

**RECIPE TRIAL RECORDING FORM**

FORM RT-2

Location: \_\_\_\_\_ Date: \_\_\_\_ / \_\_\_\_ / \_\_\_\_

Recipe No. \_\_\_\_\_

Ingredients	Amount used (local measure*)	Amount used (mls)
Millet (fermented: Y/N)		
Sugar		
Salt		
Milk		
Groundnut paste		
Groundnut powder		
Bean flour		
Vegetable flour		
Vegetable Oil		
Water		

\*Specify local measure eg. spoon, plastic cup, tin cup etc.

Time began: \_\_\_\_ \_\_\_\_ Time ended: \_\_\_\_ \_\_\_\_

[only record the time taken to prepare the recipe.]

Describe method of preparation:

---



---



---



---



---

Probe all mothers: why/why not for ingredients, amounts, methods.

Once pap is ready, probes

How much of this pap could your child consume at one meal? How many meals in a day?

Could you prepare this at home regularly? Why/why not? Would you change the recipe? How? Why?

Ask about the taste, thickness, response of the child. ease of feeding, acceptability for a sick child, availability of ingredients, time needed for preparation, willingness to prepare and feed this recipe at home and why/why not?

RECIPE TRIAL ASSESSMENT FORM

FORM RT-3

Location : \_\_\_\_\_ Date : \_\_\_\_ / \_\_\_\_ / \_\_\_\_

Type of group : 4-6 month      7-9 month      Recipe no. \_\_\_\_\_

Mother's name	COLOUR CODE (green (g), yellow (y) or red (r))						
	thickness of pap	taste by mother	taste by child	feed to sick	availability of items	prep time	willing to prepare
<b>Total score</b>							

NOTE : green =well-liked = 3      yellow = acceptable = 2      red = unacceptable =1



## Appendix B.7

### TRIALS OF IMPROVED PRACTICES (TIPs) GUIDE FOR A THREE-VISIT INTERVIEW

(From: Dickin, K. *Trip report on qualitative research on infant feeding in Nigeria*.  
Consultant report prepared for Wellstart International, 1995.)



## HOUSEHOLD TRIALS: INITIAL VISIT

---

### BACKGROUND INFORMATION:

DATE : \_\_\_\_\_ START TIME: \_\_\_\_\_

COMMUNITY \_\_\_\_\_ CODE: \_\_\_\_\_

INTERVIEWER \_\_\_\_\_ CODE: \_\_\_\_\_

CHILD'S NAME \_\_\_\_\_ I.D.: \_\_\_\_\_

Age in months \_\_\_\_\_ Birthdate: \_\_\_\_\_

Sex: \_\_\_\_\_ Mother's occupation: \_\_\_\_\_

Number of hours per week away from child: \_\_\_\_\_

Caretaker's name: \_\_\_\_\_

Relationship to child: \_\_\_\_\_

Address/compound: \_\_\_\_\_

---

Explain to the mother that we want to learn about her child's health and feeding.

### HEALTH HISTORY

1. How is child's overall illness? Any problems? (Probe for frequent illnesses and mother's general impression of the child's health.)

2a. If possible, check the growth chart and note how well the child is growing. Also, note your own observations about whether or not the child looks \_\_\_\_\_.

3. Generally, how is the child eating? Any problems? How is the appetite?

### BREASTFEEDING HISTORY

4. Is the child breastfed? \_\_\_\_\_ (Y/N)

a. If yes: Frequency? Day \_\_\_\_ \_\_\_\_ Night \_\_\_\_ \_\_\_\_  
(estimate number of times)  
On demand? day \_\_\_\_ night \_\_\_\_ (Y/N)

Until when does she plan to continue?  
\_\_\_\_ \_\_\_\_ (child's age in months)

- b. If no: Ever breastfed? \_\_\_\_ (Y/N)
- c. If yes: When did she stop? \_\_\_\_ \_\_\_\_ months  
Why?
- d. If never breastfed: Why not?

#### **BREASTFEEDING OBSERVATION :**

If mother breastfeeds during the interview, observe her and the child and make notes on breastfeeding style. For example, include points such as the following:

- Does the mother seem relaxed about breastfeeding?
- Does she feed from both breasts?
- Does she begin the next breastfeed with the other breast?
- Who initiates and ends the feeding: the mother or the child?
- Does the child breastfeed frequently? For long periods?

