

The EVALUATION Project

Indicators for Reproductive Health Program Evaluation

Final Report of the Subcommittee on Breastfeeding

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Acknowledgments

In April 1994, the United States Agency for International Development (USAID) requested that The EVALUATION Project establish a Reproductive Health Indicators Working Group (RHIWG). The purpose of the RHIWG has been to develop indicators for program evaluation in five areas of reproductive health: safe pregnancy, including post-abortion care, STD/HIV, breastfeeding, women's nutrition and adolescents. A steering committee, composed of staff from the USAID Center for Population, Health and Nutrition, and external organizations, has provided valuable guidance to the work of the RHIWG.

Following the first meeting of the RHIWG on June 8, 1994, in Rosslyn, Virginia, each of the subcommittees met several times, identified the indicators judged most useful for evaluating programs in their specific areas, and drafted descriptions of each indicator. Subsequently, the full Reproductive Health Indicators Working Group met on February 8, 1995 to review progress to date and draft a "short list of indicators" for each topic area. Further revisions were made, and each report was then externally reviewed by one or more experts in the topic area. Comments from the reviewers have been incorporated into the current reports.

The EVALUATION Project and the editors of this report wish to express their thanks to the members of the Breastfeeding Subcommittee of the Reproductive Health Indicators Working Group, who spent a great deal of time participating in meetings, preparing descriptions of the indicators, and reviewing various drafts of this report. The names of the members and the organizations that supported their participation in this subcommittee are provided at the back of this report. We owe a debt of gratitude to all who contributed their time, energy and ideas to this collaborative effort.

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TABLE OF CONTENTS

	Summary List of Indicators	4
	Short List of Indicators	7
	List of Acronyms	8
<u>Chapter</u>		
I	Introduction	9
	A Background	10
	B Technical Challenges	10
	C Indicators to Measure Breastfeeding	11
II	Output Indicators	12
	A Policy Indicators	13
	B Quality of Care Indicators	24
	C Community-Level Indicators	35
	D Training Indicators	37
	E Family Planning Indicators	43
	F Information-Education-Communication Indicators	46
III	Outcome Indicators	50
	A Breastfeeding Rates	51
	B Breastfeeding Duration, Timing, and Frequency	57
	C Feeding Strategies	67
	D Family Planning	71
	E World Health Organization Recommendations	76
	<u>References and Appendices</u>	79
	References	80
	A Conceptual Framework	81
	B Members of the Subcommittee on Breastfeeding	86
	C Steering Committee of the RHIWG	87

SUMMARY LIST OF INDICATORS

Policy	Page
■ Breastfeeding as an element of national family planning programs	14
■ Breastfeeding as an element of national health policies	15
■ Breastfeeding as an element of national labor policies	16
■ Government endorsement of the Lactational Amenorrhea Method (LAM)	17
■ National breastfeeding policy and plan	18
■ National breastfeeding coordinator or committee	20
■ National code of marketing	21
■ National participation in the Baby Friendly Hospital Initiative (BFHI)	22
■ Infant food sample distribution rate	23
Quality of Care	
■ Existence of written clinical reproductive health/family planning service delivery protocols for breastfeeding women	26
■ Percentage of service delivery points (SDPs) with reproductive health/family planning service delivery protocols for breastfeeding women on site	27
■ Percentage of reproductive health/family planning service providers trained to use family planning service delivery protocols for breastfeeding women	28
■ Existence of a range of family planning methods appropriate to breastfeeding women at service delivery points (SDPs)	29
■ Percentage of reproductive health/family planning service providers who know about appropriate contraception for breastfeeding women	30
■ Percentage of reproductive health/family planning service providers who ascertain whether or not a woman is breastfeeding prior to providing contraceptive advice or methods	31
■ Discouragement of breastfeeding by health care providers	32
■ Rooming-in rate	34

Community-Level	Page
■ Community-based counseling	36
Training	
■ Percentage of reproductive health/family planning service providers trained in breastfeeding counseling	38
■ Percentage of trained providers who are knowledgeable and competent in breastfeeding counseling	39
■ Availability of breastfeeding training materials	41
Family Planning	
■ Percentage using the Lactational Amenorrhea Method (LAM)	44
■ Percentage of new family planning acceptors currently breastfeeding	45
Information-Education-Communication (IEC)	
■ Percentage of target breastfeeding communication products developed and disseminated	47
■ Percentage of target audience exposed to IEC messages on breastfeeding	49
Breastfeeding Rates	
■ Exclusive breastfeeding rate (EBR)	52
■ Predominant breastfeeding rate (PBR)	54
■ Never breastfed rate	56
Breastfeeding Duration, Timing, and Frequency	
■ Mean duration of breastfeeding	58
■ Mean duration of breastfeeding among the breastfed	60
■ Continued breastfeeding at 24 months	61
■ Breastfeeding lack-of-confidence	62
■ Initiation of breastfeeding in the first hour of life	64

Breastfeeding Duration, Timing, and Frequency (Cont'd)	Page
■ Frequency of breastfeeding in 24 hours	66
Feeding Strategies	
■ Timely complementary feeding rate	68
■ Percentage using bottles from 0-6 months	70
Family Planning	
■ Mean duration of lactational amenorrhea	72
■ Contraception among nursing mothers	73
World Health Organization Recommendations	
■ World Health Organization (WHO) recommended breastfeeding indicators	77

SHORT LIST OF INDICATORS

Each of the Reproductive Health Indicators Working Group (RHIWG) subcommittees was asked to draw up a short list of “primary indicators” that potentially would be the most important and useful in monitoring interventions in their area. It was recommended that the list contain 7-8 policy or output (program-based) indicators and 2-3 outcome (population-level) indicators. The breastfeeding list includes the following indicators:

- National breastfeeding policy and plan
- Percentage of reproductive health/family planning service providers trained to use family planning service delivery protocols for breastfeeding women
- Percentage of reproductive health/family planning service providers who ascertain whether or not a woman is breastfeeding prior to providing contraceptive advice or methods
- Percentage of reproductive health/family planning service providers trained in breastfeeding counseling
- Community-based counseling
- Percentage of target audience exposed to IEC messages on breastfeeding
- Continued breastfeeding at 24 months
- Timely complementary feeding rate
- Contraception among nursing mothers

LIST OF ACRONYMS

CDD	Childhood Diarrheal Disease
DHS	Demographic & Health Survey
EBR	Exclusive Breastfeeding Rate
FP	Family Planning
IEC	Information-Education-Communication
LAM	Lactational Amenorrhea Method
MCH	Maternal and Child Health
ORS	Oral Rehydration Salts
PBR	Predominant Breastfeeding Rate
PVO	Private Voluntary Organization
RH	Reproductive Health
SDP	Service Delivery Point
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WHO	World Health Organization

Chapter I

Introduction

- Background
- Technical Challenges in Evaluating Breastfeeding Policies and Programs
- Indicators to Measure Breastfeeding

INTRODUCTION

Background

Breastfeeding is a natural, cost-effective, preventive intervention to improve reproductive health and space births. It is a key child survival intervention that promotes nutritional status and decreases infection and diarrheal disease. Over the past decade, development organizations, public health experts, and governments around the world, building on traditional practices and aided by scientific insights, have recognized the significance of breastfeeding. They have made commitments to: *protect* current breastfeeding practices from erosion due to aggressive marketing of breastmilk substitutes; *support* women's desire to breastfeed well by providing appropriate health services, accurate and complete information, and an environment which reinforces breastfeeding; and *promote* improved breastfeeding practices (i.e., exclusive breastfeeding for about six months, adequate complementary feeding from six months onward, and duration of two years or longer) as well as to increase the prevalence of breastfeeding.

Technical Challenges in Evaluating Breastfeeding Policies and Programs

Evaluation of efforts to improve and increase breastfeeding is a serious challenge. Breastfeeding is a behavior carried out entirely by mothers; its determinants are multiple and complex; and there are no quantifiable commodities associated with its successful delivery. Defining exactly what should be measured and how to measure it is difficult. Many breastfeeding services are integrated

into broader maternal and child health programs, further compounding the difficulty of monitoring and measuring. Perhaps these are some of the reasons why few implementations of breastfeeding policies and programs have been assessed.

Breastfeeding is a unique process that:

- provides ideal nutrition for infants and contributes to their healthy growth and development;
- reduces incidence and severity of infectious diseases, thereby lowering infant morbidity and mortality;
- contributes to women's health by reducing the risk of breast and ovarian cancer, and by increasing the spacing between pregnancies;
- provides social and economic benefits to the family and the nation; and
- provides most women with a sense of satisfaction when successfully carried out.

From: The Innocenti Declaration on the Protection, Promotion, and Support of Breastfeeding. WHO/UNICEF, 1990.

Written by Chloe O'Gara, University of Michigan.

Indicators to Measure Breastfeeding

Indicators of breastfeeding practices have

been widely collected, analyzed, and used with increasing sophistication in recent years. Numerous surveys have measured breastfeeding practices, though the variables included have not been constant across surveys or through the years. To resolve the non-comparability of data and information about breastfeeding, an informal group of donors and experts, the "Interagency Group for Action on Breastfeeding," did extensive work to develop consistent nomenclature and definitions of breastfeeding behaviors. These definitions are now widely used and effectively define the key features of the outcome indicators presented here. The merits or definitions of certain other breastfeeding practice indicators are still under debate; for these, commentary appears in the "Purpose and Issues" section which accompanies each indicator.

In addition to the monitoring of behavioral indicators, there have been qualitative and quantitative investigations of the knowledge and attitudes of mothers and health workers that are associated with improved breastfeeding practices. From a search for predictors common to all women, the field has evolved to a sophisticated recognition of cultural specificity and variability of breastfeeding practices and the information and beliefs associated with them. Qualitative studies have been critical to the effective design and implementation of programs to improve breastfeeding.

To date, experience with using standardized indicators to analyze and assess *programs* to improve or increase breastfeeding is relatively limited. The many individuals and institutions that contributed to the development of the indicators included in this working paper have tried to capture the lessons learned to date

about the critical features of successful breastfeeding protection, support, and promotion. Programs range from vertical, visible efforts on the national and international levels to efforts integrated within larger maternal and child health or family planning programs which are typically poorly defined and not evaluated. As the indicators proposed here are used, we hope that the nature and effectiveness of breastfeeding interventions will be explored and explained. This will be especially important for activities within integrated service delivery, which, given budgeting constraints around the world, are the probable future for breastfeeding promotion in many countries.

Many of the policy indicators are relatively straightforward, and further development of definitions and methodologies may not be needed or may be relatively straightforward. For example, it is fairly simple to determine whether or not the Lactational Amenorrhea Method (LAM) is officially identified as a family planning option. In contrast, it is much more difficult at the program level to gauge whether family planning service providers can and do routinely offer LAM to mothers. Development of reliable and valid indicators is an iterative process, and empirical fine-tuning is a needed next step as the program and policy indicators are put into use.

In an era of stronger commitment to and higher priority for breastfeeding in reproductive health, the appearance of this set of indicators is timely. The output indicators presented in this volume recapitulate and expand on indicators developed by WHO and UNICEF for assessing health facility practices that affect breastfeeding. If these indicators are systematically used to assess efforts to protect, support, and promote breastfeeding, comparability of results across programs and populations will be greatly enhanced.

Chapter II

Program Indicators

- Section A: Policy
- Section B: Quality of Care
- Section C: Community-Level
- Section D: Training
- Section E: Family Planning
- Section F: Information-Education-Communication

Section A

POLICY

- Breastfeeding as an element of national family planning programs
- Breastfeeding as an element of national health policies
- Breastfeeding as an element of national labor policies
- Government endorsement of the Lactational Amenorrhea Method (LAM)
- National breastfeeding policy and plan
- National breastfeeding coordinator or committee
- National code of marketing
- National participation in the Baby Friendly Hospital Initiative (BFHI)
- Infant food sample distribution rate

BREASTFEEDING AS AN ELEMENT OF NATIONAL FAMILY PLANNING PROGRAMS

DEFINITION

Inclusion of breastfeeding in a National Family Planning Policy, Plan, or Program document. The document should explicitly address support for breastfeeding mothers who use family planning services and support breastfeeding as a method of child spacing. It should also examine the demographic significance and cost implications of breastfeeding in the country.

MEASUREMENT

Measurement is dichotomous (yes/no). Positive indicates confirmation of a document meeting these criteria and identified as national (population-based) in scope.

DATA REQUIREMENTS

Document(s) available at the ministerial level.

DATA SOURCE(S)

National government family planning personnel or personnel of a non-governmental body delegated by the government to manage national family planning efforts.

PURPOSE AND ISSUES

This indicator identifies awareness of breastfeeding and commitment to protecting breastfeeding in family planning programs which affect breastfeeding practices.

Goals, targets, strategic actions, and service delivery guidelines should be mandated in such documents.

Qualitative analysis, assessment of awareness and compliance, and narrative reporting will add significantly to the utility of this indicator.

Prepared by Chloe O’Gara, University of Michigan.

BREASTFEEDING AS AN ELEMENT OF NATIONAL HEALTH POLICIES

DEFINITION

Inclusion of breastfeeding in a National Health Policy, Plan, or Program document. The document should explicitly address the protection, support, and promotion of breastfeeding in health services.

MEASUREMENT

Measurement is dichotomous (yes/no). Positive indicates confirmation of a document meeting these criteria and identified as national (population-based) in scope.

