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DIVISION OF CHILD HEALTH AND DEVELOPMENT

INDICATORS FOR ASSESSING BREASTFEEDING PRACTICES

Reprinted report of an Informal Meeting
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WORLD HEALTH ORGANIZATION
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Indicators for assessing breastfeeding practices

An informal meeting convened by the WHO Division of Diarrhoeal and Acute Respiratory Disease Control on behalf of the Organization's Working Group on Infant Feeding[1] was held on 11-12 June 1991, at WHO headquarters in Geneva. The purpose of the meeting was to reach a consensus on the definitions of key breastfeeding indicators and specific methodologies for their measurement. In addition to the WHO participants, the meeting was attended by representatives of UNICEF, the United States Agency for International Development (USAID) and the Demographic Health Surveys (DHS) Program of the Institute for Resource Development/Macro International Inc., who had played an important role in developing the proposed indicators. The Swedish International Development Agency (SIDA) was also invited but was unable to send a participant. The participants are listed in Annex 1.

This report summarizes the discussion and consensus reached on breastfeeding indicators derived from household survey data. No consensus was reached on proposed breastfeeding indicators to be measured through enquiries at health facilities. It was agreed that this topic required further discussion, bearing in mind, for example, the monitoring of the "Ten steps to successful breastfeeding".[2]

The participating organizations and agencies committed themselves to promoting, adopting and implementing at global and country programme levels indicators measuring the following elements of feeding:

- **EXCLUSIVE BREASTFEEDING**
- **PREDOMINANT BREASTFEEDING**
- **TIMELY COMPLEMENTARY FEEDING**
- **CONTINUED BREASTFEEDING AT ONE AND TWO YEARS OF AGE**
- **BOTTLE FEEDING**

Precise definitions of these indicators are given in section 5 of the report. The preceding sections describe the rationale for their selection and for arriving at the definitions.

1. PURPOSE OF THE INDICATORS

The main purpose of developing breastfeeding indicators is to have a common set of measures to assess breastfeeding practices and evaluate the progress of promotional programmes. Indicators should be limited in number, relatively easy to measure and interpret, and operationally useful. The focus of the indicators should be on intra-country comparison, although the degree of comparability between countries is also of interest.

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[1] The WHO Working Group on Infant Feeding in 1991 comprised representatives of the Food and Nutrition Programme, the Division of Diarrhoeal and Acute Respiratory Disease Control, the Maternal and Child Health Programme, the Office of the Legal Counsel and the Special Programme of Research, Development and Research Training in Human Reproduction.

[2] *Protecting, promoting and supporting breast-feeding: the special role of maternity services: A joint WHO/UNICEF statement.* World Health Organization, Geneva, 1989.

In addition to being suitable for use at the country level, breastfeeding indicators should be designed keeping in mind the monitoring requirements of the goals and policies outlined in the Innocenti Declaration[3] and reflected in the statements of the World Summit for Children.

Although the benefits of breastfeeding in terms of child survival are well known, changes in child mortality are difficult to measure and cannot easily be attributed to specific interventions. Attitudes towards breastfeeding, awareness of the importance of breastfeeding, and support to enable mothers to breastfeed are all important outcomes of promotional activities in health programmes, but they may also be difficult to measure and/or interpret and may not reflect actual practice. Indicators of current breastfeeding practices can be relatively easily measured and are sensitive to changes resulting from programme activities. It is clear that research studies and special evaluations may require the measurement of other parameters and the definition of other indicators than those listed in this document.

2. DEFINITIONS OF BREASTFEEDING CATEGORIES

The definitions of breastfeeding categories used in this report (all of which apply to the 24-hour period preceding the enquiry) are as follows:

- **EXCLUSIVE BREASTFEEDING**: the infant has received only breastmilk from his/her mother or a wet nurse, or expressed breastmilk, and no other liquids or solids with the exception of drops or syrups consisting of vitamins, mineral supplements or medicines.

- **PREDOMINANT BREASTFEEDING**: the infant's predominant source of nourishment has been breastmilk. However, the infant may also have received water and water-based drinks (sweetened and flavoured water, teas, infusions, etc.); fruit juice; Oral Rehydration Salts (ORS) solution; drop and syrup forms of vitamins, minerals and medicines; and ritual fluids (in limited quantities). With the exception of fruit juice and sugar-water, no food-based fluid is allowed under this definition.