#### **FEEDING OBSERVATION**

As part of the dietary assessment, observe any feedings that take place during the interview, noting issues such as type of food, consistency, amount served and consumed, method of feeding, and attitude of both the care-taker and the child. Make notes to supplement the 24-hour recall.

**DIETARY ASSESSMENT**

5. Conduct 24-hour recall for all foods and liquids (including water) other than breast milk.

Ask mother to tell you everything the child has taken by mouth in the previous day and night. Start in the morning and for each food, ask what the ingredients were, the amount and the mode of feeding (hand, cup, bottle, etc.)

Probe for snacks or pieces of fruit between meals, bites of family meals shared with the mother, foods purchased from vendors, drinks of tea, water or other liquids. Be patient and allow the mother to recall everything she can.

Hour	Food or Drink	Ingredients	Amount	Mode

6. Conduct a food frequency assessment about other foods, drinks or snacks that child commonly receives (other than those listed above). Ask the mother about foods she sometimes gives the child, but not yesterday. the idea is to learn about other foods that did not get included in the 24-hour recall, but that the child might eat at least once a week.

Probe for foods eaten only once in a while, such as when away from the house, on weekends, or just when available. Ask mother to estimate how much the child usually eats of this food, and about how often. Also ask about purchased foods and snacks.

Food/Drink	Ingredients	Amount	Times per week

Ask the questions below that apply to the child's age and diet. Probe and take detailed notes.

For all children 0–5.9 months:

7. What was the first thing given by mouth to the child after delivery? Why?

Who recommended it?

8. When was breastfeeding started?

Was colostrum given? Why or why not?

Would you be willing to start breastfeeding within one hour after birth? Why or why not?

9. What is the next new food or drink you are planning to add to the child's diet?

Why? When? How will you know the child is ready?

For all children aged 0–11.9 months, if ever breastfed:

10. Have you had any problems breastfeeding?  
**Probe insufficient milk, soreness, child crying, child refusing, being away from the child, etc.**

What problems? [If none, skip to #11.]

What did you do to resolve these problems?

Who do you ask/where can you go for help with breastfeeding problems?

For all children aged 6–23.9 months:

11. Is there any change in the child's appetite or feeding during illness? **Probe: diarrhoea and respiratory infection.**  
Does the child take less, the same, or more of breast milk?

Of water and other fluids?

Of pap and soft foods?

Of solid foods?

If less, is it due to child refusing or you not offering?

Is appetite a problem? What do you do about it?

For all children

12. Where do you learn new information about child feeding? who is a good (trusted) source of information or help with child feeding problems? Why? **Probe: for VFW, TBA, CBD**
13. Do you listen to the radio? If yes, how often? What do you like to listen to? Have you heard any information about child health on radio? What messages? What did you think about it? What about television? **Same probes as for radio.**

By the end of the interview, try to carefully/indirectly find out the level of education of the mother, the number of children, and the birth order of this child (3rd, 5th, etc.)

Mother's level of Education (check one) :

None \_\_\_\_\_ Primary incomplete \_\_\_\_\_ Primary completed \_\_\_\_\_

Secondary incomplete \_\_\_\_\_ Secondary completed \_\_\_\_\_ post-sec \_\_\_\_\_

No. of children \_\_\_\_\_ Birth order of child in study \_\_\_\_\_

**CLOSURE : Thank the mother for answering your questions and explain that you will return tomorrow to discuss the child's diet with her. Arrange a time to visit.**

**Counselling visit arranged for :** \_\_\_\_\_

**Time finished :** \_\_\_\_ \_\_\_\_ : \_\_\_\_ \_\_\_\_

**ANALYSIS OF DIET : (TO BE COMPLETED AFTER FIRST VISIT)**

14. Analyze the dietary information and identify any feeding problems listed on the Assessment and Counselling Guide. Write a brief summary of the following aspects of the diet and indicate whether or not current feeding is adequate.

Breastfeeding practices (including frequency):

Feeding frequency: (other than breastfeeding):

Amount given:

Quality/variety:

Consistency/thickness:

15. Problems identified : \_\_\_\_ \_\_\_\_ \_\_\_\_

list numbers from Assessment and Counselling Guide)

Possible recommendations: \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_



[See discussion guide for ideas on how to begin talking about the child's diet and possible recommendations.]

Ask the mother if she would be willing to try something new to improve the diet for the child's health and strength.

