or young children cannot eat thicker porridges. However, Table 5 illustrates that many different types of porridge given to children in various countries can meet the energy density requirement, so long as the amount of water used in preparation is not excessive. Table 5 also provides information about the energy density of a number of other foods commonly eaten by young children, for comparison.

While energy density cannot be determined from KPC survey data, we do suggest an indicator for frequency of feeding. With the assumption that foods provide at least 0.8 kcals/gram, the new Guiding Principle describes optimal frequency of feeding, including both meals and snacks:

“For the average healthy breastfed infant, meals of complementary foods should be provided 2-3 times per day at 6-8 months of age and 3-4 times per day at 9-11 and 12-23 months of age, with additional nutritious snacks (such as a piece of fruit or bread or chapatti with nut paste) offered 1-2 times per day, as desired. Snacks are defined as foods eaten between meals – usually self-fed, convenient and easy to prepare. If energy density or amount of food per meal is low, or the child is no longer breastfed, more frequent meals may be required.”<sup>15</sup>

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<sup>15</sup> PAHO/WHO (2003) *Guiding principles for complementary feeding of the breastfed child*.

**Table 5. Energy density of foods eaten by young children<sup>a</sup>**

Food	Country	Water (percent)	Energy density (Kcals/gram)
Porridges:			
Potato, kale, chickpea flour, oil, water	Ethiopia	10%	1.23
Banana flour, peanuts, sugar, water	Philippines	45%	2.06
Unrefined maize flour, cow peas, ground nuts, water	Malawi	68%	1.16
Rice, dried fish, sesame, water	Thailand	71%	1.17
Rice, soya flour, ground nuts, water	Thailand	72%	1.04
Unrefined maize flour, soya flour, water	Malawi	72%	1.03
Rice, kidney beans, roasted sesame, sugar, water	Philippines	87%	0.63
Unrefined maize flour, soya flour, water	Malawi	90%	0.38
Bread, leavened		32%-40%	2.46-2.92
Plantain, cooked		67%	1.16
Rice, boiled		68%-73%	1.11-1.30
Lentils, boiled		70%	1.16
Sweet potato, yellow		73%	1.03
Banana, raw, ripe		74%	0.92
Egg		75%	1.55
Mango, raw ripe		82%	0.65
Orange		87%	0.47
Milk, whole		88%	0.66
Papaya, raw, ripe		89%	0.39
Cooked greens, various		91% - 95%	0.15 – 0.32

<sup>a</sup> Data for the porridges is from Gibson, R.S., E.L. Ferguson, and J. Lehrfeld, *Complementary foods for infant feeding in developing countries: Their nutrient adequacy and improvement*, European Journal of Clinical Nutrition, 52 (1998), p. 766. Data for other foods are from the WorldFood Dietary Assessment System, a public domain program available at [www.fao.org/infoods/software/worldfood.html](http://www.fao.org/infoods/software/worldfood.html). Data for bread and cooked rice are taken both from the WorldFood System, and from the United States Department of Agriculture (USDA) Nutrient Database for Standard Reference, Release 15, available at [w.nal.usda.gov/fnic/foodcomp/Data/SR15/sr15.html](http://w.nal.usda.gov/fnic/foodcomp/Data/SR15/sr15.html).

While both meals and snacks are included in the guideline, the calculations upon which the guideline is based focus only on meals, so the suggested indicator also focuses on the minimum number of meals for each age group. Note again that in addition to being based on a minimum energy density of 0.8 kcals/gram, the Guiding Principle for frequency of feeding also assumes that the infant or child is fed to gastric capacity at each meal.

In discussing an indicator for frequency of feeding with PVO representatives, there was a clear consensus that asking separately about meals and snacks would be confusing and difficult. Also, PVO staff felt that the message about frequency of feeding needs to stay very simple, and is best communicated by the idea of “feeds” (rather than meals or snacks). There was also recognition that snacks can play an important role in ensuring calorie and micronutrient adequacy, and should therefore not be ignored. Therefore we suggest retaining a simple question about frequency of feeding, but accompanying the question with more guidance on defining what counts as a “feed” and on probing with mothers.

Since the Guiding Principle states that infants 6-8 months of age should be offered meals 2-3 times per day, the minimum frequency is 2 for this age group. Similarly, for ages 9-23 months, the minimum number of feeds is 3.

Suggested indicator: **Frequency of feeding**

Percent of children 6-23 months who ate at least the minimum recommended number of times yesterday; that is:

Infants 6-8 months who ate at least 2 times yesterday, and  
children 9-23 months who ate at least 3 times yesterday

“Feeds” will be defined to include meals or snacks that include staple foods, but also other substantial snacks. This is further discussed in Section 5.

<p><b>Guiding Principle #8:</b>      <i>Nutrient content of complementary foods</i></p>
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Current indicator:                      No current indicators

Guiding Principle #8 states: “Feed a variety of foods to ensure that nutrient needs are met. Meat, poultry, fish, or eggs should be eaten daily, or as often as possible. Vegetarian diets cannot meet nutrient needs at this age unless nutrient supplements or fortified products are used. Vitamin A-rich fruits and vegetables should be eaten daily. Provide diets with adequate fat content. Avoid giving drinks with low nutrient value, such as tea, coffee and sugary drinks such as soda. Limit the amount of juice offered so as to avoid displacing more nutrient-rich foods.”<sup>16</sup>

Many PVO representatives indicated that there is demand for indicators that describe at least some elements of the quality of complementary foods. With simple tools such as the KPC, estimates of nutrient intake and assessments of intake relative to needs are not possible. However, even simple food group recalls such as the one on the KPC 2000+ can yield good descriptive information about patterns of intake in the project area.

Note that this information is meaningful in describing patterns at the community- or project-level; a single food group recall cannot provide meaningful information at the level of the individual child, because individual intakes naturally vary widely from day-to-day.

Eleven suggested indicators are described below (one dietary diversity indicator, five animal source food indicators, and five indicators for vitamin A-rich plant foods). Each indicator is followed by a brief justification. *As always, this relatively long list of suggested indicators should be seen as part of the KPC “menu,” from which PVOs can choose indicators of relevance for their projects.*

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<sup>16</sup> PAHO/WHO, op. cit.

### *Dietary diversity*

From Guiding Principle #8: “Feed a variety of foods to ensure that nutrient needs are met.”<sup>17</sup>

Suggested dietary  
diversity indicator: **Dietary diversity**<sup>18</sup>  
Mean number of food groups eaten the previous day by children  
6-23 months

For this diversity indicator, the following food groups are summed, with each of the groups scored “1” if the child had the food group yesterday, and “0” if not. This results in a diversity score ranging from 0 to 8, for each child.

- Grains, roots and tubers
- Legumes and nuts
- Vitamin A-rich fruits and vegetables (and red palm oil, palm nut, palm nut pulp sauce, where eaten)
- Other fruits and vegetables
- Dairy
- Eggs
- Meat, poultry, fish, and shellfish (and organ meats, where eaten)
- Foods cooked with fat or oil

The dietary diversity indicator is based on the idea that more diverse diets are more likely to provide adequate levels of a range of nutrients. There is considerable evidence for this idea (Ruel 2002), although little of this evidence is from studies of young children in developing countries (with the exception of Hatløy, Torheim, and Oshaug 1998; Onyango, Koski, and Tucker 1998; Tarini, Bakari, and Delisle 1999). While there is no doubt that more diverse diets are desirable, many questions remain: How diverse is diverse enough? What is the best way to construct a diversity indicator (how to group foods, how to score or weight different food groups, etc.)?

While this indicator may be refined in the future based on answers to these questions, analysis of *DHS+* data (using the same type of 24-hour food group recall) has illustrated that increases in diversity correspond to important changes in the diets of young children. A particular diversity

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<sup>17</sup> PAHO/WHO, op. cit.

<sup>18</sup> Dietary diversity has been defined and operationalized in many ways, but most commonly as either the number of unique foods eaten in a time period (e.g., yesterday, last week) or as the number of different food groups eaten in a time period (see Ruel, 2002). Throughout this document, we operationalize diet diversity as the number of food groups eaten by the child yesterday.

“score” (e.g., a child having two food groups the previous day, or five, or six) will have a different meaning depending on the country/context of the survey. But within any given survey area, higher scores correspond to a more adequate range of food groups in the diet. Table 6 illustrates this by comparing a diversity score of 0-2 (i.e., children who had two or fewer food groups the previous day) to a diversity score of five or higher (children who ate food from five or more groups) in five countries, using data from recent *DHS+* surveys.<sup>19</sup>

Table 6 demonstrates that a particular score does not have a consistent meaning across countries. For example, with a score of 5 or higher, the proportion of children eating vitamin A-rich fruits and vegetables yesterday ranges from 44 percent in Ethiopia to 95 percent in Malawi and Peru. Similarly, at a score of 5 or higher, the proportion eating meat, poultry, fish, or eggs ranges from 49 percent in Nepal to 91 percent in Peru.

Table 6 also illustrates that when looking *within* countries, children scoring “0-2” are far less likely than those scoring “5+” to have eaten any of the high quality, energy and nutrient-dense

**Table 6. Relationship between diversity score and food group intake in five countries: Percent of children aged 6-23 months eating various food groups yesterday (*DHS+* survey data)**

Diversity score (number of food groups)	Ethiopia, 2000		Malawi, 2000		Nepal, 2001		Haiti, 2000		Peru, 2000	
	0-2	5+	0-2	5+	0-2	5+	0-2	5+	0-2	5+
Grains, roots & tubers	63	100	92	99	74	100	42	97	59	100
Legumes	19	84	7	67	12	83	2	54	7	46
Vitamin A-rich fruits & vegetables	3	44	32	95	8	75	8	83	14	95
Excluding green leafy vegetables	---	---	9	45	2	22	5	66	12	91
Other fruits & vegetables	3	58	4	79	2	65	8	56	4	60
Dairy products – all 6-23	25	74	1	41	20	78	11	51	11	80
Non-breastfed only <sup>a</sup>	33	95	5	50	33	79	5	58	12	92
Meat, poultry, fish, shellfish, eggs	2	60	9	89	3	49	2	75	13	91
Foods cooked with fats or oil	6	98	1	52	14	86	37	99	17	83

<sup>a</sup> Dairy products are a particularly critical diet component for non-breastfed children, and are important sources of calcium and other nutrients.

<sup>19</sup> In the DHS questionnaire, eggs are included in the same group as meat, poultry, and fish. The question about fats and oils was not included on the Zimbabwe questionnaire. Therefore the diversity score used in Table 4 ranged from 0-6 in Zimbabwe, and 0-7 in all other countries.

food groups on the list. For example, in Ethiopia – the country with the lowest diversity in Table 6 – only 2 percent of the children who scored “0-2” ate meat, poultry, fish, or eggs yesterday, compared to 60 percent of the children who scored “5+”. In Peru – the country with the highest diversity – the figures are 13 percent of children scoring “0-2” and 91 percent of those scoring “5+”.

Because the diversity score sums the food groups, it is natural that higher scores will correspond to a higher likelihood that any particular food group has been consumed. We include Table 6 because dietary diversity indicators have not been widely used in the context of programs. While a particular diversity score has no intuitive meaning, the Table shows that higher scores do correspond to important differences in the food groups eaten yesterday.

### *Animal source foods*

From Guiding Principle #8: “Meat, poultry, fish, or eggs should be eaten daily, or as often as possible. Vegetarian diets cannot meet nutrient needs at this age unless nutrient supplements or fortified products are used.”<sup>20</sup>

#### Suggested indicators: **Animal source foods eaten**

Percent of children 6-23 months eating meat, organ meat, poultry, or fish the previous day

Percent of children 6-23 months eating eggs the previous day

Percent of children 6-23 months having dairy products the previous day

Percent of non-breastfed children 6-23 months having dairy products the previous day<sup>21</sup>

Percent of children 6-23 months having any one of these animal source foods the previous day

Several indicators are suggested in order to describe the proportion of infants/children receiving various animal source foods. The animal source foods are divided into nutritionally similar groups. The Guiding Principle reflects a growing recognition of the difficulty of meeting the micronutrient needs of infants and young children without any animal source foods (Gibson, Ferguson, and Lehrfeld 1998; WHO/UNICEF 1998). While these foods may be unobtainable or culturally unacceptable in some project areas, in other areas a variety of projects may promote

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<sup>20</sup> PAHO/WHO, op. cit.

<sup>21</sup> The Guiding Principles cover only breastfed children. However, in reality all PVO projects will include both breastfed and non-breastfed children. Dairy foods are very important sources of calcium and other nutrients for non-breastfed children, and we include one indicator to reflect this.

animal source foods.<sup>22</sup> These indicators will be important and relevant indicators of diet quality in any area where access to animal source foods is possible and/or promoted.

We also suggest several changes to the grouping of animal sources foods on the food group list. Currently, both the *DHS+* and the KPC 2000+ surveys group eggs with flesh foods (meat, poultry, fish). There are several reasons why separating eggs may be useful. Because they are a reasonably good source of vitamin A but a poor source of bioavailable iron, eggs are nutritionally different from flesh foods. Unlike flesh foods, eggs do not enhance absorption of iron from plant foods. In addition, people often use eggs differently in terms of who is generally given eggs to eat, as opposed to flesh foods. Finally, a number of projects promote egg consumption and need to be able to assess changes in consumption of eggs specifically. They cannot do this if eggs are grouped with flesh foods.

A similar rationale could be made for separating red meat from poultry or fish (generally higher levels of iron in red meat; rarer and higher “prestige” than poultry or fish in some cultures; projects may specifically promote increased consumption of poultry or fish). However, because they are nutritionally more similar, we leave meat, organ meat, poultry, and fish grouped together *in this indicator*. However, we suggest that these foods be listed separately in the questionnaire, so that projects promoting fish or poultry consumption have the option of adding indicators to assess changes in consumption of specific, promoted foods (see Section 4).

#### *Vitamin A-rich plant foods*

From Guiding Principle #8: “Vitamin A-rich fruits and vegetables should be eaten daily.”<sup>23</sup>

#### Suggested indicators: **Vitamin A-rich plant foods eaten**

Percent of children 6-23 months eating vitamin A-rich yellow/orange fruits the previous day

Percent of children 6-23 months eating vitamin A-rich yellow/orange vegetables the previous day

Percent of children 6-23 months eating dark green leafy vegetables the previous day

*Where red palm oil or palm nuts are available:*

Percent of children 6-23 months eating food prepared with red palm oil, or palm nuts or palm nut pulp sauce yesterday

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<sup>22</sup> For example, at the same time as nutrition programs are implemented, PVOs may support microcredit and/or small animal husbandry programs, and this may result in increased access to animal source foods.

<sup>23</sup> PAHO/WHO, op. cit.: “The advice to provide vitamin A-rich fruits and vegetables each day is based on the clear health benefits associated with preventing vitamin A deficiency...and the likelihood that consumption of such foods will help meet the needs for many of the other vitamins.”

Percent of children 6-23 months eating food from any of these vitamin A-rich plant food groups yesterday

Both the *DHS+* and the KPC 2000+ questionnaires include three separate vitamin-A rich plant food groups: yellow/orange fruits such as mango; yellow/orange vegetables such as squash, pumpkin, and orange-fleshed sweet potatoes; and dark leafy greens.<sup>24</sup> Following conversations with CORE PVO staff, we recommend several small changes in the way these food groups are described on the KPC questionnaire (e.g., change “red sweet potato” to “yellow/orange-fleshed sweet potato”; changing “mango” to “ripe mango”, etc.). These and several other changes are shown in Section 4. We also recommend adding a separate group for foods cooked with red palm oil, palm nuts and palm nut pulp sauce, in areas where these are eaten.

Over the last decade, there has been increasing recognition that the vitamin A precursors ( $\beta$ -carotene and other carotenoids) in plant foods vary in the extent to which they are absorbed and converted into useful forms in the body (i.e., they vary in *bioefficacy*) (West, Eilander, and van Lieshout 2002). One important and widely cited study documented that the bioefficacy of vitamin A precursors in dark green leafy vegetables is poorer than once thought (de Pee et al., 1995). Another study showed some evidence that bioefficacy from orange-fleshed sweet potato is good; a controlled, randomized feeding trial showed increases in serum retinol following a three-week feeding period, where sweet potato provided 80 percent of the beta-carotene in the supplemental meals and snacks (Jalal et al. 1998).

In general, information on bioefficacy of carotenoids from a range of plant sources is very scarce. Based on available evidence, bioefficacy of carotenoids in some orange-fleshed fruits and vegetables is thought to be better than in dark green leafy vegetables. Because of this, we include separate indicators for orange-fleshed fruits, orange-fleshed vegetables, and dark leafy greens. More studies with a variety of carotenoid sources will enrich our understanding of the potential of vitamin A-rich plant foods.

In the meantime, in deciding which foods to include on the questionnaire, we assessed whether or not plant foods are high in Vitamin A precursors by using currently recommended conversion factors (IVACG, 2002)<sup>25</sup> and a criterion of 100 retinol activity equivalents (RAE) per 100 grams edible portion.<sup>26</sup> Using the current IVACG conversion factors, dark green leafy vegetables

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<sup>24</sup> Ideally, those adapting the KPC questionnaire will consult a nutritionist with local knowledge regarding vitamin A-rich fruits and vegetables. Although the groups suggested for the KPC will cover most major sources of vitamin A, there may be other locally-important vitamin A-rich fruits and vegetables.

<sup>25</sup> “Retinol Activity Equivalents” (RAE) replace the older “Retinol Equivalents” (RE), and take into account best recent estimates of both bioavailability and bioconversion of precursors (carotenoids) to the active form (retinol). Conversion factors are detailed in the International Vitamin A Consultative Group (IVACG) *Conversions Factors for Vitamin A and Carotenoids* (2002), available at the International Life Sciences Institute website: [www.ilsa.org](http://www.ilsa.org).

<sup>26</sup> This criterion is similar to the criterion used by Helen Keller International (HKI) to designate “major” food sources of vitamin A, in *How to Use the HKI Food Frequency Method to Assess Community Risk of Vitamin A Deficiency* (1993). The HKI method was developed before some of the recent studies on bioefficacy, and used the older “RE” units while we use “RAEs” as described above.

generally meet the criterion, as do yellow- or orange-fleshed squash, pumpkin, and yellow/orange sweet potato, carrots, and ripe mango.<sup>27</sup>

**Guiding Principle #9:** *Use of vitamin-mineral supplements or fortified food products*

Current indicator: No current indicators

While there are currently no indicators in the KPC tabulation plan, Module 2 includes two relevant questions (presence of iodized salt in the household, and maternal report of vitamin A supplementation for the child in the last six months).

In addition to iodized salt, a variety of other fortified products are available in some areas. There are several ways fortified foods might be included in a child's diet. For example, children may eat foods prepared with fortified food aid commodities that are distributed as rations (e.g., corn-soy blend or vegetable oil). In some countries, centrally processed foods are fortified at the country or regional level (e.g., flour, sugar, or oil). Projects with specific interventions involving supplementation, or distribution or promotion of fortified foods, can and should include additional questions and indicators for the particular supplement or food.

We do not suggest new questions on fortified foods on the standard Module 2 but provide a set of optional questions, which could be used by projects promoting specific fortified products (see Section 4). Similarly, we provide here some examples of indicators:

Example indicators: Percent of children 6-23 months in households where iodized salt is used for cooking

Percent of children X-X months who received a vitamin A supplement in the last six months (age range will depend on national policy)

Percent of children 6-23 months who ate food prepared with fortified flour or cereal blend from a food assistance ration yesterday

Percent of children 6-23 months who ate food prepared with commercially fortified flour yesterday

Percent of children 6-23 months who ate food prepared with fortified cooking oil yesterday

Percent of children 6-23 months who had food or drink prepared with fortified sugar yesterday

<sup>27</sup> Papaya does not meet this criterion. However, in recognition that papaya is widely recommended as a vitamin A source, we have not excluded it at this time. The difficulty in using a criterion based on RAEs per gram is that serving sizes for different foods vary. Children may eat larger portions of papaya than of greens. Additional empirical work, examining typical serving sizes for various vitamin A-rich plant foods, would allow a more sophisticated criterion.

This is not meant as an exhaustive list of possible indicators, but rather as a set of examples of how indicators could be defined.

**Guiding Principle #10:**    *Feeding during and after illness*

Current indicators:

Module 4C:            **Increased fluid intake during a diarrheal episode**  
Percent of children aged 0-23 months who were offered more fluids during the illness

Module 4C:            **Increased food intake during a diarrheal episode**  
Percent of children aged 0-23 months who were offered the same amount or more food during the illness

*Rapid CATCH:*      The *Rapid CATCH* indicator combines the two above but the question is asked not just for children who had diarrhea, but for any child ill in the last two weeks<sup>28</sup>

Percent of sick children aged 0-23 months who received increased fluids and continued feeding during an illness in the last two weeks

We recommend that the Module 4C fluid intake indicator be restricted to children aged 6-23 months. This will be more consistent with the recommendation of exclusive breastfeeding for children under 6 months of age.

The Guiding Principle recognizes the importance of breastfeeding for maintaining fluid intake during illness (“Increase fluid intake during illness, including more frequent breastfeeding...”). We suggest that this be recognized through adding a question to Module 4C, and to the *Rapid CATCH* regarding breastfeeding during illness, with the same response categories as for fluids and foods (“less than usual, same amount, more than usual”). Information from the fluids question and the breastfeeding question can then be combined in tabulating the indicator.

For the Module 4C food intake indicator, we suggest renaming the indicator to be consistent with the definition: “Continued feeding during a diarrhea episode” (note that the *Rapid CATCH* indicator already correctly refers to “continued feeding”). The current indicator is called “Increased food intake...” yet is defined as those who respond that they offered “the same” or “more” during diarrhea. We also suggest that this indicator only cover children aged 6-23 months, since solid foods are not recommended for infants under 6 months.

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<sup>28</sup> This includes children who had diarrhea, blood in stool, cough, difficult breathing, fast breathing/short, quick breaths, fever, malaria, convulsions, or “other” illnesses.

Suggested indicators:

**Increased fluid intake during a diarrheal episode**

Percent of children aged 6-23 months who were offered more fluids during the illness

**Continued feeding during a diarrheal episode**

Percent of children aged 6-23 months who were offered the same amount or more food during the illness

For the same reasons noted above, we also suggest that the denominator for the *Rapid CATCH* be changed from 0-23 months to 6-23 months.

In addition to the changes noted above, we suggest that questions be asked regarding feeding during other illnesses (i.e., add questions and similar indicators to Modules 4D (Acute Respiratory Illness) and 4E (Malaria)). The rationale for this is that children may have poor appetite during other illnesses as well as during diarrhea, and that nutrient needs are higher during other infections as well.

The Guiding Principle also recognizes the importance of feeding after illness. This is difficult to incorporate in the questionnaire, because the child who has been ill in the last two weeks may still be ill. No new indicator for feeding after illness is suggested at this time.

<p><b><i>Summary indicators for infant and child feeding practices</i></b></p>
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In addition to the indicators described above, which each address one aspect of complementary feeding, we suggest three optional measures to summarize key practices. We suggest a young child feeding practices score covering the ages of 6-23 months, good young child feeding practices prevalence for the same age group (6-23 months), and good infant and young child feeding practices prevalence covering the ages of 0-23 months.

Indicators that present a summary of various practices may be useful for several purposes:

- Assessment by program managers of overall effectiveness in improving feeding practices
- Communication and advocacy, when information on a few summary indicators is sufficient

In the KPC 2000+ there is a summary indicator for the 6-9 month age group only; this “complementary feeding rate” indicator was described above and identifies whether or not infants in this age group are both breastfed and given any solid or semi-solid food. We suggest a more comprehensive “young child feeding practices score” with the following components:

- Continued breastfeeding
- Age-appropriate frequency of feeding

- Dietary diversity (food group diversity)

In addition to capturing more practices, an additional advantage of this score over the current summary indicator is that sample sizes in this age range (6-23 months) are far more likely to yield adequately precise estimates than is the case with the current complementary feeding rate, covering ages 6-9 months only. The young child feeding practices score is expressed as an average. For those who prefer an indicator that can be expressed as a percent, the good young child feeding practices prevalence gives the percent in the 6-23 month age-group with the highest scores.

Finally, for those cases where program managers wish to include infants 0-5 months, we describe a summary indicator called the good infant and young child feeding practices prevalence. It covers 0-23 months and incorporates exclusive breastfeeding for infants 0-5 months of age.

Note that a summary indicator may not be useful in cases where an intervention does not target the entire range of practices included in the measure. Yet, especially in the case of complementary feeding, a summary indicator also highlights the fact that none of these components alone can ensure adequate nutrient intakes. If, for example, an intervention succeeds in increasing continued breastfeeding, but does not seek to improve frequency of feeding or diversity, changes in the overall score or prevalence will be slight, masking project success with breastfeeding. On the other hand, projects that seek only to improve a single practice may not reach larger goals of improved nutrition for this vulnerable age group.

Current indicator:       **Complementary feeding rate** (summarizes two practices)  
Percent of infants 6-9 months still breastfed and also receiving any of the food groups (not liquid) on the 24-hour food group recall

Suggested indicators:   **Young child feeding practices score**  
For children aged 6-23 months, average (mean) score, on a scale of 0-6, where “6” indicates good practices (continued breastfeeding, at least minimum age-appropriate frequency of feeding, and high diversity)

**Good young child feeding practices prevalence**  
Percent of children aged 6-23 months scoring “6” on the young child feeding practices score

**Good infant and young child feeding practices prevalence**  
Percent of infants and children 0-23 months fed using good practices (infants 0-5 months exclusively breastfed, and children 6-23 months scoring “6” on young child feeding practices score, described above)

*Young child feeding practices score*

Table 7 details how each component contributes to the young child feeding practices score. The young child feeding practices score is a simplified version of a previously developed infant and child feeding index (Arimond and Ruel 2002).<sup>29</sup>

**Table 7. Components and scoring of a young child feeding practices score for children aged 6-23 months**

Components included	Scoring	
<b>Continued breastfeeding</b>	No = 0 Yes = 2	
<b>Frequency of feeding (number of feeds yesterday)</b>	6-8 months: None = 0 One = 1 2+ = 2	9-23 months: 0-1 = 0 2 = 1 3+ = 2
<b>Dietary diversity (number of food groups yesterday)</b>	Low (0-2) = 0 Middle (3-4) = 1 High (5-8) = 2	

The scoring for continued breastfeeding is straightforward: either the mother is still breastfeeding the child or she is not, so scores are easily assigned. In the case of frequency of feeding, there is a clear recommendation, but no guidance to provide a basis for assigning an intermediate score. The scoring above reflects the idea that there is a continuum. For example, clearly feeding a 6-8 month-old infant once is better than not feeding solids/semi-solids at all; the highest score (+2) is reserved for the recommended number of feeds (at least two feeds; see discussion of an indicator for Guiding Principle #7).

In the case of dietary diversity, there is no specific guideline indicating an adequate or inadequate level of diversity. In previous work (Arimond and Ruel 2002), we acknowledged the lack of international standards and used the distribution of diversity within the survey sample to group children into low, middle, and high diversity groups. However, this approach would add an impractical level of complexity to KPC tabulation guidelines. In addition, in some countries where diversity is very low, the “high” diversity group would not correspond to a high quality diet.