DATA REQUIREMENTS

Document(s) available at the ministerial level.

DATA SOURCE(S)

National government maternal and child health, reproductive health, and/or nutrition

personnel.

PURPOSE AND ISSUES

This indicator identifies awareness of breastfeeding and commitment to its protection and promotion in health services which affect breastfeeding practices. Promotion of breastfeeding in prenatal, perinatal, well baby, and sick child programs is essential. Inclusion in immunization activities is also desirable.

Goals, targets, strategic actions, and service delivery guidelines should be mandated in these documents.

Qualitative analysis, assessment of awareness and compliance, and narrative reporting will add significantly to the utility of this indicator.

Prepared by Chloe O'Gara, University of Michigan.

Indicator

BREASTFEEDING AS AN ELEMENT OF NATIONAL LABOR POLICIES

DEFINITION

Protection of breastfeeding in national labor policies or regulations. Documents should specify mothers' right to postpartum leave, as well as mothers' and infants' rights to adequate lactation breaks and/or access in the workplace during the working day.

MEASUREMENT

Measurement is dichotomous (yes/no). Positive indicates confirmation of policies or regulations meeting these criteria.

DATA REQUIREMENTS

Document(s) available at the ministerial level.

DATA SOURCE(S)

National labor or union officials, major employers, women's organizations with economic or workplace interests.

PURPOSE AND ISSUES

This indicator identifies protective regulations to ensure workers' rights to breastfeed, infants' rights to breastfeed, and mothers' rights to work while breastfeeding.

A rationale, goals, and guidelines for facilitating breastfeeding by working women should be mandated in these documents. Sanctions for noncompliance should also be spelled out.

Qualitative analysis, narrative reports, and assessment of awareness (on the part of workers and employers) and compliance will add significantly to the utility of this indicator.

It should be noted that the costs of implementing a workplace breastfeeding policy will vary according to the proportion of the labor force that is female in a given worksite or industry. Government cost-sharing may encourage participation by private industry in policies that protect workers' right to breastfeed.

Prepared by Chloe O'Gara, University of Michigan.

GOVERNMENT ENDORSEMENT OF THE LACTATIONAL AMENORRHEA METHOD (LAM)

DEFINITION

The inclusion of the Lactational Amenorrhea Method (LAM) as a nationally approved family planning method. Where government has delegated such approval to a non-governmental body, approval from such a body is acceptable.

MEASUREMENT

Measurement is dichotomous (yes/no). Positive indicates that LAM is a nationally approved method.

DATA REQUIREMENTS

Policy and program documents available at the ministerial level in Ministries of Health or other public sector institutions.

DATA SOURCE(S)

Lists of family planning methods approved for use in the country may be found in government policy or program documents or may come from non-governmental bodies. Such approved contraceptive lists form the basis for clinical protocols that govern access to the method.

PURPOSE AND ISSUES

The Lactational Amenorrhea Method (LAM) is a family planning method based on breastfeeding that can be used by women who fully or nearly fully breastfeed. LAM, presented as an algorithm, offers an alternative method for the early postpartum months and assures the timely use of another method. LAM indicates that breastfeeding women who wish to delay their next pregnancy must introduce a form of family planning that is complementary to breastfeeding if menses return, or at six months, whichever comes first. LAM can be offered to women who are fully or nearly fully breastfeeding, less than six months postpartum, and amenorrheic, and can be taught prior to delivery.

In order for LAM to be widely available to women, it usually has to be approved for use in the country, often by some government or professional body that is empowered to approve new contraceptives for distribution. The existence of such approval is essential groundwork for the inclusion of the method in family planning programs. Knowledge of the status of the method in the country would benefit those who wish to improve infant feeding practices and those who seek to increase or maintain the fertility impact of breastfeeding.

Prepared by Virginia Laukaran, John Snow, Inc.

Indicator

NATIONAL BREASTFEEDING POLICY AND PLAN

DEFINITION

A national breastfeeding policy and plan is a document which identifies major breastfeeding benefits and problems nationwide, specifies targets or goals, describes a strategy and specific activities to achieve those goals, and is endorsed at the ministerial level of the national government as a national policy and/or program plan.

MEASUREMENT

Measurement is dichotomous (yes/no). Positive indicates confirmation of a document identified as national (population-based) in scope.

DATA REQUIREMENTS

Document(s) available at the ministerial level.

DATA SOURCE(S)

National government personnel, typically MCH, CDD, nutrition, or family planning in a Ministry of Health, and personnel from other Ministries, such as Finance and Labor.

PURPOSE AND ISSUES

This indicator identifies awareness of breastfeeding and commitment to action to promote breastfeeding at the national level. Most countries which successfully protect or promote breastfeeding develop a national plan to mobilize interest, coordinate multi-sectoral activities, project budget requirements, and focus evaluation efforts.

Such plans need not necessarily be drafted by Ministries of Health. For example, private voluntary organizations (PVOs) might draft a national plan which a government might then endorse. For the plan to be truly national, however, recognition by the national government is essential. Some level of involvement by the Ministries of Finance and Labor is also desirable, as these Ministries often have influence over policy implementation.

National breastfeeding policies typically define: goals and targets (e.g., within five years, 95% initiation of breastfeeding, exclusive breastfeeding for four to six months of 70% of infants, duration of two years or more); health and family planning policy and service delivery guidelines; and strategies for breastfeeding promotion. Policies may: include or refer to commercial (breastmilk substitutes) and labor (maternity and lactation leave) regulations; identify responsible institutions (governmental, non-governmental, or a combination); define a position or committee responsible for planning, monitoring, and reporting on actions and outcomes; and specify or refer to multiple sectoral policies (e.g., health, family planning, education, communications, labor). Generally, national policy statements include an overview of the status of breastfeeding and a rationale for its protection, support, and promotion. The cost implications of alternative policies (e.g., foreign exchange cost of milk formula) need to be made explicit.

National breastfeeding plans are program

Prepared by Chloe O'Gara, University of Michigan.

descriptions that define targets and provide operational guidance for activities during a specified period. Such plans typically: describe the breastfeeding problem in some detail and offer a rationale for the programs proposed to protect, support, and promote breastfeeding; describe the cost of alternative policies; identify the party or parties responsible for each element of the initiative; describe pre-service and in-service knowledge and skills training of health/family planning professionals and service providers; describe awareness and sensitization training for policy makers and service providers (e.g., teachers) in other sectors; define public education and

promotional efforts through mass media and other channels; identify existing materials or needs for development; describe outreach and community support strategies; specify critical institutional and national policies or regulations which must be developed or implemented; describe research relevant to breastfeeding problems and programs; and mandate monitoring and evaluation activities. Effective national plans include a calendar of anticipated implementation and a budget.

Qualitative analysis, assessment of use and availability, and narrative reporting will add significantly to the utility of this indicator.

Indicator

NATIONAL BREASTFEEDING COORDINATOR OR COMMITTEE

DEFINITION

Existence of a person or group of persons responsible for coordination of breastfeeding support, protection, enforcement of WHO code, and promotion activities in a country.

MEASUREMENT

Measurement is dichotomous (yes/no). Positive indicates confirmation of a functioning coordinator or committee whose responsibilities and/or authorities are national (population-based) in scope.

DATA REQUIREMENTS

- **For a breastfeeding coordinator**, a position description, scope of work, or terms of reference. It is critical to determine whether the individual dedicates a significant and/or adequate amount of time to this responsibility, especially if the individual is tasked with multiple responsibilities. One way to do this is to request evidence of activity, such as correspondence, documents, or functioning programs.
- **For a breastfeeding coordinating committee**, a charge, declaration, scope of work, or terms of reference. The committee must meet at least semi-annually to be considered a functioning committee. It is important to substantiate dates and outcomes of meetings (e.g., minutes) in the preceding year.

The individual or committee should be spontaneously identified by key players and acknowledged as having responsibility and authority vis-à-vis breastfeeding programs and policies.

DATA SOURCE(S)

Key national personnel. Typically, this will be at the ministerial level or in the MCH, CDD, nutrition, or family planning division of a Ministry of Health. The coordinator or committee need not be government employees or entities, but should be acknowledged and recognized by government personnel as the parties responsible for action and authorized to address the issue.

PURPOSE AND ISSUES

The purpose of this indicator is to assess national commitment to improved and increased breastfeeding and to enforcement of a code of marketing (where one exists), and evidence of coordinated action to achieve that goal.

If a committee or coordinator is unaware of key policies or activities regarding breastfeeding, the coordinating and leadership functions are not being served.

Narrative reporting and qualitative assessment of capabilities, authorities, actions, and effectiveness will add significantly to the utility of this indicator.

Indicator

NATIONAL CODE OF MARKETING**DEFINITION**

Legislation modeled on or derived from the International Code of Marketing of Breastmilk Substitutes (1981).

MEASUREMENT

Measurement is ordinal, as follows:

- 0: No regulations.
- 1: Regulations drafted, under active discussion or revision.
- 2: Regulations pending before national legislative body or executive.
- 3: Regulatory code enacted.
- 4: Regulatory code enacted, monitored, and enforced.

DATA REQUIREMENTS

- Access to copies of legislation or drafts.
- Interviews and observation to determine extent of compliance, monitoring, and enforcement.

DATA SOURCE(S)

National legislative body, Ministry of Health, Ministry of Commerce, private sector representatives, breastfeeding coordinator or committee.

PURPOSE AND ISSUES

Notwithstanding approval by all but two countries, few nations have enacted legislation to regulate marketing of breastmilk substitutes. Enactment of such legislation is a good indication of firm commitment to protecting breastfeeding. Almost all legislation deviates from the WHO model. This indicator does not pretend to assess quality, appropriateness, or effectiveness of specific legislation.

Narrative description will add significantly to the utility of this indicator, to document progress, obstacles (e.g., advertising of breastmilk substitutes on billboards and television), and process. Some countries have draft legislation prepared. In some cases, it may have been brought before the legislature for discussion or vote. Reporting these efforts provides useful information about intent and commitment to policy development.

Prepared by Chloe O'Gara, University of Michigan.

Indicator

NATIONAL PARTICIPATION IN THE BABY FRIENDLY HOSPITAL INITIATIVE (BFHI)

DEFINITION

National commitment to the "Ten Steps to Successful Breastfeeding" in all institutions providing birthing care.

MEASUREMENT

Measurement is ordinal, as follows:

- 0: No commitment to the Baby Friendly Hospital Initiative (BFHI).
- 1: Stated commitment to the "Ten Steps" at the ministerial level.
- 2: A plan for achieving the "Ten Steps" nationally.
- 3: #2 plus designation of at least one teaching hospital as "Baby Friendly."

DATA REQUIREMENTS

Document(s) available at the ministerial and hospital levels.

DATA SOURCE(S)

UNICEF, WHO, or ministry personnel.

PURPOSE AND ISSUES

Commitment to this initiative suggests at a minimum an awareness of the importance of breastfeeding and of appropriate birthing practices to support its initiation. Compliance, and certification of compliance, are often a political issue within countries and vis-à-vis international agencies. Certified services vary greatly in the quality of care offered. For this reason, this indicator is included as a policy rather than a quality of care indicator.

Qualitative analysis, narrative reports, and assessment of compliance in participating hospitals will add significantly to the utility of this indicator.

Prepared by Chloe O'Gara, University of Michigan.

Indicator

INFANT FOOD SAMPLE DISTRIBUTION RATE

DEFINITION

The proportion of the population receiving samples of breastmilk substitutes or other infant foods packaged for use by infants under six months of age.

MEASUREMENT

The indicator is a percentage, with the numerator consisting of mothers receiving samples of breastmilk substitutes or other infant foods, and the denominator consisting of all mothers.

Rate of receipt of breastmilk substitute samples is calculated as:

$$\frac{\text{\# of mothers < six months postpartum receiving samples of breastmilk substitutes}}{\text{\# of mothers < six months postpartum}} \times 100$$

Rate of receipt of other infant foods is calculated as:

$$\frac{\text{\# of mothers < 6 months postpartum receiving samples of other infant food products}}{\text{\# of mothers < six months postpartum}} \times 100$$

DATA REQUIREMENTS

The data are derived from answers to a questionnaire item asking women if they or the child's father received a sample of a breastmilk substitute. A follow-up item would ask if they were given a sample of other

infant food products such as cereal-based products.

DATA SOURCE(S)

- Population survey(s).
- Exit surveys of women leaving a health facility.

PURPOSE AND ISSUES

The Code of Marketing of Breastmilk Substitutes calls for elimination of the use of sample distribution as a marketing practice for infant foods. Nevertheless, in many countries the distribution of samples of breastmilk substitutes or of cereal-based infant foods continues. The practice of sample distribution has been shown to be highly effective for marketing purposes. Collection of data to monitor compliance with the requirement to eliminate sample distribution is a useful component of efforts to improve infant feeding.

The six-month infant age range reflects the time during which supplementary foods are not necessary and may interfere with continued lactation.

In countries where sample distribution is prevalent, it would also be of interest to determine by whom the samples are distributed and in what locations (e.g., at home, in shops, or in public places such as health facilities).

