

Infant and Young Child Feeding Practices Monitoring Tool and Guide



Photos: PATH/Evelyn Hockstein

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I. Introduction and Instructions

Purpose of the tool

The Feeding Practices Monitoring Tool is designed to help programs track progress in achieving key practices/behaviors related to infant and young child feeding on an ongoing basis. The tool tracks behaviors at the individual level at each counseling or contact point with the community health worker, thereby providing a record of progress toward reaching an optimal mix of practices for the child.

The tool is also designed so that data can be aggregated in real-time (rather than only at annual, mid-term, or end-of-project points) to assess changes in infant and young child feeding practices at the community, or possibly program level. Through this function, it serves as a supervision support and program management tool. The data collected through this tool cannot be used to draw conclusions about program outcomes.

While primarily designed to be a practices monitoring device (i.e., data collection method), since it is an individual child record, it could also be adapted to serve as a support for negotiation of practices with the mother/caregiver and/or a reminder tool.

Background on development and use of this tool

- The tool (Appendix A) and accompanying “Questions and Marking Guide” (Appendix B) are currently available in **prototype** and need to be adapted for use in any particular program (see Part III of this guide for the adaptation guidelines).
- The tool pertains to the **healthy breastfed** child. Depending on its utility, there could be another version, or separate instructions developed for use with non-breastfed children.
- The tool is relevant to the child who is **not sick** at the time of the counseling session. Since expectations for feeding practices for a child who is sick and/or recovering from illness are different from the well-child, a different tool would be needed to monitor these practices.
- This tool is based on the latest international guidance on infant and young child feeding and related household practices. It draws on research and international guidelines on monitoring and measuring practices related to infant and young child feeding (see the background document in Appendix C for additional information).
- The prototype tool included in this guide has not yet been pre-tested in a field setting.

Context for the use of the tool

- The tool is intended to be used within the context of a one-on-one counseling or educational session between a health facility worker or community health worker (CHW) and a caregiver/mother with a child between the ages of 6 and 23 months. Each child (in a program) would have his/her own record that would allow the health worker to track the practices of this child’s caregiver/mother over this period. Ideally, contact would be made with the mother and child on a monthly basis.
- The tool serves as a recording form to be filled out by the health worker. The information recorded on the tool is self-reported information from the caregiver/mother in response to the

questions from the CHW. The assumption is that a counseling guide or cards would be used for further discussion and negotiation with the mother/caregiver. This process would be repeated on a monthly basis such that the tool serves as a record for the caregiver/mother and health worker on the feeding and related practices for that individual child.

Overview of the tool

- The first column on the tool provides a space for the date of the counseling/monitoring session.
- The second column shows ages in months starting at 6 months when complementary foods should be introduced. The tool is designed to be used during the 6–23-month period.
- The third column in the tool relates to the health of the child. Since this tool has been developed with the “non-sick” child in mind, the CHW must first ask the caregiver/mother whether the child is, or has been sick, and whether the illness is affecting the child’s appetite. If yes, then the CHW would mark that box on the tool for that month and the complementary feeding practices for this child would not be recorded during that visit (but the mother would be counseled about feeding a sick child).
- The guiding principles for complementary feeding are reflected in the columns to the right of the AGE column. Eight key practices are represented in pictures; these practices are explained in more detail in a separate guide that describes the criteria for marking practices on the tool. As noted, this is a generic tool that would be adapted for a particular program.
- The tool includes space to record practices related to four sets of indicators: breastfeeding, caloric density, nutrient density/dietary diversity, and food safety and feeding style. Following each sub-set of indicators moving from the left to the right of the form, is a space to record a “sub-total” for that sub-set of practices. The sub-total is merely a count of the number of checks in the boxes pertaining to that category of practices.
- The final two columns of the tool include a space to put the total for all practices and the target “score” for that age. The total is merely a summation of the four sub-totals. The target score is given; it reflects the total number of checks possible for the practices being monitored.

How to use the tool

- At the counseling session, the health worker asks the mother/caregiver questions according to the categories on the tool. A suggested *Questions and Criteria for Marking Practices* guide includes questions that can be used to elicit the information from the mother/caregiver (see adaption guide) and the criteria for marking the “response” on the tool. For example, for the first column related to breastfeeding practices, the health worker would ask: “Are you still breastfeeding your child?” If the mother responds “yes,” then the CHW would put a check in the box that corresponds to the age of the child under the breastfeeding picture.
- This process continues—the CHW asking the questions and recording the practices according to the *Questions and Criteria for Marking Practices* guide. The criteria listed in this guide would link directly to the tool.

- After all of the questions have been asked and the answers recorded, the counselor can review the results and discuss with the mother/caregiver.
- The tool was developed with “positive” practices represented on the form. Therefore, ideally all of the possible boxes would be checked and the child’s score would be the same as the “target” number on the form.
- Given that the more boxes checked the better the practices, for an individual child it would be relatively simple for the CHW to look at the form and see where practices need strengthening. The fewer the boxes checked, the more attention needed in this sub-set of practices.

Reviewing and aggregating individual results

This tool is designed to obtain data (and track) individual feeding and related behaviors. The information/data recorded in this tool is subject to a range of biases and issues inherent in any self-reported information when collecting information on young child feeding (see background document for additional information). Efforts have been made to minimize these issues (in the structuring of the questionnaire and the selection of indicators); nevertheless for this, and other reasons (such as sampling factors), these data cannot be used for program evaluation. However, the simple quantitative information provided through this tool can be used to objectively aid/support program monitoring and management.