Therefore, the following ideas guided the scoring for diversity: When children receive only one food, it is extremely likely to be a starchy staple food (grain-based or root/tuber-based). A diversity score of two allows only one additional food group, and therefore the child’s diet cannot meet the guidelines, which recommend animal source foods and vitamin A-rich plant

<sup>29</sup> The previously developed version included several additional elements, specifically, the use of infant feeding bottles, and a score for frequency of consumption of each food group over the last seven days. The KPC 2000+ does not include a 7-day recall. The bottle use element is not included due to feedback from the CORE Nutrition Working Group, who advocated keeping bottle use as a separate indicator, but not including it in a summary indicator. We have also changed the scoring for frequency of feeding, based on the new Guiding Principles (PAHO/WHO, 2003). The previously developed version also scored diversity differently in three different age groups (6-8 months, 9-11 months, and 12-36 months). We simplify the scoring here because: 1. While diversity naturally increases with age, Guiding Principle #8 does not differentiate level of diversity by age group; 2. For KPC applications, an overall estimate of diversity for children 6-23 months will serve the purpose of providing useful baseline data and of assessing progress toward objectives; and 3. In constructing indicators for the KPC, the simplest version that will serve the purpose is preferred.

foods daily. Therefore children eating 0-2 food groups are considered to have “low” diversity. On the other side, children eating five or more food groups in the previous day are very likely to receive a variety of nutrient-dense foods, as illustrated in Table 6, and are considered to have “high” diversity.<sup>30</sup> The middle diversity group includes children eating 3-4 food groups the previous day.

Using *DHS+* data from the same five countries shown in Table 6, Table 8 shows the proportion of children aged 6-23 months who would fall into the low, middle, and high diversity groups, based on the scoring system just described.

**Table 8. Level of dietary diversity in five countries: Percent of children 6-23 months with low, middle, or high diversity of food groups eaten yesterday (*DHS+* survey data)**

Country	Level of diversity		
	Low (0-2 food groups)	Middle (3-4 food groups)	High (5+ food groups)
Ethiopia	62	31	7
Malawi	44	46	10
Nepal	40	46	14
Haiti	22	47	32
Peru	14	33	53

Table 8 reflects differences between countries in dietary diversity; diversity is lowest in Ethiopia,<sup>31</sup> with very few children classified as having had high diversity yesterday, and highest in Peru, where only 14% of children were classified as having had low diversity. However, there is variability in diversity in each country, and room for diversity to increase.

In addition to the decisions described above for scoring each component, the young child feeding practices score also implicitly weights the components relative to one another. The scoring provides equal weight (two points) to each of the three components (breastfeeding, frequency of feeding, and dietary diversity). This “weighting” of the components is intuitive (each is important) but arbitrary. As with the dietary diversity indicator, further work using data from many contexts could help define the relationship between various versions of a young child feeding practices score and actual nutrient intakes.

### *Good young child feeding practices prevalence*

The same information used in the young child feeding practices score can be shown as the percent or prevalence of children 6-23 months with “good” feeding practices. To calculate good feeding practices, a score of 1 (yes) is assigned only to those children 6-23 months who score “6”

<sup>30</sup> We analyzed data from 10 *DHS+* surveys in order to inform a decision about a cut-off for “high” diversity. When a cut-off of “5” is used, in most countries at least 50% of the children ate meat, poultry, fish or eggs yesterday, at least 50% had vitamin A-rich fruits and vegetables, and at least 50% of non-breastfed children had dairy products yesterday. There were three exceptions: in Ethiopia, only 44% in the “high” diversity group had vitamin A-rich fruits and vegetables; in Rwanda 48% in the high diversity group had meat, poultry, fish or eggs, and in Nepal 49% in the high diversity group had meat, poultry, fish or eggs.

<sup>31</sup> Adding to the effect of a generally precarious food security situation in parts of Ethiopia, the most recent DHS was fielded during a drought year.

on the young child feeding practices score – that is, those who are breastfed, fed at least the minimum recommended number of times, and who score high for food group diversity. All those with a 0-5 on the young child feeding practices score would in turn receive a 0 (no) on good young child feeding practices.

*Good infant and young child feeding practices prevalence*

Finally, information on exclusive breastfeeding for infants 0-5 months of age is combined with information on young child feeding practices for infants and children 6-23 months of age, to calculate the prevalence of “good” infant and young child feeding practices. Thus the entire 0-23 month age range is covered. Like the good young child feeding practice prevalence, it is scored dichotomously; that is, the infant or child either was or was not fed using good practices. Good practices are defined as exclusive breastfeeding for 0-5 months, and continued breastfeeding, appropriate frequency, and high diversity (i.e., a score of “6” on young child feeding practice score) for 6-23 months.

**Table 9. Defining “good practices” for infant and young child feeding (Ages 0-23 months)**

Components included (good practices)	Age group	
	0-5 months	6-23 months
Exclusive breastfeeding	Yes = 1 No = 0	
Young child feeding practices score		Six = Yes = 1 0-5 = No = 0

Table 10 shows the percent of infants and children in various countries who would be classified as having been fed using good practices (as described above), using *DHS+* data from 10 countries.<sup>32</sup> This provides some context, and shows that “good practices” were possible for some in each country. The proportion of infants and children fed using “good practices” ranged from 8% in both Mali and Haiti, up to 38% in Peru.

As has been emphasized throughout this document, all suggested indicators should be viewed as a menu from which program managers can select. As described in Appendix 1, some PVO staff and others strongly promoted the usefulness of summary indicators, particularly for advocacy purposes. Others did not feel these are needed. We present them as options for those who wish to summarize several critical dimensions of infant and child feeding.

On the pages following Table 10, Table 11 summarizes the current and suggested indicators discussed in this section, for each Guiding Principle. Table 12 shows the current and suggested

<sup>32</sup> Note that the diversity variable has one fewer food group than the variable proposed in KPC draft, and so has a smaller range. This is because meat, poultry, fish, and eggs are all in one group on the *DHS+* questionnaire. Differences should be slight, as only children who ate both meat/fish/poultry AND eggs yesterday would score higher by one point if the KPC variable were used.

summary indicators. Next, Section 4 shows revisions to the Module 2 questionnaire, which would allow tabulation of all suggested indicators.

**Table 10. Percent of infants and children fed using “good practices” in ten countries (DHS+ survey data)**

Age range	Indicators for single practices				Summary indicators	
	0-5 months	6-23 months			6-23 months	0-23 months
Country	% exclusively breastfed	% still breastfed	% who ate minimum recommended # of times or more <sup>a</sup>	% with 24-hour dietary diversity 5+	% young children with good feeding practices (6 on young child feeding practices score) <sup>b</sup>	% infants and children with good feeding practices <sup>c</sup>
Benin	35	89	42	24	11	18
Ethiopia	52	91	45	6	4	16
Malawi	42	92	51	10	6	15
Mali	22	90	28	8	1	8
Rwanda	81	90	16	15	3	23
Cambodia	10	80	64	26	14	13
Nepal	68	96	69	14	11	26
Colombia	22	46	65	63	21	21
Haiti	22	68	24	34	4	8
Peru	64	73	72	56	30	38

<sup>a</sup> Minimum recommended number of times is 2 for infants 6-8 months, and 3 for those 9-23 months (PAHO/WHO, 2003). Note that even though this recommendation is for breastfed infants and children, we have included all children in this analysis.

<sup>b</sup> In order to score “6”, a child must be breastfed, fed with at least the minimum age-appropriate frequency, and have eaten at least 5 food groups yesterday.

<sup>c</sup> Good practices are defined as exclusive breastfeeding for infants 0-5 months, and practices yielding a score of “6”, as described above, for those 6-23 months of age.

**Table 11. Current and suggested infant and young child feeding indicators for the KPC 2000+ by Guiding Principle**

Guiding Principle	Current indicator(s)	Suggested indicator(s)
<p>1. Duration of exclusive breastfeeding &amp; age of introduction of complementary foods</p>	<p><b>Exclusive breastfeeding rate:</b> Percent of infants 0-5 months who were fed only breastmilk in the last 24 hours</p> <p><b>Rapid CATCH INDICATOR</b></p>	<p>No change suggested</p>
	<p><b>Complementary feeding rate:</b> Percent of infants 6-9 months still breastfed AND also receiving any of the food groups (not liquid) on the food group recall</p> <p><b>Rapid CATCH INDICATOR</b> (calculated slightly differently from in Module 4)</p>	<p>No change suggested, but suggest only using this indicator when the sub-sample size is adequate for 6-9 months (see Appendix 3)</p>
<p>2. Maintenance of breastfeeding</p>	<p><b>Median duration of breastfeeding:</b> AMONG THOSE ALREADY WEANED, age in months at which half have stopped breastfeeding</p> <p><b>Continued breastfeeding:</b> % of children 20-23 months who are still breastfeeding</p>	<p>Suggest dropping this indicator, unless a new tabulation method (survival analysis) is used;</p> <p style="text-align: center;"><b>-OR-</b></p> <p>Consider dropping and replacing both current indicators with the following set:  <b>Continued breastfeeding 6-11 months</b>                      Percent of infants 6-11 months still breastfed  <b>Continued breastfeeding 12-17 months</b>                      Percent of children 12-17 months still breastfed  <b>Continued breastfeeding 18-23 months</b>                      Percent of children 18-23 months still breastfed</p>
<p>3. Responsive feeding</p>	<p>None</p>	<p>None suggested</p>

(continued)

Guiding Principle	Current indicator(s)	Suggested indicator(s)
4. Safe preparation & storage of complementary foods	<p><b>Hand-washing facility:</b> Percent of households with a special place for hand washing (Modules 1A &amp; 4C)</p> <p><b>Maternal hand washing:</b> Percent of mothers who report washing their hands with soap/ash for all of following: before food preparation; before infant or child feeding; after defecation; after attending to a child who has defecated (Modules 1A &amp; 4C)</p> <p><b>Rapid CATCH INDICATOR</b></p>	<p>No change suggested</p> <p>No change suggested; potential for biased responses noted</p>
5. Amount of complementary food	None	<p><b>Bottle use rate:</b> Percent of infants 0-11 months old who were given anything by bottle yesterday during the day or at night</p>
6. Food consistency	None	None, suggest inquiry at community/project level
7. Meal frequency & energy density	None	<p>None, suggest inquiry at community/project level</p> <p>For <b>energy density</b>, no indicator suggested; suggest inquiry at community/project level</p> <p><b>Frequency of feeding:</b> Percent of children 6-23 months who ate at least the minimum recommended number of times yesterday</p> <p>Minimum is 2 feeds for 6-8 months Minimum is 3 feeds for 9-23 months</p>

Guiding Principle	Current indicator(s)	Suggested indicator(s)
<p>8. Nutrient content of complementary foods</p>	<p>None</p> <p>(continued)</p>	<p><b>Dietary diversity yesterday:</b> Average (mean) number of food groups eaten by children 6-23 months</p> <p><b>Animal source foods eaten yesterday:</b> Percent of children 6-23 months eating meat, organ meat, poultry, fish or shellfish</p> <p>Percent of children 6-23 months eating eggs</p> <p>Percent of children 6-23 months consuming dairy products</p> <p>Percent of non-breastfed children 6-23 months consuming dairy products</p> <p>Percent of children 6-23 months consuming any one of these animal source foods</p> <p><b>Vitamin A-rich plant foods eaten yesterday:</b> Percent of children 6-23 months eating vitamin A-rich yellow/orange vegetables</p> <p>Percent of children 6-23 months eating vitamin A-rich yellow/orange fruit</p> <p>Percent of children 6-23 months eating dark green leafy vegetables</p> <p>(Percent of children 6-23 months eating palm nut, palm nut pulp sauce, or food prepared with red palm oil)</p> <p>Percent of children 6-23 months eating food from any of these vitamin A-rich food groups</p>

(continued)

Guiding Principle	Current indicator(s)	Suggested indicator(s)
<p>9. Use of vitamin-mineral supplements or fortified food products</p>	<p>None; there are questions on Module 2 presence of iodized salt in the household and about vitamin A dose in the last 6 months; projects with interventions in these areas can report these as indicators</p>	<p>No change suggested; however, recommend that project-specific indicators be added in areas where supplements and/or fortified foods are available, or to be promoted.</p> <p>Examples of indicators:</p> <ul style="list-style-type: none"> <li>Percent of children 6-23 months in households where iodized salt is used for cooking</li> <li>Percent of children X-X months who received a vitamin A supplement in the last six months (age range will depend on national policy)</li> <li>Percent of children 6-23 months who ate food prepared with fortified flour or cereal blend from a food assistance ration yesterday</li> <li>Percent of children 6-23 months who ate food prepared with commercially fortified flour yesterday</li> <li>Percent of children 6-23 months who ate food prepared with fortified cooking oil yesterday</li> <li>Percent of children 6-23 months who had food or drink prepared with fortified sugar yesterday</li> </ul>

(continued)

Guiding Principle	Current indicator(s)	Suggested indicator(s)
<p>10. Feeding during and after illness</p>	<p><b>Increased fluid intake during a diarrheal episode:</b> Percent of children aged 0-23 months with diarrhea in the last two weeks who were offered more fluids during the illness (Module 4C)</p>	<p>Suggest limiting this indicator to children aged 6-23 months, since breastmilk only is recommended for infants 0-5 months</p> <p>Use information from two questions to tabulate the indicator: current question on fluids, and an additional question on breastfeeding during illness</p>
	<p><b>Increased food intake during a diarrheal episode:</b> Percent of children aged 0-23 months who were offered the same amount or more food during illness (Module 4C)</p>	<p>Suggest renaming this indicator to <b>Continued feeding during a diarrheal episode</b></p> <p>Also suggest limiting this indicator to 6-23 month age group, since solid foods are not recommended under 6 months</p>
	<p><b>Rapid CATCH INDICATOR:</b> Combines the two above into one indicator. % of sick children age 0-23 months who received increased fluids and continued feeding during an illness in the last two weeks</p>	<p>Suggest limiting this indicator to children aged 6-23 months</p>
	<p>None for feeding after illness</p>	<p>None suggested</p>

**Table 12. Current and suggested indicators summarizing several practices**

	<b>Current indicator</b>	<b>Suggested indicators</b>
<p>Indicators summarizing feeding practices for infants and young children</p>	<p><b>Complementary feeding rate:</b> Percent of infants 6-9 months still breastfed AND also receiving any of the food groups (not liquid) on the food group recall</p>	<p><b>Young child feeding practices score:</b> For children 6-23 months, average (mean) score, on a scale of 0-6, where "6" indicates good practices (continued breastfeeding, at least minimum age-appropriate frequency of feeding, high diversity) Young child feeding practices are scored as follows: Continued breastfeeding: Child not breastfed 0 points Child breastfed 2 points Frequency of feeding solids/semi-solids yesterday: Age 6-8 months and fed 0 times 0 points Age 6-8 months and fed 1 time 1 point Age 6-8 months and fed 2 or more times 2 points Age 9-23 months and fed 0 or 1 times 0 points Age 9-23 months and fed 2 times 1 point Age 9-23 months and fed 3 or more times 2 points Dietary diversity yesterday 0 to 2 food groups yesterday 0 points 3 to 4 food groups yesterday 1 point 5 or more food groups yesterday 2 points <b>Good young child feeding practices prevalence:</b> Percent of children 6-23 months scoring "6" on the young child feeding practices score <b>Good infant and young child feeding practices prevalence:</b> Percent of infants and children 0-23 months fed using good practices yesterday, as follows: For 0-5 months "Good practice" defined as exclusive breastfeeding yesterday For 6-23 months "Good practices" defined as above; i.e., children in this age group who score "6" on young child feeding practices score</p>

#### 4. SUGGESTED CHANGES TO THE MODULE 2 QUESTIONNAIRE

We suggest a number of minor changes to the survey tool itself, detailed below. These suggestions reflect discussions with a number of PVO representatives and other experts. In some cases the changes are necessary in order to generate the indicators described in the previous section (e.g., the addition of a question on bottle use yesterday). Most other changes are to the lists of foods and liquids.

Several of the suggested changes involve splitting up food groups on the current list into smaller, more specific groups. For example, we suggest splitting the category “meat, poultry, fish, and eggs” into four categories (plus the optional category of organ meats). While this makes the questionnaire slightly longer, it has several advantages.

First, a category such as “meat, poultry, and fish” is grouped in a way that may make sense nutritionally, but is not intuitive to many enumerators and respondents. This can cause confusion, and in fact several PVO staff reported that this was a problem. Secondly, with smaller, more specific groups, foods may be less likely to be missed, as respondents are read fewer food items before they are asked to reply about the group. Finally, more specific groupings allow PVOs to better assess efforts to promote consumption of specific foods (e.g., poultry or eggs).

For the purposes of constructing more general indicators (such as “Percent of children eating any animal source foods”) food groups can easily be combined (see tabulation instructions, Appendices 6-8).

As with the current questionnaire, each food and liquid group we suggest should be adapted to include all those – and only those – specific liquids and foods that are locally available. For example, “dark green leafy vegetables” could be replaced by “cassava leaves, pumpkin leaves, cowpea leaves, and other bean leaves.”

Suggested changes are:

- Divide coffee and tea from other liquids (PVO suggestion, because these drinks may play a role in inhibiting mineral absorption);
- Add an optional category for liquid and semi-liquid traditional medicine, (also a PVO suggestion);
- Add a question about bottle use;
- Slightly modify descriptions of several food groups:

Give more examples for several groups, to help guide those adapting the questionnaire;

For vitamin A-rich yellow/orange vegetables: Delete yams from the list as this has caused confusion, with white-fleshed yams being included; change “red sweet potatoes” to

“yellow/orange-fleshed sweet potatoes” as the old wording has resulted in red-skinned white potatoes being included; similarly change “squash” to “yellow/orange fleshed squash”;

Vitamin A-rich fruits: Add the word “ripe” before mango as mangoes are commonly eaten green. When green, they are very poor sources of beta-carotene;

Change “Green leafy vegetables” to “Dark green leafy vegetables”; celery, lettuce, etc., are not good sources of carotenoids yet have occasionally appeared on questionnaires;

- Separate eggs, meat, poultry and fish into four groups;
- Separate groundnuts from other legumes, and group groundnuts with other nuts; previously, other nuts were not included;
- Add optional food groups for organ meats, and one for small protein foods (insects, grubs, etc.); previously these appeared in a footnote;
- Add an optional group for red palm oil, palm nut, or palm nut pulp sauce where these are eaten; these rich sources of vitamin A were previously not included;
- Modify the frequency of feeding question, which previously included semi-solids only;
- Add an additional set of optional questions for fortified foods.

Our suggestions for these questions are shown in Boxes 4-7. Box 4 shows the revised question on liquids and the new question for bottle use; Box 5 shows the revised food group question; Box 6 shows the revised frequency of feeding question; Box 7 shows the optional questions for fortified foods.

We recommend that this Module also be accompanied by some additional guidance on adapting questions and on probing. We provide some suggestions in Section 5.

**Box 4. Suggestions for revising Module 2 question about liquids given yesterday/night**

Q8. Now I would like to ask you about the types of liquids [NAME] drank yesterday during the day or at night.

Did [NAME] drink any of the following liquids yesterday during the day or at night?

PLACE A CHECK MARK IN BOX IF CHILD DRANK THE LIQUID IN QUESTION

- A Breastmilk?
- B Plain water?
- C Commercially produced infant formula?
- D Any other milk such as tinned, powdered, or fresh animal milk?
- E Fruit juice?
- F Coffee or tea?
- G Any other liquids such as sugar water, carbonated drinks or soup broth?

OPTIONAL LIQUID GROUP: ADD IF COMMONLY GIVEN TO INFANTS/CHILDREN

H Liquid or semi-liquid traditional medicine?

Q9. Did (NAME) drink anything from a bottle with a nipple yesterday or last night?

**Box 5. Suggestions for revising Module 2 question about foods given yesterday/night**

Q10. Now I would like to ask you about the types of foods<sup>1</sup> [NAME] ate yesterday during the day and at night

Did [NAME] eat any of the following foods yesterday during the day or at night?

PLACE A CHECK MARK IN BOX IF CHILD ATE THE FOOD IN QUESTION.

- A Any foods made from grains (for example, foods made from millet, sorghum, maize, rice, wheat, or other local grains, porridge, bread)?
- B Pumpkin or yellow/orange-fleshed squash, carrots, or yellow/orange-fleshed sweet potatoes?
- C Any other food made from roots or tubers (for example, white potatoes, white yams, manioc, cassava, or other local roots/tubers)?
- D Any dark green leafy vegetables (for example, cassava leaves, bean leaves, kale, spinach, pepper leaves, taro leaves, amaranth leaves, or other dark green leaves)?
- E Ripe mango, ripe papaya, (or other local Vitamin A rich fruits)?
- F Any other fruits and vegetables (for example, bananas, avocados, tomatoes, onions, apples, oranges, others)?
- G Any beef, pork, lamb, goat, rabbit (or wild game meat such as antelope or deer)?
- H Any chicken, ducks, or other birds (for example, pigeon, guinea hen, others)?
- I Any fresh or dried fish, or shellfish?
- J Any eggs?
- K Any foods made from beans, peas, or lentils (for example, made with cowpeas, pinto beans, pink beans, black beans, chickpeas, soybeans, lentils, peas, dal, or others)?
- L Any groundnuts/peanuts, or any other nuts?
- M Any cheese or yogurt?
- N Any food made with oil, fat, or butter?

OPTIONAL FOOD GROUPS: ADD THESE WHEREVER THEY ARE AVAILABLE

- O Organ meats (for example, liver, kidney, others)
- P Grubs, snails, insects, other small protein food
- Q Foods made with red palm oil, palm nut, palm nut pulp sauce

<sup>1</sup> Modify each food group to include only those foods that are available locally. Read respondents a short list of foods for each group.

As noted, the food groups listed in Box 5 (and on the model questionnaire in Appendix 4) should be adapted so that the list includes only those foods in the group that are available in the project area. Section 5 of this document gives some additional guidance on how to approach adapting the food items listed.

The frequency of feeding question in Box 6, below, is taken from the *DHS+* model questionnaire (ORC MACRO 2001). It differs slightly from the current KPC 2000+ question, which included only semi-solids and not solids. Like the food lists in Question 10 (Box 5), this question must be adapted to reflect local descriptions of foods.

**Box 6. Suggestions for revising Module 2 question about frequency of feeding**

Q11. How many times did (NAME) eat solid, semi-solid, or soft foods other than liquids yesterday during the day or at night?

IF CAREGIVER ANSWERS 7 OR MORE TIMES,  
RECORD "7"

NUMBER OF TIMES ..... \_\_\_\_

DON'T KNOW ..... 8

ADAPT THIS QUESTION TO USE LOCAL TERMS FOR THE SEMI-SOLID FOODS THAT ARE GIVEN. INCLUDE MASHED OR PUREED FOOD, ALONG WITH PORRIDGES, PAPS, THICK GRUELS, STEWS, ETC. SOLID FOODS – FOR EXAMPLE, FAMILY FOODS, BANANAS, MANGOES, PIECES OF POTATO, AND BREAD – SHOULD ALSO BE INCLUDED.

WE WANT TO FIND OUT HOW MANY TIMES THE CHILD ATE ENOUGH TO BE FULL. SMALL SNACKS AND VERY SMALL FEEDS SUCH AS ONE OR TWO BITES OF MOTHER'S OR SISTER'S FOOD, SHOULD NOT BE COUNTED

LIQUIDS DO NOT COUNT FOR THIS QUESTION. DO NOT INCLUDE THIN SOUPS OR BROTH, WATERY GRUELS, OR ANY OTHER LIQUID.

USE PROBING QUESTIONS TO HELP THE CAREGIVER REMEMBER ALL THE TIMES THE CHILD ATE YESTERDAY

Following the question on frequency of feeding, the two last questions on the Module assess availability of iodized salt in the household, and vitamin A supplements given in the last six months. Currently there are no questions on the survey tool assessing whether or not children are eating fortified products other than iodized salt. We do not suggest inclusion of standard questions on fortified products, because availability varies and there are many possible products; including all would unduly lengthen the questionnaire. Instead, we offer a series of optional questions, as examples of how projects could ask about other fortified products. Box 7 shows these example questions.

**Box 7. Examples of optional questions on fortified foods**

Now I would like to ask you about some particular foods [NAME] may eat.

IN AREAS WHERE PROCESSED FORTIFIED COMPLEMENTARY FOODS ARE AVAILABLE:

Did (NAME) eat any food prepared with (NAME OF PROCESSED FORTIFIED COMPLEMENTARY FOOD AVAILABLE IN THE AREA) yesterday during the day or at night?

\_\_\_\_\_

IN AREAS WHERE FORTIFIED COMMODITY FOODS SUCH AS CORN-SOY-BLEND OR CORN-SOY-WHEAT BLEND ARE AVAILABLE:

Did (NAME) eat any food prepared with (LOCAL NAME FOR FORTIFIED COMMODITY FLOUR OR CEREAL BLEND) yesterday during the day or at night?

\_\_\_\_\_

IN AREAS WHERE COMMERCIAL FORTIFIED FLOUR IS AVAILABLE:

Did (NAME) eat any food prepared with (NAME OF COMMERCIAL FORTIFIED FLOUR) yesterday during the day or at night?

\_\_\_\_\_

IN AREAS WHERE FORTIFIED OIL IS AVAILABLE:

May I see the oil that is used for cooking?

CHECK THE LABEL TO SEE IF OIL IS FORTIFIED. IF YES:

Did (NAME) eat any food prepared with this oil yesterday, during the day or at night?

\_\_\_\_\_

IN AREAS WHERE FORTIFIED MARGARINE IS AVAILABLE:

May I see the margarine your family uses?

CHECK LABEL TO SEE IF MARGARINE IS FORTIFIED. IF YES:

Did (NAME) eat any food prepared with this margarine yesterday during the day or at night?

\_\_\_\_\_

IN AREAS WHERE FORTIFIED SUGAR IS AVAILABLE:

May I see the sugar your family uses?

CHECK LABEL TO SEE IF SUGAR IS FORTIFIED. IF YES:

Did (NAME) have any food or drink prepared with this sugar yesterday, during the day or at night?

Note that for some fortified products (e.g., oil and sugar), households may buy in very small quantities, from bulk, daily or when they can afford it. In this case, there may be no package and no label to check. If information on use of these products is very important to the project, additional information will be needed. For example, questions about the source of the oil, sugar, etc., can be added, and staff can follow-up with vendors to ascertain whether the product sold from bulk, in small amounts, is fortified.

## 5. ADAPTING THE QUESTIONNAIRE AND PROBING

PVO staff reported a range of experiences with adapting Module 2 of the KPC 2000+. Some reported that this posed no problem for field staff, while others said that additional guidance would be welcome. Several stressed that any additional guidance should be on or attached to the tool itself.

The task of adapting Module 2 requires some qualitative exploration prior to the survey. PVO representatives with experience in nutrition programming emphasized that if a complementary feeding intervention is planned – or any nutrition intervention with an education or behavior change component – gathering qualitative information is absolutely essential to grounded program development. Investing in this work prior to the baseline *also* means that KPC questions can be appropriately adapted with little additional effort. Qualitative work will also provide staff with important information to use as a basis for giving enumerators guidance on probing on the complementary feeding questions.

There are many resources available providing guidance on rapid qualitative methods (Dickin, Griffiths and Piwoz 1997; Winch et al. 2000). Key informant and other individual interviews, group interviews, focus groups, rapid market surveys, various free listing and sorting exercises with foods, and recipe trials have all been used to help development workers understand local food availability, beliefs and practices. Qualitative inquiry may be very abbreviated or in-depth. Experienced PVO staff report that even a small investment in well-planned qualitative work (e.g., two-three days for one or several staff members) can yield significant insights and better-adapted tools, as well as essential information for designing educational messages and activities.