Ask if she has any ideas—make general suggestions and try to get her to come up with some possible improvements.

Discuss the appropriate recommendations for the child's age and current feeding patterns, based on the Assessment and Counselling Guide.

On the following forms, record as much detail as possible about the mother's responses to the recommendations (how does she react, why is she willing or unwilling to try?)

Negotiate with the mother so that she chooses one new practice she would be willing to try for a few days. Explain that you will be coming back to get her opinion on the new practice.

**RECOMMENDATION:**

Recommendation # \_\_\_\_\_ :

---

Specific food options suggested :

---

---

Mother's initial response:

---

---

---

---

---

Willing to try? Why or why not?

---

---

---

---

---

Any other circumstances under which she would try the recommendations? When? What modifications?

---

---

---

[Insert additional sheets for as many recommendations as are planned for this counselling session.]

Ask the mother to explain to you the new practice she will try. Make sure she understands and agrees. Summarize (in her own words) what the mother has agreed to try:

---

---

---

Ask if she has any questions or comments (record them). Make sure that all the details of preparation are clear.

Write what she is going to try on a "Child Feeding Reminder" slip and give it to her to keep.

Arrange a date for follow-up in about 5 days (see schedule). Ask the mother when is a convenient time of day to meet her and try to arrange that she will be home when you come.

Follow-up visit arranged for: \_\_\_\_\_

Thank mother for spending time answering your questions and encourage her to really try the new practice.

Time finished : \_\_\_\_ : \_\_\_\_



**OUTCOME OF TRIAL:**

Refer to summary of the agreement made with the mother during the second visit (after counselling). Using the following forms, note each practice she agreed to try, and ask the questions listed. Probe for reasons why and make detailed notes.

Fill in separate forms for each practice she agreed to try, or for what she tried instead.

**Recommendation :**

---

---

---

3.3 Has the mother tried it? \_\_\_ Y/N

3.4 If no, what are her reasons? Probe why not.

---

---

---

3.5 If yes, did she like it? \_\_\_ Y/N

3.6 What did she like about it?

3.7 What didn't she like about it?

---

---

---

3.8 How does she feel the child responded?

---

---

---

3.9 Did she modify the recommendation? How? Why?

---

---

---

3.10 Did other people say anything about it? Who? (Husband, in-laws, friends?) What did they say?

---

---

---

3.11 Will she continue the recommended practice? Why or why not? Will it be every day?

---

---

---

3.12 Would she recommend it to others? How would she convince them to try it? (in her own words?)

---

---

---

[Insert additional sheets as needed].

Closure: Encourage mother to continue practice and ask if she has any questions or comments. Provide counselling or information as needed. Thank her for her participation in the study.

Time finished : \_\_\_\_ \_\_\_\_ : \_\_\_\_ \_\_\_\_



**Attachment B.8**

**SAMPLE TIPs TABULATION FORM**

(From: The Weaning Project, National Nutrition Council, Swaziland.)



**HOUSEHOLD TRIAL TABULATION FORM**

AGE GROUP

COMMUNITY

INTERVIEWERS \_\_\_\_\_

No. interviewed: First visit

Second visit

Third visit \_\_\_\_\_

I.D.	Age	Feeding Problems	Recs Offered	Reasons/ Reactions	Recs Agreed	Tried	Outcome: Reactions/ Changes	Adopt



**Attachment B.9**

**SAMPLE FOCUS GROUP DISCUSSION GUIDE**

(From: 1. Dickin, K. *Trip report on qualitative research on infant feeding in Nigeria*.  
Consultant report prepared for Wellstart International, Washington, D.C., 1995)



## FGD GUIDE—MOTHERS OF CHILDREN <2 YRS

TOPIC	DISCUSSIONS/TRANSITIONS
Introduction.	Facilitator's and Observer's names
Topic of Interview.	We would like to talk to you today about your children, especially when they are young.
No right or wrong answers.	There are no right or wrong answers to any of the questions—this is not a test.
Your opinions.	We would just like to know about what you do normally and ask your opinions.
Child Health Project.	We are working on a project about child health in Nigeria.
Help other people like them.	We would like to know your experiences and thoughts to help other families. After we are finished, we will tell you more about the project.
Length of time of discussion.	The discussion will take about one hour.
Talking to one another.	As we will be discussing many things about ourselves, it will be important that we not all talk at once because we will want to hear each other so we can talk together.
Explain note-taking and tape recording.	_____ (observer's name) will be writing down some of the things we talk about so we can remember them later. Also, we would like to use a tape recorder. Does anyone object?
Confidentiality.	We are the only ones who will know your name and your baby's name and we will not use names in any reports.
Check understanding.	Do you understand what I said?
Clarification if needed.	Do you have any questions?