The way in which these “scores” could be aggregated varies, and would depend on program capacity and needs. The form is simple enough to do tallies by hand on a form designed for aggregation. Ideally, Microsoft Excel spreadsheets could be developed and used to aggregate data and conduct simple analyses for program purposes. An example of indicators and how the data might be tallied and presented is provided below:

- At the community/CHW level, one indicator that could be used to track progress might be the number of children who have achieved 80 percent of targeted practices. Given that the target score is approximately 20 (ranging between 18–22) at each age in months, this means that to achieve about 80 percent of the target, the child must receive a score within 4 of the total (14 at 6 and 7 months, 15 at 8 months, and at least 18 for the remaining months). A child would be marked 1 if he/she achieved 80 percent of the target and a 0 if not. The CHW could then track progress in practices by month (Table 1 and Figure 1).
- These same data could be compared across communities, thus showing program staff and others where additional support/attention is needed.
- Alternatively, the focus could be on the age group rather than the total sample. In lieu of all children monitored together, the data could be tallied by age groups: for example, 6–8 months, 9–12 months, and 13–23 months—when major changes in practices are anticipated.

Table 1: Sample data tally

Month/Date	Number of children counseled	Number of children monitored	Number of children sick	Number of children achieved 80% of all practices	Number of children achieved at least 3 BF practices	Number of children achieved 80% caloric density practices	Number of children achieved 3 nutrient density/diversity practices	Number of children achieved 3 food safety and feeding style practices
Jan	30	25	5	15				
Feb	28	25	3	18				
March	25	19	6	12				
April	32	30	2	26				
May	30	29	1	24				
June	28	27	1	23				

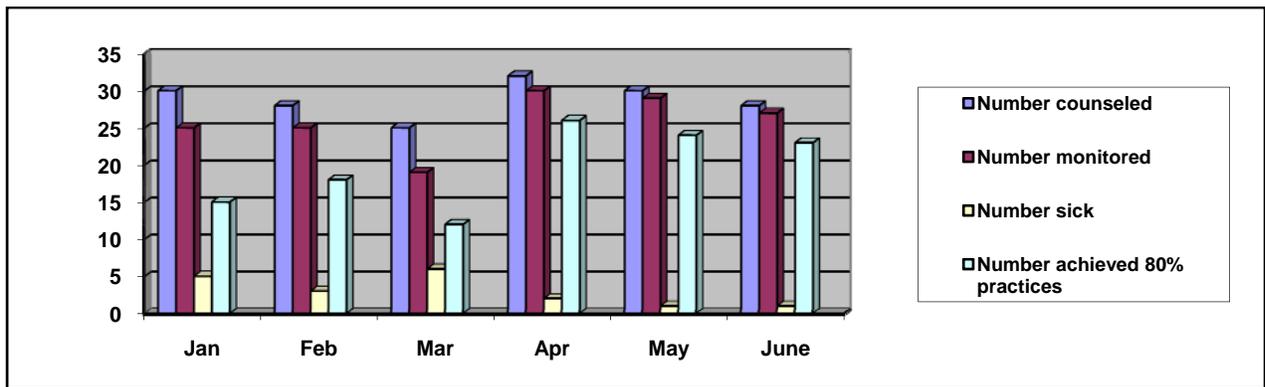


Figure 1: Sample data tally

II. Adaptation Guide

This generic tool covers eight key practice (breastfeeding, feeding frequency, consistency of meals, quantity of meals, snacks, dietary diversity, feeding style, and food hygiene and safety) related to optimal complementary feeding during the 6–23-month period. However, feeding practices vary by country and region and programs select certain practices to prioritize. Therefore, it is expected that this prototype tool will be adapted/changed to reflect the specific priority practices of individual programs and NOT be used in its generic form. This guide describes the steps to take in adapting this generic tool for use in a particular program.

Create a working group

To adapt the tool you will need to convene a group of knowledgeable and interested program stakeholders. The group does not have to be formal. The working group will be tasked with three key activities:

1. Discussing and identifying the elements/messages related to complementary feeding that are the focus of the program's efforts.
2. Adapting/changing the tool to reflect the elements that you have selected and making any other changes necessary for the tool to meet local needs and capacities.
3. Planning a pre-test process to complete the adaptation of/revision of the tool (refer to part III of this guide for how to develop and implement a pre-test).

Identify program practices to be monitored

The monitoring tool is intended to provide information for a program to be able to track progress in the adoption of complementary feeding practices it is supporting and promoting.

- The starting point is to choose from among the practices represented on the generic tool, the ones relevant to your particular program.
- Among the ones that are targeted by your program you then decide which ones you would like to track (it could be all of them, but it does not have to be the situation). For example, if your program is not focusing on food hygiene, eliminate those practices (columns) from the monitoring tool.
- If there are more specific or additional practices or messages that are included in your complementary feeding counseling program that are not well reflected in the tool, then these should be added. For example, if your program is distributing micronutrient powders, you might want to add a column to track use of these powders. Or, if the program is promoting a specific practice such as carrying food to the field for the child, this might be included in a separate column.
- You will want to bear in mind that the tool should be simple to use and that “higher quality” information is better than more information. Hence, the tool should focus on your highest program priorities.

Identify the priority ages for practices

The prototype tool assumes that all practices are relevant for the 6–23 month age range with the exception of offering snacks. The “snack column” has hatched marks blocking out the 6-8 month period when offering snacks is not necessary (and generally not recommended). The tool can be modified in this fashion to give priority to certain practices among the eight shown on the tool for particular ages.