Specific guidance on methods is beyond the scope of this document. Rather, we suggest a list of topics to be addressed related to the quantity and quality of complementary foods. Other topics for qualitative inquiry, not detailed here, could include breastfeeding practices, food beliefs, sanitation and hygiene, caregiver feeding styles, who feeds the child, child appetite and responses to poor appetite, feeding during illness, etc. In order to design interventions, additional areas for qualitative research include identification of potential motivations for change and barriers and constraints to changing behavior. All of these are important, but here we restrict our topics to those relevant to adapting the complementary feeding questions on the KPC 2000+:

1. Local meal patterns and frequency of feeding infants and young children 6-23 months of age;
2. What foods are available, and which are given to the 6-23 month age group;
3. Methods of preparation, consistency and energy density of complementary foods; and
4. Amounts fed to infants and young children 6-23 months of age.

For each of these four topics, examples of possible questions are provided in Boxes 8-11. In some cases, this information will be available through review of recent work by the PVO or others working in the area. In other cases, a new inquiry will be needed.

*Topic 1: Local meal patterns and frequency of feeding infants/young children*

Reasons for exploring this topic:

1. To understand local concepts and vocabulary for eating episodes, so that questions and probes can be worded appropriately; and
2. To understand the usual meal and feeding patterns, so that a set of probes can be developed to get complete information on frequency of feeding.

**Box 8. Topic 1: Local meal patterns and frequency of feeding**

Examples of aspects to explore:

- What are the names for meals and snacks, how do people describe and define them?
  - What counts as a meal?
  - Is there a concept/name for between-meal eating/snacks?
  - What are typical snacks? (are typical snacks low energy density, like some fruits, vegetables, or high energy density, like breads or fried snacks)?
  - Are the usual snacks likely to provide significant amounts of energy?
  - What is the typical meal pattern?
  - How often do caregivers usually cook?
  - How much do meal patterns and cooking schedules vary between households (e.g., richer/poorer)?
  - How much do meal patterns vary between seasons?
- How are meal patterns different for the 6-23 month age group, compared to the family pattern?
  - Do infants/children in this age group get extra meals or other extra feeds (other than breastfeeding)?
  - Are they always offered food when adults/older children eat?
  - What is the typical feeding pattern for this age group?
    - Typical times of the day
    - Number of times per day (not including breastfeeding)
    - Is there a concept of meals versus snacks or other “feeds” for this age group?
  - How much does the feeding pattern vary (between households, seasons)?
  - At what age do children begin to feed themselves?
  - To what extent do children this age self-feed? (inquire separately for 6-11, 12-18, and 18-23 months)
  - What do they eat when they feed themselves?
  - Do caregivers have different ideas about the “best” number of times to feed young children?

*Topic 2: What foods are available and which are given to 6-23 month age group*

Reasons for exploring this topic:

1. So that typical foods can be listed for each food group on the 24-hour food group recall;
2. To gain understanding of the foods usually given to the age group of interest, in order to guide development of probes. Probes may be needed for mixed foods, special foods made for young children, etc.; and
3. To determine if the optional food groups (e.g., organ meat, small protein food, etc.) should be included on the questionnaire.

**Box 9. Topic 2: Identifying available foods**

Examples of aspects to explore:

- What foods and drinks are available from home production and in local markets?
  - Refer to the food groups in the questionnaire, and be sure to get information about foods in each group, if available
  - Be sure to gather information about fats/oils used in cooking
  - Gather information about any fortified foods/drinks/products available in the project area
- What are the seasonal differences in the range of foods available?
- What role do wild/forage foods play and during which seasons?
  - Every year or some years?
  - Insects, grubs, etc.
  - Meat from wild animals
  - Leaves, roots, wild fruits
  - Are any wild fruits known to be rich in vitamin A?  
(Consult with national food composition tables/nutritionists)
- Looking at all available foods, which are given to infants and young children?
  - Which foods are considered especially good for infants and young children?  
Which of these are usually affordable for most peoples? Only some people? A few?
  - What special foods are prepared and given to infants and young children at various ages  
(First 6 months? 6-8 months? 9-11 months? 12-23?)
  - Why are these special foods given?
  - How much do views on the above questions vary?
  - Do they vary by generation? Education level?  
(Note actual practices may vary from expressed “taboos”)

### *Topic 3: Methods of preparation, consistency and energy density*

Reason for exploring this topic:

To identify if low energy density of complementary foods is a problem in the program/project area. This cannot be determined through the KPC itself. Because frequency of feeding recommendations are based on a minimum energy density, KPC results for frequency of feeding will be interpreted differently if energy density of foods is inadequate. This information can also help planners prioritize intervention activities.

As noted, porridges and gruels should not be very thin and watery; for example, they should not flow easily through a bottle with nipple; quantitatively, energy density should be at least 0.8 kcals/gram.

#### **Box 10. Topic 3: Methods of preparation, consistency, energy density**

Examples of aspects to explore:

- Identify the foods most commonly given to infants/children 6-23 months
  - Include porridges, gruels, and adult forms of the staple food if given
  - Include any other special foods for this age group
  - Include snacks or between-meal feeds commonly given
- For the most commonly prepared foods, learn method(s) of preparation and ingredients used
  - What are the ingredients and steps in making the dish?
  - Any fermentation or germination steps?
  - How long do the most common foods take to prepare?
  - What is the consistency? (Liquid, semi-liquid? Stiff porridge? Can it be drunk? Does it flow off a spoon?)
  - How much do preparation method and consistency vary between women?
  - How much do the ingredients vary?  
(Between households, seasons, etc.)
  - How is it usually fed (By cup? Bottle? Spoon? By hand?)
  - Calculate energy density (kcals/gm) from the most common recipes and for the most common snacks<sup>a</sup>

<sup>a</sup> Calculation of energy density involves the following steps: Arrange to observe mothers prepare the most common porridges, soups, etc. Weigh each ingredient that provides energy (water and spices/seasonings do not need to be weighed). Weigh the total quantity of food produced. Choose a set of food composition tables (e.g., food composition data tables are available in the WorldFood Dietary Assessment System, a public domain program available at [www.fao.org/infoods/software/worldfood.html](http://www.fao.org/infoods/software/worldfood.html); food composition tables are also available from the USDA Nutrient Data Laboratory at [www.nal.usda.gov/fnic/foodcomp/](http://www.nal.usda.gov/fnic/foodcomp/)). For each ingredient, calculate energy (kcals); sum kcals from all ingredients and divide by weight of food produced (in grams). Alternatively, if observation is not possible, make calculations based on recipes gathered from mothers in the area. However, it is difficult for many people to accurately estimate the quantities they use in preparing food, so observation is strongly preferred. Also, when recipes are used, foods must usually be prepared in order to weigh the cooked product, as this is very difficult to estimate based on recipes. For an example on how the process was used in Haiti, see Menon et al., forthcoming.

#### Topic 4: Amounts fed to young children 6-23 months

Reasons for exploring this topic:

1. Recommendations for frequency of feeding depend on a “feed” being at or near gastric capacity – that is, the amount a child can eat based on the size of his/her stomach. Information from the questions below will help managers interpret data on frequency of feeding;
2. To help the team define what counts as a “feed”; and
3. To identify and “flag” foods that may be given or consumed in very small amounts (e.g., a teaspoon of milk in a cup of tea; a small piece of tomato in a bowl of thin soup); this will guide probing on the food group recall and may ensure that condiment sized portions are not recorded.

#### Box 11. Topic 4: Amounts fed to young children

Examples of aspects to explore:

- Can women show a typical amount infants/young children are usually fed?
  - Use various containers in home to determine
  - Discuss typical amounts of various foods for different ages
  - If possible, visit homes to observe amounts being fed
- When not sick, does the child usually eat all the food offered? (Most of it? Half? Less?)
- How does the caregiver know if the child is hungry?
- How does the caregiver decide how much to feed?
  - A set amount? A share of what is available? Until the child is satisfied? Until time or patience runs out?
  - How does this change with the age of the infant or child?
- When does the caregiver consider that the child has been fed?
  - Only when staple food is given?
  - When the child eats until s/he is full?
  - Does it count when a child feeds him/herself a snack?
  - When a child shares someone else's food?
- How do caregivers describe appetite and lack of appetite?
- How do they know when the child has had enough (caregiver's perspective on what is enough)?
- How do they know when the child is full or satisfied (i.e., based on what cues from the child)?
- How often does food scarcity determine the child's portion size?
- Does food scarcity affect the amount of staple food fed to the child? Other foods? Both?
- Does food scarcity delay the introduction of complementary foods?

Once answers are available covering these four topic areas, the food group lists can be adapted, and suggested probes can be developed for the Module 2 questions. The foods listed on the food group recall should include all widely available foods that belong in the group (for example, all foods made with grain that are eaten in the area), even if some people have indicated that certain foods are not (or should not be) fed to young children.

The result of this process should be a clear and specific list of foods, using local terms that will be understood by caregivers. One PVO reported excellent results using photographs of all common foods, which were laminated with plastic and held together on a ring. This allowed enumerators to show caregivers each food as they asked about them.

Foods that are totally unavailable in the local area do not need to be included on the list (for example, orange-fleshed sweet potatoes are totally unavailable in many areas). However, if a project plans to improve access to and/or promote consumption of specific foods, these foods should be included in the list, even if households have had little access to date. They should be included in order to establish a zero or near-zero baseline for the pre-project proportion of young children eating the food.

In addition to adapting the questionnaire based on grounded knowledge of local practices, projects may want to adapt the questionnaire to capture information specific to any existing set of government recommendations for infant and child feeding. For example, as part of the Integrated Management of Childhood Illness (IMCI) program, many countries have participated in a process resulting in adapted feeding recommendations. To the extent that projects will be using or supporting use of existing counseling recommendations, any country-specific recommendations should be reflected in the questionnaire and indicators.

Finally, prior to fielding the survey, and usually during enumerator training, probing questions should be developed. Specific probes for the food group recall and the frequency of feeding question will depend on available foods, forms of food given to infants/young children, and local ideas about foods and meal patterns. However, several general suggestions are relevant when developing probes:

- *Develop probes in consultation with project staff and enumerators*<sup>33</sup>  
Share the information from the qualitative inquiry and come to training with some suggestions, but also listen to staff and enumerators. Reach consensus on a standard set of probes.
- *Address the issue of portion size while training on the food group recall question*  
The KPC questionnaire is not designed to capture information about portion size. However, condiment-size portions should not be recorded as “yes” for a food group on the food group recall. For example, when dried fish or fish powder is used in tiny amounts do not check the box for “fish”. It is not possible to specify here a complete set of rules or probes; rather the knowledge gained in the qualitative phase can be used

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<sup>33</sup> By “probes” we mean follow-up questions that the enumerator asks after the survey question, either because the respondent does not understand or is having difficulty answering, and/or to get more complete information.

during training as a basis for discussions with staff and enumerators. The group should agree on how to probe consistently to make sure condiment-size portions are not recorded as “yes” for the food group. To ensure consistent use of standard probes, they can be included as written follow-up questions on the adapted questionnaire.

- *Address the issue of mixed foods while training on the food group recall question*  
Enumerators should know that when a mixed dish is eaten by the child, all the food groups included in the mixed dish should be marked “yes.” For example, if a child eats thick porridge to which an egg is added both the “grain” group and “eggs” should be marked. If the child eats a sauce made with oil, cassava leaves, and a substantial amount of groundnut flour, all three groups should be marked. Once again, local knowledge of commonly eaten mixed foods should guide discussions during training.
- *Reach consensus on what counts as a “feed” for the frequency of feeding question*  
Depending on the local meal pattern, typical snacks, etc., reach consensus on what counts as a feed for infants/young children. Develop a set of probes to help caregivers remember the number of times the child was fed (or fed him/herself), based on this definition of a feed. Several specific suggestions are made on the suggested revised questionnaire.

Once the Module 2 questions are appropriately adapted, the suggested KPC indicators can provide a very good picture of key feeding practices in the project area, both at baseline and in later assessments.

## 6. OPTIONS FOR PRESENTING INFANT AND CHILD FEEDING RESULTS

This section will demonstrate options for presenting the information available from Module 2 of the KPC. The simplest possible presentation of information would consist of descriptive statistics for the subset of indicators selected by the project for assessing objectives. For example, if three indicators were chosen for assessing progress, results could be described as simply as:

- 43% of infants 0-5 months were exclusively breastfed yesterday
- 39% of those 6-23 months ate at least the minimum number of times appropriate for age yesterday
- 25% of children 6-23 months had meat, organ meat, poultry, fish or eggs yesterday

However, in many cases project staff and others may value a more complete descriptive presentation of results. This section provides some options for such a presentation. While all the information could be presented in tables, we focus on providing examples of useful figures. All figures shown here can be constructed using the output from the Epi Info analysis program provided in Appendix 8.

In addition to the examples provided here, project staff may want to examine specific comparisons (e.g., comparisons by sex of the child, by maternal education level, by other maternal or household characteristics, geographic areas or agroecological zones, etc.). We do not present such comparisons, because the appropriateness will vary by situation. For example, in areas where there has never been evidence of gender bias in feeding, it is generally not very informative to look at feeding by sex; in areas where the vast majority of women have no education, comparisons by education level are not useful. By contrast, in most situations comparisons by age of the child are very informative and some examples are presented below.

For most of the figures on the next pages, data are taken from recent *DHS+* surveys, and country and year of survey are indicated. For certain results (e.g., use of colostrum, certain food groups) questions were not included on the *DHS+* questionnaire, so illustrative data are used to show how the figures may help readers visualize results.

### Maternal recall of early feeding practices

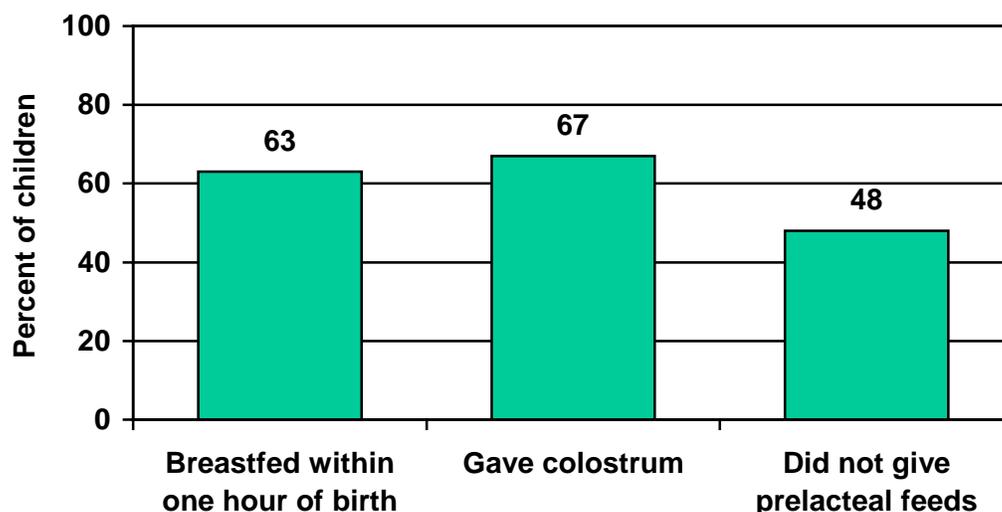
Module 2 provides information on several early practices. We suggest limiting reporting for these maternal recall questions to responses from mothers of children 0-11 months.<sup>34</sup> As children get older, maternal recall of early practices becomes less accurate. These results can be given in a table, or presented in bar chart as in Figure 2. Figure 2 shows the percent of infants breastfed within an hour of birth, given colostrum, and *not* given prelacteal feeds (i.e., all three

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<sup>34</sup> We suggest *reporting* only data from mothers of children 0-11 months. The question may be asked of all mothers. This is because many times it is preferable to limit the number of age-based filters on a questionnaire; when questions are brief and simple it may be easier to ask the question of all mothers, but report the results for a subset. However, when projects employ parallel sampling, questions on early feeding practices can be left off questionnaires that are specifically designed for children 12 months and older.

show the positive practice). When many women report giving prelacteal feeds, it can be useful to look more specifically at what was given (questions 5A – 5X on Module 2 of the KPC 2000+ questionnaire).

**Figure 2. Early feeding practices: responses from mothers of infants 0-11 months<sup>a</sup>**



<sup>a</sup> Data for initiation of breastfeeding and avoidance of prelacteal feeds are taken from the Benin *DHS+* (2001). No *DHS+* data are available on use of colostrum, so illustrative data are used.

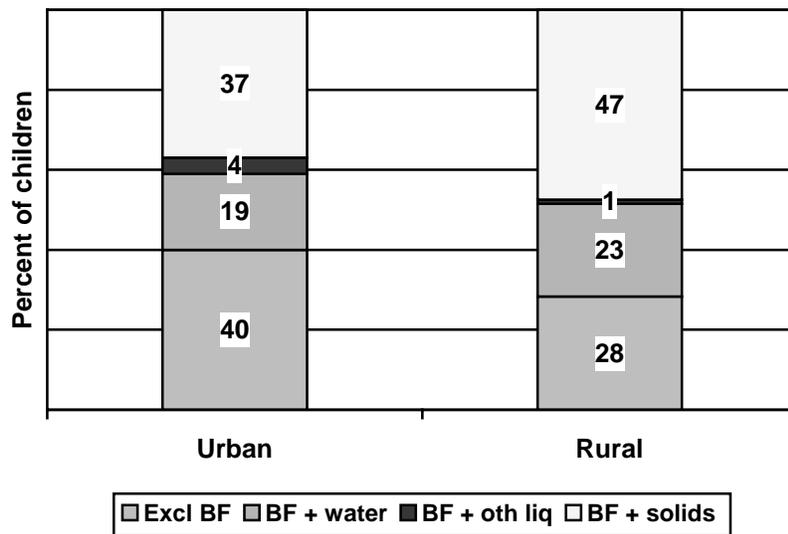
### Current breastfeeding practices for 0-5 month old infants

The indicator for exclusive breastfeeding is a single proportion (percent of infants aged 0-5 months who were fed only breastmilk in the last 24 hours). Projects with a focus on breastfeeding may also want to look at the following:

- Percent of infants 0-5 months not breastfed
- Percent of infants 0-5 months given only breastmilk and water yesterday
- Percent of infants 0-5 months given only breastmilk and other liquids yesterday
- Percent of infants 0-5 months given solid food yesterday

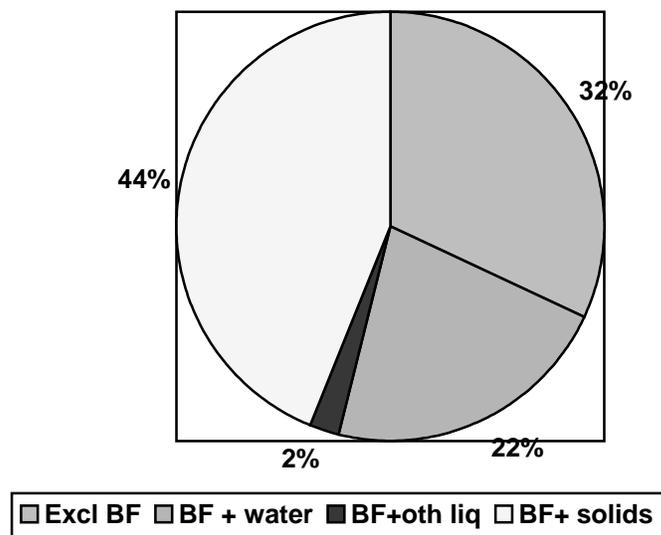
These additional statistics give a clearer picture of how far current practices are from the ideal (exclusive breastfeeding) and may also help focus interventions. These statistics are sometimes presented in the form of a “stacked bar chart,” as in Figure 3. The stacked bar chart is particularly useful when results from a number of areas are being presented (or when other comparisons are being made). When no comparison is being made, a pie chart (Figure 4) can be used instead.

**Figure 3. Feeding practices for infants 0-5 months, by area of residence (Option 1) (Example data from Zimbabwe DHS+ 1999)**



In the Zimbabwe DHS+ (1999) all infants 0-5 months were breastfed, so there is no category for “not breastfed” in Figure 3. In other areas, the stacked bar chart, and the pie chart below, would include a category for “not breastfed”.

**Figure 4. Feeding practices for infants 0-5 months (Option 2) (Example data from Zimbabwe DHS+ 1999)**

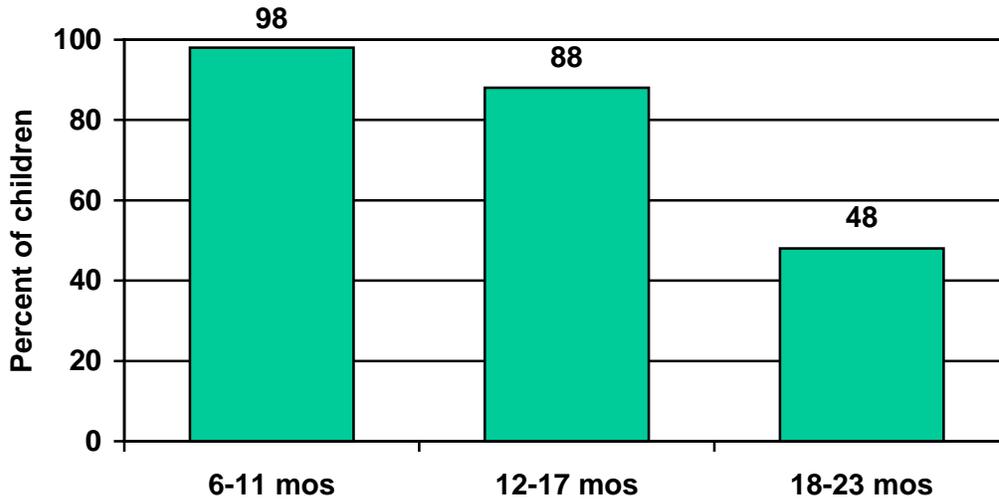


When the proportion of infants being fed either liquids other than water and/or solids is high, project staff may also want to examine output for the various food and liquid groups, to determine which foods and liquids are being given to young infants.

### Continued breastfeeding for infants and children 6-23 months

The three suggested indicators for continued breastfeeding can be presented as a bar chart, by age group (see Figure 5). Figure 5 shows example data from the Zimbabwe *DHS+* (1999).

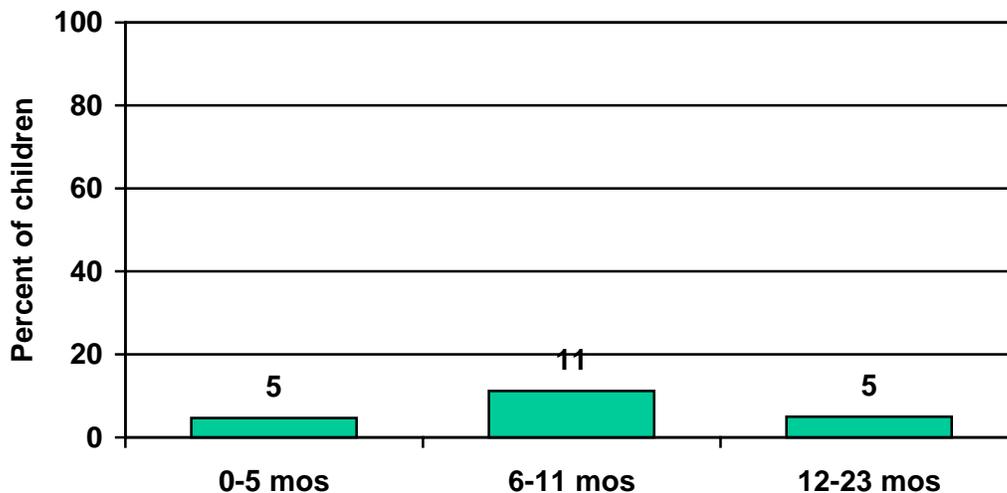
**Figure 5. Continued breastfeeding, by age group  
(Example data from Zimbabwe *DHS+* 1999)**



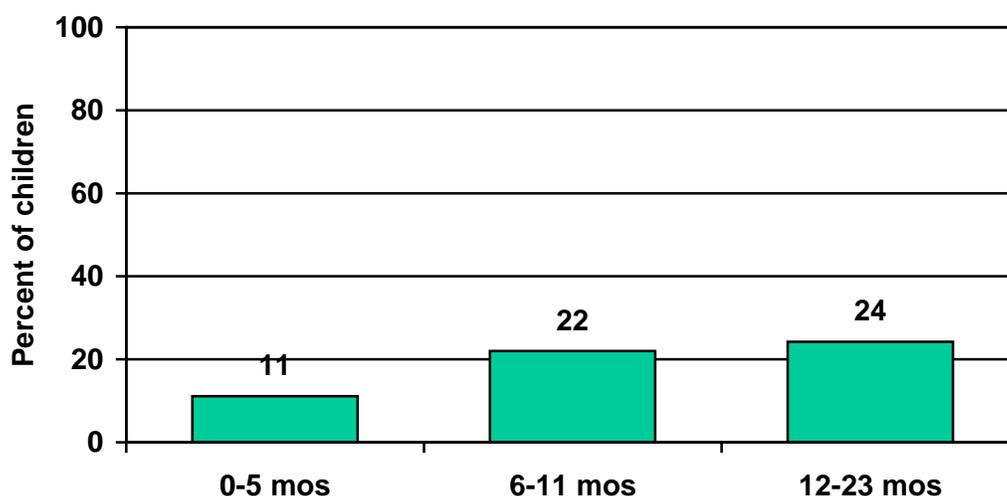
### Bottle use

The suggested indicator for bottle use is the percent of infants 0-11 months old who were given anything by bottle yesterday during the day or at night. Again, depending on the situation, it may be useful to look at bottle use by age group, and also to look at bottle use among older children (12-23 months of age). Figure 6 shows example data from all children 0-23 months in the Zimbabwe *DHS+* (1999) and Figure 7 shows data for rural children only from the Peru *DHS+* (2000).

**Figure 6. Bottle use by age group (Example data from Zimbabwe *DHS+* 1999)**



**Figure 7. Bottle use by age group, rural children only  
(Example data from Peru DHS+ 2000)**



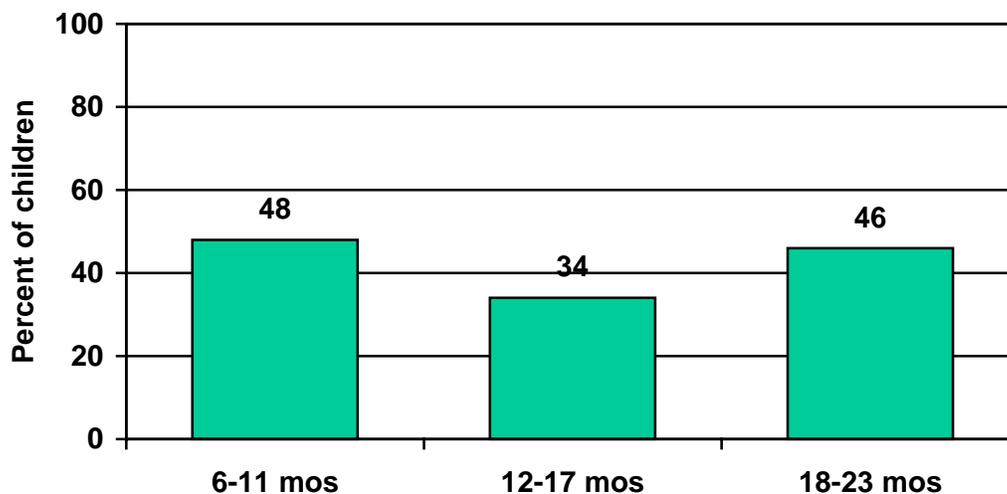
In the case of both Zimbabwe and Peru, bottle use was nearly identical among 12-17 and 18-23 month old children. Therefore these two groups were presented together. The Epi Info analysis program in Appendix 8 generates statistics for both 6-month age groupings and 12-month age groupings, so that either is an option for presentation.