- **EXCLUSIVE BREASTFEEDING AND PREDOMINANT BREASTFEEDING** together constitute **FULL BREASTFEEDING.**

- **BREASTFEEDING**: the child has received breastmilk (direct from the breast or expressed).

- **COMPLEMENTARY FEEDING**: the child has received both breastmilk and solid (or semi-solid) food.

- **BOTTLE-FEEDING**: the child has received liquid or semi-solid food from a bottle with a nipple/teat.

Although bottle-feeding is not strictly a "breastfeeding" category, it was considered essential to include it among the key indicators because of its impact on breastfeeding. The objective is to measure the prevalence of this *mode* of feeding, irrespective of the *content* of the feed - e.g., infants receiving breastmilk in a bottle are also included here.

The breastfeeding categories described above are essentially the same as those described in "Schema for the development of breastfeeding definitions" adopted by IGAB (Interagency Group for

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[3] *Innocenti Declaration on the Protection, Promotion and Support of Breastfeeding*, adopted by participants in the WHO/UNICEF policymakers' meeting (co-sponsored by USAID and SIDA), Florence, Italy, 30 July to 1 August 1990.

Action on Breastfeeding) in 1988 and published in *Studies in Family Planning*, 21: 226-230, 1990, by *M. Labbok* and *K. Krasovek*. The differences are: (1) a change in terminology from "almost exclusive" to "predominant"; (2) the acceptance of drops or syrups in the category "*exclusive* breastfeeding"; and (3) the acceptance of certain liquids and ritual fluids, in limited amounts, in the category "*predominant* breastfeeding".

The criteria for the inclusion of infants in the above feeding categories used in developing the indicators are summarized in Table 1 below.

Table 1: Criteria for inclusion in infant feeding categories

Category of infant-feeding	Requires that the infant receive	Allows the infant to receive	Does not allow the infant to receive
Exclusive breastfeeding	Breastmilk (including milk expressed or from wet nurse)	Drops, syrups (vitamins, minerals, medicines)	Anything else
Predominant breastfeeding	Breastmilk (including milk expressed or from wet nurse) as the predominant source of nourishment	Liquids (water, and water-based drinks, fruit juice, ORS), ritual fluids and drops or syrups (vitamins, minerals, medicines)	Anything else (in particular, non-human milk, food-based fluids)
Complementary feeding	Breastmilk and solid or semi-solid foods	Any food or liquid including non-human milk	
Breastfeeding	Breastmilk	"	
Bottle-feeding	Any liquid or semi-solid food from a bottle with nipple/teat	" Also allows breastmilk by bottle	

3. SELECTION OF AGE GROUPS FOR MEASURING BREASTFEEDING INDICATORS IN RELATION TO AGE-BASED FEEDING RECOMMENDATIONS

Taking into consideration various policy documents, the meeting reached the following consensus on the interpretation of recommendations for infant and child feeding:

- "All infants should be fed exclusively on breastmilk from birth to 4-6 months of age": the inference of this statement is that 100% of infants up to exact age 4 months (< 120 days) should be exclusively breastfed.

- In order to meet their nutritional requirements, complementary foods should be introduced to the majority of infants during a transitional period lasting 2 months (that is, during the fifth and sixth months of life). Thus, nearly all infants older than exact age 6 months should be receiving complementary foods in addition to breastmilk.

- Children should be breastfed for at least one year and preferably for up to 2 years of age or beyond.

These recommendations are illustrated in the figure.

Taking into account the above feeding recommendations and the limitations of typical household surveys in terms of sample size, the meeting decided that, for the purpose of measuring indicators, four age groups should be used, and that, for the sake of simplicity, the four age groups should be of equal duration, i.e., 4 months each. These groups are also illustrated in the figure and defined below:

- **EXCLUSIVE BREASTFEEDING** and **PREDOMINANT BREASTFEEDING** are measured in infants up to exact age 4 months (< 120 days).

- **TIMELY COMPLEMENTARY FEEDING** is measured in infants older than exact age 6 months but less than exact age 10 months (180-299 days).