- For example, breastfeeding during the day and the night might be a priority for mothers with children up to 18 months of age. Therefore, to account for this the tool would be re-designed and that breastfeeding column would have hatched marks beginning at 18 through 23 months.
- Another example would be food consistency that is perhaps most important for children 6–11 months. From 12 months onward the consistency column could be hatched. This would put more focus on the other aspects of complementary feeding, for example, quantity and diversity.

Make changes in the tool

Once you have identified the elements of complementary feeding that you would like the tool to monitor, your group needs to discuss each aspect of the tool (overall format, pictures, wording, criteria for marking the practice, etc.). Make changes to the tool (and accompanying question and criteria marking guide) that will best fit your individual program and situation. Given that this is a new tool, it is expected that the basic format and approach will not be changed at this stage. It is likely that through the pre-testing process modifications might be needed in these aspects of the tool. This guide does not discuss those possible changes.

- Wording and pictures
 - Adjustments are needed to make the pictures locally appropriate and understandable.
 - Words chosen should be those that are commonly used in the context of your program.
 - The language used should bear in mind the fact that the tool is to be used by CHWs.
- Criteria for marking the tool
 - The picture changes made in the tool also need to be made in the guide describing the criteria for marking the tool
 - The criteria listed for marking practices are essentially the “indicators” that are built into the tool. The ones in the “generic” guide are based on the *Guiding Principles for Complementary Feeding for the Breastfed Child*.¹
- Questions

¹ Pan American Health Organization (PAHO). *Guiding Principles for Complementary Feeding of the Breastfed Child*. Washington, DC: PAHO; 2002. Available at: http://www.who.int/child_adolescent_health/documents/a85622/en/index.html

- The questions in the guide would correspond to the practices being monitored.
- Adjustments in the language may be needed to ensure that CHWs ask questions that relate to the practices being promoted by the program.
- Particular attention should be paid to key words such as snacks, meals, porridge, etc., so that these reflect the language used in the program area.

III. Pre-test Plan

The adapted tool should be pre-tested as a next step before finalizing it for implementation in your program.

Purpose of the pre-test

- Assess whether the counselors understand how to use the tool and the accompanying material (the question guide and criteria for marking the tool) and are able to fill it out correctly.
- Identify improvements that can be made in the format, style, approach, pictures, and other elements of the tool.
- Determine how much time it takes to use the tool and assess how the tool can best be integrated within program activities.
- Observe and gather the reactions of the CHWs testing the tool—both positive and negative.

Pre-test steps

Select a few sites for pretesting

- The pre-test should be conducted in a setting where the tool is expected to be used.
- The CHWs should be involved in providing guidance to caregivers of children between the ages of 6 and 23 months.

Select the community health workers and their supervisors

- The community health workers selected for the pre-test should include those with a range of capacity and experience.
- The CHWs should be readily accessible, so that those assisting with the pre-test can observe and assist in collecting the information/experience from the pre-test.
- The supervisors (or others making up the “committee” involved in the pre-test) should be available/able to observe the use of the guide by the CHWs, and record information on the experience across several sites/CHWs.

Develop a Pre-test guide that addresses the major elements of the tool to test

- The pre-test guide would be designed to record the experience of those testing the tool.
- The type of information that might be observed and recorded on the pre-test guide includes the following:
 - How much time it takes to fill out the form.
 - Whether or not it is better to monitor practices before or after counseling.
 - Whether or not the questions are natural and easy to remember; whether or not they be elicited from the pictures alone.
 - How CHWs react.

Train the community health workers in the use of the tool and the supervisors in the implementation of the pre-test guide

- Determine the timing for the supervisor to connect with the CHWs (you want to make sure that the CHW is actually using the tool, and is able to have the opportunity to share her/his experiences).

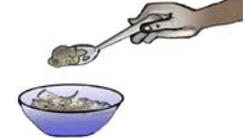
Pretest the materials and tabulate and analyze the results

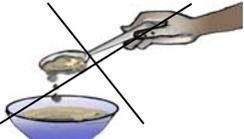
- Set the parameters for the pre-test: number of days, how many CHWs, etc.
- Organize a workshop to discuss and analyze the results.

Appendix A: Feeding Practice Monitoring Tool

Date	Age (mo.)	Sick? 	BREASTFEEDING INDICATORS					CALORIC DENSITY INDICATORS									
							Sub-total	Meal frequency 1, 2, 3, or more 		Consistency 		Quantity/Meal 1/2 3/4 1 			Snack 	Sub-total	
	6																
	7																
	8																
	9																
	10																
	11																
	12																
	13																
	14																
	15																
	16																
	17																
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	23																