### **Frequency of feeding for infants and children 6-23 months**

The frequency of feeding indicator is also a single proportion: the percent of children aged 6-23 months who ate at least the minimum recommended number of times yesterday. As described previously, the new Guiding Principles recommend that infants 6-8 months be fed 2-3 times per day (with additional snacks) and that those 9-23 months be fed 3-4 times per day (with additional snacks).

Results for frequency of feeding can be presented as an overall statistic, and by age group. Once again using data from the Zimbabwe DHS+ (1999) to illustrate, 42% of children aged 6-23 months ate at least the recommended number of times yesterday. Figure 8 shows results by age group.

**Figure 8. Percent of children who ate at least the minimum recommended number of times yesterday, by age group (Example data Zimbabwe DHS+ 1999)**



The Guiding Principles recommend that infants 6-8 months should be fed a minimum of 2 times, while children 9-23 months should be fed a minimum of 3 times. However, in Figure 8 data are not presented separately for infants 6-8 months of age, because in most KPC surveys, the number of children in this very narrow age group would be too small. The smaller proportion of children eating the recommended number of times in the 12-17 month age group reflects the fact that the recommendation changes by age group, with more frequent feeding recommended at 9 months and above.

### Liquids yesterday

Questions about which liquids the child had yesterday are useful in several ways. These questions are needed in order to define the groups shown in Figures 3 and 4, above. Presentation of other results from these questions will depend on local circumstances. For example, in areas where milk is fairly available, the proportion of children having milk yesterday is important. This is particularly important for non-breastfed children. Milk can be looked at separately, or as part of a dairy group (see below). As another example, in some areas there may be concern that coffee or tea is widely given to young children; in other areas the use of thin soups for complementary feeding may be a concern.

The Epi Info analysis program in Appendix 8 produces descriptive statistics for each liquid or group of liquids on the questionnaire. In addition, information on commercial infant formula, milk other than breastmilk, and other dairy is provided separately for breastfed and non-breastfed children. Statistics are produced for all ages, for ages 0-5 months and for ages 6-23 months. Project staff can present information about any liquid of interest.

We particularly recommend that projects consider assessing and presenting results on dairy and formula for non-breastfed children. Non-breastfed children who receive neither formula nor milk or dairy are very unlikely to have adequate intakes of calcium and other nutrients.

Figure 9 shows example data from the Haiti *DHS+* 2000, where 32% of children 6-23 months were no longer breastfed, and formula use was somewhat prevalent; milk, cheese and yogurt are shown together as “dairy” since very few children had cheese or yogurt. In countries such as Haiti where formula use is somewhat common, it may be useful to assess what proportion of children received neither milk nor formula; this proportion is not shown here (and is not generated by the Epi Info analysis program in Appendix 8). However, the *minimum* proportion of children receiving neither is easily calculated from the Figure.

Figure 9 shows that *at least* 48% of the non-breastfed children received neither. That is, if there is no overlap, and none of the children who had dairy also consumed formula, and none of those who had formula had dairy, then the percent having one or the other can be summed (36% + 16% = 52%) This leaves 48% with neither dairy nor formula. If, as is likely, there was overlap, and some children had both dairy and formula, then the true percent receiving neither would be higher.

**Figure 9. Percent of non-breastfed children 6-23 months who had dairy or formula yesterday (Example data Haiti *DHS+* 2000)**

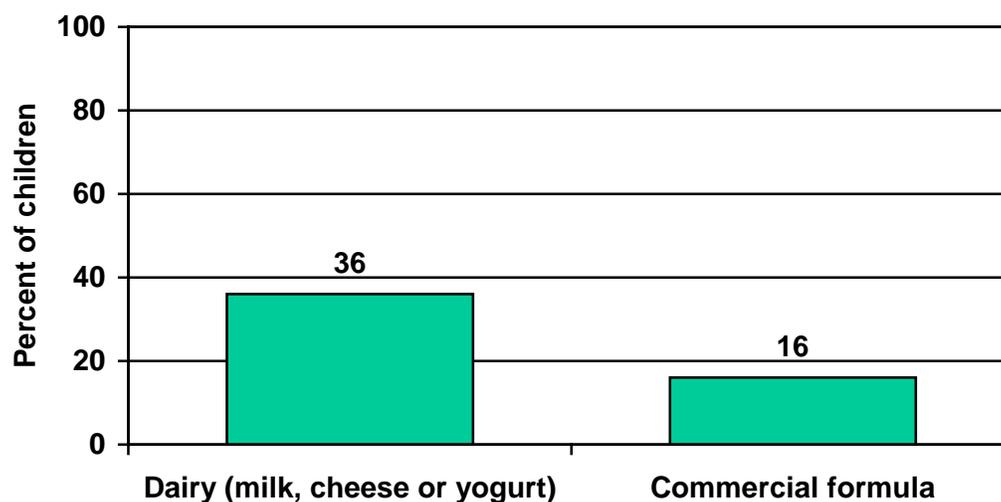
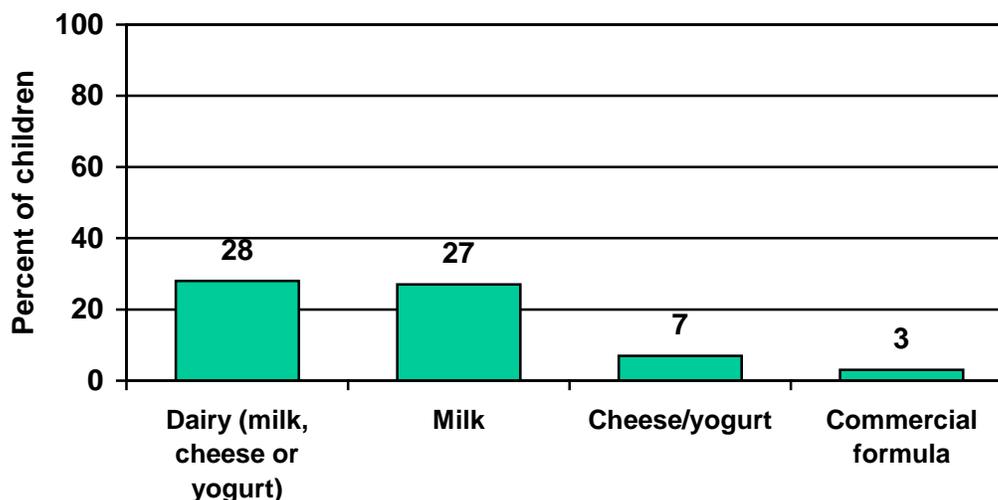


Figure 10 (next page) shows example data from the Rwanda *DHS+* 2000, where only 10% of the children were no longer breastfed, and formula use is very rare. Since only 28% of the children had dairy yesterday, and only 3% had formula, a *minimum* of 69% of the non-breastfed children had neither dairy nor formula the day before the survey.

**Figure 10. Percent of non-breastfed children 6-23 months who had dairy or formula yesterday (Example data Rwanda *DHS+* 2000)**

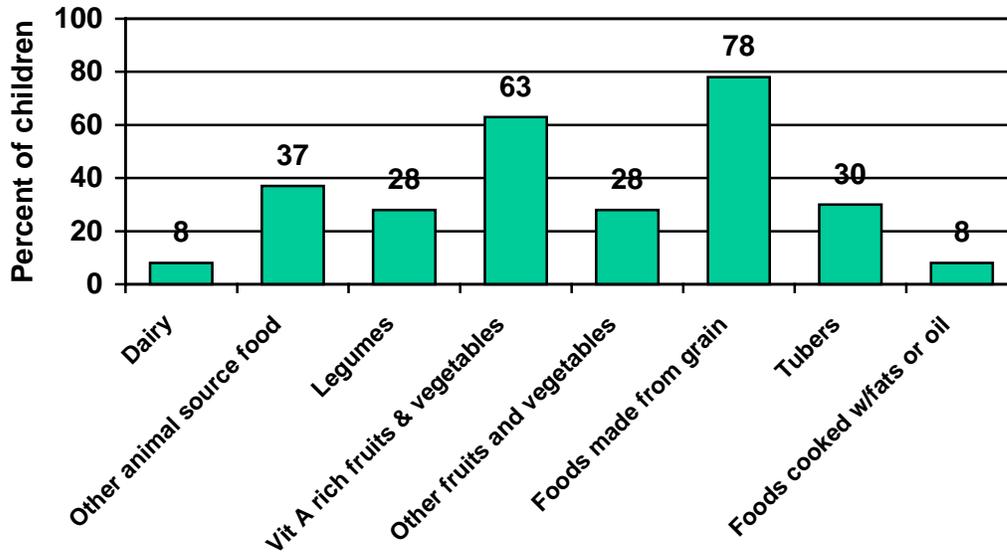


Note that the Figure above does show some overlap, and most of the children eating cheese or yogurt yesterday had also had milk. Thus the proportion who consumed dairy (28%) is not the sum of those having milk and those having cheese/yogurt, but instead is very close to the proportion who had milk.

### **Food groups eaten yesterday by infants and children 6-23 months**

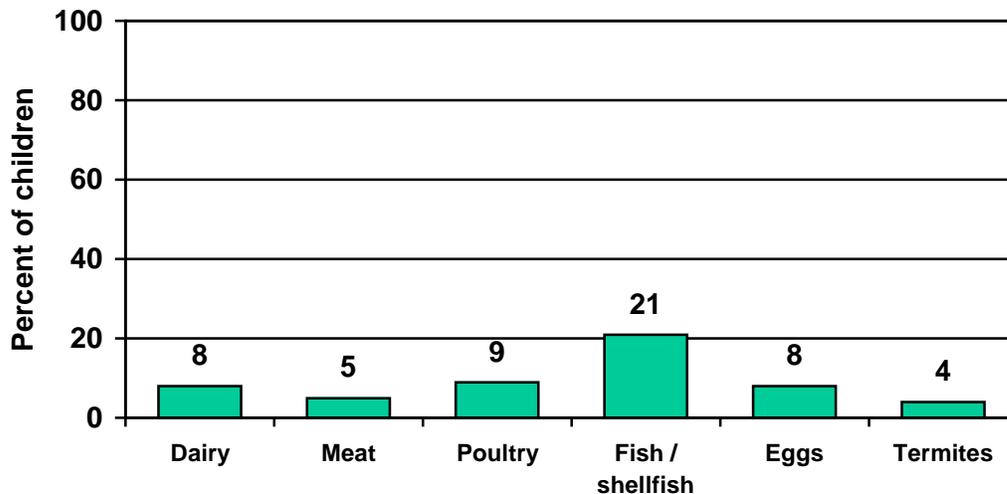
Information on food groups eaten yesterday can also be presented in bar charts. Figure 11 shows descriptive information for the food groups in the diversity variable; Figure 12 breaks down the animal source foods into more specific groups, and Figure 13 does the same for vitamin A-rich plant foods. Figures 11 and 13 use example data from the Malawi *DHS+* 2000. However, data for Figure 12 are illustrative only, because meat, poultry, fish, and eggs are grouped together on the *DHS+* questionnaire; we have suggested listing each of these four separately on the KPC.

**Figure 11. Percent of children 6-23 months eating various food groups yesterday (Example data Malawi DHS+ 2000)**



In Figure 11, the 37% of children who ate “other animal source food yesterday” may have had one or more of the following standard groups: meat, fish, poultry, and eggs. In addition, on the Malawi DHS+ questionnaire, termites are included in this food group. Figure 12 shows a more specific (illustrative) breakdown for types of animal source foods; this would be useful if project activities were aimed at increasing the proportion of children receiving one or more of the specific foods. Note that dairy is shown separately in both Figures. In addition to the groups shown in Figure 12, organ meats could be shown separately when this optional group is added to the questionnaire.

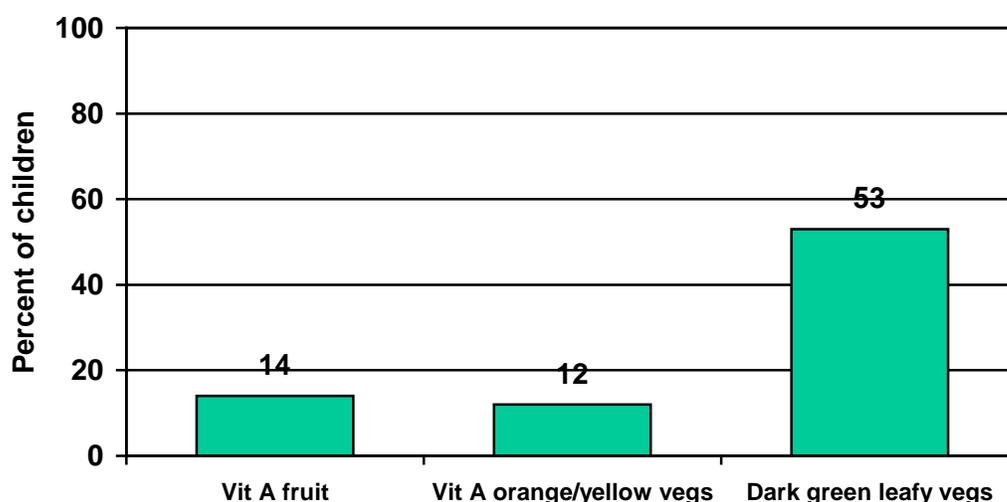
**Figure 12. Percent of children 6-23 months eating various animal source foods yesterday**



Depending on local circumstances and project foci, it may not be necessary to present this level of detail for animal source foods. The Epi Info analysis program in Appendix 8 also produces descriptive statistics for “flesh foods” (meat/organ meat, poultry, and fish grouped together) and for all animal source foods grouped together (dairy, eggs, meat/organ meat, poultry and fish).

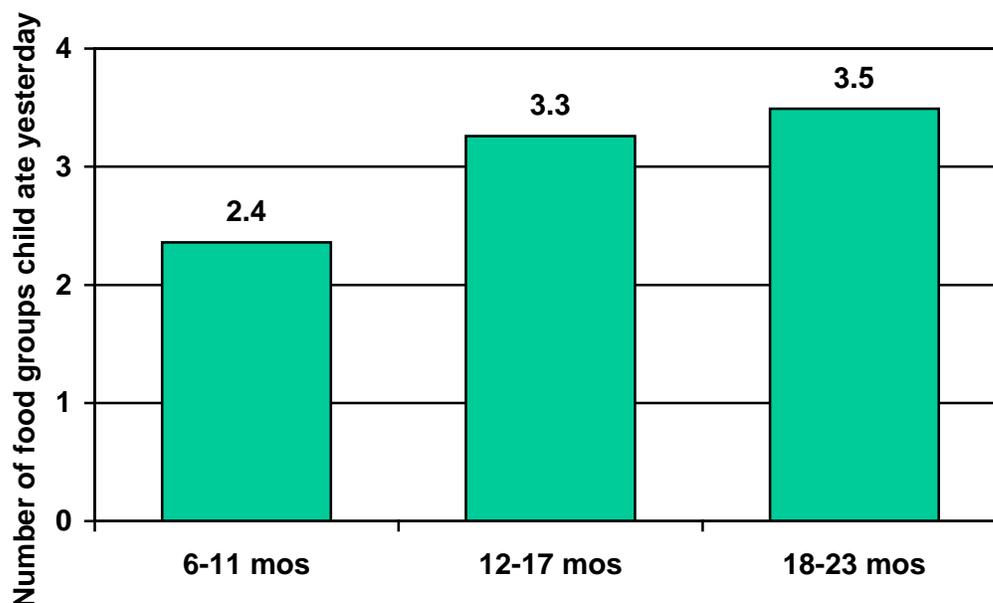
Figure 11 also showed the proportion of children eating any vitamin A-rich plant food yesterday (63%). Again using data from Malawi, Figure 13 shows the proportion eating each of the three sub-groups of vitamin A-rich plant foods. The sum of these three groups is greater than 63%, because some children will have had more than one yesterday (e.g., ripe mango and dark green leafy vegetables).

**Figure 13. Percent of children 6-23 months eating various vitamin A-rich plant foods yesterday (Example data Malawi DHS+ 2000)**



The indicator “dietary diversity” reflects one aspect of diet quality, and provides a summary measure of the information presented in Figure 11. As with the previous indicators, this can be presented as a single number, and by age group; output from the example Epi Info analysis program (Appendix 8) provides both. Figure 14 shows dietary diversity by age using the Malawi DHS+ 2000 as an example. The range of the diversity variable here is 0 to 7, since on the DHS+ questionnaire eggs are grouped with meat, poultry and fish. Nevertheless the data illustrate increases in diversity with age. The overall average for children 6-23 months was 3.0 food groups yesterday.

**Figure 14. Mean number of food groups eaten yesterday, by age group  
(Example data Malawi DHS+ 2000)**



### Young child feeding practices score for children 6-23 months

The young child feeding practices score can be presented as a single number, summarizing several feeding practices. Since an objective is to summarize practices across age groups, we do not recommend presenting the young child feeding practices score by age. Other comparisons – for example by child’s sex, maternal education, etc. – may be useful, depending on local circumstances.

To provide some context and illustrate the range of scores that may be encountered, we once again use recent *DHS+* data from a number of countries. Table 13 shows that the average (mean) young child feeding practices score ranges from 2.9 in Mali to 4.6 in Peru, out of the possible total score of 6. Table 13 also illustrates how average scores for the individual components, and their contribution to the total score, vary between countries. Finally, Table 13 also shows the percent of children 6-23 months receiving the highest possible score in each country.

**Table 13. Young child feeding practices score for 10 countries (DHS+ survey data)**

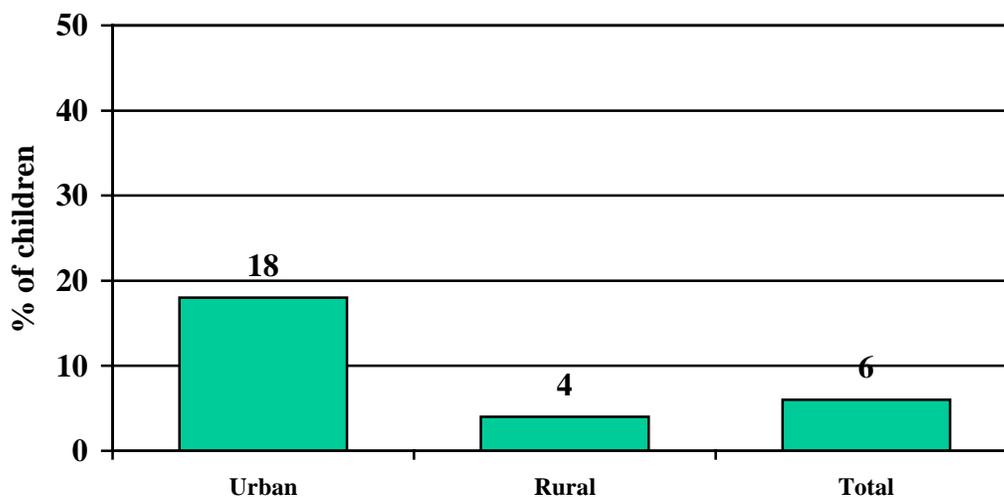
Country	Average score				Percent scoring "6"
	Continued breastfeeding (0,2)	Frequency of complementary feeding (0-2)	Dietary diversity (0-2)	Young child feeding practices score <sup>a</sup> (0-6)	
Benin	1.8	1.1	0.8	3.6	11
Ethiopia	1.8	1.1	0.5	3.4	4
Malawi	1.8	1.4	0.7	3.9	6
Mali	1.8	0.8	0.3	2.9	1
Rwanda	1.8	0.6	0.7	3.2	3
Cambodia	1.6	1.5	0.9	4.1	14
Nepal	1.9	1.5	0.7	4.2	11
Colombia	0.9	1.5	1.5	4.1	21
Haiti	1.4	1.0	1.2	3.5	4
Peru	1.5	1.6	1.4	4.6	30

<sup>a</sup> For some countries, the component scores do not add up exactly to the young child feeding practices score due to rounding.

### Good young child feeding practices prevalence

“Good” young child feeding practices are identical to a score of “6” on the young child feeding practices score and can be expressed as a single percent as in the last column of table 13 above. When managers wish to present differences between two or more groups, a bar chart may be useful. For example, as shown above, the total good young child feeding practices prevalence for Malawian children aged 6-23 months was 6%. Figure 15 compares the proportion of urban children and rural children fed using “good practices” to the total proportion for Malawi.

**Figure 15. Percent of children 6-23 months fed with selected “good practices” by area of residence (Example data Malawi DHS+ 2000)**



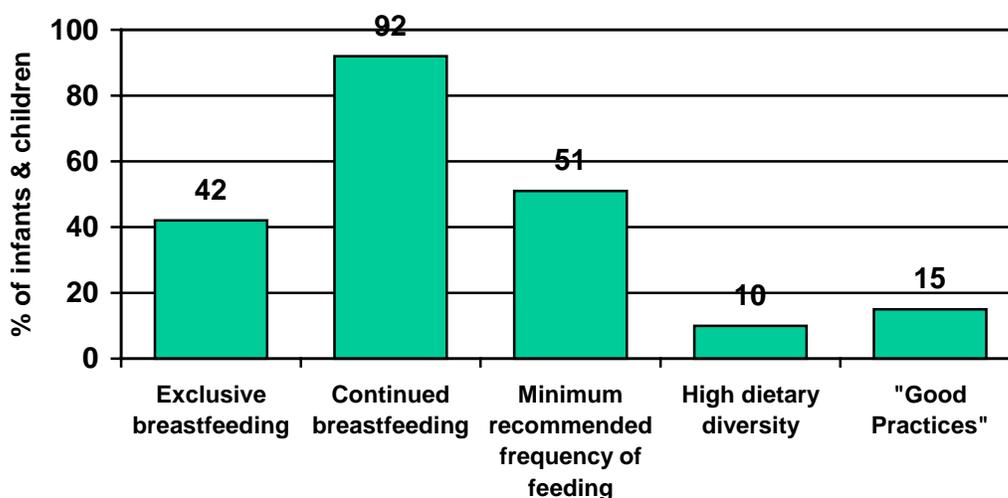
## Good infant and young child feeding practices prevalence

“Good” infant and young child feeding, which goes beyond complementary feeding to summarize selected practices across the 0-23 month age range, can also be presented as a single percent. In addition, a bar chart can be used to illustrate the proportion of children who are fed with each of the following four “good practices”:

- 0-5 months Exclusive breastfeeding of infants yesterday
- 6-23 months Continued breastfeeding
- 6-23 months At least minimum age-appropriate frequency of feeding yesterday
- 6-23 months High dietary diversity yesterday<sup>35</sup>

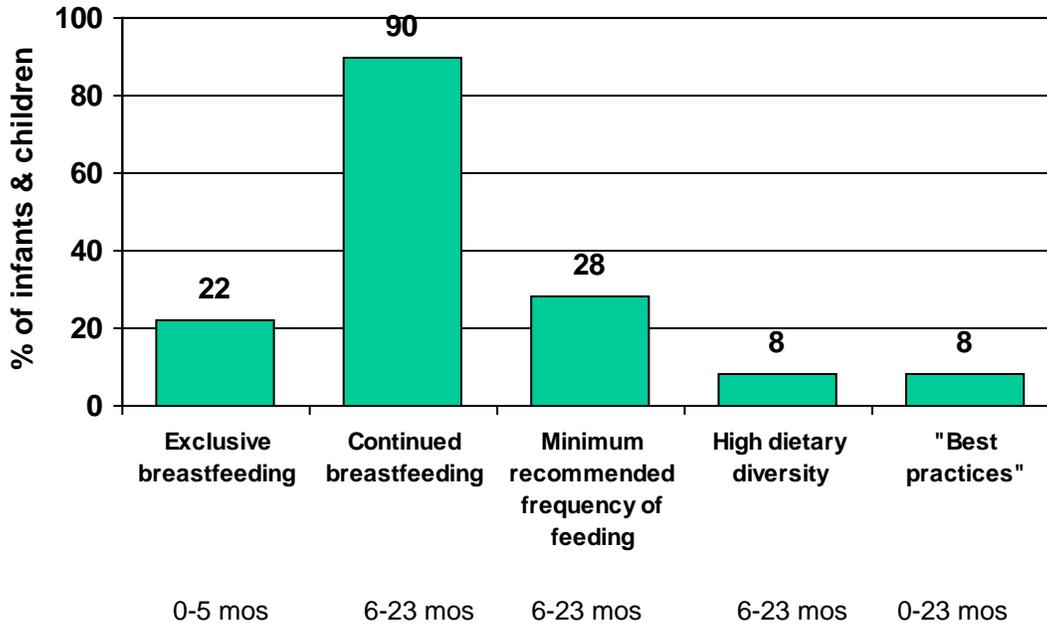
Figures 15-17 illustrate this using *DHS+* data from Malawi, Mali, and Peru. In Malawi, overall, 15% of infants and children 0-23 months were fed with “good practices”; this figure was 8% in Mali and 38% in Peru.

**Figure 16. Percent of infants and children fed with selected “good practices” (Example data Malawi *DHS+* 2000)**

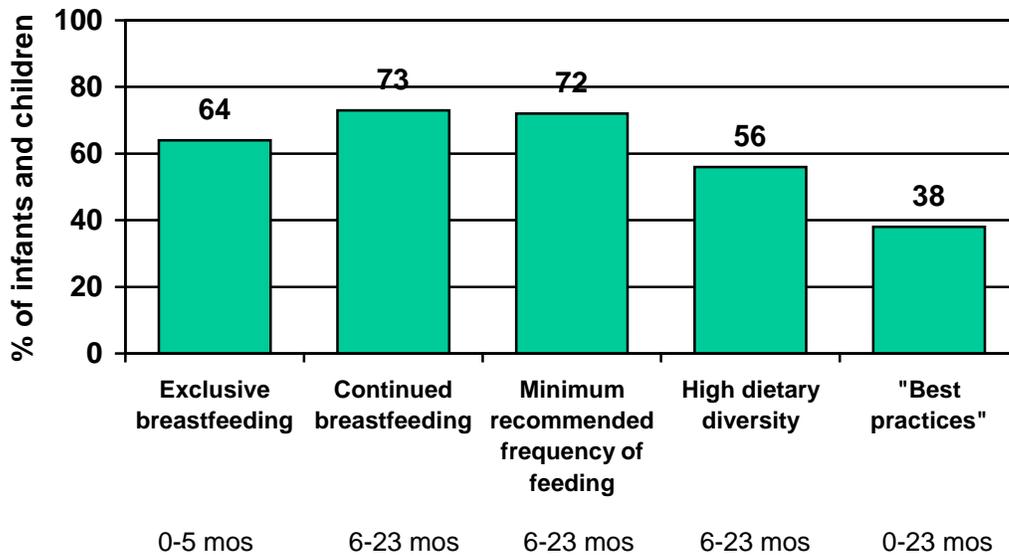


<sup>35</sup> We note again that although the first three of these four “good practices” are based on international recommendations, there is no recommendation for appropriate or optimal food group or dietary diversity. In Section 3 we detail our rationale for designating “low” “medium” and “high” dietary diversity groups, and we use *DHS+* data to illustrate the proportion of children in each diversity group receiving a variety of high-quality food groups yesterday (see Table 6). In order to construct the two summary indicators, cut-offs for food group diversity were required. We acknowledge that there is limited basis for establishing these cut-offs, and encourage further research on the relationship between various food group or dietary diversity indicators, use of cut-offs points, and nutrient adequacy.