- **CONTINUED BREASTFEEDING** is measured twice, in children one year old, and in children nearing the end of their second year of life - that is, age groups older than exact age 12 months but less than exact age 16 months, and older than exact age 20 months but less than exact age 24 months.

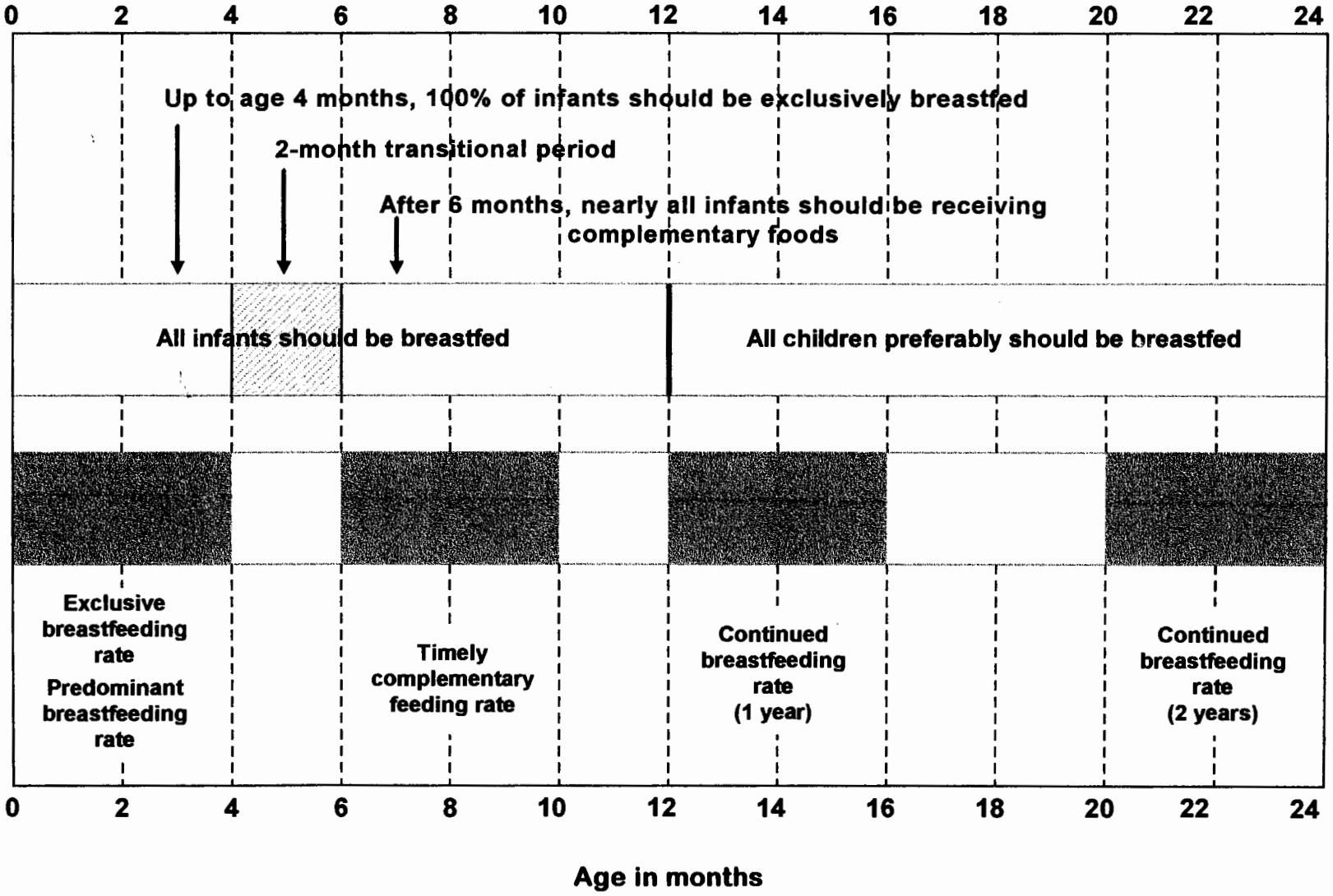
4. METHODOLOGY FOR MEASURING INDICATORS

The breastfeeding indicators derived from interviews at the household level will be measured using a household survey methodology. These indicators will be based on all live children less than 24 months of age (not yet having had their second birthday). Deceased children will not be included. The Innocenti Declaration recommends breastfeeding beyond 2 years; however, a sample of children less than 24 months will cover most of the period of interest and all of the above indicators. The indicators will be based on *current status data*, i.e., the current age of the child and other information for the 24 hours preceding the survey, rather than on retrospective data; mothers will not be asked when they stopped or started particular feeding practices, which are questions that tend to produce a heaping of data at certain ages. The 24-hour recall period for feeding practices was selected because it has been widely used and found appropriate in surveys of dietary intake.

Since it is the mother's behaviour *vis-à-vis* her child(ren) that is of interest, it is recommended that the estimates be based on all children born in a given time period, rather than including only the last-born child. If only last-born children are included in the sample, the findings may be biased, and the bias may not be equal in all countries or among all population subgroups. Last births are not a representative sample of all births. In addition, last births are spread out over an unspecified period. The sample of children for whom the indicator is calculated should always refer to all children born during a specified time period in order to be representative of a population of children.

A list of sample questions for use in surveys on breastfeeding indicators is presented in Annex 2.

Figure: Age groups for measuring indicators in relation to feeding recommendations



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5. DEFINITIONS OF KEY INDICATORS

The key indicators are defined and explained below. A summary list of the indicators is presented in Annex 3.

EXCLUSIVE BREASTFEEDING RATE

Proportion of infants less than 4 months of age who were exclusively breastfed:

$$= \frac{\text{Infants < 4 months (< 120 days) of age who were exclusively breastfed in the last 24 hours}}{\text{Infants < 4 months (< 120 days) of age}}$$