Section B

QUALITY OF CARE

- Existence of written clinical reproductive health/family planning service delivery protocols for breastfeeding women
- Percentage of service delivery points (SDPs) with reproductive health/family planning service delivery protocols for breastfeeding women on site
- Percentage of reproductive health/family planning service providers trained to use family planning delivery protocols for breastfeeding women
- Existence of a range of family planning methods appropriate to breastfeeding women at service delivery points (SDPs)
- Percentage of reproductive health/family planning service providers who know about appropriate contraception for breastfeeding women
- Percentage of reproductive health/family planning service providers who ascertain whether or not a woman is breastfeeding prior to providing contraceptive advice or methods
- Discouragement of breastfeeding by health care providers
- Rooming-in rate

Section B

INTRODUCTION

Family planning and reproductive health service providers must ensure that women are encouraged to breastfeed. Breastfeeding women who use health services may need information, support, or clinical management in order to breastfeed well and successfully. Breastfeeding women also need appropriate contraceptive advice and access to a range of contraceptives appropriate for them.

The quality of care indicators assess the likelihood that breastfeeding women are being provided with appropriate services and contraception, which are essential to their health and welfare as well as to that of their infants. The most effective way of ascertaining this, however, is to determine the advice and methods actually provided to breastfeeding women. The policy indicators are farthest from the interaction between provider and client and therefore from the advice and methods given to mothers. The indicators in this section, particularly those which suggest observation data, provide the closest approximation of quality of care related to breastfeeding. They are likely to be particularly significant for evaluation purposes since they measure implementation of interventions commonly considered key to successful breastfeeding promotion and support.

Breastfeeding women have contraceptive needs that differ significantly from those of non-breastfeeding women. Breastfeeding, if exclusive and on demand, inhibits fertility. The Lactational Amenorrhea Method (LAM), with provision for substitution of other contraceptives after the woman no longer

meets the criteria for LAM, is an appropriate contraceptive method for a breastfeeding woman, providing 98% protection against pregnancy when she is less than six months postpartum, amenorrheic (i.e., her menses have not returned), and breastfeeding fully or nearly fully (i.e., not providing regular supplementation or allowing long periods without breastfeeding, either day or night). Non-hormonal methods (e.g., condoms, diaphragm, and spermicides) and intrauterine devices have no adverse effects on breastmilk production or infant health and are therefore also appropriate for lactating women. While hormonal methods are not methods of first choice for breastfeeding women, progestin-only contraceptives, such as the progestin-only pill ("mini pill"), NORPLANT® implants, and progestin-only injectables, are appropriate after six weeks postpartum if, after counseling, such methods are preferred by women. Combined hormonal contraceptives (i.e., methods that contain estrogen, such as combined oral contraceptives and combined injectables) are contraindicated for breastfeeding women, due to their adverse effects on milk volume, duration of lactation, and, therefore, on infant weight gain and health.

Successful breastfeeding is closely related to adequate knowledge, support, and health care which does not interfere with the process of lactation. Finally, a small percentage of women experience breast or lactation problems. Service providers must be trained to manage these problems in order to provide adequate reproductive health care.

Written by Diana Measham, Consultant, The Population Council.

Indicator

EXISTENCE OF WRITTEN CLINICAL REPRODUCTIVE HEALTH/FAMILY PLANNING SERVICE DELIVERY PROTOCOLS FOR BREASTFEEDING WOMEN

DEFINITION

A written reproductive health/family planning service delivery protocol for breastfeeding women (which may be a freestanding document, a chapter of a document, a module, or the like) should specify: that breastfeeding women have contraceptive needs that differ from those of non-breastfeeding women; that providers should ascertain a woman's breastfeeding status prior to providing her with family planning advice or methods; that they should only provide appropriate contraceptives to breastfeeding women; that providers need to make women aware that breastfeeding, through the Lactational Amenorrhea Method (LAM) can be used as a contraceptive; and that providers should assist women with diagnosis and management of breast or lactation problems.

MEASUREMENT

Measurement is ordinal, as follows:

- 0: Documents not available.
- 1: Documents available but not officially endorsed.
- 2: Documents available and officially

endorsed.

DATA REQUIREMENTS

Assessment as to whether documents, chapters, modules are available and/or endorsed at the ministerial level.

DATA SOURCE(S)

National government personnel or official document registry. Typically MCH or family planning-related personnel/documents within a Ministry of Health or Population.

PURPOSE AND ISSUES

This indicator identifies national-level awareness of the family planning needs of breastfeeding women and commitment to promote appropriate service provision. The protocols need not be drafted by government bodies; for example, a private voluntary organization (e.g., a non-governmental family planning association) might draft a national protocol which a government might then adopt. For the protocol to be national policy, however, its recognition at the national government level is essential.

Prepared by Diana Measham, Consultant, The Population Council.

Indicator

PERCENTAGE OF SERVICE DELIVERY POINTS WITH REPRODUCTIVE HEALTH/FAMILY PLANNING SERVICE DELIVERY PROTOCOLS FOR BREASTFEEDING WOMEN ON SITE
DEFINITION

The extent to which family planning programs, maternity services, and other health programs providing reproductive health services have written protocols for breastfeeding women (as defined under indicator titled "The existence, at the national level, of written clinical reproductive health/family planning service delivery protocols for breastfeeding women") on site.

MEASUREMENT

Percentage calculated as follows:

$$\frac{\text{\# of service delivery points with protocol on site}}{\text{\# of service delivery points}} \times 100$$

DATA REQUIREMENTS

- Assessment of the number of SDPs and/

or definition of sample.

- Assessment of the number of SDPs with written protocols on reproductive health/family planning for breastfeeding women on site.

DATA SOURCE(S)

- Survey of service delivery points.
- Supervisory/monitoring data.

PURPOSE AND ISSUES

This indicator identifies SDP-level awareness of the reproductive health/family planning needs of breastfeeding women, program plan features to respond to the needs of breastfeeding women, and commitment to promote appropriate service provision.

Prepared by Diana Measham, Consultant, The Population Council.

Indicator

PERCENTAGE OF REPRODUCTIVE HEALTH/FAMILY PLANNING SERVICE PROVIDERS TRAINED TO USE FAMILY PLANNING SERVICE DELIVERY PROTOCOLS FOR BREASTFEEDING WOMEN

DEFINITION

The extent to which RH/FP service providers are trained in the use of family planning service delivery protocols for breastfeeding women (as defined under indicator titled "The existence, at the national level, of written clinical reproductive health/family planning service delivery protocols for breastfeeding women").

MEASUREMENT

Percentage calculated as follows:

$$\frac{\text{\# of service providers trained}}{\text{\# of service providers}} \times 100$$

DATA REQUIREMENTS

- Assessment of the number of RH/FP service providers and/or definition of sample.

- Assessment of the number of RH/FP service providers trained in the use of family planning service delivery protocols for breastfeeding women.

DATA SOURCE(S)

- Survey of RH/FP service providers or their managers.
- Training data.

PURPOSE AND ISSUES

The existence of a protocol on site does not necessarily ensure that providers are trained in its use. This indicator, therefore, helps to assess the impact of the protocol on service provision.

Prepared by Diana Measham, Consultant, The Population Council.

Indicator

EXISTENCE OF A RANGE OF FAMILY PLANNING METHODS APPROPRIATE TO BREASTFEEDING WOMEN AT SERVICE DELIVERY POINTS (SDPs)

DEFINITION

The extent to which SDPs (family planning programs, maternity services, and other health programs providing services for breastfeeding women) have a range of family planning methods appropriate to breastfeeding women on site. In order of choice, methods include: Lactational Amenorrhea Method (LAM) with provision for appropriate alternative method after LAM criteria are no longer met; barrier methods (condoms, diaphragm, spermicides), and IUDs; progestin-only methods (mini-pills, progestin-only injectables, and NORPLANT® implants); and tubal ligation or vasectomy.

MEASUREMENT

Given the value placed on providing women with choice among a comprehensive range of appropriate methods, SDPs could be rated based on the total number of methods of choice in stock, with methods most appropriate for breastfeeding women being given a higher score.

DATA REQUIREMENTS

Assessment as to whether or not a particular method is available on site.

DATA SOURCE(S)

- Survey of service managers.
- Alternatively, and preferably, inventory of SDP method stocks.

PURPOSE AND ISSUES

A range of appropriate methods for breastfeeding women must be in stock if women are to be offered these methods. This indicator simply records presence of each method at the SDP. It does not assess the quality of care actually provided, for example, whether methods are understood by health workers, whether the methods' relationship to lactation is understood and explained to mothers, or whether services are giving mothers full access to all options.

Prepared by Diana Measham, Consultant, The Population Council.

Indicator

PERCENTAGE OF REPRODUCTIVE HEALTH/FAMILY PLANNING SERVICE PROVIDERS WHO KNOW ABOUT APPROPRIATE CONTRACEPTION FOR BREASTFEEDING WOMEN

DEFINITION

The extent to which RH/FP service providers know about appropriate contraception for breastfeeding women.

MEASUREMENT

Percentage calculated as follows:

$$\frac{\text{\# of service providers who know about appropriate family planning during breastfeeding}}{\text{\# of service providers}} \times 100$$

NOTE: This indicator could be reconstructed along the lines of the indicator titled "The existence of a range of methods appropriate to breastfeeding women at SDPs," rating providers based on their knowledge of first and second choice methods.

DATA REQUIREMENTS

- Assessment of the number of RH/FP service providers and/or definition of sample.
- Assessment of the number of RH/FP service providers who know about appropriate contraception for breastfeeding women.

Prepared by Diana Measham, Consultant, The Population Council.

DATA SOURCE(S)

Survey of RH/FP service providers.

PURPOSE AND ISSUES

The fact that service delivery protocols exist, providers are trained in their use, and appropriate contraceptives are in stock does not necessarily ensure that appropriate services are being provided. This indicator helps to determine whether or not providers are being trained effectively and protocols being used appropriately, and, therefore, that women are being provided with appropriate advice and methods.

Measurement can be simple: a single percentage reflecting either knowledge of one key method, or a cut-off criterion for knowledge of several or all methods. Alternatively, two indicators could be constructed, one for first choice and one for second choice methods. Finally, for formative use or program management, in some situations it may be desirable to report an indicator for each method. A sum of scores (assigning 2 to each first choice and 1 to each second choice method) could be used to represent overall achievement.

Indicator

PERCENTAGE OF REPRODUCTIVE HEALTH/FAMILY PLANNING SERVICE PROVIDERS WHO ASCERTAIN WHETHER OR NOT A WOMAN IS BREASTFEEDING PRIOR TO PROVIDING CONTRACEPTIVE ADVICE OR METHODS

DEFINITION

The extent to which reproductive health/family planning service providers ascertain whether or not a woman is breastfeeding prior to providing her with contraceptive advice or methods.

MEASUREMENT

Percentage calculated as follows:

$$\frac{\text{\# of service providers who ascertain breastfeeding status}}{\text{\# of service providers}} \times 100$$

DATA REQUIREMENTS

- Assessment of the number of RH/FP service providers.
- Assessment of the number of RH/FP service providers who ascertain women's breastfeeding status prior to providing contraceptive advice or methods.

DATA SOURCE(S)

- Observation of client-provider interaction (preferable option).
- Survey of RH/FP service providers (second option).

PURPOSE AND ISSUES

The fact that service delivery protocols exist, providers are trained in their use, and appropriate contraceptives are in stock does not necessarily ensure that appropriate services are being provided. Like the indicator titled "The proportion of RH/FP service providers who know about appropriate contraception for breastfeeding women," this indicator helps to determine whether or not the protocols are being used effectively and women provided with appropriate advice and services. It should be noted that one is likely to find a lower percentage of service providers who actually ascertain breastfeeding status during a consultation with a woman seeking family planning services, compared to the percentage of service providers who report that they do so.

Prepared by Diana Measham, Consultant, The Population Council.

Indicator

DISCOURAGEMENT OF BREASTFEEDING BY HEALTH CARE PROVIDERS

DEFINITION

The percentage of mothers with infants under two years of age who are advised by a health care provider to terminate breastfeeding, to use breastmilk substitutes, or to introduce any other food or liquid prior to the child's fourth month anniversary.

MEASUREMENT

Measurement is dichotomous (yes/no, ever/never). Two approaches are appropriate (but results are not comparable).

In a household survey, this can be treated as a retrospective variable. Mothers of infants younger than 24 months can be asked whether health care providers or family planning services providers advised them: (1) at any time to stop or reduce frequent breastfeeding; (2) at any time to give the baby a breastmilk substitute. Mothers of children *younger than 4 months* should be asked the above questions and, in addition, whether health care providers or family planning services providers advised them: (3) at any time to give the baby any food or fluid other than breastmilk.

$$\frac{\text{\# of mothers of infants < 24 months reporting discouragement (defined as \#1\& \#2 above)}}{100} \times \text{Total \# of mothers of infants < 24 months}$$

and

$$\frac{\text{\# of mothers of infants < 4 months reporting discouragement (defined as \#1 \& \#2 \& \#3 above)}}{100} \times \text{Total \# of mothers of infants < 24 months}$$

A preferable approach is to assess this in **exit surveys of mothers at health service delivery points**. To obtain more reliable and specific data in these situations, mothers should be questioned *only about their interactions in the health center on the day of interview*.

DATA REQUIREMENTS

Standardized questionnaire item responses by mothers. Careful pretesting is necessary to ensure that mothers understand questions and identify breastmilk substitutes correctly.

DATA SOURCE(S)

- Household surveys of mothers.
- Service delivery point surveys of mothers.