**Figure 17. Percent of infants and children fed with selected “good practices” (Example data Mali DHS+ 2001)**



**Figure 18. Percent of infants and children fed with selected “good practices” (Example data Peru DHS+ 2000)**



## **Choosing an indicator to present summary results**

Use of the good infant and young child feeding practices prevalence measure will be more appropriate when project managers wish to summarize practices across the entire age range of 0-23 months. As compared to the young child feeding practices score, either the good young child feeding practices prevalence (6-23 months) or the good infant and young child feeding practices prevalence (0-23 months) may be simpler to present, because they can be shown as percents. However, as illustrated in Table 10 on page 31, in some countries very few children will be fed using “good practices” as defined here. In particular, increasing the percent of children with “high” diversity may be very difficult in some areas. Project managers in these settings may prefer the young child feeding practices score, which is presented as an average (mean). Increases from a low baseline may be better reflected by a change in a mean score, when managers feel it is unrealistic to reach “good” practices.

In cases where summary indicators are not needed, managers can select the subset of indicators for individual practices most relevant to project activities and priorities.

## **Summary**

Taken together, the descriptive analysis suggested here and the qualitative inquiry described in Section 5 can provide a wealth of information for program planning and for selection and refinement of program objectives. This information can also provide a sound foundation for later evaluations.

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## **APPENDIX 1: FEEDBACK FROM CORE PVO STAFF AND OTHER EXPERTS**

Any suggested indicators must meet the needs of CORE PVOs. Therefore, this task began with an input-gathering process. CORE PVO representatives – particularly those active in the Nutrition Working Group (NWG) – and other infant and child feeding experts were contacted during May-September of 2002. Initially, the chairperson of the NWG, Judiann McNulty, provided a list of key PVO contacts; in addition, FANTA staff suggested additional contacts from among CORE PVOs and other organizations working in the area of child nutrition/child survival. These contacts in turn suggested other people, and the list was allowed to snowball for several weeks. E-mails were sent to all contacts, asking if they would be willing and available for a phone interview, and interviews were conducted with as many contacts as possible.

CORE also hired a consultant, Joan Jennings, to contribute to this process by contacting additional PVO staff and by providing feedback on all drafts, based on her extensive experience doing nutrition surveys with both Title II and CSH projects. CARE Atlanta kindly allowed us to “piggyback” questions onto a survey that went out to relevant field staff, and provided us with the responses.

A list of people who shared ideas during this process, either in phone conversations or in writing, is provided at the end of this Appendix, along with a sample interview guide. In addition to those listed, participants at the October 2, 2002 CORE NWG meeting provided extremely valuable feedback on suggested indicators. While every effort was made to contact a range of PVOs, it is likely that small PVOs and PVOs with little experience in child nutrition remained underrepresented in this process.

Areas where there was general consensus about indicators (or where only one viewpoint was expressed) include:

- **New complementary feeding indicators should be optional**  
Any suggested indicators should be clearly identified as optional, since they will not be relevant for all projects. This would also argue against including any new indicators in the *Rapid CATCH*, at least at this time.
- **New complementary feeding indicators are needed**  
For those CSH projects that include complementary feeding components, additional indicators are needed and will be welcomed. Lack of indicators is one reason why question 8 (the food-group recall question) has been omitted from surveys.
- **Additional guidance on probing for both question 8 (food-group recall) and question 9 (frequency of feeding) would be useful**
- **A frequency of feeding indicator is a good idea**  
Most felt that an indicator for frequency of feeding, using question 9, would be very helpful. All agreed that the question should ask about solids as well as semi-solids (current version is semi-solids only).

However, several people raised concerns about data quality for this question. Concerns included bias (mothers giving “desirable” answers) and recall errors (children may “graze”, and it is difficult to remember how often they eat). In addition, several noted the need for clarification of the intent of the question (snacks as well as meals? should everything count?)

- **An indicator of dietary diversity may be useful, but this is a new idea**

Most felt that some kind of indicator of dietary diversity would be useful. However, this was a new idea to many people and the meaning and interpretation of the indicator should be clear. In particular, it must be clear that it is useful as a *relative* (“more food groups are better than fewer”), rather than an absolute indicator (“4 (or 5, or 6) groups is optimal”).

Also, in order for this to be a meaningful indicator, several noted the need to do some type of probing on quantity and give guidance on what counts as “yes” for the food group (examples: when very small amounts of milk are given in tea; when dried fish are used as a condiment, etc.).

- **There is interest in one or more animal-source foods indicator**

A number of people indicated that an indicator for animal-source foods in the child’s diet – including dairy products, eggs, meat and fish – and/or an indicator for nondairy animal source foods might be useful. The same issues on quantity (probing for “condiment-size” portions) apply.

- **Some PVOs/projects would like to have indicators derived from quantitative information on energy and/or micronutrient intakes**

A number of people indicated the need for much more detailed information on the nutrient content and nutrient adequacy of diets. However, it is not possible to get this level of information in the context of the KPC.

- **It is acceptable to suggest that some indicators are best tabulated by computer**

All PVO representatives indicated that survey results are tabulated by computer as well as by hand, and many asked that detailed computer tabulation instructions (for Epi Info) be included. Most said that it is acceptable to include *optional* indicators that are not convenient for hand tabulation. While hand tabulation is extremely important for a number of reasons (allowing participation in the analysis process, a quick turnaround on results, staff and/or community capacity development, etc.), the consensus was that this does not mean that *each* indicator in the KPC needs to be hand tabulated.

While there was general consensus on each of the points above, there was a lack of consensus on several issues:

- **Should there be more guidance on adapting the Module?**

Some PVOs indicated that they needed substantial technical assistance in adapting the questionnaire (e.g., the list of food groups), while others reported that this was not an issue.

- **Would a summary indicator for positive child-feeding practices be useful?**  
A summary indicator would combine information about continued breastfeeding, appropriate frequency of feeding, food-group diversity, etc., into one indicator. Such an indicator could potentially be particularly useful for advocacy with donors and others. A majority of respondents felt that this would be overly complex, and not useful to field staff. In contrast, the leadership of the CORE Nutrition Working Group strongly feels that a summary indicator may be useful, and suggests that such an indicator should be included in field tests.

In addition to specific questions about indicators, several other topics were discussed in some of the interviews. The nature and limitations of KPC nutrition information were discussed, as well as the critical need for *prior* qualitative information about infant and child-feeding practices.

Several people made the point that if a complementary feeding intervention is planned – or any nutrition intervention with an education or behavior change component – gathering qualitative information prior to the baseline is absolutely essential to program development; investing in this work prior to the baseline also means that KPC questions or other tools can be appropriately adapted with little additional effort.

Finally, the issue of the use of KPCs in evaluation designs was discussed both with PVO representatives and with other experts. PVO representatives were asked whether their organizations used KPCs only for baselines and initial program development, or whether they also used KPCs in follow-up surveys (mid-term or final), as components of evaluations. All reported using the KPC for both purposes. Appendix 3 provides a brief discussion of sample size issues when the suggested indicators are used in evaluation designs.

*Sample interview guide used to gather feedback on KPC 2000+ Module 2*

An interview guide was used to try to ensure that most of the same questions were covered with most people. But conversations were also guided by each person's particular interests and experience, and questions evolved over time. Some of the questions below were prefaced by explanations; these are omitted here. The following topics were covered in most conversations:

- How is the PVO currently using the KPC and/or KPC questions – as an early “snapshot” of practices, as part of evaluation design, in the context of monitoring (e.g., LQAS or sentinel methods)?
- Does the information provided by Module 2 – in combination with appropriate qualitative information – meet needs for information on complementary feeding? For prioritizing and planning complementary feeding interventions? For evaluation? If not, what is missing?
- What – if any – have been the difficulties in fielding this Module? How have these difficulties been overcome?
- How has the Module been adapted in the field? Have there been difficulties adapting the Module? Can field staff do this or do they need technical support for this task?
- How do you feel the frequency of feeding question has worked in the field? Is this question capturing information about meals only, or meals and snacks? Do you see any problem with changing this question so that it reads “solids and semi-solid foods” instead of just semi-solids?
- Would you like to see an indicator for age-appropriate frequency of feeding?
- What do you think of the idea of an indicator for dietary diversity?
- What other indicators of the quality of complementary feeding would be useful?
- What do you think about a single indicator combining various feeding practices (e.g., the proportion of kids still breastfed AND fed as often as recommended AND getting relatively diverse diets)?
- How do you see the current balance between the need for simple hand tabulations and computer-tabulated indicators? If some indicators may be awkward to hand tabulate, what should we do?

## APPENDIX 2: LIST OF CONTACTS

Name	Organization
Purushottam Acharya	CARE Nepal
Juan Carlos Alegre	Project HOPE
Luis Benavente	Formerly Project HOPE
Sandra Bertoli	Child Survival Technical Support
Sonia Blaney	World Vision Canada
Susan Burger	Independent, formerly Helen Keller International
Judy Canahuati	CARE Atlanta
Eunyong Chung	USAID
	BASICS (Basic Support for Institutionalizing Child Survival)
Lydia D'Alois	Curamericas and Food for the Hungry, International
Tom Davis	Brigham Young University, formerly Linkages Project
Kirk Dearden	Adventist Development and Relief Agency
Becky DeGraaf	Helen Keller International
Erin Dusch	CSTS
Donna Espeut	CARE Guatemala
Clara Aurora Garcia Gonzalez	LINKAGES
Agnes Guyon	National Institutes of Health
Pat Haggerty	World Vision
Tom Hall	Save the Children
Anurhada Harinaraan	Food and Nutrition Technical Assistance Project
Paige Harrigan	MOST (USAID Micronutrient Program)
Phil Harvey	Helen Keller – Cameroon
Nancy Haselow	CARE Bolivia
Yovanna Imaña	Independent
Joan Jennings	USAID
Sam Kahn	Concern International
Michelle Kouletio	CORE
Karen Leban	Save the Children
David Marsh	Mercy Corps
Judiann McNulty	Independent
Julie Mobley	ORC/MACRO DHS
Altrena Mukuria	World Vision Mozambique
Martha Newsome	International Eye Foundation
Gwen O'Donnell	CSTS
Michel Paque	SARA/SANA AED
Ellen Piwoz	Catholic Relief Services
Alfonso Rosales	World Vision
Dorothy Schefel	Save the Children
Eric Starbuck	Food and Nutrition Technical Assistance Project
Anne Swindale	NGO Networks
Joe Valadez	BASICS (Basic Support for Institutionalizing Child Survival)
	CARE Peru
Karen Van Roekel	CORE
Alejandro Vargas Vásquez	
Bill Weiss	

### **APPENDIX 3: SAMPLE SIZE ISSUES FOR COMPLEMENTARY FEEDING INDICATORS**

The purpose of this Appendix is to provide a few examples of the sample sizes needed to estimate the prevalence of practices, and to highlight the fact that sub-sample sizes within the narrow age ranges for some indicators may result in very wide confidence intervals.

Child survival and health project staff currently use KPCs for several purposes. Baseline KPC surveys help managers prioritize activities, based on the prevalence of various practices. When KPCs are used only for this purpose, managers may not need very precise estimates of prevalence. Wide confidence intervals do not preclude the use of the KPC for this purpose.

However, all the PVO representatives we interviewed reported that KPCs are also used to gather post-intervention data and as part of evaluation designs. KPCs can be used for this purpose, but it is important to define expectations for the survey carefully. For example, it is much harder to demonstrate *change* in indicators than to assess if an objective has been met. Larger sample sizes – and sometimes much larger – are generally required in order to assess change (see, e.g., Magnani 1997).

These issues are beyond the scope of this report, and are thoroughly addressed in several resources available at the CSTS website. These include:

- *Methodology and Sampling Issues for KPC Surveys* (Sarriot et al. 1999), which is part of the KPC 2000+ Toolkit;
- Training materials from the recent “Training of Survey Trainers” (Davis, Mobley, and Moses 2002).<sup>36</sup>

We leave aside the issue of assessing change, and focus instead on the less demanding task of assessing achievement of an objective. The terms and definitions used here are consistent with those used in the KPC 2000+. Sample size calculations for assessing achievement of an objective require managers to specify the following:

- **A rough estimate of prevalence.**  
The closer the true prevalence is to 50%, the larger the required sample size. For this reason, when there is no rough estimate available, managers often use 50% in order to ensure an adequate sample size for any true level of prevalence.
- **A “confidence-level” which is a statement about how certain the result must be.**  
Managers often want a confidence-level of 95%, which means that 95 times out of 100, the true prevalence will be within an estimated confidence interval.

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<sup>36</sup> The link for the draft training materials is: [www.childsurvival.com/documents/workshops/tost/TOSTreport.cfm](http://www.childsurvival.com/documents/workshops/tost/TOSTreport.cfm)

- **An acceptable confidence interval (CI).**

For example, the manager may need to know the true prevalence within  $\pm 5$  percentage points, or within  $\pm 10$  percentage points. This is also called the precision of the estimate. Box A1 provides an illustration of the importance of precision when KPC indicators are used to evaluate progress towards achieving objectives.

**Box A1. Example of the role of indicator precision in evaluating progress towards objectives**

Suppose a baseline survey showed the following:

Estimate:	60% $\pm$ 15% of children aged 20-23 months were breastfed
Confidence interval:	45% - 75%
(True value:	47%)

Note that the true value cannot be determined from a sample, only the estimate.

On the basis of the baseline and other information, maintenance of breastfeeding through the second year of life was identified as a priority, and intervention activities were designed and implemented. For the follow-up survey, parallel sampling<sup>a</sup> was used to greatly increase the sample size in this age range in order to get a more precise estimate within  $\pm 8$  percentage points.

Now suppose a post-intervention survey showed the following:

Estimate:	55% $\pm$ 8% of children aged 20-23 months were breastfed
Confidence interval:	47% - 63%
(True value:	60%)

In truth, there was a 13 percentage-point increase in the prevalence of breastfeeding for this age group – a result that might please managers, if known. However, even with a more precise estimate at follow-up, the estimate declined from 60% to 55%, and the post-intervention confidence interval was entirely within the baseline confidence interval. This is a somewhat extreme example (baseline true value at the low end of the CI and follow-up true value at the high end of the CI), but nevertheless is possible, and highlights a possible cost of poor precision.

<sup>a</sup>In parallel sampling, the same households and mothers are surveyed using two or more questionnaires; each questionnaire corresponds to an age group of interest for specific indicators. Sample sizes are calculated separately for each age group/questionnaire, and interviews continue until the cluster quota is met for each questionnaire. This means that in some households, fewer questionnaires will be needed, resulting in shorter interviews (e.g., when sample size requirements are met for some but not all age groups). This is similar to over-sampling. See Sarriot et al., 1999, for further discussion.

Table A1 (next page) gives some examples of sample sizes needed, when simple random samples are used. The Table gives minimum sample sizes to achieve precision of  $\pm 10$  percentage points, and  $\pm 8$  percentage points, given confidence-levels of 95% and 90%. We show sample sizes when the (unknown) true prevalence is 50%, and 30%.

**Table A1. Examples of sample sizes for simple random samples**

Confidence level	Estimated prevalence and confidence interval			
	50% ± 10%	50% ± 8%	30% ± 10%	30% ± 8%
95%	96	150	81	126
90%	68	106	57	89

Sample sizes for simple random samples can be determined very easily in Epi Info (either DOS or Windows versions), using the “STATCALC” utility. However, simple random samples are not used for KPC surveys; cluster samples or, increasingly “Lot Quality Assurance Sampling” (LQAS) are often used. Calculations for LQAS samples are the same as for simple random samples.<sup>37</sup>

When cluster samples are used, the sample sizes in Table A1 must be multiplied by a factor called a “design effect”. This procedure corrects for the fact that practices (such as feeding practices) may be similar within study clusters – causing a loss in sampling efficiency as compared with a similar-size simple random sample. Because of this loss in efficiency, cluster samples are likely to have wider confidence intervals than are similar-size simple random samples.

The design effect is usually unknown, because it is a ratio of the variance of the cluster sample to the variance of a simple random sample, and information to calculate both is often unavailable. When the design effect is unknown, a standard factor of “2” is often used for 30-cluster samples. That is, the sample sizes in Table A1 need to be doubled when 30-cluster samples are used and a design effect of “2” is assumed.

Although design effects are usually unknown prior to the survey, they may be estimated after the survey. Estimated design effects from seven KPC surveys have been calculated for a variety of indicators (Weiss 1997). The observed design effects for various indicators ranged from 0.6 to 2.8, with a mean of 1.4. Design effects were calculated for the “complementary feeding rate” indicator, and ranged from 0.8 to 1.4. These relatively low design effects are encouraging, although it is not possible to say if they are representative. We have no information on observed design effects for our new suggested indicators.

Managers may want to calculate sample sizes for a number of key indicators based on the expected prevalence, desired precision, assumed design effect, etc. When planning a survey, calculated sample sizes (for number of households to visit) should be inflated to account for households without a child in the target age range, possible refusals to participate, and post-survey data losses (for example, when clearly inaccurate questionnaires or measurements are excluded). The Food and Nutrition Technical Assistance Project *Sampling Guide* (Magnani, 1997) provides guidance on this.

<sup>37</sup>LQAS uses very small samples so that a manager can judge whether or not prevalence of a behavior has reached a performance benchmark. These judgments are generally made in each of the smaller management units that comprise a project. However, when the various LQA samples are added together the resulting data can be treated as a stratified random sample – the calculations for estimating a confidence interval are the same as for simple random samples. For more information about LQAS see Valadez, 1991, and Valadez et al., 2002.

LQAS is now used by a number of PVO projects; the main objective of this sampling method is to provide useful monitoring data for management. However, another advantage of LQAS lies in the fact that sampling is more dispersed than in cluster sampling, and cluster-sample design effects are not an issue. LQAS samples of any given size generally provide more precise estimates than do cluster-survey samples of the same size. As noted above, when LQAS samples are used to calculate prevalence estimates, sample size is calculated the same way as for simple random samples.

Taking into account the information in Table A1, even with the low design effects observed by Weiss or with LQAS samples, it still appears that sample sizes under 100 are unlikely to yield desirable precision in estimates in many cases. In past KPC surveys, this means that confidence intervals for certain indicators with narrow age ranges have probably been very wide. In the current tabulation plan, the infant- and child-feeding indicators with narrow age ranges are the “complementary feeding rate” (ages 6-9 months) and the “continued breastfeeding” indicator (ages 20-23 months).

This issue also relates to our suggested breastfeeding indicators using 6-month age spans (6-11, 12-17, and 18-23 months). Wider age spans are unlikely to help managers pinpoint the age where continued breastfeeding begins to decline. But managers should realize that confidence intervals may be wide for these indicators, unless sample sizes are increased above the previous standard of approximately 300.

## APPENDIX 4: MODEL QUESTIONNAIRE

The questionnaire on the next several pages follows the format of the current KPC Module 2 questionnaire. If it were a “stand-alone” survey several changes would be necessary. For example, there is no space on the questionnaire for interview date, interviewer’s name or code, supervisor check off, etc. “Age” is recorded as age in months, whereas it is preferable to record the date of birth (when available) and date of interview; these two pieces of information are recorded elsewhere on the KPC.

### *Adapting the questionnaire*

The KPC questionnaire is meant to be adapted to meet the needs of projects. With the exception of the *Rapid CATCH* questions, project staff are advised to select only those questions relevant for their projects.

Questions 8 and 10 on this questionnaire (liquids and foods the infant or child had yesterday) require additional adaptation. Whoever works to adapt the questionnaire should consult local staff and nutritionists and make the food and liquid group descriptions as concrete and specific as possible. The model questionnaire gives a number of examples in each category. These are only examples, and the exact list for each category should reflect locally available foods.

Try not to leave categories abstract or vague (e.g., “other fruits and vegetables”). Instead, say “other fruits and vegetables such as....” and then list all that are commonly eaten in the area. Similarly, it is better to list specific, locally available dark green leafy vegetables rather than to say “dark green leaves” or “dark green leafy vegetables.”

If there are questions about which foods belong in the three vitamin A-rich plant food groups – orange/yellow vegetables, vitamin A-rich fruits, and dark green leafy vegetables – consult a local nutritionist. Foods should provide, at minimum, approximately 100 retinol activity equivalents (RAEs) per 100 grams edible portion.

The last three food categories (organ meats, small protein food such as insects, and palm products) can be left off the questionnaire in areas where they are not available. Similarly, on question 8, the optional question about liquid and semi-liquid traditional medicines can be left off in areas where these are not given to infants and young children.

The optional questions about fortified foods are meant as examples; they are not used in the standard tabulation plan. However, in areas where families have access to fortified foods, we recommend that questions and project-specific indicators be included, as fortified products can be nutritionally very important.

### *A note on coding*

Throughout the questionnaire, and in the programs and codebooks that follow, we have followed the convention of using “1” as the code for “yes”, “0” as the code for “no”, and “8” as the code for “don’t know”. Using “1” and “0” (instead of, for example, “1” and “2”, or “Y” and “N”) minimizes the amount of recoding needed in the Epi Info analysis program (Appendix 8). Our priority was to keep this program as simple as possible. Those who wish to use other codes, and/or use the Epi Info Y/N variable type for data entry will need to adapt the programs.

The current KPC questionnaire includes an instruction to enumerators to place a check mark for each food or liquid the child ate or drank yesterday (see questions 8 and 10 on the model questionnaire). This does not provide any way to distinguish between answers of “no”, “don’t know”, or missing data (e.g., the enumerator accidentally skipped a food category). We have not changed this aspect of the questionnaire, but users may wish to. At a minimum, we do recommend that data entry staff enter a “1” for “yes” when the food or liquid category is checked, and a “0” for no, if there is no check by a particular food or liquid group.

For those who do change the way these responses are recorded and coded, and add codes for “don’t know” and/or “missing”, the Epi Info analysis program in Appendix 8 allows for this, and recodes anything other than “0” or “1” to missing before calculating statistics.

## BREASTFEEDING AND INFANT/CHILD NUTRITION

### IDENTIFICATION

CLUSTER NUMBER ..... | | |

HOUSEHOLD NUMBER ..... | | |

RECORD NUMBER ..... | | |

AGE OF CHILD (IN MONTHS) ..... | | |

SEX OF CHILD (1=MALE, 2=FEMALE) ..... |

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
1	Did you ever breastfeed (NAME)?	YES ..... 1 NO ..... 0	8
2	How long after birth did you first put (NAME) to the breast?	IMMEDIATELY / WITHIN FIRST HOUR AFTER BIRTH ..... 1 AFTER THE FIRST HOUR ..... 0 DON'T REMEMBER / DON'T KNOW .... 8	
3	During the first three days after delivery, did you give (NAME) the liquid that came from your breasts?	YES ..... 1 NO ..... 0 DON'T KNOW ..... 8	
4	During the first three days after delivery, did you give (NAME) anything else to eat or drink before feeding him/her breastmilk?	YES ..... 1 NO ..... 0 DON'T KNOW ..... 8	6 6
5	What did you give (NAME)?  Anything else?  DO NOT READ THE LIST  RECORD ALL MENTIONED BY CIRCLING LETTER FOR EACH ONE MENTIONED	MILK (OTHER THAN BREASTMILK) .... A PLAIN WATER ..... B WATER WITH SUGAR AND/OR SALT . C FRUIT JUICE ..... D TEA / INFUSIONS ..... E LIQUID OR SEMI-LIQUID TRADITIONAL MEDICINE ..... F INFANT FORMULA ..... G OTHER (SPECIFY) ..... X	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
6	Are you currently breastfeeding (NAME)?	YES ..... 1 NO ..... 0	8
7	For how long did you breastfeed (NAME)? IF LESS THAN ONE MONTH, RECORD "00" MONTHS.	MONTHS .....  __ __	
8	<p>Now I would like to ask you about the types of liquids (NAME) drank yesterday during the day and at night.</p> <p>Did (NAME) drink any of the following liquids yesterday during the day or at night?</p> <p>READ THE LIST OF LIQUIDS (A THROUGH H, STARTING WITH "BREASTMILK"). PLACE A CHECK MARK IN THE BOX IF CHILD DRANK LIQUID IN QUESTION</p> <p>A Breastmilk?</p> <p>B Plain water?</p> <p>C Commercially produced infant formula?</p> <p>D Any other milk such as tinned, powdered, or fresh animal milk?</p> <p>E Fruit juice?</p> <p>F Coffee or tea?</p> <p>G Any other liquids such as sugar water, carbonated drinks, or soup broth?</p> <p>OPTIONAL LIQUID GROUP: ADD IF COMMONLY GIVEN TO INFANTS/CHILDREN</p> <p>H Liquid or semi-liquid traditional medicine?</p>	<p>A .....  __ </p> <p>B .....  __ </p> <p>C .....  __ </p> <p>D .....  __ </p> <p>E .....  __ </p> <p>F .....  __ </p> <p>G .....  __ </p> <p>H .....  __ </p>	
9	Did (NAME) drink anything from a bottle with a nipple yesterday or last night?	YES ..... 1 NO ..... 0 DON'T KNOW ..... 8	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
10	<p>Now I would like to ask you about the types of foods (NAME) ate yesterday during the day and at night.</p> <p>Did (NAME) eat any of the following foods yesterday during the day or at night?</p> <p>READ THE LIST OF FOODS. PLACE A CHECK MARK IN THE BOX IF CHILD ATE THE FOOD IN QUESTION</p>		
A	Any foods made from grain (for example, made with millet, sorghum, maize, rice, wheat, or other local grains, porridge, bread)?	A .....   <input type="checkbox"/>	
B	Pumpkin or yellow/orange-fleshed squash, carrots, or yellow/orange-fleshed sweet potatoes?	B .....   <input type="checkbox"/>	
C	Any other food made from roots or tubers (for example, white potatoes, white yams, manioc, cassava, or other local roots/tubers)?	C .....   <input type="checkbox"/>	
D	Any dark green leafy vegetables (for example, cassava leaves, bean leaves, kale, spinach, pepper leaves, taro leaves, amaranth leaves, or other dark green leaves)?	D .....   <input type="checkbox"/>	
E	<b>Ripe</b> mango, <b>ripe</b> papaya (or other local vitamin A-rich fruits)?	E .....   <input type="checkbox"/>	
F	Any other fruits and vegetables (for example, bananas, avocados, tomatoes, onions, apples, oranges, others)?	F .....   <input type="checkbox"/>	
G	Any beef, pork, lamb, goat, rabbit (or wild game meat such as antelope/deer)?	G .....   <input type="checkbox"/>	
H	Any chicken, duck, or other birds (for example, pigeon, guinea hen, others)?	H .....   <input type="checkbox"/>	
I	Any fresh or dried fish, or shellfish?	I .....   <input type="checkbox"/>	
J	Any eggs?	J .....   <input type="checkbox"/>	
K	Any foods made from beans or lentils (for example, made with cowpeas, pinto beans, pink beans, red beans, black beans, lentils, chickpeas, dal, soybeans or others)?	K .....   <input type="checkbox"/>	
L	Any groundnuts/peanuts, or any other nuts?	L .....   <input type="checkbox"/>	
M	Any cheese or yogurt?	M .....   <input type="checkbox"/>	
N	Any food made with oil, fat, or butter?	N .....   <input type="checkbox"/>	
	<p>OPTIONAL FOOD GROUPS: ADD THESE WHEREVER THEY ARE AVAILABLE</p>		
O	Organ meats (for example, liver, kidney, others)	O .....   <input type="checkbox"/>	
P	Grubs, snails, insects, other small protein food	P .....   <input type="checkbox"/>	
Q	Foods made with red palm oil, palm nut, palm nut pulp sauce	Q .....   <input type="checkbox"/>	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
11	<p>How many times did (NAME) eat solid, semi-solid, or soft foods other than liquids yesterday during the day and at night?</p> <p>IF CAREGIVER ANSWERS SEVEN OR MORE TIMES, RECORD "7"</p> <p>ADAPT THIS QUESTION TO USE LOCAL WORDS FOR THE SEMI-SOLID FOODS THAT ARE GIVEN. INCLUDE MASHED OR PUREED FOOD, ALONG WITH PORRIDGES, PAPS, THICK GRUELS, STEWS, ETC. SOLID FOODS – FOR EXAMPLE, FAMILY FOODS, BANANAS, MANGOES, POTATOES, BREAD – SHOULD ALSO BE INCLUDED.</p> <p>WE WANT TO FIND OUT HOW MANY TIMES THE CHILD ATE ENOUGH TO BE FULL. SMALL SNACKS AND SMALL FEEDS SUCH AS ONE OR TWO BITES OF MOTHER'S OR SISTER'S FOOD SHOULD NOT BE COUNTED.</p> <p>LIQUIDS DO NOT COUNT FOR THIS QUESTION. DO NOT INCLUDE THIN SOUPS OR BROTH, WATERY GRUELS, OR ANY OTHER LIQUID.</p> <p>USE PROBING QUESTIONS TO HELP THE RESPONDENT REMEMBER ALL THE TIMES THE CHILD ATE YESTERDAY</p>	<p>NUMBER OF TIMES .....  __ </p> <p>DON'T KNOW ..... 8</p>	
12	<p>IN AREAS WHERE IODIZED SALT IS AVAILABLE</p> <p>May I see the salt that is used for cooking?</p> <p>TAKE A TEASPOONFUL OF SALT AND TEST FOR IODINE</p>	<p>FORTIFIED ..... 1</p> <p>NOT FORTIFIED ..... 0</p> <p>NOT AVAILABLE TO CHECK ..... 8</p>	
13	<p>Did (NAME) receive a vitamin A dose like this during the last 6 months?</p> <p>SHOW AMPULE/CAPSULE/SYRUP</p>	<p>YES ..... 1</p> <p>NO ..... 0</p> <p>DON'T KNOW ..... 8</p>	
	<p>IF OTHER FORTIFIED FOODS OR IRON SUPPLEMENTS ARE AVAILABLE IN THE PROJECT AREA, ADD QUESTIONS (SEE OPTIONAL QUESTIONS FOR FORTIFIED PRODUCTS)</p>		

**Examples of optional additional questions**

The following questions are about fortified foods. Select and adapt questions as needed, depending on the fortified products available in the project area. Questions about iodized salt are already included on the questionnaire.