Appendix B: Questions and Criteria for Marking Practices—

Sick?	
	<p>Questions: Is your child sick now? [If yes, ask] Has your child been eating relatively normally?</p> <p>[If not currently sick, ask] Has your child been sick recently? [If yes, ask] Was your child eating relatively normally, even though sick?</p> <p>Check the box if the mother believes the young child is currently sick. Do not complete the feeding assessment for the month if the sick child has poor appetite or was sick and still has a poor appetite.</p>
Breastfeeding	
	<p>Question: Are you still breastfeeding your young child?</p> <p>Check the box if the response is yes.</p>
	<p>Question: Each time you breastfeed, do you feed from one breast or both?</p> <p>Check the box if the mother empties one breast and offers the other each time she breastfeeds.</p>
	<p>Questions: How many times do you breastfeed during the day? How many times do you breastfeed during the night?</p> <p>Check the box if the mother breastfeeds at least once at night AND if she feeds 4 or more times in a day.</p>
	<p>Question: Do you ever give your child anything to drink in a baby bottle?</p> <p>Additionally, look to see if there is a bottle present with the child.</p> <p>Check the box if the mother says no.</p>
Meal frequency	
	<p>Question: Do you give your baby any feedings besides breastfeeding? [If yes] How many times do you feed your baby each day? For example, how many times did you feed your baby yesterday?</p> <p>For a 6–8-month old child, check one box for once and two boxes for two or more meals each day.</p> <p>For a 9–23-month old child, check one box if once, two boxes if twice, and three boxes if the mother gives three or more meals each day.</p>
Consistency/each meal	
	<p>Questions: Can you please tell me what food you normally feed your young child at each meal during a day? For example, what did you feed your child yesterday? If any of the meals include porridge or soup, ask: How thick is the porridge? Or, if soup was given, ask: Do you feed just the broth or both broth and the solids in the soup? If you take a spoonful and turn the spoon sideways, will the porridge or soup run off or will it fall in clumps?</p>

	<p>Check the boxes for each meal that the child receives soft, but thick or solid food.</p>
<p>Quantity/each meal</p>	
<p>½ cup </p> <p>¾ cup </p> <p>Full cup </p>	<p><i>Questions [for each meal that the child eats every day]:</i> How much food does the child eat at the meal? Show a 250ml cup. How much of this cup would the food fill up? Think about what your child ate yesterday.</p> <p>For a 6–8-month old child, check the box if the child eats at least ½ cup at each meal.</p> <p>For a 9–11-month old child, check the box if the child eats at least ½ cup at each meal.</p> <p>For a 12–17-month old child, check the box if the child eats at least ¾ cup at each meal.</p> <p>For an 18–23-month old child, check the box if the child eats one cup at each meal.</p>
<p>Snacks</p>	
	<p><i>Questions:</i> Do you give your young child any foods/snacks between meals? [If yes] How many snacks do you give your child each day?</p> <p>Check the box if the mother gives one or more healthy snacks.</p>
<p>Quality/Diversity</p>	
	<p><i>Question:</i> Thinking about yesterday, can you please tell me what foods your young child ate? Anything else? Was this typical?</p> <p>Check the first box if the child eats fruit and vegetables every day.</p> <p>Check the second box if the child eats food from an animal source every day, e.g., meat, fish, milk, cultured milk, cheese, yogurt, insects.</p> <p>Check the third box if the child eats a pulse each day, e.g., beans, legumes, nuts.</p> <p>Check the fourth box if the child eats a <u>good</u> source of fat each day, e.g., oil, vegetable shortening, animal lard, butter (ghee), coconut milk, avocado, peanut butter.</p>
<p>Feeding style</p>	
	<p><i>Questions:</i> Who feeds your young child? [If the child feeds him or herself] Do you watch your child eat? Do you encourage your child to finish all the food? [If the mother or another caregiver feeds the child] Do you [or she] talk to the child, or sing to the child while feeding? Do you [or she] try to encourage the child to eat all the food?</p>

	<p>Check the box if the mother (or other caregiver) actively feeds (talks to, or otherwise engages) the child and/or closely observes the child feeding him/herself, ensuring that food is not spilled or eaten by other children or animals.</p>
<p>Food storage and hygiene</p>	
	<p><i>Questions:</i> Do you [or the person you feeds the young child] wash your hands before you feed your child? [If yes] Do you always use soap? Observe, if possible, if there is a handwashing station in the house.</p> <p>Check the box if the mother (or other caregiver) says she always washes her hands with soap before feeding the child.</p>
	<p><i>Questions:</i> Do you ever feed your young child food that you prepared earlier in the day? [If yes] Please tell me what, if anything, you do to the food before serving it again.</p> <p>Check the box if the mother does not serve food prepared earlier or if she does reheats it and serves it warm.</p>
	<p><i>Questions:</i> What, if anything, do you do to the water used in your young child's food?</p> <p>Check yes if the mother uses treated water for the young child's food and drink (boiled, chlorinated, filtered, solar-disinfected).</p>

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Appendix C: Background Document—Monitoring Complementary Feeding Practices

Introduction

Optimal breastfeeding and complementary feeding practices are important contributors to child survival and nutritional status during the first two critical years of life. The *Lancet* Maternal and Child Undernutrition Series calculated that sub-optimal breastfeeding practices are estimated to be responsible for more than a million child deaths and 44 million disability-adjusted life years (DALYs), which account for 10 percent of DALYs in children younger than 5 years.² For complementary feeding, estimates suggest that about half this level of mortality among children under five could be averted by improving practices. Specifically, the *Lancet* Series concluded that strategies including counseling when food is available, and counseling in combination with other resources (cash transfers or food) in food-insecure populations could improve malnutrition and related disease burden.³

The USAID-funded Infant & Young Child Nutrition (IYCN) Project is supporting actions to address infant and young child feeding practices during this critical time, including efforts to improve the capacity to monitor and evaluate changes in behaviors. Among infant and young child feeding practices, supporting and monitoring complementary feeding practices present particular challenges, since feeding requirements change rapidly over short periods of time (within a couple of months). Moreover, ideal, or optimal practices, are dependent on local situations and circumstances. Practices even vary within the same areas of a country—depending on cultural habits and food availability. In addition, appropriate complementary feeding requires that a combination of practices be addressed simultaneously.