Explanatory notes:

All infants should be fed exclusively on breastmilk from birth to 4-6 months of age. The exact age at which complementary feeding should be introduced will vary from child to child; however, implicit in the recommendation of the 4-6 months range is that all infants less than exact age 4 months (< 120 days) should be exclusively breastfed. Individual infants 120 days or older should be receiving complementary foods in addition to breastmilk if their growth on exclusive breastfeeding starts to falter.

This indicator includes breastfeeding from a wet nurse and feeding on expressed breastmilk. It was, however, thought simpler to retain the term "exclusive breastfeeding" rather than the more precise but cumbersome term "fed exclusively on breastmilk". (For the definition of "exclusive breastfeeding" see section 2 and Table 1.)

Using a 24-hour recall period may cause the proportion of exclusively breastfed infants to be slightly overestimated, since some infants who are given other liquids irregularly may not have received them in the 24 hours before the survey.

Although this rate may be low, at least initially, an increase in the proportion of exclusively breastfed infants will be the goal of many programmes, and thus it is desirable to have an indicator that measures the change.

PREDOMINANT BREASTFEEDING RATE

Proportion of infants less than 4 months of age who are predominantly breastfed:

$$= \frac{\text{Infants < 4 months (< 120 days) of age who were predominantly breastfed in the last 24 hours}}{\text{Infants < 4 months (< 120 days) of age}}$$

Explanatory notes:

As the proportion of infants exclusively breastfed may be very low, the intent of this indicator is to identify infants whose predominant source of nourishment is breastmilk, but who also receive other fluids. (For the definition of "predominant breastfeeding" see section 2 and Table 1.)

TIMELY COMPLEMENTARY FEEDING RATE

Proportion of infants 6-9 months of age who are receiving breastmilk *and* complementary foods:

$$= \frac{\text{Infants 6-9 months (180-299 days) of age who received complementary foods } \textit{in addition to breastmilk} \text{ in the last 24 hours}}{\text{Infants 6-9 months (180-299 days) of age}}$$

Explanatory notes:

Solid and/or semi-solid complementary (weaning) foods should normally be introduced from 4-6 months of age. Thus, after exact age 6 months almost all infants should be receiving complementary food *in addition to breastmilk.* As well as being introduced at the right time, complementary foods should be appropriate and adequate in terms of infant nutrient requirements.