TOPIC	DISCUSSION/TRANSITIONS	PROBES
Women's Introduction (warm up)	Please introduce yourselves and as you do, tell us how many children you have, the name and age of your youngest child.	- Observer should record this information for use during analysis
Motherhood (To establish emotional pulls)	As you all have young children, can you say something about how your child makes you feel?	<ul style="list-style-type: none"> <li>- Happy, why?</li> <li>- Proud, why?</li> <li>- Tired, why?</li> <li>- Link to future</li> <li>- Aspirations</li> </ul>
Good Mother (To establish tone)	There are many things your children do that make you happy. Now I would like to shift to you, the mother. These are some pictures of women here in Nigeria (place photos so all can see.) Which one of these women do you believe is a good mother?	<ul style="list-style-type: none"> <li>- How can you tell?</li> <li>- What is it about her?</li> <li>- How would she care for her child?</li> </ul> <p>-Why are the others not good mothers?</p>
Necessities for Children of Different Ages (To place feeding among other needs)	<p>Among us we have mothers with children of many different ages. Think of your youngest child and tell us: What was important for your baby right after birth?</p> <p>What was important for your baby during the first month?</p> <p>What about in the next months up to six months?</p>	<ul style="list-style-type: none"> <li>- Care/ceremonies</li> <li>- Foods</li> <li>- Drinks/water/"agbo"</li> <li>- Breastmilk</li> <li>- Why?</li> </ul> <ul style="list-style-type: none"> <li>- Food, drinks</li> <li>- Care/ceremonies</li> </ul> <ul style="list-style-type: none"> <li>- Care/development</li> <li>- Food, drinks</li> <li>- Why started?</li> </ul>
<u>Child Feeding Decisions</u>	<p>Some of you mentioned breastmilk as important for a baby (may have to rephrase, depends on response)</p> <p>Who has breastfed their youngest child? Why did you breastfeed/why did you prefer breastfeeding? Who has influenced your decision to breastfeed?</p>	<ul style="list-style-type: none"> <li>- Advantages of breastfeeding</li> <li>- Problems with giving bottles or cow's milk</li> <li>- People and reasons for influence—doctor, husband, relatives, friends.</li> </ul>
No breastfeeding	Has anyone not breastfed their baby? Why didn't you breastfeed? ( <u>or if everyone breastfed</u> ) Why might a mother not	- People and reasons influenced? Husbands? VHWs, CBDs, etc.?

	breastfeed?	<ul style="list-style-type: none"> <li>- Health?</li> <li>- Work?</li> <li>- Inconvenience?</li> <li>- Image of breastfeeding?</li> </ul>
Use of other milks	<p>Earlier, some of you mentioned that young babies need milks other than breastmilk. Who among you is giving other milk to your youngest child?</p> <p>Why did you decide to do this?</p>	<ul style="list-style-type: none"> <li>- Benefits of milk to child?</li> <li>- Which type of milk? Why?</li> <li>- Insufficient milk, what can be done, who do you ask?</li> <li>- Does cost limit use?</li> <li>- People and reasons influenced? Husbands? Grandmothers? VHWs, CBDs, etc.?</li> </ul>
Pictures of women	<p>Many of you have received advice about how to feed your child. Please look at the photographs I showed you earlier.</p> <p>Which one of these women looks like she could have given you advice?</p>	<ul style="list-style-type: none"> <li>- Why?</li> <li>- From your neighborhood, health center, etc.?</li> <li>- Modern vs. traditional views?</li> <li>- Why not for those not chosen?</li> </ul>
Attitude/Images of BF and Bottle-feeding Pictures of women	<p>Please look again at the photographs. Who do you think would have breastfed their child and not used a bottle?</p> <p>Who do you think would be using a bottle?</p>	<ul style="list-style-type: none"> <li>- Why? Why not others?</li> <li>- Would she give anything besides breastmilk? What? Why or why not?</li> <li>- Why? Why not others?</li> </ul>
Neighborhood Woman	<p>Which of these women might live in your neighborhood? Let's say this woman who lives in your neighborhood had a child of one month. She had been breastfeeding her baby, but now came to you for advice on what to do next. What would you recommend?</p>	<ul style="list-style-type: none"> <li>- Why? (probe for image of someone like themselves)</li> <li>- Beginning other milks, water feeds, pap?</li> <li>- Depends on whether child is sick or healthy?</li> </ul>
Children's Pictures	<p>Now please look at these three children. How have they been fed? Why?</p>	<ul style="list-style-type: none"> <li>- Fatness, strength</li> <li>- Health</li> <li>- Other things than milks?</li> </ul>
Breastfeeding and bottle-feeding problems	<p>Finally, I would like to ask you if you have heard of any problems associated with breastfeeding?</p>	<ul style="list-style-type: none"> <li>- Maternal weakness</li> <li>- Lack of milk</li> <li>- Nipple soreness/infection</li> </ul>