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
	<p>Now I would like to ask you about some particular foods your child may eat.</p> <p>IN AREAS WHERE PROCESSED FORTIFIED COMPLEMENTARY FOODS ARE AVAILABLE:</p> <p>Did (NAME) eat any food prepared with (NAME OF PROCESSED FORTIFIED COMPLEMENTARY FOOD AVAILABLE IN THE AREA) yesterday during the day or at night?</p>	<p>YES ..... 1</p> <p>NO ..... 0</p> <p>DON'T KNOW ..... 8</p>	
	<p>IN AREAS WHERE FORTIFIED COMMODITY FOODS SUCH AS CORN-SOY-BLEND OR WHEAT-SOY-BLEND ARE AVAILABLE</p> <p>Did (NAME) eat any food prepared with (LOCAL NAME FOR FORTIFIED COMMODITY FLOUR OR CEREAL BLEND) yesterday during the day or at night?</p>	<p>YES ..... 1</p> <p>NO ..... 0</p> <p>DON'T KNOW ..... 8</p>	
	<p>IN AREAS WHERE COMMERCIAL FORTIFIED FLOUR IS AVAILABLE</p> <p>Did (NAME) eat any food prepared with (NAME OF COMMERCIAL FORTIFIED FLOUR) yesterday during the day or at night?</p>	<p>YES ..... 1</p> <p>NO ..... 0</p> <p>DON'T KNOW ..... 8</p>	
<p>➔</p>	<p>IN AREAS WHERE FORTIFIED OIL IS AVAILABLE</p> <p>May I see the oil that is used for cooking?</p> <p>CHECK THE LABEL TO SEE IF OIL IS FORTIFIED</p> <p>Did (NAME) eat any food prepared with this oil yesterday, during the day or at night?</p>	<p>FORTIFIED ..... 1</p> <p>NOT FORTIFIED ..... 0</p> <p>CANNOT TELL IF FORTIFIED, OR NOT AVAILABLE TO CHECK..... 8</p> <p>YES ..... 1</p> <p>NO ..... 0</p> <p>DON'T KNOW ..... 8</p>	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
▶	<p>IN AREAS WHERE FORTIFIED MARGARINE IS AVAILABLE</p> <p>May I see the margarine your family uses?</p> <p>CHECK THE LABEL TO SEE IF MARGARINE IF FORTIFIED</p> <p>Did (NAME) eat any food prepared with this margarine yesterday, during the day or at night?</p>	<p>FORTIFIED ..... 1</p> <p>NOT FORTIFIED ..... 0</p> <p>CANNOT TELL IF FORTIFIED, OR NOT AVAILABLE TO CHECK ..... 8</p> <p>YES ..... 1</p> <p>NO ..... 0</p> <p>DON'T KNOW ..... 8</p>	
▶	<p>IN AREAS WHERE FORTIFIED SUGAR IS AVAILABLE</p> <p>May I see the sugar your family uses?</p> <p>CHECK THE LABEL TO SEE IF SUGAR IS FORTIFIED</p> <p>Did (NAME) have any food or drink prepared with this sugar yesterday, during the day or at night?</p>	<p>FORTIFIED ..... 1</p> <p>NOT FORTIFIED ..... 0</p> <p>CANNOT TELL IF FORTIFIED, OR NOT AVAILABLE TO CHECK ..... 8</p> <p>YES ..... 1</p> <p>NO ..... 0</p> <p>DON'T KNOW ..... 8</p>	

## **APPENDIX 5: INTERVIEWER INSTRUCTIONS**

The interviewer instructions on the following pages follow the KPC format, and are adapted from the interviewer instructions in the KPC 2000+ version of the survey.

## MODULE 2: BREASTFEEDING AND INFANT/CHILD NUTRITION

### INTERVIEWER INSTRUCTIONS

#### Organization of this module

Module 2 consists of thirteen questions on breastfeeding and infant/child nutrition. Optional questions on fortified foods and supplements are also available.

#### Related questions in other modules

Questions 1 and 2 also appear in the *Rapid CATCH*. A simpler version of questions 8 & 10 also appears in the *Rapid CATCH*. Several other modules also contain questions related to feeding. Questions on feeding during illness appear in Module 4C (Diarrhea) and the *Rapid CATCH*. Questions on handwashing, including before feeding, appear in Module 1A (Household water and sanitation), Module 4C (Diarrhea) and the *Rapid CATCH*.

#### Asking questions and recording answers

With the exception of question 13, all questions in this module are based on mothers' (or other caregivers') recall. It is very important that you ask each question exactly as it is written on the questionnaire. If the mother or caregiver does not understand the question, you may need to use extra probing questions. Probing questions are discussed during interviewer training. It is important that all interviewers use the same probing questions.

In addition to the questions, there are statements that appear in all capital letters. These are interviewer instructions, and should not be read aloud to the mother/caregiver.

Most questions have precoded responses. It is important that you do not read these choices aloud. When you ask a question, you should listen to the mother's/caregiver's answer, then circle the code next to the category that best matches her answer.

#### Q.1: Ever breastfed child.

In this question it does not matter how long the mother breastfed the child, only whether or not she ever gave the child the breast. This question also appears in the *Rapid CATCH*.

#### Q.2: When breastfeeding began

Immediate breastfeeding ensures that the infant begins to receive the nutritional and antiviral/antibacterial benefits of the mother's colostrum. Colostrum is yellow and thicker than the later milk, and it contains more antibodies and white blood cells. It gives the infant protection against bacteria and viruses. Immediate breastfeeding also ensures that body warmth is maintained after delivery. In Question 2, record whether the baby was breastfed within the first hour of life or after the first hour of life. This question also appears in the *Rapid CATCH*.

### Qs. 3, 4, & 5: Colostrum (first milk) and prelacteal feeds

For approximately three days after delivery, the breasts secrete colostrum. There are some communities that believe colostrum is not good for infants and do not allow them to have colostrum. Fluids and/or solids given to infants in the first few days after delivery are called prelacteal feeds. They may introduce pathogens that cause diarrhea and other diseases. Prelacteal feeds are given during the period when the colostrum is produced prior to the free flow of the mother's mature milk and rob the infant of this important health protecting substance. Question 3 assesses whether mothers who breastfeed their infants give the colostrum. Mothers are then asked whether the infant was given any prelacteal feeds (Q.4) and if so, what was given (Q.5).

### Q. 6: Currently breastfeeding

For Question 6, it does not matter if the mother is giving (NAME) other liquids or foods as well as breastmilk; what is of interest is if the infant or child is breastfeeding at all.

### Q.7: Duration of breastfeeding

This question is only for mothers who are no longer breastfeeding the infant or child in question. It is important to try to get as accurate information as possible. If the mother says she cannot remember how long she breastfed the infant or child, urge her to think about it for a while, or ask her if she remembers how old the infant or child was when she completely stopped breastfeeding him/her. If the mother gives an approximate answer, such as "about one year," establish if it was exactly one year or how much more or less. If the survey team has developed a calendar of local events and celebrations, use the calendar to help the mother remember.

Record the number of months when the mother completely stopped breastfeeding the infant or child. It does not matter if she was giving the infant or child other liquids or foods in addition to breastmilk; you are simply recording how many months she breastfed the infant or child.

### Qs. 8 & 9: Liquids given yesterday

The main purpose of questions 8, 9, and 10 is to obtain a better picture of the variety of the child's diet. You will ask the mother or other caregiver about the types of liquids and foods given to the child the day preceding the interview ("yesterday during the day or at night").

Question 8 asks about different liquids. It is important to ask about all the different kinds of liquids. One reason is that for almost all infants less than 6 months old, only breastmilk is recommended. We need to know if young infants are getting other liquids.

Read the question slowly and then read the liquids in the list. Wait for the mother's/caregiver's response and record whether the infant or child had each liquid (or group of liquids). If no liquid in a group was given at all in the day before the interview, leave the box blank and go on to the next group.

Question 9 asks whether the infant or child drank anything from a bottle with a nipple yesterday. Baby bottles are not recommended, because they are very difficult to clean. Spoons, cups, and gourds may also be dirty, but bottles are even more likely to be contaminated and to make the baby sick.

#### Q. 10: Foods given yesterday

Question 10 asks about different foods. Similar foods are grouped together. Once again, it is important to ask about all the different groups of foods. Children and older infants (six months or older) need many different kinds of foods. These questions will help show whether or not children in the project area are getting all the different kinds of food they need.

Just as with the liquids, read the question slowly and then read the foods in the list. Wait for the response and record whether the infant or child had each food (or group of foods). If no food in a group was given at all in the day before the interview, leave the box blank and go on to the next group.

Some foods in the list are listed as a single item – for example, tomatoes – but may usually be eaten in a sauce, soup or stew. If the infant or child has eaten a mixed food like a sauce, soup, or stew, record all the food groups in the mixed food. For example, if the child ate a stew of beans, tomatoes, and green leaves, there should be a check mark for each of these three foods.

Do not check off foods that have been added in very small amounts, or for seasoning. For example, if a spoon of fish powder is added to a pot of stew, do not record that the infant or child has eaten fish. If one chili pepper is included in the family pot, do not record that as an “other fruit or vegetable.”

#### Q. 11: How many times infant or child ate yesterday

This question asks about how many times the infant or child ate solid, semi-solid, or soft foods yesterday. Ask the mother/caregiver the question just as it is written. You may need to use probes to help her remember all the times her infant or child ate yesterday. Probing for this question is discussed during interviewer training.

Solid, semi-solid, or soft foods include family foods, and also many special dishes prepared for infants. Thick soups and stews should be included. Thick paps and porridges are also included. Very thin, watery soups and gruels should not be included because infants and young children do not get enough energy (calories) from very thin soups and gruels.

Liquids do not count for this question. Also, very small snacks, such as a bite or two of someone else's food, should not be counted.

#### Q. 12: Type of salt

The purpose of this question is to assess whether the household uses salt that has been fortified with iodine in cooking. Fortified salt prevents iodine deficiency. Iodine is an important micronutrient and a lack of it may lead to an enlarged thyroid gland in the neck known as goiter.

You will need an iodine testing kit order to assess the iodine content of the household's cooking salt. Ask the respondent for a sample of cooking salt in a spoon (a quantity of about one half teaspoon). If the household uses more than one type of salt, make sure that the sample provided is the salt that the household uses for cooking.

Q.13: Vitamin A supplements

The purpose of this question is to find out whether or not the infant/child received a dose of vitamin A in the last 6 months. Lack of vitamin A causes children to get sick more easily and in extreme cases lack of vitamin A can cause eye damage and blindness. Vitamin A supplements are given because many children do not get enough vitamin A from the foods they eat.

You will need examples of the vitamin A capsules or ampules that have been used in the project area. Show the mother/caregiver the capsule or ampule and help her remember if her infant or child received one in the last six months. If the survey team has developed a calendar of local events and celebrations, use the calendar to help the mother/caregiver remember how long ago the child received the supplement.

Additional questions on fortified foods and other supplements

Additional example questions are available for project areas where fortified foods are available, or where they will be promoted by the project.

Skip patterns for breastfeeding and infant/child nutrition module

It is very important that you ask the mother only those questions that are relevant to her situation. For example, if a mother never breastfed her infant or child you should not ask her how long after birth she put the infant to the breast. For certain questions, you are instructed to skip to the next appropriate question if the mother gives a particular response. Skip instructions are located in the far right-hand column of the questionnaire. Here are the skip patterns in the Breastfeeding and Infant/Child Nutrition Module.

Question	Response	Instructions
Q.1: Did you ever breastfeed (NAME)?	YES (1) NO (2)	Go to Q.2 <b>Skip</b> to Q.8
Q.4 During the first three days after delivery, did you give (NAME) the liquid that came from your breasts?	YES (1) NO (2) DON'T KNOW (8)	Go to Q.5 <b>Skip</b> to Q.6 <b>Skip</b> to Q.6
Q.6 Are you currently breastfeeding (NAME)?	YES (1) NO (2)	<b>Skip</b> to Q.8 Go to Q.7

## APPENDIX 6: TABULATING INDICATORS

This Tabulation Plan provides a fairly large number of indicators that may be of interest to projects undertaking interventions in the area of infant and young child feeding. *We emphasize again that the tabulation plan should be viewed as a menu, providing many options. Project staff will select only those indicators relevant to their local areas and interventions.*

The Tabulation Plan on the following pages follows the format in the current KPC 2000+, but shows indicator definitions for the modified and new Module 2 indicators recommended in Section 3 of this document. The text preceding the table of indicators is taken directly from the current tabulation plan.

In addition to the changes described in Section 3, we also recommend a change in the denominator for the indicator for early initiation of breastfeeding. Rather than tabulating for all children under 2 years, we recommend that this indicator be restricted to children under 12 months. This question asks mothers to recall early practices, and restricting the length of the recall improves the accuracy of maternal recall.

In the current KPC 2000+ Module 2 tabulation plan, all indicators are easily tabulated by hand. We include several indicators (diet diversity, young child feeding practices score, good young child feeding practices prevalence, and good infant and child feeding practices prevalence) that are very awkward to tabulate by hand. We recommend computer tabulation for these (see Appendix 8 for an Epi Info tabulation program). We recognize the importance of hand tabulation for yielding quick results in the field, for facilitating broader involvement in and understanding of the data analysis, and for capacity development. However, in discussions with PVO staff, there was universal agreement that it is not necessary for *all* indicators to be hand tabulated, so long as indicators are optional.

Users should note one small difference between hand tabulated results and those tabulated by the Epi Info program in Appendix 8: Hand tabulation instructions indicate that all “age-eligible” children are included in the denominator for each indicator (for example, all children under six months of age for the exclusive breastfeeding indicator). In the computer tabulation, only those children for whom data are available are included. When there are missing data for some children, the hand tabulation will yield different results from the computer tabulation. These differences should be small, unless many children are missing data for particular questions.

## MODULE 2. TABULATION PLAN

Module 2 yields information on breastfeeding and infant/child nutrition practices within the target community. Table 2-1 presents a list of key indicators that can be derived from this module.

**PVOs should select those indicators which are of relevance to their specific project activities.** Additional indicators may also need to be devised. When developing indicators, it is suggested that PVOs take national policies on infant/child feeding into account.

Age-specific indicators (e.g., percent of 0-5 month-olds who receive breastmilk only) are calculated using the age information recorded at the top of the questionnaire. These indicators are based upon “completed months”. For example, the current international standard for exclusive breastfeeding is the provision of breastmilk only until about six months of age. The exclusive breastfeeding indicator therefore includes children aged 0, 1, 2, 3, 4, and 5 completed months.

The old international standard was breastmilk only until four months of age (i.e., from ages 0-3 months). Many PVOs have calculated the exclusive breastfeeding rate based upon this older standard. As a result, PVOs may wish to calculate two exclusive breastfeeding rates: one that reflects the current “0-5 months” standard and a second that reflects the “0-3 months” standard, which can be compared to data from previous years.

TABLE 2-1: BREASTFEEDING AND CHILD NUTRITION INDICATORS

INDICATOR	DESCRIPTION/DEFINITION
<i>Breastfeeding initiation</i>	<p>Percent of children aged 0-11 months who were breastfed within the first hour after birth</p> $\frac{\text{No. of children with response=1 for Q.2}}{\text{Total no. of children aged 0-11 months}} \times 100$
<i>Exclusive breastfeeding rate</i>	<p>Percent of infants aged 0-5 months who were fed breastmilk only in the last 24 hours</p> $\frac{\text{No. of children aged 0-5 months with response= A AND no other responses (B through H left blank) for Q. 8 AND no responses checked (A through Q left blank) for Q.10}}{\text{Total no. children age 0-5 months}} \times 100$
<i>Complementary feeding rate</i>	<p>Percent of infants aged 6-9 months who received breastmilk and solid or semi-solid foods in the last 24 hours</p> $\frac{\text{No. of children aged 6-9 months with response=A for Q.8 AND any of responses A through Q for Q.10}}{\text{Total no. children age 6-9 months}} \times 100$

<i>Continued breastfeeding 6-11 months</i>	Percent of children aged 6-11 months who are still breastfeeding		
	$\frac{\text{No. of children aged 6-11 months with response=1 for Q.6}}{\text{Total no. of children aged 6-11 months}} \times 100$	x	100
<i>Continued breastfeeding 12-17 months</i>	Percent of children aged 12-17 months who are still breastfeeding		
	$\frac{\text{No. of children aged 12-17 months with response=1 for Q.6}}{\text{Total no. of children aged 12-17 months}} \times 100$	x	100
<i>Continued breastfeeding 18-23 months</i>	Percent of children aged 18-23 months who are still breastfeeding		
	$\frac{\text{No. of children aged 18-23 months with response=1 for Q.6}}{\text{Total no. of children aged 18-23 months}} \times 100$	x	100
<i>Bottle use rate</i>	Percent of children 0-11 months who had anything by bottle yesterday		
	$\frac{\text{No. of children aged 0-11 months with response=1 for Q.9}}{\text{Total no. of children aged 0-11 months}} \times 100$	x	100
<i>Frequency of feeding</i>	Percent of children who ate at least the minimum recommended number of times yesterday		
	$\frac{\text{No. of children aged 6-8 months with response of 2 or more for Q.11+} + \text{No. of children aged 9-23 months with response of 3 or more for Q.11}}{\text{Total no. of children aged 6-23 months}} \times 100$	x	100

<i>Animal source foods</i>			
<i>Meat, poultry, fish rate</i>	Percent of children aged 6-23 months who ate meat, organ meat, poultry or fish yesterday		
	No. of children aged 6-23 months with any of responses G <b>or</b> H <b>or</b> I <b>or</b> O for Q.10		
	<hr/>	x	100
	Total no. of children aged 6-23 months		
<i>Egg rate</i>	Percent of children aged 6-23 months who ate eggs yesterday		
	No. of children aged 6-23 months with response J for Q.10		
	<hr/>	x	100
	Total no. of children aged 6-23 months		
<i>Dairy rate</i>	Percent of children aged 6-23 months who had dairy yesterday		
	No. of children aged 6-23 months with response D for Q.8 <b>or</b> response M for Q.10		
	<hr/>	x	100
	Total no. of children aged 6-23 months		
<i>Non-breastfed dairy rate</i>	Percent of non-breastfed children aged 6-23 months who had dairy yesterday		
	No. of children aged 6-23 months with either response=0 for Q.1 <b>or</b> response=0 for Q.6 AND response D for Q.8 <b>or</b> response M for Q.10		
	<hr/>	x	100
	Total no. of children aged 6-23 months		
<i>Animal source food rate</i>	Percent of children aged 6-23 months who ate any animal source food yesterday		
	No. of children aged 6-23 months with response D for Q.8 <b>or</b> any of responses G, H, I, J, M, or O for Q.10		
	<hr/>	x	100
	Total no. of children aged 6-23 months		

<i>Vitamin A-rich plant foods</i>	
<i>Vitamin A orange vegetables rate</i>	<p>Percent of children aged 6-23 months who ate vitamin A-rich yellow/orange vegetables yesterday</p> <p>No. of children aged 6-23 months with response B for Q.10</p> <hr style="width: 50%; margin-left: 0;"/> <p style="text-align: right;">x 100</p> <p style="text-align: center;">Total no. of children aged 6-23 months</p>
<i>Vitamin A fruit rate</i>	<p>Percent of children aged 6-23 months who ate vitamin A-rich fruit yesterday</p> <p>No. of children aged 6-23 months with response E for Q.10</p> <hr style="width: 50%; margin-left: 0;"/> <p style="text-align: right;">x 100</p> <p style="text-align: center;">Total no. of children aged 6-23 months</p>
<i>Dark green leafy vegetables rate</i>	<p>Percent of children aged 6-23 months who ate dark green leafy vegetables yesterday</p> <p>No. of children aged 6-23 months with response D for Q.10</p> <hr style="width: 50%; margin-left: 0;"/> <p style="text-align: right;">x 100</p> <p style="text-align: center;">Total no. of children aged 6-23 months</p>
<i>Palm oil or nut rate</i>	<p>Percent of children aged 6-23 months who ate palm nut, palm nut pulp sauce, or food prepared with red palm oil yesterday</p> <p>No. of children aged 6-23 months with response Q for Q.10</p> <hr style="width: 50%; margin-left: 0;"/> <p style="text-align: right;">x 100</p> <p style="text-align: center;">Total no. of children aged 6-23 months</p>
<i>Vitamin A-rich plant foods rate</i>	<p>Percent of children aged 6-23 months who ate any vitamin A-rich plant food yesterday</p> <p>No. of children aged 6-23 months with response B or D or E or Q for Q.10</p> <hr style="width: 50%; margin-left: 0;"/> <p style="text-align: right;">x 100</p> <p style="text-align: center;">Total no. of children aged 6-23 months</p>
<i>Dietary diversity</i>	<p>Average (mean) number of food groups eaten by children aged 6-23 months:</p> <p>Dairy (# of children 6-23 months with response D for Q.8 or M for Q.10) +</p> <p>Meat poultry fish (# of children 6-23 months with response G, H, I or O for Q.10) +</p> <p>Eggs (# of children 6-23 months with response J for Q.10) +</p> <p>Legumes or nuts (# of children 6-23 months with response K or L for Q10) +</p> <p>Vitamin A-rich plant foods (# of children 6-23 months with response B, D, E, or Q for Q.10) +</p> <p>Other fruits or vegetables (# of children 6-23 months with response F for Q.10) +</p> <p>Grains, roots, or tubers (# of children 6-23 months with response A or C for Q.10) +</p> <p>Foods cooked with oil/fat (# of children 6-23 months with response N for Q.10)</p> <hr style="width: 50%; margin-left: 0;"/> <p style="text-align: center;">Total no. of children aged 6-23 months</p>

<i>Young child feeding practices score</i>	<p>Average (mean) score, on a scale of 0-6, for children 6-23 months of age</p> <p>Breastfeeding (No. of children aged 6-23 months with response=1 for Q.6) X 2 +</p> <p>Frequency of feeding (No. of children aged 6-8 months with response=1 for Q.11) X 1 + (No. of children aged 6-8 months with response of 2 or more for Q.11) X 2 + (No. of children aged 9-23 months with response=2 for Q.11) X 1 + (No. of children aged 9-23 months with response of 3 or more for Q.11) X 2 +</p> <p>Diversity (from above) (No. of children with diversity score of 3 or 4) X 1 + (No. of children with diversity score of 5 or higher) X 2</p> <hr/> <p>Total no. of children aged 6-23 months</p>
<i>Good young child feeding practices prevalence</i>	<p>Percent of children 6-23 months of age fed using "good practices"</p> <p>No. of children aged 6-23 months scoring "6" on young child feeding practices score as described above</p> <hr/> <p style="text-align: right;">x 100</p> <p>Total no. of children aged 6-23 months</p>
<i>Good infant and young child feeding practices prevalence</i>	<p>Percent of children 0-23 months of age fed using "good practices"</p> <p>No. of children aged 0-5 months who were exclusively breastfed (i.e., no. of children aged 0-5 months with response= A AND no other responses (B through H left blank) for Q. 8 AND no responses checked (A through Q left blank) for Q.10) + No. of children aged 6-23 months scoring "6" on young child feeding practices score as described above</p> <hr/> <p style="text-align: right;">x 100</p> <p>Total no. of children aged 0-23 months</p>

With the exception of two indicators (dietary diversity and the young child feeding practices score) all other indicators listed in Table 2-1 are proportions (percents). Computer tabulation is strongly recommended for the last four (dietary diversity, young child feeding practices score, good young child feeding practices prevalence, and good infant and young child feeding practices prevalence). Appendix 8 provides examples of an Epi Info analysis program for all indicators.

## APPENDIX 7: EPI INFO DATA ENTRY PROGRAMS

This Appendix includes Epi Info programs and suggestions for adapting the programs. We used the DOS version of Epi Info (6.04) because PVO staff generally reported that they had not switched to the more recent, Windows version of Epi Info. The programs presented here are meant to facilitate immediate field-testing of the new questions and indicators. Ultimately, if these suggestions are accepted and incorporated into the KPC, a template could be developed in the Windows version of Epi Info as well.

The following files were created:

MODULE2.QES	Epi Info file containing data entry screens; variable types and lengths are also defined in Epi Info *.QES files
MODULE2.CHK	Epi Info file specifying legal entries, ranges, and skips for each variable
MODULE2.REC	Empty data file with the variables defined in the .QES file

MODULE2.QES and MODULE2.CHK are presented in this Appendix. The .REC file is described in the codebook in Appendix 9. The .QES file on the next pages has been edited (font, spacing and page breaks). Users should adapt the electronic copy of the .QES file, rather than saving the program on the next pages as a .TXT file.

If changes are made to the questionnaire in Appendix 4, then these files will need to be edited accordingly. In order to ensure that the analysis program (Appendix 8) functions with minimal editing, we suggest:

- Do not change variable names, types, or lengths
- If questions are deleted from the questionnaire, leave them in the .QES and .REC files. This means there will be empty variables in the data set, representing those questions that were deleted from the questionnaire.
- If questions are deleted from the questionnaire, it is also useful to edit the .QES file so that the deleted questions appear on a separate page. Then program additional skips in the .CHK program so that data entry staff do not need to see these questions or cursor past variables for them.
- Note that if food groups are excluded and skipped over during data entry, programs constructing summary indicators will need to be edited (example program in Appendix 8). The exceptions to this are the “optional” liquid group (liquid or semi-liquid traditional medicine) and the three “optional” food groups listed last (organ meats, small

protein food such as insect, and palm nut/palm oil). These groups can be skipped during data entry without affecting summary indicators.