Given these complexities, efforts to support and promote improved practices—as well as the tools and methods for monitoring progress in achieving of better practices—must be developed and implemented, while taking into account many factors and variations. Some progress has been made in designing appropriate messages and materials to guide counselors in supporting caregivers with appropriate complementary feeding; however, program-level tools to monitor (on an interim, ongoing basis) how well these practices are being adopted are almost non-existent. Final—and even mid-term—evaluation results do not provide the feedback and information needed to make program adjustments during implementation. The IYCN project aims to begin to fill this gap by identifying and developing guidance and tools to improve the capacity to monitor changes in caregiver complementary feeding practices on a routine/real-time basis.

Two initial tools have been identified for development and testing as a first step toward improving the capacity at the field/program level to track progress in complementary feeding practices. These are as follows:

² Bhutta ZA, Ahmed T, Black RE, et al. What works? Interventions for maternal and child undernutrition and survival. *The Lancet*. 2008;371:417–440

³ Ibid.

- An individual child feeding practices monitoring tool for the breastfed, healthy child⁴ to be used in the context of counseling sessions.
- A home visit observation tool intended to be used in conjunction with the individual child tracking tool to validate the information obtained in the individual counseling sessions through observation, as well as to support and/or provide a monitoring mechanism for home visits related to infant and young child feeding.

To set the context for these tools, this document provides background information on the measurement/monitoring of complementary feeding practices. The following four sections are organized as follows:

- Section I clarifies the terminology and technical information on complementary feeding.
- Section II presents contextual information on program/project/intervention monitoring, and on indicators that have been developed for tracking progress in complementary feeding practices at the population-level.
- Section III provides a brief overview of the tools and experience measuring complementary feeding and related practices.
- Section IV discusses the major considerations, including gaps in our knowledge, that we need to take into account in developing and using a tool for monitoring complementary feeding practices.

⁴ After the initial tool has been validated, it could be adapted for non-breastfed children and to monitor practices related to feeding during illness.

Section I. Definition and guiding principles for complementary feeding

Complementary feeding is defined as the process of adding complementary foods to the diet of an infant when breastmilk is no longer adequate to meet nutritional needs. This process should be initiated at six months of age and continue until the child is on the family diet, usually sometime between 18 and 24 months of age, although this varies by country and circumstances. The term “complementary feeding” is becoming more widely used, although other terminology persists in describing this period—including in particular, “weaning foods” and “solid foods.” Additionally, at times, complementary feeding can be confused with “supplementary feeding.” The latter refers to providing additional food for children suffering from malnutrition.

The complementary feeding period is the time when the infant/child is most vulnerable to malnutrition and infection, particularly in environments when pathogens are introduced to a child via contaminated foods and/or utensils used in feeding. The starting point for programmatic efforts and those to develop indicators to measure/monitor infant and young child feeding practices are the standards for appropriate complementary feeding practices based on physiological and developmental needs of children in the 6–23-month period. The World Health Organization’s (WHO) guiding principles for complementary feeding of the breastfed child (Table A1) sets the standards for developing locally appropriate feeding recommendations.⁵ Guidelines for non-breastfed children are also available.⁶

The WHO guidelines represent ideal practices. They serve as a basis for program development related to the critical elements of feeding during this period. Specific programmatic strategies and messages (and the tools to monitor progress in program objectives/changes in practices) must be context-specific. The initial generic tool being tested by the IYCN Project will support tracking the first eight principles for the well child. A separate tracking mechanism would need to be developed for the sick child and non-breastfed child. The provision of vitamin- and/or mineral-fortified foods might also require separate consideration depending on the program context.

In the 2000s, efforts to better define the elements of complementary feeding, as well as work on developing indicators to help track progress in complementary feeding practices began in earnest (see Table A2 below for a timeline of some of the key events and documents related to complementary feeding).

⁵ Pan American Health Organization (PAHO). *Guiding Principles for Complementary Feeding of the Breastfed Child*. Washington, DC: PAHO; 2002.

⁶ World Health Organization (WHO). *Guiding Principles for Feeding Non-Breastfed Children 6–24 Months of Age*. Geneva, Switzerland: WHO; 2005. Available at: http://www.who.int/child_adolescent_health/documents/9241593431/en/index.html

Table A1: Guiding principles for complementary feeding for the breastfed child

Topic	Guiding Principle Summary
Introduction of complementary foods	Practice exclusive breastfeeding from birth to six months of age, and introduce complementary foods at six months of age (180 days), while continuing to breastfeed.
Maintenance of breastfeeding	Continue frequent, on-demand breastfeeding until two years of age or beyond.
Responsive feeding	Practice responsive feeding, applying the principles of psychosocial care: feed infants directly and assist older children when they feed themselves; feed slowly and patiently; experiment with different food combinations, tastes, textures; minimize distractions during meals; talk to children during feeding with eye-to-eye contact.
Safe preparation and storage of complementary foods	Practice good hygiene and proper food handling: washing caregivers' and children's hands before food preparation and eating; store foods safely and serve immediately after preparation; use clean utensils, cups, and bowls; avoid using baby bottles.
Amount of complementary food needed	Start at six months of age with small amounts of food and increase the quantity as the child gets older, while maintaining frequent breastfeeding. Amounts should be approximately: 200 kcal/day at 6–8 months; 300 kcal/day at 9–11 months; and 550 kcal/day at 12–23 months.
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 or semi-solid foods starting at 6 months; by 8 months most can eat "finger foods;" and by 12 months most can eat "family foods"—bearing in mind nutrient-density and avoiding foods that may be choking hazards.
Meal frequency and energy density	Increase the number of times that the child is fed complementary foods as he or she gets older: for the "average" child, 2–3 times/day at 6–8 months; 3–4 times/day at 9–11 months and 11–23 months. Additional nutritious snacks may be offered 1–2 times/day.
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; vitamin A-rich fruits and vegetables daily; diets with adequate fat content; avoid giving drinks with low nutritive value.
Vitamin-mineral supplements or fortified products	Use fortified complementary foods or vitamin-mineral supplements for the infant, as needed.
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.