PURPOSE AND ISSUES

Reports by mothers of inappropriate guidance about breastfeeding from health care providers correlate with early and inappropriate weaning. The focus of this indicator is to capture the advice which

Prepared by Chloe O'Gara, University of Michigan.

mothers hear regardless of the merits of the rationale which a health care provider may give for discouraging breastfeeding.

Not infrequently, health care providers believe that they support breastfeeding, but operate with so much erroneous information that the instructions they give to mothers undermine successful breastfeeding.

Specificity of questions (e.g., What was recommended? By which health care provider? Why?) will add significantly to the utility of this indicator, especially for program monitoring and evaluation.

Note that 100 minus this indicator's value is the percentage of mothers who are not discouraged from breastfeeding. This may be a more positively orientated figure to monitor.

ROOMING-IN RATE**DEFINITION**

"Rooming-in" is uninterrupted close proximity of mother and infant following birth. Criteria for rooming-in include that it: (1) begin within one hour of birth; (2) continue during the day and the night; (3) eliminate any separation of mother and baby for more than an hour at a time.

MEASUREMENT

The indicator (WHO, 1992), percentage of newborns rooming-in, is calculated as:

$$\frac{\text{\# of newborns rooming-in 24 hours a day, beginning within one hour of birth and not separated from their mothers for more than one hour at any time}}{\text{of newborns in the facility}} \times 100$$

DATA REQUIREMENTS

- Number of newborns roomed-in with their mothers during a specified period.
- Total number of newborns cared for in the facility during that period.

DATA SOURCE(S)

- Review of facility records (e.g., ward

records, discharge records).

- Facility-based exit surveys of mothers.
- Observations of facilities.
- Retrospective population-based survey (least reliable option).

PURPOSE AND ISSUES

The purpose of the indicator is to assess the extent of rooming-in within health facilities. Aggregated numbers can suggest population-based trends as well. Rooming-in is recommended because it promotes on-demand feeding, helps establish exclusive breastfeeding, encourages bonding between mother and child, provides skin-to-skin contact (which helps premature or small-for-gestational-age babies to stay warm) and provides health benefits to the infant through exposure to maternal antibodies in colostrum.

Determination of which infants to include in the denominator is one potential issue. Because rooming-in is important for all infants, the WHO and UNICEF have opted to include all births, including those delivered vaginally or by cesarean section, as well as infants kept in special care or other units after birth.

Prepared by Martha Holley Newsome, Wellstart International.

Section C

COMMUNITY- LEVEL

- Community-based counseling

COMMUNITY-BASED COUNSELING

DEFINITION

Percentage of mothers with infants under six months of age who are supported or advised by a member of their community (who is not a facility-based health care provider) how to exclusively breastfeed, including, for ex-ample, addressing issues such as frequency, positioning, avoiding bottles, early initiation, night feeding, and weaning. Counseling may be provided by paid or volunteer counselors; friends, or family; formal or informal contact in any setting.

MEASUREMENT

Indicator calculated as follows:

$$\frac{\text{\# of mothers with infants under six months of age who report ever receiving advice on exclusive breastfeeding from persons other than facility-based health care providers}}{\text{\# of mothers with infants under six months of age in the target population (or sample)}} \times 100$$

Prepared by Sandy Huffman, NURTURE Center to Prevent Childhood Malnutrition, and Chloe O'Gara, University of Michigan.

DATA REQUIREMENTS

Standardized questionnaire item responses by mothers. Careful pretesting is necessary to ensure that mothers understand questions, and that responses are reliable and valid.

DATA SOURCE(S)

- Household surveys of mothers.
- Service delivery point surveys.

PURPOSE AND ISSUES

Evaluation of community-based efforts to support and improve breastfeeding is in its infancy. This indicator captures any community or household contact which addresses exclusive breastfeeding. It does not capture repeated contacts, effectiveness of those contacts, or sources of counseling support. Each of these is difficult to measure reliably, and the definition of each is context-specific.

Section D

TRAINING

- Percentage of reproductive health/family planning service providers trained in breastfeeding counseling
- Percentage of trained providers who are knowledgeable and competent in breastfeeding counseling
- Availability of breastfeeding training materials

PERCENTAGE OF REPRODUCTIVE HEALTH/FAMILY PLANNING SERVICE PROVIDERS TRAINED IN BREASTFEEDING COUNSELING

DEFINITION

Breastfeeding counseling denotes verbal and tactile interactions between service providers and mothers whose focus is breastfeeding. Counseling about breastfeeding ranges from provision of simple information and advice to complex clinical management of lactation. Training is distinct for each cadre of health service provider (e.g., physicians, nurses, midwives, nurse aides, community-based distribution workers). Data should be assembled for specified reference periods, typically designed to reflect national breastfeeding training strategy targets.

MEASUREMENT

The indicator is calculated as:

$$\frac{\text{\# of service providers trained in a cadre}}{\text{total \# of service providers in the cadre}} \times 100$$

DATA REQUIREMENTS

- Number of course graduates by cadre, based on an actual list of names enrolled in courses or workshops (family planning course with a breastfeeding module) for potential verification purposes.

- Review of materials or curricula to verify training on breastfeeding.

DATA SOURCE(S)

- Course records, usually kept by the training body (e.g., training institution, hospital, family planning training center, Ministry of Health), which are used both for administrative purposes during the training (e.g., distributing materials or fees) and for monitoring of trainees at a later date.
- Provider surveys (questions asking whether they received training).
- Training strategy documents (national, regional, community, institutional).
- Ministerial or organizational personnel records (to define the denominator).

PURPOSE AND ISSUES

The indicator serves as a crude measure of training activity. It can be used to assess the capability of the current training system to: (1) produce trained providers; (2) determine whether a program/project meets its training targets; and (3) track progress from one year to another.

Prepared by Inga Oleksy, Office of Population, USAID.

PERCENTAGE OF TRAINED PROVIDERS WHO ARE KNOWLEDGEABLE AND COMPETENT IN BREASTFEEDING COUNSELING

DEFINITION

An operational definition of knowledge and competency in terms of recognized local and international standards is a critical first step. Such a definition is usually based on the national training objectives and assessed through an objective examination and practical skills test.

MEASUREMENT

The indicator is calculated as:

$$\frac{\text{\# of trainees who have mastered breast-feeding knowledge and skills per objectives}}{100} \times \text{\# of trainees who have completed breastfeeding training}$$

DATA REQUIREMENTS

- Listing of individuals who complete breastfeeding training.
- Evidence of mastery knowledge (e.g., criterion-referenced test scores).
- Standardized assessment of trainees' breastfeeding promotion, counseling, or clinical skills (depending on cohort and objectives) by an expert observer.

A more complete picture of the training situation can be represented in a matrix which shows results by cadre and type of training.

DATA SOURCE(S)

- Administration records (training files).

Prepared by Inga Oleksy, Office of Population, USAID.

- Written tests (e.g., pre- and post-tests of knowledge).
- Checklists, notes, or reports of an expert observer(s).
- National or institutional targets and/or objectives for training and service delivery.

PURPOSE AND ISSUES

This indicator measures the effectiveness of training. It can also be used to measure training participants' ability to retain key information both in the short and long term. Low scores may reflect inadequacies in the course and/or the inability of participants to absorb the information.

It will be difficult to compare the results from this indicator across countries and even across programs within a given country. Neither objectives, courses, nor evaluation tools are typically standardized. Not only do criteria vary across training programs, but mastery is defined in many different ways. When comparisons are made across programs, content, criteria, and mastery levels must be examined for approximate equivalence.

When measuring providers' knowledge at a later date, this indicator is useful in determining the retention of skills acquired during training, and for identifying possible candidates for retraining. If a trained provider does

not retain the skills acquired, it is important to explore the reasons. They may include an inadequate or inappropriate curriculum; an incompetent trainer(s); poor materials; or trainees incapable of learning, retaining, or applying the knowledge and skills imparted.

This indicator may reflect less on the quality of the training than on the subsequent work environment of the trainee. Type and frequency of supervision, demand for the

skills and knowledge, or low patient load resulting in a lack of practice can significantly affect outcomes. The proficient trainee is a person who retains or even improves skills and knowledge in the course of routine service delivery.

Qualitative analysis, structured observations, expert interviews, focus groups, and narrative reports will add significantly to the utility of this indicator.

Indicator

AVAILABILITY OF BREASTFEEDING TRAINING MATERIALS**DEFINITION**

The terms "breastfeeding training materials," "curricula," "modules," and "course plans" must be operationally defined according to recognized standards. Each type of material should be geared to the specific category of cadre to be trained. Materials must reflect expert breastfeeding knowledge and be designed according to sound training methodology.

MEASUREMENT

The indicator is the percentage of training material targets achieved and is calculated as:

$$\frac{\text{\# of adequate breastfeeding training materials/curricula/modules (by provider cadre)}}{\text{target \# of breastfeeding training materials/curricula/modules (by provider cadre)}} \times 100$$

Where:

"Adequate" is defined by explicit criteria and judged by an expert reviewer.

DATA REQUIREMENTS

- Training materials and background materials developed or in the process of development. Expert trainers will need to review materials in light of country goals and objectives to ascertain adequacy.

- National training strategy which identifies goals for training and cadres to be trained.

DATA SOURCE(S)

- Resource centers or libraries of training institutions, breastfeeding programs, or RH/FP units.
- Materials listings gathered by the training institutions, service providers, and from existing RH/FP project documentation.
- For the breastfeeding training strategy, Ministry of Health or directorate of region/community/institutional site for training.

PURPOSE AND ISSUES

This indicator is intended to measure availability of adequate breastfeeding training materials, curricula, modules, and course plans which are needed for implementation of any national strategy. These are essential for the development of a sustainable training system.

Some criteria for adequacy might include:

- a minimum of four hours training on breastfeeding, including LAM, for any cadre; for all cadres, time in training should be appropriate for training objectives.

tives, capabilities of trainees, and complexity of materials and skills;

- accurate information;
- skills and information which are appropriate to the cadre and respond to the objectives and priorities of the program; and
- design/plan which reflects basic principles of adult learning.

This indicator does not measure quality, only local availability of usable materials. Criteria for adequacy should not be very stringent.

A matrix presenting numbers of targeted and existing types of training materials by cadre of provider is a useful tool to show performance of current programs compared to goals as stated in the national (regional, community, institutional) training strategy. A matrix is also useful for comparisons of time periods and regions.

Section E

FAMILY PLANNING

- Percentage using the Lactational Amenorrhea Method (LAM)
- Percentage of new family planning acceptors currently breastfeeding

PERCENTAGE USING THE LACTATIONAL AMENORRHEA METHOD (LAM)

DEFINITION

Percent of women who use the Lactational Amenorrhea Method (LAM) among all women of reproductive age.

MEASUREMENT

$$\frac{\text{\# of women reporting LAM as their means of child spacing}}{\text{\# of women of reproductive age}} \times 100$$

DATA REQUIREMENTS

The total number of women of reproductive age, and, of these, the number who are currently using LAM.

DATA SOURCE(S)

Population-based surveys.

PURPOSE AND ISSUES

In some populations there is a heavy reliance on breastfeeding. The Lactational Amenorrhea Method (LAM) should be distinguished from breastfeeding, which is not a reliable method but may be classified as a traditional and less effective method (Institute for Reproductive Health, 1994; Perez, Labbok & Queenan, 1992). LAM, in contrast, is a highly effective method, which involves three criteria: (1) that the user be less than six months postpartum, (2) fully or nearly fully breastfeeding, and (3) amenorrheic. When the user no longer meets any one of these three criteria, she should be advised to change to a more effective method.

In countries where the method is accepted for use in programs and where it is being offered in family planning service delivery programs, the prevalence of use is an important indicator of program effectiveness. It should be noted that the proportion of all women in the community who are eligible for LAM may be less than for some other methods. The proportion of women less than six months postpartum will vary depending on the birth rate. The proportion of women fully or nearly fully breastfeeding in the community is another determinant of the prevalence of LAM use and depends on infant feeding practices.

An alternative indicator would assess the percentage of eligible women who use LAM. That indicator would be calculated as follows:

$$\frac{\text{\# of women reporting LAM as their means of child spacing}}{\text{\# of women eligible to use LAM (i.e. < 6 months postpartum)}} \times 100$$

This indicator may be more meaningful to program designers and managers. It is not comparable to prevalence figures for other family planning methods.

Both variants of the indicator are likely to represent a conservative estimate of the prevalence of LAM use in countries where women may use LAM but not self-report as LAM users (e.g., Bangladesh).

Indicator

PERCENTAGE OF NEW FAMILY PLANNING ACCEPTORS CURRENTLY BREASTFEEDING

DEFINITION

The percentage of new family planning acceptors who are currently breastfeeding during a defined reference period.

MEASUREMENT

The indicator is calculated as follows:

$$\frac{\text{\# of new acceptors breastfeeding}}{\text{total \# of new acceptors}} \times 100$$

Where:

of breastfeeding = Number of new clients currently breastfeeding during reference period.

of acceptors = Total number of new acceptors at the institution during reference period.

DATA REQUIREMENTS

- Total counts of new acceptors at an institution during the reference period (usually one month, or one year).
- A count of those who are breastfeeding.

DATA SOURCE(S)

Service statistics of first acceptance visits. This would typically be found as part of the client-based family planning health information system.