All infants who are breastfed and are receiving solid/semi-solid foods are included in the numerator of this indicator, regardless of whether or not they also receive breastmilk substitutes. This latter practice is not recommended, unless medically indicated. Because of difficulties associated with measuring the notions of "appropriateness" and "adequacy" where complementary foods are concerned, they are not included as part of this indicator. However, if a programme has a policy statement recommending certain complementary foods as appropriate or adequate, an optional or additional indicator could incorporate the recommended foods into the definition.

CONTINUED BREASTFEEDING RATE (1 YEAR)

Proportion of children 12-15 months of age who are breastfed:

$$= \frac{\text{Children 12-15 months of age who were breastfed in the last 24 hours}}{\text{Children 12-15 months of age}}$$

CONTINUED BREASTFEEDING RATE (2 YEARS)

Proportion of children 20-23 months of age who are breastfed:

$$= \frac{\text{Children 20-23 months of age who were breastfed in the last 24 hours}}{\text{Children 20-23 months of age}}$$

Explanatory notes:

Some programmes promote breastfeeding "for one year or longer". However, the Innocenti Declaration states that children should continue to be breastfed while receiving appropriate complementary food "for up to two years or beyond". Thus it is useful to have indicators that measure the proportion of children who are still breastfed at one and 2 years of age.

To be consistent with the first, second and third indicators proposed, the latter indicators are also measured using 4-month age groups. The continued breastfeeding rate (1 year) gives

an indication of breastfeeding beyond one year, and the continued breastfeeding rate (2 years) gives an indication of breastfeeding practices towards the end of the second year of life. (For the definition of "breastfeeding" see section 2 and Table 1.)

BOTTLE-FEEDING RATE

Proportion of infants less than 12 months of age who are receiving any food or drink from a bottle:

$$= \frac{\text{Children < 12 months (< 366 days) of age who were bottle-fed in the last 24 hours}}{\text{Children < 12 months (< 366 days) of age}}$$

Explanatory notes:

In addition to monitoring recommended feeding practices, many country programmes are interested in bottle-feeding rates because of the interference of bottle-feeding with optimal breastfeeding practices and the association between bottle-feeding and increased diarrhoeal disease morbidity and mortality. Included in the numerator of this indicator are infants less than 12 months of age (< 366 days) who received any food or drink from a bottle with a nipple/teat in the last 24 hours, regardless of whether or not the infant was breastfed. An optional, related indicator that might be useful for some programmes would be the bottle-feeding rate for infants less than 6 months of age.

6. OPTIONAL ADDITIONAL INDICATORS

Considering the need to limit the number of indicators and quantity of data to be collected to a minimum, the consensus of the participants at the meeting was that the six key indicators described above are the most useful for programme assessment and evaluation. However, recognizing that some programmes may wish to measure additional indicators, the participants recommended the following options: ever breastfed rate, timely first-suckling rate, median duration of breastfeeding, and exclusive breastfeeding rate by mothers. These are defined below.

EVER BREASTFED RATE

Proportion of infants less than 12 months of age who were ever breastfed:

$$= \frac{\text{Infants < 12 months of age who were ever breastfed}}{\text{Infants < 12 months of age}}$$

TIMELY FIRST-SUCKLING RATE

Proportion of infants less than 12 months of age who first suckled within one hour of birth:

$$= \frac{\text{Infants < 12 months of age who first suckled within one hour of birth}}{\text{Infants < 12 months of age}}$$

EXCLUSIVELY BREASTFEEDING RATE BY MOTHER

Proportion of infants up to 4 months of age who are exclusively breastfed by their natural mother:

$$= \frac{\text{Infants} < 4 \text{ months } (< 120 \text{ days }) \text{of age who are exclusively breastfed by their mother}}{\text{Infants} < 4 \text{ months } (< 120 \text{ days }) \text{ of age}}$$

MEDIAN DURATION OF BREASTFEEDING

The age (in months) when 50% of children are no longer breastfed.

The median duration of breastfeeding is calculated based on current status data among all living children under 3 years of age, i.e., exact age 36 months[4]. The first step in the calculation is to determine the proportion of all living children in each single-month age group who are still breastfed. The next step is to smooth these data by calculating a 3-month moving average. The median duration, of breastfeeding is the month of age when 50% or more of the children are no longer breastfed. Table 2 is an example of how to calculate the median duration.