	<p>What problems?</p> <p>What about bottle-feeding? (probe on cow's milk)</p>	<ul style="list-style-type: none"> <li>- Ability/ways to overcome?</li> <li>- Child illness/behavior</li> <li>- Nutrition</li> <li>- Cost</li> <li>- Ability/ways to overcome?</li> </ul>
Contraceptive effects	<p>Can you get pregnant while breastfeeding? How soon after the previous birth?</p> <p>Is it good to become pregnant soon? If not, how can you avoid getting pregnant too soon?</p>	<ul style="list-style-type: none"> <li>- Breastfeeding and menstruation? (LAM)</li> <li>- Is postpartum abstinence practiced? How long?</li> <li>- Importance of spacing?</li> <li>- Child's need for breastmilk?</li> <li>- Use of contraceptives?</li> </ul>
Closure	<p>Recap main points discussed.</p> <p>Thank you for your time. Now do you have any questions you would like to ask? I am not sure I will be able to answer them all, but I will try. (Record all questions. Do not lecture on child feeding.)</p>	



## APPENDIX C

### Guidelines for the Dietary Analysis during TIPs<sup>1</sup>

This appendix provides guidance on analysis of dietary information obtained during the dietary assessment portion of the trials of improved practices (TIPs) and the recipe trials. Use of this guide requires familiarity with nutritional science and experience calculating nutrient requirements and the composition of foods. It is intended for use by the team nutritionist.

The dietary analysis initially requires three estimates: 1) dietary requirements (for energy, protein, other nutrients); 2) the portion of these requirements being met by breastmilk consumption; and 3) the portion of these requirements that must be met through complementary foods. This information is used to identify dietary needs, and alternative foods and feeding practices that will improve consumption of energy and other nutrients.

#### Nutrient Requirements

To determine whether a child's diet provides adequate energy and other nutrients, refer to Table 1 for estimates of the child's nutrient requirements at different ages.

**Table 1: Estimated (rounded) Energy, Protein, and Other Nutrient Requirements by Age\***

Nutrient	Age in months			
	0 up to 6	6 up to 9	9 up to 12	12 to 24
energy (kcal/day)	400–550	680	830	1100
protein (g/day)	9.1	9.1	9.6	10.9
vitamin A (µg RE/day)	350	350	350	400
iodine (µg/day)	55	60	60	70
zinc (mg/day)	4.0	5.0	5.0	6.5
iron (mg/day)				
- low bioavailability	21	21	21	12
-medium bioavailability	11	11	11	6
-high bioavailability	7	7	7	4

\* Derived from the International Dietary Energy Consultative Group (IDECG) for energy and from the Dietary Reference Values for the United Kingdom for all others, as cited in Brown, et. al. (1996).

<sup>1</sup> This appendix focuses on estimating energy intake because this is the most important calculation. The same process is used to estimate the adequacy of protein, vitamin A, iron, and other nutrient intake. References in the text may be made to issues related to other nutrients, but complete information is not given.

## Estimating the Energy Contribution from Breastmilk and Other Foods

Estimates of the calories and other nutrients contributed from breastmilk at different ages are calculated next. This calculation is important because the total energy requirement minus the amount from breastmilk indicates the calories that must be obtained from non-breastmilk liquids and foods in the diet.

Estimates of energy from breastmilk are included in Table 2 for children of six months up to two years. For children under six months, this calculation is not done because it is assumed that breastmilk alone provides adequate energy for most infants as long as nursing is frequent and on demand.