PURPOSE AND ISSUES

The main purpose of this indicator is to raise the awareness of family planning providers, policy makers and program planners concerning the number of breastfeeding clients serviced by the program. Once attention is drawn to this significant subpopulation, services can be tailored to meet the demand. Secondly, knowledge of a woman's breastfeeding status is relevant to her method selection. A retrospective review of method assignments, with the added information on breastfeeding status, would be an important quality control assessment tool. Users of this indicator may wish to differentiate between any breastfeeding, predominant breastfeeding, and exclusive breastfeeding. (For more information, see "Exclusive Breastfeeding Rate" and "Predominant Breastfeeding Rate" indicators.)

Prepared by Hubert Allen, Hubert Allen and Associates.

Section F

INFORMATION-EDUCATION-COMMUNICATION (IEC)

- Percentage of target breastfeeding communication products developed and disseminated
- Percentage of target audience exposed to Information-Education-Communication (IEC) messages on breastfeeding

PERCENTAGE OF TARGET BREASTFEEDING COMMUNICATION PRODUCTS DEVELOPED AND DISSEMINATED

DEFINITION

Breastfeeding communication products may be television and radio spots, street billboards, posters, brochures, advertisements in newspapers and magazines, songs, plays, etc. Dissemination refers to: (a) the external transmission or distribution of communications produced via electronic, print, or other media; and (b) the artistic, interpersonal activities or public relations events implemented.

MEASUREMENT

The two, related indicators are calculated as:

$$\frac{\text{\# of breastfeeding communication products developed}}{\text{target \# of breastfeeding communication products to be developed}} \times 100$$

$$\frac{\text{\# of breastfeeding communication products disseminated}}{\text{target \# of breastfeeding communication products to be disseminated}} \times 100$$

Reference periods can be the stages of an IEC campaign, or specified periods covered by a communications and/or breastfeeding strategy or plan.

DATA REQUIREMENTS

- Lists of breastfeeding communication products developed and disseminated, and of activities conducted by the institution responsible for breastfeeding during a reference period.

Prepared by Inga Oleksy, Office of Population, USAID.

- A breastfeeding or IEC strategy or plan which specifies targets (national, regional, or community).

DATA SOURCE(S)

- For *development*: Sample materials (spots, posters, scripts, tapes, programs, etc.) and production figures (generally available on bills).
- For *dissemination*: Log books of radio and TV stations regarding the number of broadcasts of each breastfeeding spot or program.
- Data from records of the IEC program (or responsible organization) on the number of breastfeeding posters or brochures displayed at the service delivery points, plays or community mobilization events implemented, etc.
- Data from service delivery points regarding the number of breastfeeding brochures distributed to clients, educational talks given, outreach visits conducted by program staff, etc.

PURPOSE AND ISSUES

Well planned IEC campaigns define target audiences and objectives. Development and dissemination of communications products can be assessed against those objectives. This indicator does not assess scale, appropriateness or effectiveness of breastfeeding

communications strategies or products. Com-

parability across programs will be minimal.

Quantitative and qualitative information may be assembled in a matrix, with columns listing the type of breastfeeding communication products developed (e.g., ads, TV spots) and rows listing specific channels of communication (e.g., local TV channel, newspaper). Entering checkmarks

or numbers in specific cells can provide an all-inclusive information matrix on the situation of the entire IEC breastfeeding campaign for regional comparisons and evaluations.

Qualitative analysis, structured observations, expert interviews, focus groups, and narrative reports will add significantly to the utility of this indicator.

PERCENTAGE OF TARGET AUDIENCE EXPOSED TO INFORMATION-EDUCATION-COMMUNICATION (IEC) MESSAGES ON BREASTFEEDING

DEFINITION

"Target audience" must be defined in specific terms, based on the IEC strategy adopted (e.g., women of reproductive age, population of city X, female workers of a given factory, breastfeeding women in an SDP catchment area). "Exposure" refers to an individual's recognition of messages disseminated by the breastfeeding communication program.

MEASUREMENT

The indicator is calculated as:

$$\frac{\text{\# of target audience who report exposure}}{\text{total \# of target audience}} \times 100$$

DATA REQUIREMENTS

- List of messages, media channels, and specific products/materials through which the individual has seen or heard either a specific message or any message about breastfeeding such as TV, radio, magazines, newspapers, posters.
- Population or sample counts of target audience(s).
- Recognition or assisted recall data.

DATA SOURCE(S)

Survey (preferably with a random sample) of the target population (e.g., women who come to family planning clinics).

PURPOSE AND ISSUES

Recognition of specific messages provides a measure of the reach of a given communications campaign. Recognition, or assisted recall is analogous to questions on knowledge of family planning methods in the DHS. The respondent is asked whether he/she has heard other messages not spontaneously mentioned.

It is important to collect this information by interviewing a series of individuals in private (the usual format for a survey). Focus groups are not a useful means of obtaining this information. If, for example, only one person in a focus group knows the correct response and he/she gives it, this immediately contaminates the rest of the data collection procedure. It should be noted, however, that in individual interviews there may be a courtesy bias in response to questions of this type, especially if respondents believe the interviewer works for the breastfeeding program.

Information may be assembled in a matrix, with columns listing the number and type of targeted audience (e.g., school girls, women coming to family planning clinics, factory workers) and rows listing targets to be met. Entering checkmarks or numbers in specific cells offers a simplified picture of the effectiveness of the entire IEC breastfeeding campaign. This can be useful for comparisons and evaluations.

Chapter III

Outcome Indicators

- Section A: Breastfeeding Rates
- Section B: Breastfeeding Duration, Timing, and Frequency
- Section C: Feeding Strategies
- Section D: Family Planning
- Section E: World Health Organization Recommendations

Section A

BREASTFEEDING RATES

- Exclusive breastfeeding rate (EBR)
- Predominant breastfeeding rate (PBR)
- Never breastfed rate

Indicator

EXCLUSIVE BREASTFEEDING RATE (EBR)**DEFINITION**

The percent of infants aged less than 6 months (0-182 days) who are being exclusively breastfed. An infant is considered to be exclusively breastfed if he/she receives only breastmilk with no other liquids or solids, with the exception of drops or syrups consisting of vitamins, mineral supplements or medicines.

MEASUREMENT

The Exclusive Breastfeeding Rate (EBR) is calculated as:

$$\frac{\text{\# of infants 0-6 months exclusively breastfed}}{\text{total \# of infants 0 - 6 months}} \times 100$$

Illustrative Computation

Among 335 living infants aged 0-3 months, in the previous 24 hours:

- 33 were not breastfed
- 56 received only breastmilk
- 12 received breastmilk with vitamin drops but nothing else
- 59 received breastmilk with water, but nothing else
- 71 received breastmilk with water and fruit juice, but nothing else
- 25 received breastmilk with formula and fruit juice, but no solids
- 79 received breastmilk and solid foods

In this example, 68 children are exclusively breastfed (56+12), so the Exclusive Breastfeeding Rate is 20.3 percent (68/335 x 100).

Prepared by Laurence Grummer-Strawn, Centers for Disease Control and Prevention.

DATA REQUIREMENTS

- The number of living infants under the age of 6 months.
- 24-hour recall data of all liquids and solids consumed by living infants 0 - 6 months. Respondents should be probed about the different kinds of liquids the infant may have received, including water, juice, milk, formula, and other liquids.

DATA SOURCE(S)

Population-based surveys.

PURPOSE AND ISSUES

According to the Innocenti Declaration, all infants should be fed exclusively on breast milk from birth to 6 months. This recommendation implies that 100% of infants under the age of 6 months should be exclusively breastfed. This indicator is used to give an overall measure of the degree to which women have adopted behaviors consistent with this recommendation. The indicator is the same as that described at an informal WHO Working Group on infant feeding indicators.

The indicator gives equal weight to a reduction in the duration of exclusive breastfeeding and to a reduction in the percent of women who exclusively breastfeed. For example, a population in which three-quarters of infants are exclusively breastfed for four

months and one-quarter are never exclusively breastfed would have the same value on this indicator as would a population in which all infants are exclusively breastfed for three months.

The indicator should be interpreted as the percent of infants who "are currently being exclusively breastfed" rather than the percent who "have been exclusively breastfed since birth." The use of a 24-hour recall period may cause the indicator to overestimate the percent of infants who have never ingested anything except breastmilk since birth, since some infants who are given other liquids irregularly may not have received them in the 24 hours before the survey. If retrospective

data are collected to capture this information, **the results are not comparable to 24-hour recall data.**

In some surveys, the number of births each month could vary considerably, perhaps due to survey methodology, sampling error or seasonality of births. Such variation could affect the calculation of the EBR. For example, if there are many more zero-month-olds than three-month-olds in the sample, the EBR will be biased upward since younger children are more likely to be exclusively breastfed. In this case, it might be useful to age-adjust the percent exclusively breastfed, assuming that the number of births each month is constant.

Indicator

PREDOMINANT BREASTFEEDING RATE (PBR)**DEFINITION**

The percent of infants aged less than 6 months who are being predominantly breastfed. An infant is considered to be predominantly breastfed if he/she receives breastmilk along with water, water-based drinks (sweetened and flavored water, teas, infusions, etc.), fruit juice, Oral Rehydration Salts (ORS) solution, but does not receive any other liquids or solids. No food-based fluids (except fruit juice and sugar-water) are allowed.

Prepared by Laurence Grummer-Strawn, Centers for Disease Control and Prevention.

MEASUREMENT

The Predominant Breastfeeding Rate is calculated as:

$$\frac{\text{\# of infants 0-6 months predominantly breastfed}}{\text{total \# of infants 0 - 6 months}} \times 100$$

Illustrative Computation

Among 335 living infants, in the previous 24 hours:

- 33 were not breastfed
- 56 received only breastmilk
- 12 received breastmilk with vitamin drops, but nothing else
- 59 received breastmilk with water, but nothing else
- 71 received breastmilk with water and fruit juice, but nothing else
- 25 received breastmilk with formula and fruit juice, but no solids
- 79 received breastmilk with solid foods

In this example, 130 children are predominantly breastfed (59+71), so the Predominant Breastfeeding Rate is 38.8 percent (130/335 x 100).

DATA REQUIREMENTS

- The number of living infants under the age of 6 months (0 - 182 days).
- The number of these infants predominantly breastfed, based on a 24-hour recall of liquids and solids consumed. Respondents should be probed about the different kinds of liquids the infant may have received, including water, juice, milk, formula, and other liquids.

the EBR and the PBR represents the percent fully breastfed. Second, WHO has subsequently simplified guidance regarding the recommended ages for exclusive breastfeeding. The earlier recommendation

DATA SOURCE(S)

Population-based surveys.

PURPOSE AND ISSUES

Although it is recommended that young infants be exclusively breastfed, the introduction of water, ritual foods, teas, juices, etc. in small quantities are not especially important to the infant's nutrition.

Introducing these items does not appear to affect the relationship between breastfeeding and the duration of postpartum amenorrhea. This indicator is used to give an overall measure of predominant breastfeeding.

This indicator is the same as that described at an informal WHO Working Group on infant feeding indicators, with two clarifications. First, infants receiving breastmilk and vitamin, mineral or medicine drops or syrups are considered to be exclusively breastfed, not predominantly breastfed. The categories of exclusive breastfeeding and predominant breastfeeding are mutually exclusive, and so the rates can be added together. The sum of

was 4 - 6 months; the current recommendation is about 6 months.

(Refer to the "exclusive breastfeeding rate" indicator for further notes on this indicator.)

Indicator

NEVER BREASTFED RATE**DEFINITION**

The percentage of infants never given breastmilk over the proportion of live births, in a reference time period.

MEASUREMENT

Never breastfed rate =

$$\frac{\text{\# of children never receiving breastmilk}}{\text{\# of live births}} \times 100$$

during a reference time period.

DATA REQUIREMENTS

Number or proportion of respondents reporting that breastmilk was never given to their infants in a sample of live births.

DATA SOURCE(S)

Population-based surveys.

PURPOSE AND ISSUES

This measure is often used in surveys to determine the proportion of women ever attempting to breastfeed. One issue to be considered is whether to include infants who are given expressed breastmilk rather than fed at the breast. Premature infants are often unable to suck and may be given expressed breastmilk. This is likely to be the only breastmilk for those who die within the first week. Omission of such infants would bias the numbers downward, since any liveborn prematures would be included in the denominator. Since the proportion of infants never breastfed may be quite low, sometimes under one percent, the need to consider such a bias is more than theoretical.

Assessment of the never breastfed rate is meaningful and necessary in order to interpret prevalence of breastfeeding and full breastfeeding at later points in time.

Prepared by Virginia Laukaran, John Snow, Inc.

Section B

BREASTFEEDING DURATION, TIMING, AND FREQUENCY

- Mean duration of breastfeeding
- Mean duration of breastfeeding among the breastfed
- Continued breastfeeding at 24 months
- Breastfeeding lack-of-confidence
- Initiation of breastfeeding in the first hour of life
- Frequency of breastfeeding in 24 hours

Indicator

MEAN DURATION OF BREASTFEEDING**DEFINITION**

The mean number of months that children are breastfed, regardless of what other fluids or foods they might also receive.