[4] While the other indicators can be derived from information from children under 24 months, the median duration of breastfeeding should be based on data from children under 36 months, especially in countries and among population subgroups where the median duration of breastfeeding is close to 24 months. If data are available only for children under 24 months of age, and if more than 50% of the children are still breastfed at 24 months of age, the median duration could be expressed as "longer than 24 months".

Table 2: Calculation of the median duration of breastfeeding

Age group (current age of child in months)	Number of children	Number breastfed	% still breastfed	3-month* moving average
1	•	•	•	•
2	•	•	•	•
3	•	•	•	•
4	•	•	•	•
5	•	•	•	•
6	•	•	•	•
7	•	•	•	•
8	•	•	•	•
9	•	•	•	•
10	•	•	•	•
11	•	•	•	•
12	•	•	•	•
13	•	•	•	•
14	•	•	•	•
15	•	•	•	•
16	100	63	63	•
17	100	60	60	59
18	100	56	56	56
19	100	52	52	52
20	100	47	47	50
21	100	51	51	48
22	100	45	45	47
23	100	44	44	44
24	100	42	42	41
25	100	38	38	•
26				
27				
28				
29				
30				
31				
32				
33				
34				
35				

The median duration of breastfeeding is 20 months.

* This is calculated by averaging the percentages for 3 months and assigning the result to the middle month, e.g., 3-month average for month 19 above is $\frac{56 + 52 + 47}{3} = 52$

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Annex 1

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Annex 2

SAMPLE QUESTIONS FOR USE IN SURVEYS ON BREASTFEEDING INDICATORS

Date of interview _____

For each child less than 24 months old ask the respondent:

1. Can you tell me how old this child is today?
   (If possible, the exact date of birth is _____)

2. Since this time yesterday, has (name) been breastfed? Yes No
   If yes, was this (name)'s main source of food? Yes No

3. Since this time yesterday, did (name) receive any of the following:

Vitamins, mineral supplements, medicine	Yes	No
Plain water	Yes	No
Sweetened of flavoured water	Yes	No
Fruit juice	Yes	No
Tea or infusion	Yes	No
Infant formula	Yes	No
Tinned, powdered or fresh milk	Yes	No
Solid or semi-solid food	Yes	No
Oral Rehydration Salts (ORS) solution	Yes	No
Other (specify: .....)	Yes	No

4. Since this time yesterday, did (name) drink anything from a bottle with a nipple/teat? Yes No
   If yes, please describe: .....

Annex 3

SUMMARY LIST OF KEY BREASTFEEDING INDICATORS

Indicators derived from households

EXCLUSIVE BREASTFEEDING RATE

Proportion of infants less than 4 months of age who are exclusively breastfed:

$$= \frac{\text{Infants < 4 months (< 120 days) of age who were exclusively breastfed in the last 24 hours}}{\text{Infants < 4 months (< 120 days) of age}}$$

PREDOMINANT BREASTFEEDING RATE

Proportion of infants less than 4 months of age who are predominantly breastfed:

$$= \frac{\text{Infants < 4 months (< 120 days) of age who were predominantly breastfed in the last 24 hours}}{\text{Infants < 4 months (< 120 days) of age}}$$

TIMELY COMPLEMENTARY FEEDING RATE

Proportion of infants 6-9 months of age who are receiving breastmilk and complementary foods:

$$= \frac{\text{Infants 6-9 months (180-299 days) of age who received complementary foods } \textit{in addition to breastmilk} \text{ in the last 24 hours}}{\text{Infants 6-9 months (180-299 days) of age}}$$

CONTINUED BREASTFEEDING RATE (1 YEAR)

$$= \frac{\text{Children 12-15 months of age who were breastfed in the last 24 hours}}{\text{Children 12-15 months of age}}$$

CONTINUED BREASTFEEDING RATE (2 YEARS)

$$= \frac{\text{Children 20-23 months of age who were breastfed in the last 24 hours}}{\text{Children 20-23 months of age}}$$

BOTTLE-FEEDING RATE

$$= \frac{\text{Children < 12 months (< 366 days) of age who were bottle-fed in the last 24 hours}}{\text{Children < 12 months (< 366 days) of age}}$$

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