Source: Pan American Health Organization, 2003

Table A2: Timeline of key events and documentation for complementary feeding

Date	Event or Document
1998	WHO: Complementary feeding of young children in developing countries: A review of current scientific knowledge
2001	WHO: Global consultation on complementary feeding
2002	WHO: Informal meeting to review and develop indicators for complementary feeding
2003	IFPRI: “Moving forward with complementary feeding: indicators and research priorities” (Ruel, Brown, and Caulfield). Call for validation studies.
2003	WHO and PAHO: Guiding principles for feeding of the breastfed child. An update from 1998 WHO/UNICEF document (energy and nutritional requirements).
2003	University of California, Davis and IFPRI: Protocol developed and infant and young child feeding data analyzed from breastfed children 6–12 months of age at 4 sites (Bangladesh, Ghana, Honduras, and Peru).
2004	FAO: Protocol strengthened, 6 new sites identified (Brazil, India, Madagascar, Malawi, Peru, and Philippines); children 6–23 months of age and non breastfed children included.
2005	WHO: Guiding principles for feeding non-breastfed children.
2006	Results from 10 sites reviewed and consensus among stakeholders achieved on how to complete the analysis.
2007	Work on updating breastfeeding indicators.
2007	Consensus meeting on complete set of infant and young child feeding indicators with participation of multiple stakeholders.
2007	Working group on infant and young child feeding indicators: Developing and validating simple indicators of dietary quality. Additional analysis of 10 data sets.
2007	WHO: Indicators for assessing infant and young child feeding practices—Part 1 Definitions.
2009	WHO: Infant and young child feeding—Model chapter for textbooks for medical students and allied health professionals.
2010	WHO: Indicators for assessing infant and young child feeding practices—Part 2 Measurement.
2010	WHO: Indicators for assessing infant and young child feeding practices—Part 3 Country Profiles.

FAO=Food and Agriculture Organization; IFPRI=International Food Policy Research Institute; PAHO=Pan American Health Organization; WHO=World Health Organization

Section II. Population-level complementary feeding indicators

One of the major outcomes of the consultations and research on infant and young child feeding (Table A2) is the development of a set of indicators to provide the standard/ability to track complementary feeding in greater detail. Until the development of these indicators, there was one major population-level indicator for complementary feeding: the timely complementary feeding rate, which assessed the percentage of infants 6 to 9 months of age who receive breastmilk and a solid/semi-solid food (based on 24-hour recall). In 1998 (as reflected in the timeline above), a process was initiated to review and develop additional indicators for infant and young child feeding. This process led to the identification of eight core and seven optional indicators (the latter all pertain to breastfeeding practice) for assessing infant and young child feeding practices. The indicators that pertain to complementary feeding are presented in Table A3 below. These are population-level indicators intended to be used in large-scale surveys or national programs. They are not intended to meet all of the needs of program monitoring and evaluation at the local or regional level (Part 1 Definitions, 2008). Programs are expected to develop more specific indicators to monitor and evaluate their particular interventions and behavior change objectives.

Table A3: Core indicators for complementary feeding

Category	Indicator
Introduction of solid, semi-solid or soft foods	Proportion of infants 6–8 months of age who receive solid, semi-solid, or soft foods.
Minimum dietary diversity	Proportion of children 6–23 months of age who receive foods from four or more food groups.
Minimum* meal frequency	Proportion of breastfed and non-breastfed children 6–23 months of age who receive solid, semi-solid, or soft foods (but also including milk feeds for non-breastfed children) the minimum number of times, or more.
Minimum* acceptable diet	Proportion of children 6–23 months of age who receive a minimum acceptable diet (apart from breastmilk) [composite indicator based on minimum dietary diversity and minimum meal frequency].
Consumption of iron-rich or iron-fortified foods	Proportion of children 6–23 months of age who receive an iron-rich food or iron-fortified food that is specifically designed for infants and young children, or that is fortified at home.

*Minimum is defined for breastfed and non-breastfed children and dependent on age

Even at the population level, these indicators leave gaps in the ability to adequately track progress in complementary feeding practices. Evidence based on these indicators provides information on selected aspects of the guiding principles—e.g., meal frequency, nutrient content/dietary quality, and the use of micronutrient-fortified products. They will not provide information/evidence on the practical application of other aspects of the guiding principles: the amount and consistency/nutrient density of complementary food, maintenance of breastfeeding, safe preparation and storage of foods for young children, responsive feeding, or child feeding during and after illness.

Section III. Overview of tools and experience measuring complementary feeding practices at the household/individual level

There are tools that exist for assessing dietary or consumption patterns—dietary diaries and 24-hour (or other food) recall methodologies⁷—for young child undernutrition or overnutrition within any context. These tools are designed to be used by trained professionals obtaining self-reported information; or, often in case of the developed world, used by a mother or another individual to track his/her own intake or a child’s intake. The goal is the same: to identify—with some level of specificity—the foods consumed by the person in question, in order to enable a dietary assessment. In addition to actual consumption, other factors such as food handling and “how” children are fed are important for child nutrition and health. In most cases, this information is obtained through question-answer discussions/sessions between a provider and mother/caregiver. In some cases, observations/spot checks of “actual” behaviors have been used— usually in a program context to assess the effectiveness of messages or interventions.