MEASUREMENT

The mean duration of breastfeeding (MDBF) is calculated as:

$$\text{MDBF} = \frac{\sum \text{Percent Breastfeeding (PBF)}_a}{(a \text{ ranges from } 0 \text{ to } 59)}$$

where PBF is the Percent Breastfeeding:

$$\text{PBF}_a = \frac{\begin{array}{c} \# \text{ of infants aged } a \text{ months who are} \\ \text{currently being breastfed} \end{array}}{\begin{array}{c} \# \text{ of children born } a \text{ months ago} \end{array}}$$

Illustrative Computation

Completed Age (in Months)	Infants Currently Breastfed	Living or Deceased Infants	PBF
0	82	85	0.965
1	72	77	0.935
2	74	87	0.851
3	76	90	0.844
.	.	.	.
.	.	.	.
.	.	.	.
56	0	65	0.000
57	0	69	0.000
58	0	75	0.000
59	0	62	0.000

$$\text{MDBF} = (0.965 + 0.935 + 0.851 + 0.844 + \dots + 0.000 + 0.000 + 0.000 + 0.000) = 15.5 \text{ months}$$

Source: El Salvador Family Planning/Maternal and Child Health Survey, 1993

Prepared by Laurence Grummer-Strawn, Centers for Disease Control and Prevention.

DATA REQUIREMENTS

- The number of births within the last 60 months classified by single months ago.
- The number of infants currently being breastfed, classified by single month of age.

DATA SOURCE(S)

Population-based surveys.

PURPOSE AND ISSUES

This indicator gives an overall measure of the extent of breastfeeding in the population. It combines information on the percentage ever breastfed and the duration of breastfeeding among those who are breastfed. Children never breastfed are implicitly treated as being breastfed for 0 months. Because all births are included in the denominator, even of children no longer living, the indicator gives the actual duration of breastfeeding, treating death as one of many reasons to stop breastfeeding.

Retrospective reports of how long a child was breastfed are not used to calculate the duration of breastfeeding, because this type of data is known to exhibit substantial heaping on durations which are multiples of 6 months. This heaping of responses likely reflects rounding, which is not necessarily symmetrical. As a result, the mean computed from retrospective data could be biased.

All births in the time period should be included, not just last births. If only last-born children are included, the findings may be biased, and the bias may not be equal in all countries or among all population subgroups.

The computation shown above assumes that age is given in completed months. If, instead, infants are classified by their average age in months (e.g., because date of birth is not ascertained), the mean should be reduced by $(0.5 \times PBF_0)$, where PBF_0 is calculated from births occurring in the month of interview (see Grummer-Strawn & Trussell, 1993). In the example above, if the data referred to average age rather than completed age, the mean duration of breastfeeding would be 15.0 months $(15.5 - 0.965/2)$.

The mean duration is recommended rather than the median, primarily because of the relative ease of calculating the mean. Computation of the median from current breastfeed-

ing data requires that the data first be smoothed, a procedure which is not always straightforward. The mean tends to be slightly higher than the median (by about 0.5 to 1.0 months) because of very long breastfeeding practices by a small subset of women.

The calculation of this indicator is based on children under five years of age, because in many developing countries, a significant proportion of three and four-year-olds are still being breastfed. The mean duration of breastfeeding would be underestimated if these children were excluded from the calculations. In countries in which the duration of breastfeeding is known to be short, perhaps less than 12 months, it can reasonably be assumed that children older than 36 months are not being breastfed. In this case, the data requirements can be reduced to include only children 0-35 months old.

Indicator

MEAN DURATION OF BREASTFEEDING AMONG THE BREASTFED**DEFINITION**

The mean number of months that children who started breastfeeding are breastfed, regardless of what other fluids or foods they might also receive.

MEASUREMENT

The mean duration among the breastfed (DAB) is calculated as:

$$\text{DAB} = \frac{\text{MDBF}}{1 - \text{Percent never breastfed}/100}$$

Illustrative Computation

MDBF = 15.5 months

Proportion never breastfed = .088

DAB = 15.5 / (1 - 8.8/100) = 17.0

DATA REQUIREMENTS

- Mean duration of breastfeeding.
- Proportion never breastfed.

(See descriptions of these indicators.)

DATA SOURCE(S)

Population-based surveys.

PURPOSE AND ISSUES

This indicator gives a measure of how long breastfed children are breastfed. It separates the decision of how long to breastfeed from the decision of whether or not to breastfeed. The distinction may be important since policy and program implications may differ, depending on which indicator is to be changed.

Prepared by Laurence Grummer-Strawn, Centers for Disease Control and Prevention.

Indicator

CONTINUED BREASTFEEDING AT 24 MONTHS

DEFINITION

The percentage of children 20-23 months of age who are breastfeeding.

MEASUREMENT

The indicator is calculated as follows:

$$\frac{\text{children 20-23 months of age breastfed in the last 24 hours}}{\text{live children 20-23 months of age}} \times 100$$

DATA REQUIREMENTS

- A representative sample of children 20-23 months.
- Mother's reporting of each child's food/liquid consumption in the 24 hours preceding the interview.
- Child's age.

DATA SOURCE(S)

Typically this indicator is measured using a population based household survey of all live children less than 24 months of age. The indicator is based on current status data, i.e., (1) the current age of the child, and (2) mother's 24-hour recall of any liquids or foods consumed during the 24 hours preceding the survey.

PURPOSE AND ISSUES

This is a measure of breastfeeding duration. It is a simple percentage and thus relatively easy to understand and compare. The four-month cross-section makes the indicator more reliable and useful with smaller samples. The four-month interval is not a serious liability at the end of two years when few programs are designed to change specific practices.

Prepared by Chloe O'Gara, University of Michigan.
Based on WHO indicator.

Indicator

BREASTFEEDING LACK-OF-CONFIDENCE**DEFINITION**

Among children under 24 months of age who stopped breastfeeding, the percentage whose mothers said that they stopped breastfeeding because of a nursing problem ("nipple or breast problem" or "no/ insufficient milk") or because the child refused.

MEASUREMENT

Breastfeeding lack-of-confidence is calculated as follows:

$$\frac{\begin{array}{l} \# \text{ of children from whom breastfeeding was} \\ \text{stopped because mothers report nipple/breast or} \\ \text{milk supply problems or because the child refused} \end{array}}{\begin{array}{l} \# \text{ of children 0-23 months of age who} \\ \text{had stopped breastfeeding} \end{array}} \times 100$$

DATA REQUIREMENTS

- A representative sample of children under 24 months of age (i.e., 0-23 months).
- Information about ever breastfed status and whether the child is still breastfed.
- Information about the main reason for stopping breastfeeding, including the categories "nipple / breast problem," "no/ insufficient milk," and "child refused."

DATA SOURCE(S)

Population-based surveys employing representative samples (e.g., DHS surveys) should be used to estimate the level of support for breastfeeding in a given population.

Prepared by Elizabeth Sommerfelt, Macro International, Inc.

PURPOSE AND ISSUES

The breastfeeding lack-of-confidence indicator is intended as a simple indicator of whether nursing mothers receive support for breastfeeding. While it is common for nursing mothers to wonder whether the infant receives enough milk, support from family and friends (and, hopefully, from health personnel) usually is enough to carry the mother through any doubts about whether she has enough milk. Sore nipples and tender breasts are also common experiences that normally occur during breastfeeding, and are quickly resolved. Again, reassurance from family, friends, and qualified health personnel help ensure that these remain minor issues on the road to successful breastfeeding.

On the aggregate level, studies in a number of countries show that there is a clear relationship between the median duration of breastfeeding in a population and the percentage of children who stopped breastfeeding either because of nursing problems or because the child refused.

The breastfeeding lack-of-confidence indicator is easy to calculate, and provides insights which can be used in planning and implementing programs for the support of breastfeeding.

The age group 0 through 24 months is suggested since other breastfeeding indicators also will be derived from this age group.

Breastfeeding Duration, Timing, and Frequency

The breastfeeding lack-of-confidence indicator can also be used for selected groups of children. Representative samples of specific population subgroups, such as infants under 6 months, can be used. The

indicator can also be calculated for participants in specific programs, e.g., programs that promote good feeding practices among young children, and in well-baby clinics and immunization clinics.

Indicator

INITIATION OF BREASTFEEDING IN THE FIRST HOUR OF LIFE**DEFINITION**

This indicator is defined as the percentage of infants less than 12 months of age who were put to the breast within one hour of birth (WHO, 1991).

MEASUREMENT

For a population-based survey, it is calculated as:

$$\frac{\text{\# of infants < 12 months of age who were put to the breast within one hour of birth}}{\text{total \# of infants < 12 months of age}} \times 100$$

An output/program level version of this indicator is:

$$\frac{\text{\# of infants discharged during reference period who were put to the breast one hour after birth}}{\text{total \# of infants discharged during reference period}} \times 100$$

These two indicators are not comparable.

DATA REQUIREMENTS

Population-level:

number of infants less than 12 months of age in the population or subpopulation sample; and

number of infants less than 12 months of age reported to have been put to the breast within one hour of birth.

Prepared by Martha Holley Newsome, Wellstart International.

Program level:

- number of infants discharged from a facility and the number of infants discharged who breastfed within one hour of birth.

DATA SOURCE(S)

- Version 1: Population-based surveys.
- Version 2: Facility-based, observations, or exit surveys.

PURPOSE AND ISSUES

One issue to consider is whether or not to exclude cesarean births, exclude facilities with high levels of cesarean births, or define a different criterion for cesarean or high-risk births. Many researchers now prefer to use a single criterion (typically one hour, although some argue for one half-hour) regardless of the number of cesarean or other high-risk births. The rationale for this approach, which is endorsed here, is that defining overly stringent criteria for risk can be a major stumbling block to rooming-in; therefore, infants who are unable to room in with their mothers because they are defined as high risk and/or delivered by caesarean section should be captured by the data. As of this writing, the Baby Friendly Hospital Assessment Tools use a four-hour criterion for cesarean births. Using different periods of time for normal versus cesarean deliveries creates two different indicators and requires additional

information which may also be biased.

The purpose of the indicator is to assess whether mothers in the population and/or in health facilities initiate early breastfeeding with its respective benefits to both mother (reduced postpartum hemorrhage) and infant (skin-to-skin contact and exposure to maternal antibodies in colostrum). WHO has defined this indicator as both a household and a facility-based indicator.

The **population-based indicator's** denominator is broad (all infants under 12 months of age) and may introduce a significant recall bias as

women may have difficulty recalling when they initiated breastfeeding and whether this was within one hour. This indicator may also mask changes in population or health facility practices that have occurred within one year.

The **facility-based indicator** does not have as much recall bias but individual facility-based rates would need to be aggregated to determine population-level trends and would be inappropriate in settings where home births are occurring. Since home births occur almost everywhere, it is not recommended that facility-based data be aggregated and interpreted as population-based indicators.

Indicator

FREQUENCY OF BREASTFEEDING IN 24 HOURS

DEFINITION

The average number of suckling episodes reported within the last 24 hours across breastfeeding mothers.

MEASUREMENT

Mean is calculated as follows:

sum of all suckling episodes in previous 24 hours of infants in a one-month age cohort

of breastfeeding infants in a one-month age cohort

This indicator should be calculated and reported by months of infant age.

DATA REQUIREMENTS

- Response to questionnaire items asking the frequency of breastfeeding during the daylight hours (day feeds) and from the setting of the sun to daylight the next day (night feeds). The responses to these are totaled for the 24-hour frequency.
- Age of infant in months.

DATA SOURCE(S)

Information on the past 24 hours collected from breastfeeding mothers through household surveys or exit interviews in facilities.

PURPOSE AND ISSUES

The number of breastfeedings per 24 hours is a helpful measure since suckling at the breast is such an important intermediate determinant of milk output and of ovulation

suppression during lactation. Increased suckling frequency leads to both increased milk output and suppression of fertility. Frequently, programs to improve infant feeding focus efforts on increasing or maintaining suckling frequency.

The indicator can only be used for current status. In addition, women may answer "on demand." In DHS-I surveys, a large proportion of women reported on demand feeding. For DHS-II, a probe was added to further request the number of feeds during the day and night, leading to a much higher proportion giving an actual number of feeds, although reliability is less than ideal. At the upper end of the distribution, with frequent on demand feeds, it becomes difficult for women to report the actual number of feeds. The effect of loss of precision at the upper end of the distribution is likely to be tolerable for most analytical purposes, and is mitigated by using the median rather than the mean as an indicator of central tendency.

Mean and median are both informative indicators because frequencies are highly reliable within and between infants, across ages of infants (younger infants suckle more frequently), and across cultures. The median is often more appropriate and obtainable because of uncertainty about numbers of night feeds and non-normal distributions. The median can be approximated by listing the number of suckling episodes in order of magnitude. The number of episodes for the mother at the middle of the list (the $n/2$ position in the distribution) is the median value. This is only an estimate, since calculation of an exact median may require estimation between two value categories.

Prepared by Virginia Laukaran, John Snow, Inc. and Chloe O'Gara, University of Michigan.

Section C

FEEDING STRATEGIES

- Timely complementary feeding rate
- Percentage using bottles from 0-6 months

Indicator

TIMELY COMPLEMENTARY FEEDING RATE**DEFINITION**

Percentage of infants 6-9 months of age receiving complementary foods according to breastfeeding status. The basic indicator uses 24-hour recall of whether the infant received breast milk and/or solid foods (see Purpose and Issues). Solids are defined as foods of mushy or solid consistency, not fluids.

MEASUREMENT

The indicator shows the percentage of children in four (non-overlapping) categories.