Other changes some users might consider:

- Add range checks specific to the survey for cluster number, household number, record number, age of child, and months of breastfeeding. Currently there are no range checks for these variables.
- If necessary, allow a missing code for “sex.” In this version, only code 1 (male) or 2 (female) is listed. Similarly, if necessary allow a missing code for Q.1 (child ever breastfed) and/or Q.6 (still breastfeeding); currently only code 1 (yes) and 2 (no) are allowed.
- Make more fields “must enter” (data entry staff cannot cursor past these fields without entering data). Currently, only cluster, household, and record are “must enter.”
- If interview date and child’s birth date are included, edit the Epi Info analysis program in Appendix 8 to calculate age. Appendix 8 includes instructions for calculating age from dates in Epi Info.

The programs presented here were purposely kept simple and short. They do not take advantage of all features of Epi Info (e.g., pop-up windows, calculated fields, etc.). The objective was to provide simple, short .QES and .CHK files that are easy to edit and adapt.

Also in order to keep editing simple, the variable names appear on the data entry screens adjacent to the variables.<sup>38</sup> This adds clutter to the screen, and data entry personnel do not need to see the variable names. However, the alternative (accept Epi Info default names and change them later) requires more programming, and therefore more editing when the programs are changed and adapted by users.

Certain data entry instructions also appear on the screen (for example, for questions 5, 8, and 10, where enumerators have circled or “checked” answers and data entry staff must use codes). These instructions also clutter the screen, and can be removed depending on how the questionnaire is adapted (e.g., some prefer to put data entry instructions on the questionnaire) and on how data entry personnel are trained.

For users who have little experience with Epi Info, it is helpful to know that both .QES files and .CHK files are ASCII text files, and can be edited in any editor that allows .TXT files.

When adapting the programs, make all changes before data entry begins. We suggest making changes in the following order:

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<sup>38</sup> In the .QES file, the variable names appear in brackets, but these brackets do not appear on the data entry screens.

- Edit the .QES file first, using a text editor (either the Epi Info EPED editor or another), but do not change or delete variable names<sup>39</sup>;
- Then edit the .CHK file;
- Last, in Epi Info ENTER, revise the structure of the .REC (data) file using the revised .QES file.

Finally, note that each screen (page) of data entry is followed by a reminder to the data entry personnel:

PLEASE CHECK YOUR WORK, THEN TYPE "Y" FOR YES ....<Y>

This adds one more keystroke per page of data entry. However, our experience is that the gains in accuracy outweigh the added time involved in asking keypunchers to check each page before continuing.

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<sup>39</sup> If you change or delete variable names, rename the file and create new .CHK and .REC files; the .CHK in this Appendix will not work if variable names are changed.

**MODULE2.QES**

**BREASTFEEDING AND INFANT CHILD NUTRITION**

{Clust}er {num}ber ..... ###

{H}ouse{h}old {num}ber ..... ##

{Rec}ord {num}ber ..... ##

Age of child (age in months) ..... {ESTAGE} ##

{Child}'s {sex} ..... #

1. Did you ever breastfeed (CHILD)? ..... {BF1} #

2. How long after birth did you first put (NAME) to the breast? {BF2} #

PLEASE {CHECK} YOUR WORK, THEN TYPE "Y" FOR YES ....<Y>

3. During the first three days after delivery, did you give (NAME) the liquid that came from your breasts?.....{BF3} #

4. During the first three days after delivery, did you give (NAME) anything else to eat or drink before feeding him/her breastmilk? .....{BF4} #

5. What did you give (NAME)? ENTER "1" FOR EACH CIRCLED LIQUID  
ENTER "0" FOR EACH ONE NOT CIRCLED

- Milk ..... {BF5A} #
- Plain water ..... {BF5B} #
- Water with sugar/salt .. {BF5C} #
- Fruit juice ..... {BF5D} #
- Tea/infusions ..... {BF5E} #
- Liquid medicine ..... {BF5F} #
- Infant formula ..... {BF5G} #
- Other..... {BF5X} #

PLEASE {CHECK} YOUR WORK, THEN TYPE "Y" FOR YES ....<Y>

6. Are you currently breastfeeding (NAME)? ..... {BF6} #

7. For how long did you breastfeed (NAME)? .....(months) {BF7} ##

PLEASE {CHECK} YOUR WORK, THEN TYPE "Y" FOR YES ....<Y>

8. Did (NAME) drink any of the following liquids yesterday during the day or at night?

ENTER "1" IF CHECKED, ENTER "0" IF NOT

A. Breastmilk .....{BF8A} #

B. Plain water .....{BF8B} #

C. Infant formula .....{BF8C} #

D. Any other milk .....{BF8D} #

E. Fruit juice .....{BF8E} #

F. Coffee or tea .....{BF8F} #

G. Any other liquids .....{BF8G} #

PLEASE {CHECK} YOUR WORK, THEN TYPE "Y" FOR YES ....<Y>

ENTER "1" IF CHECKED, ENTER "0" IF NOT

H. Liquid traditional medicine .....{BF8H} #

PLEASE {CHECK} YOUR WORK, THEN TYPE "Y" FOR YES ....<Y>

9. Did (NAME) drink anything from a bottle with a nipple yesterday during the day or at night .....{BF9} #

PLEASE {CHECK} YOUR WORK, THEN TYPE "Y" FOR YES ....<Y>

10. Did (NAME) eat any of the following foods yesterday during the day or at night?

ENTER "1" IF CHECKED, ENTER "0" IF NOT

- A. Foods made from grain .....{BF10A} #
- B. Pumpkins, squash, carrots, sweet potato .....{BF10B} #
- C. Other foods from roots or tubers .....{BF10C} #
- D. Dark green leafy vegetables .....{BF10D} #
- E. Ripe mango, other .....{BF10E} #
- F. Other fruits and vegetables .....{BF10F} #
- G. Beef, pork, lamb, goat, rabbit, other.....{BF10G} #

PLEASE {CHECK} YOUR WORK, THEN TYPE "Y" FOR YES ....<Y>

ENTER "1" IF CHECKED, ENTER "0" IF NOT

- H. Chicken, duck, or other birds .....{BF10H} #
- I. Fresh or dried fish or shellfish .....{BF10I} #
- J. Eggs .....{BF10J} #
- K. Foods made from beans or lentils .....{BF10K} #
- L. Groundnuts/peanuts, or any other nuts .....{BF10L} #
- M. Cheese or yogurt .....{BF10M} #
- N. Food made with oil, fat, or butter .....{BF10N} #

PLEASE {CHECK} YOUR WORK, THEN TYPE "Y" FOR YES ....<Y>

ENTER "1" IF CHECKED, ENTER "0" IF NOT

- O. Organ meats (liver, kidney, others) .....{BF10O} #
- P. Grubs, snails, insects, other small protein food...{BF10P} #

Q. Foods made with red palm oil, palm nut pulp/sauce..{BF10Q} #

PLEASE {CHECK} YOUR WORK, THEN TYPE "Y" FOR YES ....<Y>

11. How many times did (NAME) eat solid/semi-solids, or soft foods yesterday during the day and at night?

NUMBER OF TIMES....{BF11} #

12. May I see the salt that is used for cooking? .....{BF12} #

13. Did (NAME) receive a vitamin A dose... in last 6 months?.{BF13} #

PLEASE {CHECK} YOUR WORK, THEN TYPE "Y" FOR YES ....<Y>

**MODULE2.CHK**

CLUSTNUM  
MUSTENTER  
END

HHNUM  
MUSTENTER  
END

RECNUM  
MUSTENTER  
END

CHILDSEX  
COMMENT LEGAL  
1 MALE  
2 FEMALE  
END  
END

BF1  
LEGAL  
0  
1  
END  
Jumps  
0 BF8A  
END  
END

BF2  
LEGAL  
0  
1  
8  
END  
END

BF3  
LEGAL  
0  
1  
8  
END

END

BF4

LEGAL

0

1

8

END

Jumps

0 CHECK01

8 CHECK01

END

END

BF5A

LEGAL

0

1

END

END

BF5B

LEGAL

0

1

END

END

BF5C

LEGAL

0

1

END

END

BF5D

LEGAL

0

1

END

END

BF5E

LEGAL

0

```
1
END
END
```

```
BF5F
LEGAL
0
1
END
END
```

```
BF5G
LEGAL
0
1
END
END
```

```
BF5X
LEGAL
0
1
END
END
```

```
BF6
LEGAL
0
1
END
Jumps
1 CHECK02
END
END
```

```
BF7
IF BF7 > ESTAGE
THEN
HELP "PROBLEM: MONTHS BREASTFED > CHILD AGE IN MONTHS" 15 +2
CLEAR BF7
GOTO BF7
ENDIF
END
```

```
BF8A
```

LEGAL  
0  
1  
END  
END

BF8B  
LEGAL  
0  
1  
END  
END

BF8C  
LEGAL  
0  
1  
END  
END

BF8D  
LEGAL  
0  
1  
END  
END

BF8E  
LEGAL  
0  
1  
END  
END

BF8F  
LEGAL  
0  
1  
END  
END

BF8G  
LEGAL  
0  
1  
END  
END

BF8H  
LEGAL  
0  
1  
END  
END

BF9  
LEGAL  
0  
1  
8  
END  
END

BF10A  
LEGAL  
0  
1  
END  
END

BF10B  
LEGAL  
0  
1  
END  
END

BF10C  
LEGAL  
0  
1  
END  
END

BF10D  
LEGAL  
0  
1  
END  
END

BF10E  
LEGAL  
0  
1  
END  
END

BF10F  
LEGAL  
0  
1  
END  
END

BF10G  
LEGAL  
0  
1  
END  
END

BF10H  
LEGAL  
0  
1  
END  
END

BF10I  
LEGAL  
0  
1  
END  
END

BF10J  
LEGAL  
0  
1  
END  
END

BF10K  
LEGAL  
0  
1  
END  
END

BF10L  
LEGAL  
0  
1  
END  
END

BF10M  
LEGAL  
0  
1  
END  
END

BF10N  
LEGAL  
0  
1  
END  
END

BF10O  
LEGAL  
0  
1  
END  
END

BF10P  
LEGAL  
0  
1  
END  
END

BF10Q  
LEGAL  
0  
1  
END  
END

BF11  
RANGE 0 8  
END

BF12  
LEGAL  
0  
1  
8  
END  
END

BF13  
LEGAL  
0  
1  
8  
END  
**END**

## **APPENDIX 8: EPI INFO ANALYSIS PROGRAM**

The annotated Epi Info program on the following pages – called KPCMOD2.PGM – produces all the indicators in the tabulation plan. In order to do this, a series of new variables are created; these new variables are also described in a codebook in Appendix 9. In addition to the indicators in the tabulation plan, the program will output a full set of descriptive statistics for this Module. All of the figures suggested in Section 6 of this document can be produced from the output of this program.

Like the hand tabulation instructions, this program produces point estimates for each indicator, and not confidence intervals. If confidence intervals are desired, program staff will need to be familiar with Epi Info and will need to use the CSAMPLE module for cluster designs, and sample weights where necessary. Because projects currently use a variety of sample designs, no attempt was made to provide programs producing confidence intervals.

Descriptive statistics for six-month age groups are included for several variables (e.g., current breastfeeding status, bottle use, frequency of feeding relative to recommendations, and food-group diversity). We note again that these statistics are likely to be quite imprecise unless subsamples in the age group are close to 100 children. Nevertheless, the output may be useful for baseline assessments and for identifying and prioritizing problems. Program managers should decide whether or not this information is useful, and adapt the Epi Info analysis program to exclude these commands when they are not wanted.

Also note that if variable names or types have been changed, the program will need to be edited accordingly. If any questions have been excluded entirely, the program will also need to be edited. The exceptions to this are the “optional” liquid group (liquid and semi-liquid traditional medicine) and the three last “optional” food groups in question 10 (organ meats, small protein foods, and palm products). The program is written to function whether or not the optional liquid and food groups have been included on the questionnaire. However, as noted previously, the variables must be left in the data template even though they will be empty of data. This will avoid error messages when the program is run.

If readers wish to adapt or use this program, remember that it must be saved as a text file, not as a Word file.

Before this program can be used, all data must be in a single .REC file. When parallel sampling is used, with different questionnaires for different age groups, it may be necessary to combine data from several files. For example, if separate questionnaires are used for infants under 12 months and children 12 to 23 months, the two files should be merged. On the next page, a short series of commands shows how this can be done in Epi Info.

Finally, before the program can be used, the child’s age must be available in the data file. On the current Module 2 questionnaire, age in months is recorded; often this information is copied from an earlier Module where age is determined. The program KPCMOD2.PGM presumes that age in months is entered, and the variable is called ESTAGE. However, in cases where the child’s date of birth is available, age calculated (by computer) from date of birth and date of interview should

be used. Epi Info commands for calculating age from date of birth and date of interview are also shown below. If a new age variable is created, the KPCMOD2.PGM should be edited (replace ESTAGE, throughout the program, with the variable name of the new age variable).

***Merging files (adding cases)***

In the example below, there is a file for infants called INFANT.REC, and a file for children 12-23 months called CHILD.REC. These two files are merged into BOTH.REC. The commands below would need to be edited to reflect the user's paths and filenames. Because the two files are likely to contain different variables, the variables common to both files must all be listed in the WRITE RECFILE command. The selected variables and variable names must be identical in both files in order for the files to merge properly. In the example, only a few variables are listed.

```
READ C:\EPI6\INFANT.REC
ROUTE C:\EPI6\BOTH.REC
WRITE RECFILE HHID KIDID DOI DOB BF1 BF2 BF3
READ C:\EPI6\CHILD.REC
ROUTE C:\EPI6\BOTH.REC
WRITE RECFILE HHID KIDID DOI DOB BF1 BF2 BF3
```

***Calculating age from date of birth and date of interview***

In most surveys, date of birth will be available for some, but not all children. Exact age based on date of birth is necessary for some analyses (e.g., of anthropometric indicators), but the best approximation for age is adequate for other analyses. In the case of the infant and child feeding variables, the best approximation is adequate, and children for whom date of birth is missing do not need to be excluded. It is best to create a variable that holds precise age (calculated from dates) for those children with date of birth, but holds the best approximation for other children. In the commands below, ESTAGE is the best approximation (e.g., taken from probing with mothers, use of local calendars, etc.) and is presumed to be present in the data file. DOI is date of interview, and DOB is the infant or child's date of birth.

```
DEFINE CALCAGE ##.#
LET CALCAGE = (DOI - DOB)/30.4
DEFINE AGE ##.#
LET AGE = ESTAGE
IF CALCAGE > 0 THEN AGE = CALCAGE
```

\* This program is called KPCMOD2.PGM.

\* Edit the READ command to use the file path and  
\* file name for your data file.

```
READ C:\EPI6\KPC\TEMP.REC
```

\* Edit the route command to indicate the path and filename  
\* where you want your output to go (frequency tables, etc.)

```
ROUTE C:\EPI6\KPC\OUTPUT1.TXT
```

```
SET STATISTICS = OFF
```

\* The next commands give two sets of frequencies, one including  
\* blank (".") missing values, and one not including missing values.  
\* Examine these frequencies for unexpected or extreme results  
\* that may indicate data collection or data entry problems for  
\* particular questions.

```
FREQ * NOT HHNUM RECNUM
```

```
SET IGNORE = OFF
```

```
FREQ * NOT HHNUM RECNUM
```

```
SET IGNORE = ON
```

\* The next commands recode 8 (don't know) to missing for several  
\* variables, so that descriptive statistics for the new variables  
\* give percents using the number of children with responses as the  
\* denominator.

\* If you need to know the percent of children with missing  
\* responses, use the original variables and use the command  
\* "SET IGNORE = OFF" -- this tells Epi Info NOT to exclude  
\* blank (".") missing values.

\* If you need to know the percent of responses out of all  
\* valid responses (this is what is usually reported),  
\* then use the new variables and "SET IGNORE = ON").

```
DEFINE BF2NEW #
```

```
RECODE BF2 TO BF2NEW 0=0 1=1 ELSE=.
```

```
DEFINE BF3NEW #
```

```
RECODE BF3 TO BF3NEW 0=0 1=1 ELSE=.
```

```
DEFINE BF4NEW #
```

```
RECODE BF4 TO BF4NEW 0=0 1=1 ELSE=.
```

- \* Next commands produce descriptive statistics for early
- \* breastfeeding practices, using responses only from
- \* mothers of infants under 12 months of age.

```
SELECT (ESTAGE >= 0) AND (ESTAGE < 12)
FREQ BF2NEW BF3NEW BF4NEW
FREQ BF5A BF5B BF5C BF5D BF5E BF5F BF5G BF5X
SELECT
```

- \* Next commands give frequencies for continued breastfeeding
- \* for various age groups.

```
SELECT (ESTAGE >= 0) AND (ESTAGE < 6)
FREQ BF6
SELECT
```

```
SELECT (ESTAGE >= 6) AND (ESTAGE < 12)
FREQ BF6
SELECT
```

```
SELECT (ESTAGE >= 12) AND (ESTAGE < 18)
FREQ BF6
SELECT
```

```
SELECT (ESTAGE >= 18) AND (ESTAGE < 24)
FREQ BF6
SELECT
```

```
SELECT (ESTAGE >= 6) AND (ESTAGE < 24)
FREQ BF6
SELECT
```

- \* The next command gives the average age that mothers reported
- \* stopping breastfeeding FOR THOSE CHILDREN WHO HAVE ALREADY
- \* BEEN FULLY WEANED. This is not the same as average age of
- \* stopping breastfeeding for the population, because data for
- \* all those still breastfeeding is not accounted for in this
- \* average.

```
DESCRIBE BF7
```

- \* Defines and codes new variables for Question 8 (liquids).
- \* The new variables are numeric, and are coded "0" if the child

- \* did not receive the liquid and "1" if he/she did.
- \* These variables will be needed later, when groups are
- \* summed into a diversity variable.

```
DEFINE BF8ANEW #
RECODE BF8A TO BF8ANEW 0=0 1=1 ELSE=.
DEFINE BF8BNEW #
RECODE BF8B TO BF8BNEW 0=0 1=1 ELSE=.
DEFINE BF8CNEW #
RECODE BF8C TO BF8CNEW 0=0 1=1 ELSE=.
DEFINE BF8DNEW #
RECODE BF8D TO BF8DNEW 0=0 1=1 ELSE=.
DEFINE BF8ENEW #
RECODE BF8E TO BF8ENEW 0=0 1=1 ELSE=.
DEFINE BF8FNEW #
RECODE BF8F TO BF8FNEW 0=0 1=1 ELSE=.
DEFINE BF8GNEW #
RECODE BF8G TO BF8GNEW 0=0 1=1 ELSE=.
DEFINE BF8HNEW #
RECODE BF8H TO BF8HNEW 0=0 1=1 ELSE=.
```

- \* Gives descriptive statistics for Question 8, for all
- \* children, for children under 6 months and for children
- \* from 6-23 months.

```
FREQ BF8ANEW BF8BNEW BF8CNEW BF8DNEW
FREQ BF8ENEW BF8FNEW BF8GNEW BF8HNEW
```

```
SELECT (ESTAGE >= 0) AND (ESTAGE < 6)
FREQ BF8ANEW BF8BNEW BF8CNEW BF8DNEW
FREQ BF8ENEW BF8FNEW BF8GNEW BF8HNEW
SELECT
```

```
SELECT (ESTAGE >= 6) AND (ESTAGE < 24)
FREQ BF8ANEW BF8BNEW BF8CNEW BF8DNEW
FREQ BF8ENEW BF8FNEW BF8GNEW BF8HNEW
SELECT
```

- \* Recodes Question 9 (bottle use) so that 8 (don't know)
- \* is recoded as missing. Then gives descriptive statistics
- \* for various age groups (by 1-year and 6-month groupings).
- \* The suggested indicator is for 0-11 months, and is
- \* given first.

```
DEFINE BF9NEW #
RECODE BF9 TO BF9NEW 0=0 1=1 ELSE=.

SELECT (ESTAGE >= 0) AND (ESTAGE < 12)
FREQ BF9NEW
SELECT

SELECT (ESTAGE >= 12) AND (ESTAGE < 24)
FREQ BF9NEW
SELECT

SELECT (ESTAGE >= 0) AND (ESTAGE < 6)
FREQ BF9NEW
SELECT

SELECT (ESTAGE >= 6) AND (ESTAGE < 12)
FREQ BF9NEW
SELECT

SELECT (ESTAGE >= 12) AND (ESTAGE < 18)
FREQ BF9NEW
SELECT

SELECT (ESTAGE >= 18) AND (ESTAGE < 24)
FREQ BF9NEW
SELECT
```

\* As with Q.8, creates and codes new variables for  
\* Q.10 (solid food groups yesterday).

```
DEFINE BF10ANEW #
RECODE BF10A TO BF10ANEW 0=0 1=1 ELSE=.
DEFINE BF10BNEW #
RECODE BF10B TO BF10BNEW 0=0 1=1 ELSE=.
DEFINE BF10CNEW #
RECODE BF10C TO BF10CNEW 0=0 1=1 ELSE=.
DEFINE BF10DNEW #
RECODE BF10D TO BF10DNEW 0=0 1=1 ELSE=.
DEFINE BF10ENEW #
RECODE BF10E TO BF10ENEW 0=0 1=1 ELSE=.
DEFINE BF10FNEW #
RECODE BF10F TO BF10FNEW 0=0 1=1 ELSE=.
DEFINE BF10GNEW #
RECODE BF10G TO BF10GNEW 0=0 1=1 ELSE=.
DEFINE BF10HNEW #
```

```
RECODE BF10H TO BF10HNEW 0=0 1=1 ELSE=.
DEFINE BF10INNEW #
RECODE BF10I TO BF10INNEW 0=0 1=1 ELSE=.
DEFINE BF10JNEW #
RECODE BF10J TO BF10JNEW 0=0 1=1 ELSE=.
DEFINE BF10KNEW #
RECODE BF10K TO BF10KNEW 0=0 1=1 ELSE=.
DEFINE BF10LNEW #
RECODE BF10L TO BF10LNEW 0=0 1=1 ELSE=.
DEFINE BF10MNEW #
RECODE BF10M TO BF10MNEW 0=0 1=1 ELSE=.
DEFINE BF10NNEW #
RECODE BF10N TO BF10NNEW 0=0 1=1 ELSE=.
DEFINE BF10ONEW #
RECODE BF10O TO BF10ONEW 0=0 1=1 ELSE=.
DEFINE BF10PNEW #
RECODE BF10P TO BF10PNEW 0=0 1=1 ELSE=.
DEFINE BF10QNEW #
RECODE BF10Q TO BF10QNEW 0=0 1=1 ELSE=.
```

- \* Gives descriptive statistics for solids food
- \* groups eaten yesterday, for all kids, for infants
- \* under 6 months, and for kids 6-23 months.

```
FREQ BF10ANEW BF10BNEW BF10CNEW BF10DNEW BF10ENEW
FREQ BF10FNEW BF10GNEW BF10HNEW BF10INNEW BF10JNEW
FREQ BF10KNEW BF10LNEW BF10MNEW BF10NNEW BF10ONEW
FREQ BF10PNEW BF10QNEW
```

```
SELECT (ESTAGE >=0) AND (ESTAGE < 6)
FREQ BF10ANEW BF10BNEW BF10CNEW BF10DNEW BF10ENEW
FREQ BF10FNEW BF10GNEW BF10HNEW BF10INNEW BF10JNEW
FREQ BF10KNEW BF10LNEW BF10MNEW BF10NNEW BF10ONEW
FREQ BF10PNEW BF10QNEW
SELECT
```

```
SELECT (ESTAGE >= 6) AND (ESTAGE < 24)
FREQ BF10ANEW BF10BNEW BF10CNEW BF10DNEW BF10ENEW
FREQ BF10FNEW BF10GNEW BF10HNEW BF10INNEW BF10JNEW
FREQ BF10KNEW BF10LNEW BF10MNEW BF10NNEW BF10ONEW
FREQ BF10PNEW BF10QNEW
SELECT
```

- \* Creates and codes a new variable for Q.11 (how many
- \* times child ate yesterday) coding 8 (don't know)
- \* as missing. Then gives descriptive statistics,
- \* overall and by age group.

```
DEFINE BF11NEW #  
RECODE BF11 TO BF11NEW 0=0 1=1 2=2 3=3 4=4 5=5 \  
6=6 7=7 ELSE=.
```

```
FREQ BF11 BF11NEW  
DESCRIBE BF11NEW
```

```
SELECT (ESTAGE >= 6) AND (ESTAGE < 12)  
FREQ BF11NEW  
DESCRIBE BF11NEW  
SELECT
```

```
SELECT (ESTAGE >= 12) AND (ESTAGE < 18)  
FREQ BF11NEW  
DESCRIBE BF11NEW  
SELECT
```

```
SELECT (ESTAGE >= 18) AND (ESTAGE < 24)  
FREQ BF11NEW  
DESCRIBE BF11NEW  
SELECT
```

- \* Creates and codes variables for Q.12 (iodized salt)
- \* and Q.13 (vitamin A supplements) coding 8 as missing.
- \* Then gives frequencies for old and new variables.

```
DEFINE BF12NEW #  
RECODE BF12 TO BF12NEW 0=0 1=1 ELSE=.  
DEFINE BF13NEW #  
RECODE BF13 TO BF13NEW 0=0 1=1 ELSE=.
```

```
FREQ BF12NEW BF13NEW
```

- \* Next, several variables are created that will help define
- \* whether or not infants are exclusively breastfed, and
- \* if they are fully breastfed or not.

- \* Variables are: Any liquids other than breastmilk yesterday;
- \* Any liquids other than breastmilk or water yesterday;
- \* Any solid food groups yesterday. This last can also be
- \* used for the indicators for the 6-9 month age group,

- \* showing whether children in that age group received
- \* solids, and whether they received breastmilk + solids.

DEFINE OTHLIQ #

```
IF (BF8BNEW=1) OR (BF8CNEW=1) OR (BF8DNEW=1) \
OR (BF8ENEW=1) OR (BF8FNEW=1) OR (BF8GNEW=1) \
OR (BF8HNEW=1) THEN OTHLIQ = 1
```

```
IF (BF8BNEW=0) AND (BF8CNEW=0) AND (BF8DNEW=0) \
AND (BF8ENEW=0) AND (BF8FNEW=0) AND (BF8GNEW=0) \
AND (BF8HNEW<>1) THEN OTHLIQ = 0
```

- \* Note that the optional BF8HNEW (traditional medicine) can
- \* be left blank, and this program will still construct the
- \* new variable properly (i.e., BF8HNEW does not have to be
- \* coded "no" in order for the child to be defined as having
- \* had no liquids - it just cannot be coded "yes").

FREQ OTHLIQ

DEFINE OTHLIQ2 #

```
IF (BF8CNEW=1) OR (BF8DNEW=1) OR (BF8ENEW=1) \
OR (BF8FNEW=1) OR (BF8GNEW=1) OR (BF8HNEW=1) \
THEN OTHLIQ2 = 1
```

```
IF (BF8CNEW=0) AND (BF8DNEW=0) AND (BF8ENEW=0) \
AND (BF8FNEW=0) AND (BF8GNEW=0) AND (BF8HNEW<>1) \
THEN OTHLIQ2 = 0
```

FREQ OTHLIQ2

DEFINE SOLIDTMP #

DEFINE SOLIDTMP2 #

DEFINE SOLIDS #

- \* The variables "SOLIDTMP" and "SOLIDTMP2" are
- \* intermediate variables. They are needed because otherwise
- \* the "IF..AND...AND" statement \* defining the variable
- \* "SOLID" would exceed \* the Epi Info command length limit
- \* of 225 characters.