Simpler and automated/electronic ways to measure/assess feeding practices to ensure good nutrition and health also have been tried—especially in the context of the developing world, where lack of preventive child health services and limited literacy are the norm. For example, food frequency questionnaires (FFQs) and complementary feeding indexes have been developed as alternatives to the 24-hour recall, as well as a means of capturing the inter-related aspects of food quality, consistency, and quantity. Linear programming and the ProPAN software are two examples of electronic tools designed to assist in the assessment of feeding practices. The following is a brief overview of these tools.

Food recalls and diaries

- Food recalls and diaries are used to measure frequency/energy density, amount, consistency, and quality of food. They do not assess feeding style and attentiveness.
- Most common is the 24-hour recall—not as valid at the individual level.
- Not extremely appropriate for program level, ongoing monitoring since they require literate, well-trained persons. Also take a long time and/or commitment.
- Recalls are quite reliable if done by a well-trained individual using a validated instrument.
- Diaries can be relatively reliable, but validity is reduced where mothers are too busy to keep up, or where they may exaggerate good practices.
- A study asked mothers to maintain diaries on feeding and illness of their infants from birth to six months. “The mothers returned an average of 85.7% of the diaries....The methodology is labor-intensive and time consuming, but the use of diaries produced more high quality information than data retrieved without the diaries.” (Lee and Solimano, 1981)

⁷ See, for example Chavez C, Huenemann R. *Measuring impact by assessing dietary and food consumption*. Available at: <http://archive.unu.edu/unupress/unupbooks/80473e/80473E0c.htm>; or, Swindale A, Ohri-Vachaspati P. *Measuring Household Food Consumption: A Technical Guide*. Washington, DC: Food and Nutrition Technical Assistance; 2005.

Food frequency tools

- Food frequency questionnaires are quick and easy methods that provide a picture of food patterns, especially for dietary diversity or availability of a particular nutrient—for instance, vitamin A. They do not evaluate nutrient intake.
- A study tested a semi-quantitative food frequency questionnaire against two 24-hour recalls. “The FFQ performed well for most nutrients and had acceptable agreement with the 24-hour recall.” (Mouratidou et al, 2006)
- A study compared a food frequency chart with biochemical methods on individual patients. The chart “was found to have a high degree of sensitivity (74.5%) and a high specificity (75%) in detection of patients with vitamin A deficiency. The positive predictive value was 93.62%... unable to differentiate patients with normal or high vitamin A levels.” (Eigbefoh et al, 2005)
- A study tested Helen Keller International’s food frequency method in 15 communities in 3 countries. It proved to be a good tool to identify communities with high prevalence of vitamin A deficiency, although it was not evaluated for effectiveness at the individual level. “Method sensitivity and specificity were therefore 87.5% and 57.1%.” (Sloan et al, 1997)

Feeding indexes

- The feeding index is a relatively new method designed to improve on traditional indicators of infant and young child feeding practices. The aim is to obtain information, or a sense of the multi-dimensional aspects of child feeding through one measurement (Note: our interest is in keeping those dimensions separated, so that we can help the family address them).
- Research on an infant and child feeding index (constructed on the basis of 24-hour recalls) correlated well, but inconsistently, with other measures of growth in most, but not all, age groups (Sawadogo et al, 2006).
- A study tested an infant and child feeding index constructed from questionnaire responses and 24-hour recalls and found a positive, but not statistically significant correlation with other, more objective measures of food energy intake and growth (Moursi et al., 2009).
- There have been efforts to design a complementary feeding index based on self-reported practices and more objective measurements; the designers believe it is a useful tool for identifying, targeting and monitoring child feeding practices (Garg and Chadha, 2009).
- There has been an exploratory study aimed at creating a simple index using five measurements based on the population-level indicators (see Arimond and Ruel, 2000) and additional indicators for psychosocial care and hygiene. Scores were assigned based on assessment of practices (0: harmful; 1–3: positive). The sum of the scores was then calculated as the infant and child feeding index for each infant/child. The purpose was to create the index and determine if it was associated correctly with the growth of children. The conclusion was that the index can reflect practices more holistically, but the associations with anthropometric data of the children were not entirely consistent (Srivastava and Sandhu, 2007).

Other tools

- **ProPAN** is a tool developed by the Pan American Health Organization that includes a step-by-step process for collecting, analyzing, and integrating both quantitative and qualitative information on infant and young child feeding. It is primarily intended as a formative research guide rather than a tool for monitoring or evaluation; however, it discusses evaluation strategies and can provide insights into considerations for monitoring. It analyzes information in an EPI INFO format.
- **Linear programming⁸ for complementary feeding** uses a mathematical technique to help field programs more easily design low-cost diets based on locally available foods and habits that would be nutritionally adequate. Linear programming tools that incorporate the nutrient composition of most foods in developing countries are now available at www.nutrisurvey.de. Proponents suggest that designing a diet for the complementary feeding period is complex, as many different foods and practices need to be taken into account. They contend that the ability to analyze hundreds of different foods with varying nutritional and acceptability constraints (represented by equations) allow the user to arrive at feasible recommendations (that meet international recommendations and local conditions) for complementary feeding. While not a monitoring tool as such, the concepts addressed through this technique are relevant to any discussion around monitoring.
- **A field viscosity measurement tool** has been developed in an attempt to accurately measure the viscosity (consistency) of complementary foods based on small quantities. This low-tech tool effectively measures viscosity in scientific terms, making it a useful tool for the research community rather than a tool to be used directly in program (Gardner et al, 2002).