Among children 6-9 months of age, the percentage who receive:

- breastmilk and solids (a);
- breastmilk, but no solids (b);
- no breastmilk, but solids (c);
- no breastmilk, and no solids (d).

The sum of a + b + c + d = 100%.

The complementary feeding rate is calculated as follows:

$$\begin{aligned} & \text{(a) \# of infants 6-9 months given breastmilk and solid foods in the last 24 hours} \\ & \text{-----} \times 100 \\ & \text{total \# of infants 6-9 months of age} \\ \\ & \text{(b) \# of infants 6-9 months given breastmilk but not solid foods in the last 24 hours} \\ & \text{-----} \times \\ & 100 \\ & \text{total \# of infants 6-9 months of age} \end{aligned}$$

$$\begin{aligned} & \text{(c) \# of infants 6-9 months not given breastmilk but given solid foods in the last 24 hours} \\ & \text{-----} \times \\ & 100 \\ & \text{total \# of infants 6-9 months of age} \\ \\ & \text{(d) \# of infants 6-9 months not given breastmilk nor solid foods in the last 24 hours} \\ & \text{-----} \times 100 \\ & \text{total \# of infants 6-9 months of age} \end{aligned}$$

Illustrative Computation

In a population of 1000 infants 6-9 months of age, feeding practices are as follows:

- (a) 250 received breastmilk and complementary foods (may have received juice, liquids, and other milks);
- (b) 400 received breastmilk, but no complementary foods (may have received juice, liquids, or other milks);
- (c) 250 received no breastmilk, but did receive complementary foods (may also have received juice, liquids, or other milks);
- (d) 100 received no breastmilk, and no complementary foods (may have received juice, liquids, or other milks).

Most infants in this age group (6-9 months) reported to have received no breastmilk are given other milks. In a few cases (e.g., a sick child), a child who did not receive breastmilk may not have received any other milk either. For the purposes of this indicator, these children should be included in one of the last two categories (c or d).

The findings discussed above can be presented as a stacked bar or as a two-by-two table.

Prepared by Elizabeth Sommerfelt, Macro International, Inc.

DATA REQUIREMENTS

- A representative sample of children 6-9 months of age.
- Information about feeding practices in the last 24 hours, including breastfeeding status and whether the child was given solid foods.

DATA SOURCE(S)

Population-based surveys employing representative samples (e.g., DHS surveys) should be used to estimate the feeding practices in a given population.

PURPOSE AND ISSUES

It is recommended that after exclusive breastfeeding for the first 6 months of life, children continue to be breastfed with the addition of appropriate and adequate complementary foods. The complementary feeding indicator is intended as a basic, simple indicator of feeding patterns among children in the age group 6-9 months. This age group is chosen since, by this age, infants should be receiving solid foods. The timely complementary feeding indicator described above provides minimal information to assess whether children are fed according to guidelines. It does not contain information about how frequently a child is given solid foods, nor about food quantity or food quality

(e.g., energy density, or micronutrient composition). The indicator can be modified to provide more detailed information about these aspects of feeding practices by collecting additional information from the mother.

It is recommended that even if the information collected is expanded beyond the basic questions of whether the child received breastmilk and/or solid foods in the last 24 hours, the basic indicator defined above should be used in addition to a more expanded indicator. The reason for showing the basic indicator, in addition to more in-depth information that may be included in some surveys or evaluations, is that comparison of feeding practices for different population subgroups and assessment of secular changes in feeding practices are simplified if there are some basic indicators that are reported consistently.

The timely complementary feeding rate indicator can also be used for selected groups of children. Representative samples of specific population subgroups can be used. The indicator can also be calculated for participants in specific programs (e.g., programs that promote good feeding practices among young children, and children seen in well-baby clinics and immunization clinics).

Indicator

PERCENTAGE USING BOTTLES FROM 0-6 MONTHS**DEFINITION**

The percentage of infants at one to six months of age who are receiving any food or drink from a bottle with a nipple/teat.

MEASUREMENT

Calculated as:

$$\frac{\text{\# of infants 0-6 months (less than 182 days) receiving bottle}}{\text{\# of infants 0-6 months (less than 182 days)}} \times 100$$

DATA REQUIREMENTS

- Number of infants who are 0-6 months (less than 182 days old).
- The number of infants who have received a bottle of any substance (fluid or mushy) in the last 24 hours regardless of whether the infant has also been breastfed.

DATA SOURCE(S)

Population-based surveys.

PURPOSE AND ISSUES

The indicator's purpose is to assess the extent of bottle feeding at an early age and to provide information on the use of bottles during the recommended period of exclusive breastfeeding. When a woman is unable to breastfeed, cup and spoon are recommended for feeding rather than bottles because of the interference with optimal breastfeeding practices and the significant increase in infant morbidity and mortality from diarrhea associated with bottle use. An additional reason for proposing the 0-6 months age range is that research has shown that bottle use is often greater during the first few months of life. The current WHO (1992) indicator for bottle feeding includes infants less than 12 months of age and uses 24-hour recall data.

An age-adjusted bottle feeding rate by months of age is also possible, sample size permitting.

Another issue is whether to include the use of bottles to feed expressed breastmilk. This has particular significance for working women who face significant obstacles in their ability to exclusively breastfeed, including the time constraints of using a cup and spoon (either themselves or caretakers).

Prepared by Martha Holley Newsome, Wellstart International.

Section D

FAMILY PLANNING

- Mean duration of lactational amenorrhea
- Contraception among nursing mothers

Indicator

MEAN DURATION OF LACTATIONAL AMENORRHEA

DEFINITION

The mean number of months that women experience lactational amenorrhea following a live birth.

MEASUREMENT

The mean duration of lactational amenorrhea (MDLA) is calculated as:

$$MDLA = \sum PLA_a \quad (a \text{ ranges from } 0 \text{ to } 59)$$

where PLA is the Percent experiencing Lactational Amenorrhea:

$$PLA_a = \frac{\begin{array}{l} \text{\# of currently breastfeeding children aged} \\ \text{\# of months whose mothers have not resumed} \\ \text{menstruation} \end{array}}{\begin{array}{l} \text{\# of births } a \text{ months ago} \end{array}}$$

Illustrative Computation

Completed Age (in Months)	Breast-feeding Mothers w/o Return to Menses	Births	PLA
0	77	85	0.906
1	62	77	0.805
2	54	87	0.621
3	50	90	0.556
.	.	.	.
.	.	.	.
56	0	65	0.000
57	0	69	0.000
58	0	75	0.000
59	0	62	0.000

$$MDLA = (0.906 + 0.805 + 0.621 + 0.556 + \dots + 0.000 + 0.000 + 0.000 + 0.000) = 6.6 \text{ months}$$

Source: El Salvador Family Planning/Maternal and Child Health Survey, 1993

DATA REQUIREMENTS

- The number of births within the last 60 months classified by single months ago.
- The number of these infants currently being breastfed and after whose births menses have not returned and there is no subsequent birth, classified by single month of age.

All postpartum intervals which have been closed by a subsequent pregnancy are treated as if menses did return.

DATA SOURCE(S)

Population-based surveys.

PURPOSE AND ISSUES

This indicator measures the length of time between birth and return to menses which is related to breastfeeding.

The denominator used in the calculation of the percentage experiencing lactational amenorrhea is births a months ago, which is slightly different from the denominator used for the mean duration of breastfeeding, which is children born a months ago. The difference is that twins count as one birth but two children.

The denominator range (of months following a live birth) should encompass maximum lactational amenorrhea in the target populations. In some populations shorter ranges will be workable and might, for example, permit calculation of this indicator based on data collected from women 0-36 months post partum.

(Refer to the "mean duration of breastfeeding" indicator for further notes on this indicator.)

Prepared by Laurence Grummer-Strawn, Centers for Disease Control and Prevention.

Indicator

CONTRACEPTION AMONG NURSING MOTHERS

DEFINITION

Use of family planning or contraception among nursing mothers. Practices are grouped into four categories: (A) Percent nursing mothers using permanent methods, the IUD, barrier methods, or progestin-only methods; (B) percent using combined oral contraceptives; (C) percent using "natural" or traditional methods, including Lactational Amenorrhea Method (LAM); and (D) percent not using a method.

MEASUREMENT

The indicator is calculated as a percentage distribution, with all nursing mothers as the denominator. Four major categories are proposed (A through D), with possible subcategories shown.

- A1: Percent using one or more of the following
- intrauterine contraceptive device (IUD)
 - tubal ligation
 - vasectomy
- A2: Percent using one or more of the following (but none of the above)
- condom
 - vaginal barrier method

- A3: Percent using one or more of the following (but none of the above)
- hormonal injectables or implants (e.g., NORPLANT®)
 - "minipill" oral contraceptive
- B1: Percent using the following (but none of the above)
- combined oral contraceptive pills (generally not recommended for nursing mothers due to decrease in milk supply)
- C1: Percent using the following (but none of the above)
- lactational amenorrhea method (LAM) (with plan for contraceptive use after six months postpartum)
- C2: Percent using the following (but none of the above)
- periodic abstinence (cannot be used until menstruation has returned)
- C3: Percent using the following (but none of the above)
- traditional methods
- D1: Percent using the following (but none of the above)
- no method, and would like to get pregnant
- D2: Percent using the following (but none of the above)
- no method, but would not like to become pregnant

Prepared by Elizabeth Sommerfelt, Macro International, Inc. and illustrates a detailed approach to examining contraceptive practice among nursing mothers. The indicator can be simplified to a more condensed categorization of contraceptive methods. The full detail is presented here to inform potential applications about issues related to methods appropriate for nursing mothers in and beyond the immediate post partum period.

The sum of $a1 + a2 + a3 + b1 + c1 + c2 + c3 + d1 + d2 = 100\%$.

The percentage of women in each category is calculated as (using category A1 as an example):

$$\frac{(a1) \text{ \# of nursing mothers using IUD or tubal ligation or vasectomy}}{\text{total \# of nursing mothers}} \times 100$$

The basic indicator should be shown as the percent of women in each of the four major categories. This can be graphically displayed as a stacked bar. Some programs may also choose to show the percentages in some of the subcategories (see "Purpose and Issues" below).

DATA REQUIREMENTS

- A representative sample of nursing mothers.
- Information on current contraceptive use.
- Information about desire to become pregnant in the near future.
- Age of infant/time since delivery, in order to do analysis according to the time postpartum. This is highly recommended, since the appropriateness of methods cannot be determined without it (see "Purpose and Issues" below).

DATA SOURCE(S)

Population-based surveys employing representative samples (e.g., DHS surveys) should be used to estimate whether nursing mothers are using effective and appropriate contraceptive methods.

PURPOSE AND ISSUES

Breastfeeding women have contraceptive needs that differ significantly from those of non-breastfeeding women. Breastfeeding, if exclusive and on demand, inhibits fertility. Combined hormonal contraceptives are con-

traindicated for breastfeeding women, due to their adverse effects on milk volume, duration of lactation, and therefore, on infant weight gain and health. Non-hormonal methods have no adverse effects on breast milk production or infant health and are therefore appropriate for lactating women. Although hormonal methods are not methods of first choice for breastfeeding women, progestin-only contraceptives, such as the progestin-only "mini-pill," NORPLANT® implants, and Depo-Provera are appropriate if, after counseling, such methods are preferred by women. Family planning and maternal and child health service providers must ensure that women are encouraged to breastfeed and are provided with appropriate contraceptive advice and access to a range of contraceptive choices.

The "contraception among nursing mothers" indicator is intended to allow monitoring of contraceptive practices during this crucial time of life both for mother and child. Use of effective family planning methods by nursing mothers will allow optimal benefit to the child. Since breastmilk supply decreases if the mother becomes pregnant again while still nursing, use of effective contraception is crucial for the child's health and nutritional status. If the mother wants more children, she, too, benefits from the use of effective contraception allowing her to experience a longer interval before becoming pregnant with the next child.

Dividing contraceptive use among nursing mothers into different categories allows an assessment of programs needed to help women choose a contraceptive method suited to their needs and reproductive intentions. In addition, programs may choose to show the percentage of women in some, or all, of the outlined subcategories in order to track changes in practices over time, and to assess the impact of specific interventions.

Nursing mothers using oral contraceptives should use the "minipill"; hence, there should be no one in category B1, since combined oral contraceptives are not recommended for pregnant women because of the decrease in milk supply.

Women using traditional methods (category C3) should be counseled about effective methods of family planning, as should women who are non-users and who would not like to become pregnant (category D2).

The indicator can also be further refined according to time since delivery. This would facilitate comparison between groups that have different durations of breastfeeding, and over time (if breastfeeding durations change). The following time intervals are suggested: under 6 months, 6-11 months, 12-23 months, 24-35 months, and more than 35 months. The indicator may be presented according to time since delivery; however, it is recommended that the overall indicator (i.e., all nursing mothers, regardless of time since delivery) also be calculated.