- \* Note that these commands need to be edited if the list of
- \* food groups is changed. However, the commands below allow
- \* for the possibility that the last three optional food groups

\* are not used.

```
IF (BF10ANEW=1) OR (BF10BNEW=1) OR (BF10CNEW=1) \
OR (BF10DNEW=1) OR (BF10ENEW=1) OR (BF10FNEW=1) \
OR (BF10GNEW=1) OR (BF10HNEW=1) \
THEN SOLIDS = 1
```

```
IF (BF10INEW=1) OR (BF10JNEW=1) OR (BF10KNEW=1) \
OR (BF10LNEW=1) OR (BF10MNEW=1) OR (BF10NNEW=1) \
OR (BF10ONEW=1) OR (BF10PNEW=1) \
OR (BF10QNEW=1) THEN SOLIDS = 1
```

```
IF (BF10ANEW=0) AND (BF10BNEW=0) AND (BF10CNEW=0) \
AND (BF10DNEW=0) AND (BF10ENEW=0) AND (BF10FNEW=0) \
AND (BF10GNEW=0) AND (BF10HNEW=0) \
THEN SOLIDTMP=0
```

```
IF (SOLIDTMP=0) AND (BF10INEW=0) AND (BF10JNEW=0) \
AND (BF10KNEW=0) AND (BF10LNEW=0) AND (BF10MNEW=0) \
AND (BF10NNEW=0) AND (BF10ONEW<>1) \
THEN SOLIDTMP2=0
```

```
IF (SOLIDTMP2=0) AND (BF10PNEW<>1) AND (BF10QNEW<>1) \
THEN SOLIDS = 0
```

FREQ SOLIDS

- \* Defines variable for "Complementary feeding rate"
- \* (i.e. breastfed and at least one solid/semi-solid food
- \* group yesterday), and gives frequency for infants
- \* 6-9 months of age (current "complementary feeding rate"
- \* indicator).

DEFINE COMPFOOD #

IF (BF8ANEW=1) AND (SOLIDS=1) THEN COMPFOOD=1

IF (BF8ANEW=0) OR (SOLIDS=0) THEN COMPFOOD=0

FREQ COMPFOOD

SELECT (ESTAGE >= 6) AND (ESTAGE < 10)

FREQ COMPFOOD

SELECT

- \* For the pie chart in section 6, we need the percent
- \* of infants 0-5 months who got breastmilk and solids
- \* yesterday.

SELECT (ESTAGE >= 0) AND (ESTAGE < 6)

FREQ COMPFOOD

SELECT

- \* Defines and codes variables for exclusive and
- \* breastfeeding + water only, and gives frequencies
- \* for infants under six months of age.

DEFINE EXCLBF #

IF (BF8ANEW=1) AND (OTHLIQ=0) AND (SOLIDS=0) THEN EXCLBF=1

IF (BF8ANEW=0) OR (OTHLIQ=1) OR (SOLIDS=1) THEN EXCLBF=0

FREQ EXCLBF

SELECT (ESTAGE >= 0) AND (ESTAGE < 6)

FREQ EXCLBF

SELECT

DEFINE BFWATER #

IF (BF8ANEW=1) AND (BF8BNEW=1) AND (OTHLIQ2=0) \

AND (SOLIDS=0) THEN BFWATER=1

IF (BF8ANEW=0) OR (BF8BNEW=0) OR (OTHLIQ2=1) OR \

(SOLIDS=1) THEN BFWATER=0

FREQ BFWATER

SELECT (ESTAGE >= 0) AND (ESTAGE < 6)

FREQ BFWATER

SELECT

- \* The next variable (LIQONLY) indicates whether or not the

- \* infant/child is given breastmilk plus any other liquids only,
- \* or not (not = all others, including those not breastfed,
- \* exclusively breastfed, or given solids as well as breastmilk
- \* and other liquids).

- \* This variable is not used in any indicator, but is included
- \* because some projects use this information (% only given
- \* breastmilk and liquids). In our presentation we split this
- \* into % given breastmilk and water (above) and % given
- \* breastmilk and other liquids (w/ or w/o water) using the
- \* var "LIQONLY2" below.

```
DEFINE LIQONLY #  
IF (BF8ANEW=1) AND (OTHLIQ=1) AND (SOLIDS=0) THEN LIQONLY=1.  
IF (BF8ANEW=0) OR (OTHLIQ=0) OR (SOLIDS=1) THEN LIQONLY=0.
```

```
FREQ LIQONLY
```

```
SELECT (ESTAGE >= 0) AND (ESTAGE < 6)  
FREQ LIQONLY  
SELECT
```

```
DEFINE LIQONLY2 #  
IF (BF8ANEW=1) AND (OTHLIQ2=1) AND (SOLIDS=0) THEN LIQONLY2=1.  
IF (BF8ANEW=0) OR (OTHLIQ2=0) OR (SOLIDS=1) THEN LIQONLY2=0.
```

```
FREQ LIQONLY2
```

```
SELECT (ESTAGE >= 0) AND (ESTAGE < 6)  
FREQ LIQONLY2  
SELECT
```

- \* Defines a variable to be coded yes/no to indicate whether
  - \* infants/children are fed at least the minimum recommended
  - \* number of times for their age. Gives frequencies,
  - \* overall and by age group.
- 
- \* Note that Epi Info interprets blanks (".") as very low numbers.
  - \* Therefore, in defining categories we do not use expressions such
  - \* as "BF11NEW < 2 = ..." because cases missing freqfeed would be
  - \* assigned a value.

DEFINE FREQFEED #

IF (ESTAGE >= 6) AND (ESTAGE < 9) AND (BF11NEW > 1) \  
THEN FREQFEED=1

IF (ESTAGE >= 6) AND (ESTAGE < 9) AND ((BF11NEW=0) OR \  
(BF11NEW=1)) THEN FREQFEED=0

IF (ESTAGE >= 9) AND (ESTAGE < 24) AND (BF11NEW > 2) \  
THEN FREQFEED=1

IF (ESTAGE >= 9) AND (ESTAGE < 24) AND ((BF11NEW=0) OR \  
(BF11NEW=1) OR (BF11NEW=2)) THEN FREQFEED=0

FREQ FREQFEED

SELECT (ESTAGE >= 6) AND (ESTAGE < 24)  
FREQ FREQFEED  
SELECT

SELECT (ESTAGE >= 6) AND (ESTAGE < 12)  
FREQ FREQFEED  
SELECT

SELECT (ESTAGE >= 12) AND (ESTAGE < 18)  
FREQ FREQFEED  
SELECT

SELECT (ESTAGE >= 18) AND (ESTAGE < 24)  
FREQ FREQFEED  
SELECT

\* Creates and codes various animal-source food variables,  
\* and give frequencies overall and for children 6-23 months of age.

DEFINE FLESH #

DEFINE EGG #

DEFINE DAIRY #

DEFINE ASF #

IF (BF10GNEW=1) OR (BF10HNEW=1) OR (BF10INEW=1) OR \  
(BF10ONEW=1) THEN FLESH = 1

IF (BF10GNEW=0) AND (BF10HNEW=0) AND (BF10INEW=0) \  
AND (BF10ONEW<>1) THEN FLESH=0

LET EGG = BF10JNEW

```
IF (BF8DNEW=1) OR (BF10MNEW=1) THEN DAIRY=1
IF (BF8DNEW=0) AND (BF10MNEW=0) THEN DAIRY=0
```

```
IF (FLESH=1) OR (EGG=1) OR (DAIRY=1) THEN ASF=1
IF (FLESH=0) AND (EGG=0) AND (DAIRY=0) THEN ASF=0
```

```
FREQ FLESH EGG DAIRY ASF
```

```
SELECT (ESTAGE >= 6) AND (ESTAGE < 24)
FREQ FLESH EGG DAIRY ASF
SELECT
```

- \* Creates and codes variables for vitamin A-rich plant food
- \* groups, and gives frequencies, overall and for children
- \* 6-23 months of age.

```
DEFINE VITAVEG #
DEFINE VITAFR #
DEFINE GREENS #
DEFINE PALM #
DEFINE VITAPLNT #
```

```
LET VITAVEG = BF10BNEW
LET VITAFR = BF10ENNEW
LET GREENS = BF10DNEW
LET PALM = BF10QNEW
```

```
IF (VITAVEG=1) OR (VITAFR=1) OR (GREENS=1) OR \
(PALM=1) THEN VITAPLNT=1
IF (VITAVEG=0) AND (VITAFR=0) AND (GREENS=0) AND \
(PALM<>1) THEN VITAPLNT=0
```

```
FREQ VITAVEG VITAFR GREENS PALM VITAPLNT
```

```
SELECT (ESTAGE >= 6) AND (ESTAGE < 24)
FREQ VITAVEG VITAFR GREENS PALM VITAPLNT
SELECT
```

- \* Creates and codes a variable grouping legumes with nuts.
- \* The grouped variable is needed to create the food group
- \* diversity variable.

```
DEFINE LEGUMNUT #
IF (BF10KNEW=1) OR (BF10LNEW=1) THEN LEGUMNUT=1
```

```
IF (BF10KNEW=0) AND (BF10LNEW=0) THEN LEGUMNUT=0
```

- \* Creates and codes a variable grouping grains with roots and tubers.
- \* The grouped variable is needed to create the food group diversity variable.

```
DEFINE STSTAPLE #  
IF (BF10ANEW=1) OR (BF10CNEW=1) THEN STSTAPLE=1  
IF (BF10ANEW=0) AND (BF10CNEW=0) THEN STSTAPLE=0
```

- \* Creates the food group diversity variable by summing eight food groups. Gives descriptive statistics for children 6-23 months of age, and by age group.

```
DEFINE DIVERSTY #  
LET DIVERSTY=DAIRY+FLESH+EGG+LEGUMNUT+VITAPLNT+\  
STSTAPLE+BF10FNEW+BF10NNEW
```

```
SELECT (ESTAGE >= 6) AND (ESTAGE < 24)  
DESCRIBE DIVERSTY  
FREQ DIVERSTY  
SELECT
```

```
SELECT (ESTAGE >= 6) AND (ESTAGE < 12)  
DESCRIBE DIVERSTY  
FREQ DIVERSTY  
SELECT
```

```
SELECT (ESTAGE >= 12) AND (ESTAGE < 18)  
DESCRIBE DIVERSTY  
FREQ DIVERSTY  
SELECT
```

```
SELECT (ESTAGE >= 18) AND (ESTAGE < 24)  
DESCRIBE DIVERSTY  
FREQ DIVERSTY  
SELECT
```

- \* Generates descriptive statistics for non-breastfed and breastfed children separately, for infant formula, milk other than breastmilk, cheese or yogurt, and the "dairy" variable that groups milk, cheese, and yogurt (but not

\* formula). Results are shown separately for ages 0-5  
\* months, and then for ages 6-23 months.

```
SELECT (BF6=1) AND (ESTAGE >=0) AND (ESTAGE < 6)
FREQ BF8CNEW BF8DNEW BF10MNEW DAIRY
SELECT
```

```
SELECT (BF6=0) AND (ESTAGE >=0) AND (ESTAGE < 6)
FREQ BF8CNEW BF8DNEW BF10MNEW DAIRY
SELECT
```

```
SELECT (BF6=1) AND (ESTAGE >= 6) AND (ESTAGE < 24)
FREQ BF8CNEW BF8DNEW BF10MNEW DAIRY
SELECT
```

```
SELECT (BF6=0) AND (ESTAGE >= 6) AND (ESTAGE < 24)
FREQ BF8CNEW BF8DNEW BF10MNEW DAIRY
SELECT
```

\* Defines variables for each component of young child  
\* feeding practices score (breastfeeding, frequency of  
\* feeding and food group diversity).

```
DEFINE BFSCORE #
DEFINE FRQSCORE #
DEFINE DIVSCORE #
```

```
IF BF6=1 THEN BFSCORE=2
IF BF6=0 THEN BFSCORE=0
```

```
IF (ESTAGE >= 6) AND (ESTAGE < 9) AND (BF11NEW=0) \
THEN FRQSCORE=0
IF (ESTAGE >= 6) AND (ESTAGE < 9) AND (BF11NEW=1) \
THEN FRQSCORE=1
IF (ESTAGE >= 6) AND (ESTAGE < 9) AND (BF11NEW > 1) \
THEN FRQSCORE=2
```

```
IF (ESTAGE >= 9) AND (ESTAGE < 24) AND ((BF11NEW=0) \
OR (BF11NEW=1)) THEN FRQSCORE=0
IF (ESTAGE >= 9) AND (ESTAGE < 24) AND (BF11NEW=2) \
THEN FRQSCORE=1
IF (ESTAGE >= 9) AND (ESTAGE < 24) AND (BF11NEW > 2) \
THEN FRQSCORE=2
```

```
IF (DIVERSTY=0) OR (DIVERSTY=1) OR (DIVERSTY=2) THEN DIVSCORE=0
IF (DIVERSTY>2) AND (DIVERSTY<5) THEN DIVSCORE=1
IF (DIVERSTY>=5) THEN DIVSCORE=2
```

```
SELECT (ESTAGE >= 6) AND (ESTAGE < 24)
DESCRIBE BFSCORE FRQSCORE DIVSCORE
FREQ BFSCORE FRQSCORE DIVSCORE
SELECT
```

- \* Creates and codes the young child feeding practices
- \* score by summing the 3 scores. Gives descriptive
- \* statistics for ages 6-23 months. “DESCRIBE YCFPS”
- \* the mean (average) score for the young child
- \* feeding practices score.

```
DEFINE YCFPS #
LET YCFPS=BFSCORE+FRQSCORE+DIVSCORE
```

```
SELECT (ESTAGE>= 6) AND (ESTAGE<24)
DESCRIBE YCFPS
FREQ YCFPS
SELECT
```

- \* Creates and codes the “Good young child feeding practice prevalence”. This
- \* is identical to the proportion scoring “6” on the YCFPS.

```
DEFINE GCFP
IF (YCFPS>=0) AND (YCFPS<6) THEN GCFP=0
IF (YCFPS=6) THEN GCFP=1
```

```
SELECT (ESTAGE>= 6) AND (ESTAGE<24)
FREQ GCFP
SELECT
```

- \* Creates and codes the good infant and young child feeding
- \* practices prevalence by combining information about exclusive
- \* breastfeeding for ages 0-5 months with "good practices"
- \* for ages 6-23 months (defined as scoring "6" on the
- \* YCFPS,above).

DEFINE GICFP #

IF (ESTAGE>=0) AND (ESTAGE<6) THEN GICFP=EXCLBF

IF (ESTAGE>=6) AND (ESTAGE<24) AND (YCFPS=6) \  
THEN GICFP = 1.

IF (ESTAGE>=6) AND (ESTAGE<24) AND ((YCFPS>=0) \  
AND (YCFPS<6)) THEN GICFP = 0.

SELECT (ESTAGE >=0) AND (ESTAGE < 24)  
FREQ GICFP  
SELECT

- \* Saves all the new variables in a new data file.
- \* Edit the ROUTE command to specify your path
- \* and desired file name.

ROUTE C:\EPI6\KPC\TEMPPLUS.REC  
WRITE RECFILE

## **APPENDIX 9: CODEBOOKS**

The first codebook on the next pages describes the file MODULE2.REC. Variable names were chosen to be as consistent as possible with those used in a larger KPC template, which is being developed for the entire KPC.<sup>40</sup>

In addition to the variables described in the first codebook, the Epi Info data entry program provided will create a series of variables named CHECK, CHECK01, CHECK02, etc. These are the variables created at the end of each screen of data entry, when the data entry staff are asked to check their work before moving on to the next screen. These variables can be ignored during analysis, as they are only useful during the data entry process.

The second codebook describes variables constructed in the analysis program shown in Appendix 8.

---

<sup>40</sup> Julie Mobley, personal communication. Ms. Mobley generously provided a draft of this Windows version template, so that we could be as consistent as possible in variable naming conventions, etc.

**CODEBOOK FOR MODULE2.REC**

Question	Variable name	Variable type	Variable length	Codes
Cluster number	CLUSTNUM	Numeric	3	
Household number	HHNUM	Numeric	2	
Record number	RECNUM	Numeric	2	
Age of child (in months)	ESTAGE	Numeric	2	
S sex of child	CHILDSEX	Numeric	1	1 = Male 2 = Female
1. Did you ever breastfeed?	BF1	Numeric	1	1 = Yes 0 = No
2. How long after birth did you put NAME to breast?	BF2	Numeric	1	1 = Immediately or within the first hour 0 = After the first hour 8 = Don't remember/ don't know
3. During 1 <sup>st</sup> 3 days, did you give liquid from breasts?	BF3	Numeric	1	1 = Yes 0 = No 8 = Don't know
4. During 1 <sup>st</sup> 3 days, did you give anything else before breastmilk?	BF4	Numeric	1	1 = Yes 0 = No 8 = Don't know

Question	Variable name	Variable type	Variable length	Codes
5. What did you give?				
Milk (other than breastmilk)	BF5A	Numeric	1	1 = Yes 0 = No
Plain water	BF5B	"	1	As above
Water with sugar and/or salt	BF5C	"	1	"
Fruit juice	BF5D	"	1	"
Tea / infusions	BF5E	"	1	"
Liquid and semi-liquid traditional medicine	BF5F	"	1	"
Infant formula	BF5G	"	1	"
Other	BF5X	"	1	"
6. Are you currently breastfeeding (NAME)?	BF6	Numeric	1	1 = Yes 0 = No
7. For how long did you breastfeed (NAME)?	BF7	Numeric	2	
8. Did (NAME) drink any of the following liquids yesterday during the day or at night?				
Breastmilk	BF8A	Numeric	1	1 = Yes 0 = No
Plain water	BF8B	"	1	As above
Commercially prepared infant formula	BF8C	"	1	"
Any other milk (tinned, powdered, fresh)	BF8D	"	1	"
Fruit juice	BF8E	"	1	"
Coffee or tea	BF8F	"	1	"
Any other liquids	BF8G	"	1	"
(OPTIONAL) Liquid or semi-liquid traditional medicine	BF8H	"	1	"

Question	Variable name	Variable type	Variable length	Codes
9. Did (NAME) drink anything from a bottle with a nipple yesterday during the day or at night?	BF9	Numeric	1	1 = Yes 0 = No 8 = Don't know
10. Did (NAME) eat any of the following foods yesterday during the day or at night?				
	BF10A	Numeric	1	1 = Yes 0 = No
Foods made from grain				
Pumpkins, squash, carrots, sweet potato	BF10B	"	1	As above
Other foods made from roots or tubers	BF10C	"	1	"
Dark green leafy vegetables	BF10D	"	1	"
Ripe mango or papaya, other vitamin A-rich fruit	BF10E	"	1	"
Other fruits and vegetables	BF10F	"	1	"
Beef, pork, lamb, goat, rabbit, other	BF10G	"	1	"
Chicken, duck, or other birds	BF10H	"	1	"
Fresh or dried fish or shellfish	BF10I	"	1	"
Eggs	BF10J	"	1	"
Foods made from beans or lentils	BF10K	"	1	"
Groundnuts/peanuts or any other nuts	BF10L	"	1	"
Cheese or yogurt	BF10M	"	1	"
Food made with oil, fat, or butter	BF10N	Numeric	1	1 = Yes 0 = No
(OPTIONAL) Organ meats (liver, kidney, other)	BF10O	"	1	"
(OPTIONAL) Grubs, snails, insects, other small protein food	BF10P	"	1	"
(OPTIONAL) Food made with red palm oil, palm nut/pulp sauce	BF10Q	"	1	"
11. How many times did (NAME) eat solid or semi-solid foods other than liquids yesterday during the day or at night?	BF11	Numeric	1	0 = Not at all yesterday 1 = One time 7 = Seven or more times 8 = Don't know

Generating Indicators of Appropriate Feeding of Children 6 through 23 Months from the KPC 2000+

Question	Variable name	Variable type	Variable length	Codes
12. May I see the salt that is used for cooking?	BF12	Numeric	1	1 = Fortified 0 = Not fortified 8 = Not available to check
13. Did (NAME) receive a vitamin A dose like this during the last 6 months?	BF13	Numeric	1	1 = Yes 0 = No 8 = Don't know

**CODEBOOK FOR CONSTRUCTED VARIABLES**  
**ALL CONSTRUCTED VARIABLES ARE NUMERIC and ONE DIGIT**

Description	Constructed from variables:	New Variable	Codes
<p>A number of variables are recoded into new variables in order to define code 8 (“don’t know”) as missing in Epi Info. “Don’t know” is included as a option on the questionnaire in order to provide enumerators with an exhaustive set of responses. But for most analysis purposes, these responses should be excluded from frequencies, etc. The original variables are retained, in case users want to know the percent coded as “don’t know” for any question.</p>	<p>BF2 BF3 BF4 BF9 BF12 BF13</p>	<p>BF2NEW BF3NEW BF4NEW BF9NEW BF12NEW BF13NEW</p>	<p><b>Recode:</b> 1 = 1 (Yes) 0 = 0 (No) 8 = “.” (Missing)</p>
<p>Variables in Q.8 and Q.10 are renamed. If users adapt the questionnaire and add codes for “don’t know” and/or for missing information, the program will recode any other values (e.g. 8 or 9) to missing.</p>	<p>BF8A BF8B . . . BF8H BF10A BF10B . . . BF10Q</p>	<p>BF8ANEW BF8BNEW . . . BF8HNEW BF10ANEW BF10BNEW . . . BF10QNEW</p>	<p><b>Recode:</b> 1 = 1 (Yes) 0 = 0 (No) Any other values are coded to “.”</p>
<p>Recoded variable for frequency of feeding, defining code 8 (“don’t know”) as a missing value</p>	<p>BF11</p>	<p>BF11NEW</p>	<p><b>Recode:</b> 0 = 0 1 = 1 2 = 2 3 = 3 4 = 4 5 = 5 6 = 6 7 = 7 8 = “.” (Missing)</p>

Description	Constructed from variables:	New Variable	Codes
Infant or child had liquid other than breastmilk yesterday	Yes to any of BF8B through BF8H	OTHLIQ	1 = Yes, had at least one liquid other than breastmilk 0 = No
Infant or child had liquid other than breastmilk or water yesterday	Yes to any of BF8C through BF8H	OTHLIQ2	1 = Yes, had at least one liquid other than breastmilk and/or water 0 = No
Infant or child had one or more solid or semi-solid food groups yesterday	Yes to any of BF10A through BF10Q	SOLIDS	1 = Yes, had at least one solid/semi-solid food group 0 = No
Complementary feeding: Infant or child had both breastmilk and at least one solid or semi-solid food group yesterday	BF8ANEW SOLIDS	COMPFOOD	1 = Yes, had both breastmilk and solids/semi-solids yesterday 0 = No, did not have both breastmilk and solids/semi-solids yesterday
Exclusive breastfeeding: Breastfed yesterday and no other liquids or solids reported for yesterday  Note: Because of the way the questionnaire is designed, if the enumerator does not mark a liquid or food group it is taken as a "no."	BF8ANEW OTHLIQ SOLIDS	EXCLBF	1 = Yes, exclusively breastfed yesterday 0 = No, not exclusively breastfed yesterday
Breastfed AND given water yesterday, but no other liquids or solids given	BF8ANEW BF8BNEW OTHLIQ2 SOLIDS	BFWATER	1 = Yes, breastmilk and water only yesterday 0 = No (not breastfed, and/or not given water, and/or given other liquids or solids)

Description	Constructed from variables:	New Variable	Codes
Infant or child had breastmilk and liquid only	BF8ANEW OTHLIQ SOLIDS	LIQONLY	1 = Yes, breastmilk + other liquids only 0 = No (not breastfed and/or not given liquids, and/or had solids)
Infant or child had breastmilk and at least one liquid other than water. May or may not have had water, but did not have any solids/semi-solids.	BF8ANEW OTHLIQ2 SOLIDS	LIQONLY2	1 = Yes, breastmilk + other liquids only 0 = No (not breastfed and/or not given liquids other than water, and/or had solids)
Frequency of feeding yesterday was at least the minimum recommended number of times for the age group: 2+ times if 6-8 months 3+ times if 9-23 months	Based on BF11NEW	FREQFEED	1 = At least the minimum recommended number of times for age 0 = Fewer than the minimum recommended number of times for age
Did infant or child have any meat, fish, poultry, or organ meats	BF10GNEW BF10HNEW BF10INNEW BF10ONEW	FLESH	1 = Yes 0 = No
Did infant or child have eggs yesterday	BF10JNEW	EGG	1 = Yes 0 = No
Did infant or child have dairy yesterday	BF8DNEW BF10MNEW	DAIRY	1 = Yes 0 = No
Did infant or child have any of these animal source foods yesterday	FLESH EGG and DAIRY	ASF	1 = Yes 0 = No
Did infant or child have any vitamin A-rich yellow/orange vegetables yesterday	BF10BNEW	VITAVEG	1 = Yes 0 = No

Description	Constructed from variables:	New Variable	Codes
Did infant or child have any vitamin A-rich fruit yesterday	BF10ENEW	VITAFR	1 = Yes 0 = No
Did infant or child have any dark green leafy vegetables yesterday	BF10DNEW	GREENS	1 = Yes 0 = No
Did infant or child have any palm oil, palm nut, or palm nut pulp sauce yesterday	BF10QNEW	PALM	1 = Yes 0 = No
Did infant or child have any of these vitamin A-rich plant foods yesterday	VITAVEG VITAFR GREENS PALM	VITAPLNT	1 = Yes 0 = No
Did infant or child have any legumes and/or nuts yesterday	BF10KNEW BF10LNEW	LEGUMNUT	1 = Yes 0 = No
Did infant or child have any food made with grain, roots or tubers yesterday	BF10ANEW BF10CNEW	STSTAPLE	1 = Yes 0 = No
Dietary diversity yesterday	Sum of: FLESH EGG DAIRY LEGUMNUT VITAPLNT STSTAPLE BF10FNEW BF10NNEW	DIVERSTY	Range: 0 - 8 1 = One food group yesterday 2 = Two, etc.

Description	Constructed from variables:	New Variable	Codes
Breastfeeding score; intermediate variable for constructing young child feeding practices score	BF6	BFSCORE	0 = No longer breastfed 2 = Still breastfed
Score for frequency of feeding; intermediate variable for constructing young child feeding practices score	FREQFEED	FRQSCORE	0 = If 6-8 mos, fed 0 times; if 9-23 mos, fed 0-1 time 1 = If 6-8 mos, fed 1 time, if 9-23 mos, fed 2 times 2 = At least minimum recommended frequency (if 6-8 mos, fed 2+ times, if 9-23 mos, fed 3+ times)
Score for dietary diversity; intermediate variable for constructing young child feeding practices score	DIVERSTY	DIVSCORE	0 = 0-2 food groups yesterday 1 = 3-4 food groups yesterday 2 = 5-8 food groups yesterday Missing (".") if one or more food groups missing
Young child feeding practices score (ages 6-23 months)	Sum of: BFSCORE FRQSCORE DIVSCORE	YCFPS	Range: 0-6
Good young child feeding practices (ages 6-23 months)	YCFPS	GCFP	0 = Not fed using "good practices" yesterday (score of 0-5 on YCFPS, above) 1 = Fed using "good practices" yesterday (score of "6" on YCFPS above)
Good infant and young child feeding practices ( ages 0-23 months)	EXCLBF YCFPS	GICFP	0 = Not fed using "good practices" yesterday (for 0-5 months, not exclusively breastfed; for 6-23 months, score of 0-5 on YCFPS, above) 1 = Fed using "good practices" yesterday (for 0-5 months, exclusively breastfed; for 6-23 months, score of "6" on YCFPS above)