**Table 2: Approximate (rounded) Estimates for Energy Requirements and Energy Supplied by Breastmilk and Other Foods, by Age Group**

<b>Age Group (months)</b>	<b>Total Energy Requirement (kcal/day)*</b>	<b>Energy from Breastmilk (kcal/day)</b>	<b>Remainder (obtained from other foods) (kcal/day)</b>
6 up to 9	680	400	280
9 up to 12	830	380	450
12 to 24	1100	350	750

\* As noted previously, these estimates are based on energy expenditure and come from the International Dietary Energy Consultative Group. FAO/WHO/UNU (1985) uses more conservative estimates based on energy consumption. For total energy, these estimated requirements (rounded) are 800, 900, and 1200 kcal/day at 6 up to 9, 9 up to 12, and 12 to 24 months, respectively. The remaining calories from complementary foods, therefore, are 400, 520, and 850 kcal/day at 6 up to 9, 9 up to 12, and 12 to 24 months, respectively.

The breastmilk energy estimates in Table 2 represent the average consumed at different ages. They are taken from a variety of longitudinal studies that included weighed intakes (Brown et al., 1996). If children in the population are *not* breastfed frequently, the contribution of breastmilk needs to be modified. Use Table 3 as a guide.

**Table 3: Estimates of Energy Consumption (kcal/d) from Breastmilk\***

<b>Nursing Frequency</b>	<b>Kcal contribution</b>
Child nurses 6–8 times in 24 hours	400 kcal
Child nurses 4–6 times in 24 hours	300 kcal
Child nurses 3–4 times in 24 hours	200 kcal
Child nurses 1–3 times in 24 hours	100 kcal

\*Adapted from Doloksaribu, D., M. Griffiths, and M. Zeitlin. *Rapid Assessment Tool for Dietary Adequacy: The Indonesia Precoded 24-hour Food Recall*. Jakarta: Ministry of Health, 1980.

The energy density of breastmilk is approximately 65kcal/100gm. Any food replacing breastmilk that is not at least as dense calorically will contribute to undernutrition.

### **Analyzing the 24-hour Recall Data**

Data in Tables 1–3 are used to estimate nutrient requirements, the contribution from breastmilk (based on actual practices), and the deficit that must be filled by other foods and liquids in the young child’s diet. This deficit will be the same as the estimates found in Table 2 if children are breastfed frequently (on demand). If children nurse fewer than six times per day, then the energy requirements from complementary foods must be increased accordingly (by subtracting the corrected estimate in Table 3 from the total energy requirement in Table 2).

These requirements are then compared to the estimates obtained from the 24-hour food recall. It is important to recognize that 24-hour assessments may not be representative of a child’s usual intake, because young children’s appetites and food consumption vary substantially from day to day. Twenty-four hour assessments are appropriate for the TIPs because only rough estimates of intake are being made in order to identify where the major dietary problems are and to assess realistic ways to improve practices. All 24-hour dietary assessments, however, should include probing, qualitative questions to evaluate whether consumption on the day being measured was typical, and if not, why and in what ways it differed from usual diet and feeding practices, as described in Chapter 6.

To assess the nutrient contribution of non-breastmilk foods, all foods and liquids consumed are converted to their nutrient values. The 24-hour recall assessment does not involve weighing of food, so the amount a child consumes is more likely to be estimated in volumes or local measures than in grams. It is important to identify standard household measures and to make sure interviewers know the volume of these measures. Information on the nutrient content of common foods, preparations, and portion sizes needs to be assembled in each country, based on local recipes and common serving utensils. In many countries, quantitative studies of dietary intake or laboratory assessment of recommended weaning foods have been conducted. These studies often provide information on the nutrient content of prepared foods. Likewise, the World Food Database and International Mini-List of the nutrient composition of local foods should be consulted.

Many of the required nutrient calculations can be done ahead of time, before analysis of the dietary assessments. There are several steps for calculating the nutrient composition of cooked foods (ready for consumption). Once again, keep in mind that the dietary assessment for TIPs is not intended to be exact, only to identify areas where a child’s diet can be improved. Steps to follow are:

- **Examine the local diet.** First, data on the energy (nutrient) content of local foods are obtained from food consumption tables. Food consumption tables usually state values for 100 gram portions of raw foods. These raw foods must be adjusted for factors such as water absorption during cooking and the variety of ingredients in a recipe to determine nutrients per cooked food.