⁸ Linear programming is a mathematical technique for optimizing a linear objective function subject to a system of linear inequalities called constraints (see www.nutrisurvey.de/lp/background_info.htm for additional information).

Section IV. Major considerations in monitoring complementary feeding

Table A4 presents a summary of some of the issues that have been identified in collecting and interpreting complementary feeding practices. While the *Guiding Principles* provide the standard for a given key practice, the tools to measure how well the standard has been met are not simple and straightforward. Beyond the issues associated with the tools discussed in the previous section, when self-report information is used at the individual level to “check” on practices, the reliability and validity of the responses present major challenges.

Although it is difficult to generalize, it appears that unless information has been validated by other methods, self-reporting of behaviors cannot be assumed to be very reliable. That said, reliability seems to vary by individual behaviors. People over-report carrying out those behaviors that they know or believe the program wants them to be doing, or which the program has told them repeatedly that they *should* be doing. This implies that monitoring approaches that repeatedly ask people about the same practices *may* solicit higher reports of practices simply because people are learning what is expected; however, one cannot assume that this is always the case. One interesting report suggests that people report more common practices more reliably than less common practices (see Cousens et al, 1996).

The reliability of reported practices may also be affected by the relationship between the respondent and questioner. It is possible that fellow community members may solicit more accurate information, because respondents may feel that they cannot “fool” them, and also because they have less motivation to try to impress them by giving the “correct” answers. However, this is simply a hypothesis.

The best solution for gaining more confidence around the accuracy of reports of practices is to correlate those reported practices with other measures. The latter could include direct or indirect observations, or another more objective measure—in the case of complementary feeding practices, perhaps 24-hour dietary recalls and/or food frequency assessments.

Some suggestions for reaching an acceptable level of reliability through self-reported data are as follows:

- While asking questions, try to verify responses by observation of actual practices and/or conditions related to carrying out those practices.
- Gauge the extent to which reported improvements in practices correlate with improvements in child growth.
- Less frequently, perhaps annually, triangulate reported practices with results from 24-hour and food frequency recalls.
- Another possible method, although one that would need testing, would be to interview a second family member—an older sibling or grandmother who is usually home—to compare their answers with those of the mother’s.

Table A4: Issues related to collecting valid and reliable complementary feeding data

Complementary Feeding Behavior	Guiding Principle	Methods, Tools, and Indicators	Issues to overcome
Amount of food*	200kcal/day 6–8 months 300kcal/day 9–11 months 550kcal/day 12–23 months	24-hour recall Question-answer recall (self-reported)	Usually not measured—little experience in practice Translating kcal into measurable units (cups or other local measures) Guiding principle only relevant within context of “feeding frequency” and “energy density”
Feeding frequency*	2–3 times/day 6–8 months 3–4 times/day 9–11 months 3–4 times/day 12–23 months, plus 1–2 nutritious snacks/day	24-hour recall Question-answer recall (self-reported)	Definition of a “meal” or “snack” needed Appropriate practice dependent on “amount of food provided/meal” and “energy density” of food; meal will not be more than 200 to 250ml because of child’s stomach capacity
Food consistency/energy density*	Mashed, pureed, soft foods 6–8 months Additional “finger foods” by 9 months “Family foods” by 12 months	Group recipe trials Recall (self-reported)	Dependent on local situation—foods and recipes used/fed to children Involves both consistency and texture as children age Guidance is dependent on “amount of food” and “feeding frequency” but also limited due to biological factors dependent on the age and development of the child
Food quality/nutrient density	Variety of foods including meat, poultry, fish or eggs daily; vitamin A–rich fruits and vegetables daily; adequate fat Avoid drinks with low nutrient value; limit juice	Quantitative 24-hour recalls Number of foods (dietary diversity estimates) recalls Food frequency questionnaire	Pre-selected foods to target for intake are dependent on local circumstances With some exceptions, intakes of specific foods tell more about nutrient density rather than nutritional density Overall dietary diversity (number of foods or food groups consumed) used for nutrient density Amounts are not known via measures related to food frequency questionnaires
Food safety and hygiene	Wash caregivers’ and children’s hands before food preparation and eating Cooked food fed within 30 minutes or stored appropriately	Recall (self-reported) or observation Spot check for general hygiene	Typically overestimates prevalence of good/appropriate practices Recall cannot get at temperature of foods Cannot ask questions directly—decreases validity

Complementary Feeding Behavior	Guiding Principle	Methods, Tools, and Indicators	Issues to overcome
	<p>Stored foods should be re-warmed to >60 degrees before eating</p> <p>Use clean utensils</p> <p>Avoid feeding bottles</p> <p>Water used should be treated or boiled</p>		
Responsive feeding	<p>Feed directly or assist</p> <p>Feed slowly and patiently</p> <p>Encourage but do not force</p> <p>Avoid distractions</p> <p>Talk and look at child</p>	Recall (self-reported) or usual practice	<p>Very little experience in this area—unknown issues related to bias</p> <p>Labor intensive</p> <p>In general, many variables/behaviors to consider</p> <p>Several major studies currently underway</p>
Feeding during and after illness	<p>Increase fluid during illness</p> <p>Encourage soft, varied foods</p> <p>After illness give more food than usual</p> <p>Encourage to eat more</p>	Self-reported	Not sufficient information to identify the main issues

*All of these behaviors/practices must be considered simultaneously because each affects the needs/requirements of the others

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