Further information on these types of calculations can be found in Cameron and Hofvander, 1983; and Mitzner, Scrimshaw, and Morgan, 1984. Common sources of data on food composition include regional food composition tables, and the World Food Database and International Mini-List. For East Africa, useful data can be found in Burgess A et al., *Community Nutrition for Eastern Africa*. Nairobi, Kenya: AMREF, 1994.

- **Identify frequently used utensils and portion sizes.** Once cooking factors have been applied, the quantity of 100 gram of food is converted to local household measures, such as serving spoons, cupfuls, etc.
- **Identify recipes, variations, and alternative foods and preparations.** If there are a variety of ways to prepare a food such as pap or porridge, the different consistencies need to be considered and their caloric density calculated for each variation. For example, there may be a pap that is served in a bottle, and other ways to prepare pap for drinking from a cup or feeding with a spoon.
- **Calculate consumption.** Once nutrient values are estimated for prepared foods in common serving sizes, calculate the energy and other key nutrients consumed by the child.
- **Categorize and rank alternative foods and recipes.** To aid the task of identifying appropriate recommendations for improving child feeding, rank foods (and recipes) by their energy density (if calories are the major problem) or their value in terms of providing other essential nutrients. (See Box C.1 at the end of this Appendix).

### **Balancing the Trade-offs between Energy Density, Feeding Frequency, and Food Quantity when Making Recommendations**

During the analysis, all the dietary data (recall and qualitative information) are used to formulate concrete recommendations for improving intake. Deciding what to recommend requires consideration of the composition of the local diet (primarily energy density)<sup>2</sup>, how often children are fed, and the style of feeding, which often determines the amount consumed by young children.

Total energy consumed in the diet depends on three main factors:

- energy density (the amount of energy or calories per 100 grams of food).
- amount consumed at each feeding<sup>3</sup>
- frequency of feeding (including meals and snacks between meals).

---

<sup>2</sup> These factors are the same for other nutrients: vitamin and mineral intake depends on their density per 100 grams of food (or breastmilk), the amount eaten at each feeding, and the frequency with which foods containing these micronutrients are consumed. An additional consideration for some vitamins and minerals (e.g., vitamin A, iron, zinc) is their bioavailability. This depends on the source of the nutrient as well as the other foods consumed at the same meal. A detailed discussion of the bioavailability of different nutrients and their combination is beyond the scope of this manual.

<sup>3</sup> This has an upper limit of about a teacup or 200 mls for 6 up to 9 month old children; about 250 ml for children 9 up to 12 months; and 300–350 ml for children 12 to 24 months of age.

The data presented in Table 4 show the trade-offs among these three factors. Clearly, a food that is low in energy density must be fed more frequently and in greater amounts than a high density food. For example, if an eight month-old child receives only porridge and breastmilk, and at each meal he only consumes about a small cupful of porridge (150 ml) with an energy density of 50 kcal/100 grams (and diluted maize porridge often has an even lower density), this same porridge (recipe and quantity) must be eaten at least four times a day, with no reduction in breastfeeding, to meet the child's requirements and avoid energy deficits.

**Table 4: Examples of Amounts and Number of Servings Needed for Foods of Different Energy Densities, by Age Group**

Age Group (months)	Maximum Serving Size (ml)	Number of servings	Amount (g) needed per serving, by energy density		
			50 kcal/100g	100 kcal/100g	200 kcal/100g
6 up to 9	~200	3	not possible*	130	70
		4	200	100	50
		5	160	80	40
9 up to 12	~ 250	3	not possible*	170	80
		4	250	125	60
		5	200	100	50
12 to 24	~300-350	3	not possible*	250	130
		4	not possible*	200	100
		5	300	160	80

\* "Not possible" indicates that the amount of food needed per serving exceeds the estimated maximum serving size.

For older children, who have greater energy requirements, a porridge with only 50 kcal/100 grams is even less appropriate because it is not possible for older children (more than 12 months) to consume enough calories during a reasonable number of feedings (five or fewer per day) or given realistic serving sizes (300-350 ml). On the other hand, energy-dense foods such as fried bean cakes provide many calories in just a small serving (also see Box C.1).

During the dietary assessment and analysis, it is important to assess the energy (or other nutrient) density of the child's usual diet, frequency of feeding, and total consumption. Next, identify ways that either energy density or feeding practices can be modified to increase total intake, paying attention to the qualitative data collected. Evaluate the trade-offs among modifying existing recipes (frying or adding new ingredients), encouraging additional meals, promoting snacks between meals, and offering more food at each sitting. **As a general rule**, if the usual foods consumed by young children contain fewer than 65 kcal/100 grams, give priority to practices that increase their energy density.

It is important to remember that, in reality, each child's diet usually includes breastmilk and a variety of foods of different energy densities that are eaten together at meals and snacks throughout the day. In the field, it is often impossible to obtain precise estimates of usual energy and other nutrient consumption. The dietary assessment and analysis described here is intended to produce a rough estimate of energy consumption. This estimate permits an

assessment of whether energy (or other nutrient) intake appears adequate for age. If intake is not adequate, the assessment is intended to identify factors or behaviors that cause the gap and how they can be improved.

**TIPs recommendations are supposed to be realistic.** They may not lead to ideal or optimum nutrition, and diets often must be improved in small, incremental steps. Recommendations frequently suggested include: feeding one additional meal per day (if frequency is low); increasing the amount served to the child by two spoonfuls each meal and encouraging the child to finish it all (if amount eaten is low); or preparing more nutrient-dense foods by adding energy-rich ingredients (if energy density is low). If energy intake is adequate but variety is poor, a recommendation to feed fresh fruits and/or animal products once or twice daily can be offered.

### **Example of a how to Analyze a 24-hour Food Recall**

Box C.1 shows an example of how the foods commonly consumed by Yoruba children in Nigeria were categorized by approximate energy density. This information is used below to determine how to improve the sample diet of a 10-month-old child who was breastfed on demand, 10 times over a 24-hour period:

<b>Time</b>	<b>Food/ingredients</b>	<b>Amount</b>	<b>Estimate of Energy (kcal)</b>
9:00 a.m.	plain maize pap	¾ cup	50
11:30 a.m.	banana	½ fruit	50
2:00 p.m.	rice and beans stew (palm oil, tomato, pepper)	½ cup 1 ladle	100 50
4:00 p.m.	boiled egg	½ egg	30
7:00 p.m.	plain maize pap akara (fried bean cake)	¾ cup 1 piece	50 100
Estimated total energy intake from foods other than breastmilk:			430

The rough calculation shows energy intake to be borderline, because a frequently breastfed child at this age needs about 450 kcal/day in addition to breastmilk (Table 3). Feeding frequency is adequate, at three meals plus two snacks a day, so the best ways to improve the diet are through gradual increases in serving sizes or increasing energy density by adding ingredients to the pap or replacing pap with a more nutritious family food such as yam or stew.

**BOX C.1: ENERGY-DENSITY CATEGORIES TO GUIDE ANALYSIS OF  
24-HOUR RECALL INFORMATION IN NIGERIA**

**Amount of foods that provide about 100 kcal (using estimated energy density)**

Food	Weight	Local measure
<b>Energy density = 25 to 50 kcal/100 grams</b>		
plain pap (maize or guinea corn)	340 g	1 ½ cups*
pap with sugar	250 g	1 cup
<b>Energy density = 50 to 100 kcal/100 grams</b>		
pap with groundnut, soya, or bean & oil	125 g	½ cup
<i>ewedu</i> (spinach) soup without oil	130 g	½ cup
plain cooked cowpea	125 g	½ cup
<i>gbegiri</i> (bean) soup		¾ cup
mango	150 g (edible portion)	one small fruit
banana	120 g (edible portion)	one 6" fruit
fresh orange juice	250 g	1 cup
<b>Energy density = 100 to 200 kcal/100 grams</b>		
<i>moin-moin</i> (steamed bean cake)	60 g	
beans with oil	80 g	⅓ cup
<i>egusi</i> stew (pumpkin seeds, dried fish)	50 g	1 serving spoon
<i>okro</i> soup w/ fish	50 g	1 serving spoon
cooked beef	60 g	
egg (boiled, medium size)	75 g	1 ½ eggs
<i>ewedu</i> soup with oil and fish	60 g	
cooked rice	100 g	⅔ cup
<b>Energy density = 200 or more kcal/100 grams</b>		
<i>akara</i> (fried bean cake)	20 g	1 piece
fried fish	20 g	
groundnuts (roasted)	20 g	
soybean flour	30 g	⅓ cup
palm or vegetable oil	14 g	1 tablespoon

\* Cup refers to 250ml. Local cups used for feeding children will need to be calibrated to allow estimates of the volumes consumed.