A sample calculation of the percentage of women in each category according to time since delivery is shown below (using category A1 as an example):

percent (delivery less than 6 months ago) =

$$\frac{\text{\# of nursing mothers who delivered < 6 months ago, using IUD, tubal ligation or vasectomy}}{\text{total \# of nursing mothers}} \times 100$$

percent (delivery 6-11 months ago) =

$$\frac{\text{\# of nursing mothers who delivered 6-11 months ago, using IUD, tubal ligation or vasectomy}}{\text{total \# of nursing mothers}} \times 100$$

percent (delivery 12-23 months ago) =

$$\frac{\text{\# of nursing mothers who delivered 12-23 months ago, using IUD, tubal ligation or vasectomy}}{\text{total \# of nursing mothers}} \times 100$$

percent (delivery 24-35 months ago) =

$$\frac{\text{\# of nursing mothers who delivered 24-35 months ago, using IUD, tubal ligation or vasectomy}}{\text{total \# of nursing mothers}} \times 100$$

percent (delivery more than 35 months ago) =

$$\frac{\text{\# of nursing mothers who delivered > 35 months ago, using IUD, tubal ligation or vasectomy}}{\text{total \# of nursing mothers}} \times 100$$

Contraceptive use among nursing women can also be ascertained among selected groups of women. Representative samples of specific population subgroups can be used. The indicator can also be calculated for participants in specific programs likely to have contact with nursing mothers, e.g., family planning programs, programs that promote good feeding practices among young children, and in well-baby clinics and immunization clinics.

Section E

WORLD HEALTH ORGANIZATION RECOMMENDATIONS

- World Health Organization (WHO) recommended breastfeeding indicators

WORLD HEALTH ORGANIZATION RECOMMENDED BREASTFEEDING INDICATORS

DEFINITION

The WHO recommends five breastfeeding practices indicators which are primarily used for tracking global trends. The following definitions of these indicators are paraphrased from the WHO (1991).

■ **Exclusive breastfeeding rate in infants up to exact age 4 months (<120 days).**

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 rate in infants up to exact age 4 months (<120 days).**

The infant's predominant source of nourishment has been breast milk. However, the infant may also have received water and water-based drinks (sweetened and flavored 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.

■ **Rate of timely introduction of complementary foods in infants older than exact age 6 months but less than exact age 10 months (180-299 days).**

The child has received both breastmilk and solid (or semi-solid) food.

■ **Continued breastfeeding rate at 1 year (12-15 months).**

The proportion of children 12-15 months of age who are breastfeeding.

of children 12-15 months of age
breastfed in the last 24 hours

of live children 12-15 months of age

■ **Continued breastfeeding rate at 2 years (20-23 months).**

The proportion of children 20-23 months of age who are breastfeeding.

of children 20-23 months of age
breastfed in the last 24 hours

of live children 20-23 months of age

DATA REQUIREMENTS

Mother's reporting of infant/child's food/liquid consumption in the 24 hours preceding the interview and the child's age.

DATA SOURCE(S)

These breastfeeding indicators are measured using a household survey methodology of all

live children less than 24 months of age.

Summarized by Hubert Allen, Hubert Allen and Associates.

Mothers with two children under 24 months of age should contribute data on each child, to avoid possible biases introduced by using only the last born child. The indicators are based on current status data, i.e., the current age of the child and any liquids or foods consumed during the 24 hours preceding the survey, not on retrospective data.

PURPOSE AND ISSUES

Experience has shown that these five indicators successfully measure breastfeeding practices at a macro level. For example, the range of exclusive breastfeeding rates calculated from 25 Demographic and Health Surveys is 2%-89%, providing a good spread in results and a high degree of discrimination between countries. By comparison, one traditional breastfeeding indicator, "ever breast-

fed," ranges from 84%-99%, providing little discrimination between countries.

Two of these indicators, continued breastfeeding rates at one and two years, are measures of breastfeeding duration. Calculated as straight proportions, the statistical tests needed to compare these indicators are easier to work with than the statistics used by the more traditional median value (i.e., median duration of breastfeeding).

However, anecdotal evidence suggests that this group of indicators, as defined using the four-month cross-sections, may not be sensitive enough for **programmatic** needs. Therefore, these five indicators, and their samples, will be most useful to the public health community as measures of **global** breastfeeding trends.

References and Appendices

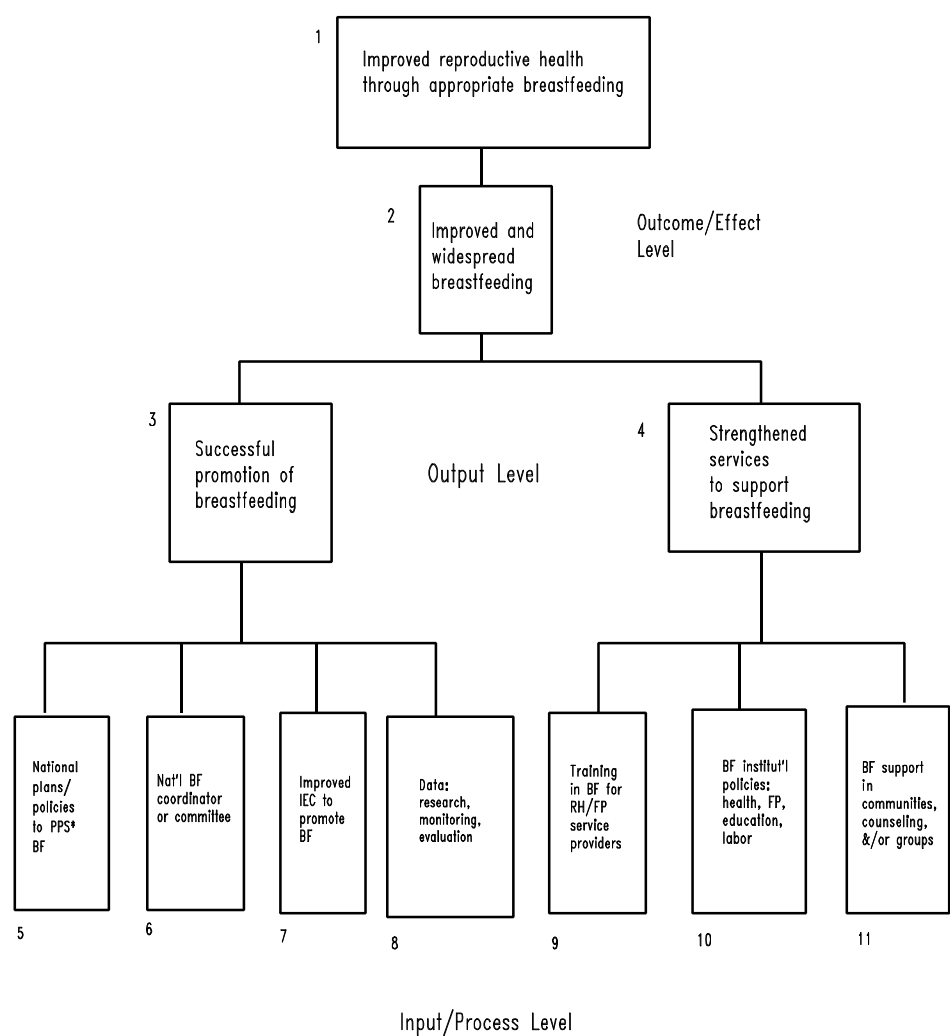
- References
- Appendix A: Conceptual Framework
- Appendix B: Members of the Subcommittee on Breastfeeding
- Appendix C: Steering Committee of the RHIWG

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CONCEPTUAL FRAMEWORK

BREASTFEEDING PROGRAM OBJECTIVE TREE



*PPS: Protect, Support, Promote

Indicator

A PROPOSED CONCEPTUAL FRAMEWORK FOR ORGANIZING INDICATORS TO MONITOR AND EVALUATE PROGRAMS DESIGNED TO PROMOTE BREASTFEEDING IN THE CONTEXT OF REPRODUCTIVE HEALTH

Introduction

At the October, 1994 meeting of the Breastfeeding Subcommittee of the Reproductive Health Indicators Working Group, participants expressed a need to consider and, perhaps, adapt the conceptual framework used by The EVALUATION Project in its *Handbook of Indicators for Family Planning Program Evaluation* for breastfeeding programs. One obvious characteristic of intervention programs to promote breastfeeding which is unusual, if not unique, is the abundant “free” supply of the main commodity being promoted: breastmilk. There is little need for an elaborate logistics system to have a successful intervention to promote breastfeeding. A second characteristic, though not unique, which adds an unusual twist to breastfeeding programs is that they are designed, in part, to forestall market forces which are disrupting a salubrious practice dating back to the beginning of human history -- the feeding of infants with mothers’ milk. Breastfeeding programs are not designed so much to introduce a new, modern technology as to prevent a proven behavior from being abandoned.

Approach to the Framework

The framework described in this paper is an elaboration of that used in the Handbook mentioned above, an elaboration that introduces some of the terminology and thought processes behind USAID’s PRISM

methodology, Missions (and now some Central Bureaus) articulate a causal sequence of accomplishments, which must be attained in order to achieve a primary objective, called the *Strategic Objective*. This causal sequence of accomplishments is represented in a diagram calling to mind an image of a tree. The *Objective Tree* is an articulation of a set of hypotheses that the results desired at any level of the *Tree* can be realized only if the results identified at the next lowest level are also attained. (The *Objective Tree* can also be compared to a hierarchical organization chart, where the bottom level of the tree is reserved for the workers of least authority -- but without whom nothing would get done -- and where successive levels of the tree progress through intermediate stages of the chain of command.)

To apply USAID’s model, the program designer includes a set of indicators with which to monitor progress towards the hoped-for results at each level of the *Objective Tree*. Not only is there a sequential model of causality among the accomplishments, there is also a similar causal relationship among the indicators arrayed at the various levels of the *Tree*. In other words, to see movement in the indicators at one level of the *Objective Tree*, one must, in theory, see movement in the indicators at the lower levels of the *Tree*.

The top of the *Objective Tree* is the *Strategic*

Extracted from text written by Virginia Laukaran, John Snow, Inc and Roy Miller, Center for International Health Information; Objective tree co-developed with Chloe O’Gara, University of Michigan.

Objective, generally stated as an already accomplished fact; for example, “improved reproductive health through appropriate breastfeeding.” USAID has assumed that, in most cases, *Strategic Objectives* should be measured in terms of changes in the well-being of the population served; that is, in “people level” impact. In other words, *Strategic Objectives* should go beyond the measurement of service delivery into the impact of that service delivery.

The first level of the *Tree* below the *Strategic Objective* represents the first level outputs. In a rough way, the indicators on this level encompass the “Outcome” indicators of The EVALUATION Project model.

Subsequent levels of the *Objective Tree* are monitored with indicators roughly corre-

sponding to the “Output” indicators of The EVALUATION Project model. At the first “Output” level, the unusual characteristics of breastfeeding programs described above suggest identifying accomplishments in the area of the “promotion of breastfeeding” and accomplishments in the area of “strengthening services to support breastfeeding” as a reproductive health measure.

The framework described above can be arrayed in an *Objective Tree* as shown in the figure.

Indicators

Following the PRISM approach, indicators have been identified to measure progress toward each of the sought after results.

Box 1: Improved reproductive health through appropriate breastfeeding

Box 2: Improved and widespread breastfeeding

- Exclusive breastfeeding rate (EBR)
- Predominant breastfeeding rate (PBR)
- Never breastfed rate
- Mean duration of breastfeeding
- Mean duration of breastfeeding among the breastfed
- Continued breastfeeding at 24 months
- Breastfeeding lack-of-confidence
- Initiation of breastfeeding in the first hour of life
- Frequency of breastfeeding in 24 hours
- Mean duration of lactational amenorrhea

Box 3: Successful promotion of breastfeeding

- Rooming-in rate
- Percentage of target audience exposed to IEC messages on breastfeeding
- Timely complementary feeding rate
- Percentage using bottles from 0-6 months

Box 4: Strengthened services to support breastfeeding

- Percentage of RH/FP service providers who ascertain whether or not a woman is breastfeeding prior to providing contraceptive advice or methods
- Discouragement of breastfeeding by health care providers
- Percentage using the Lactational Amenorrhea Method (LAM)
- Percentage of new family planning acceptors currently breastfeeding
- Contraception among nursing mothers

Box 5: National plans/policies to protect, promote, and support breastfeeding

- Breastfeeding as an element of national family planning programs
- Breastfeeding as an element of national health policies
- Breastfeeding as an element of national labor policies
- Government endorsement of the Lactational Amenorrhea Method (LAM)
- National breastfeeding policy and plan

Box 6: National Breastfeeding Coordinator or Committee

- National breastfeeding coordinator or committee

Box 7: Improved Information-Education-Communication to promote breastfeeding

- Percentage of target breastfeeding communication products developed and disseminated

Box 8: Data: research, monitoring, evaluation

Box 9: Training in breastfeeding for reproductive health/family planning service providers

- Percentage of reproductive health/family planning service providers trained in breastfeeding counseling
- Percentage of trained providers who are knowledgeable and competent in breastfeeding counseling
- Availability of breastfeeding training materials

Box 10: Breastfeeding institutional policies: health, family planning, education, labor

- National code of marketing
- National participation in the Baby Friendly Hospital Initiative (BFHI)
- Infant food sample distribution rate
- Existence of written clinical reproductive health/family planning service delivery protocols for breastfeeding women
- Percentage of service delivery points (SDPs) with reproductive health/family planning service delivery protocols for breastfeeding women on site
- Percentage of reproductive health/family planning service providers trained to use family planning service delivery protocols for breastfeeding women
- Existence of a range of family planning methods appropriate to breastfeeding women at service delivery points (SDPs)
- Percentage of reproductive health/family planning service providers who know about appropriate contraception for breastfeeding women

Box 11: Breastfeeding support in communities, counseling, and/or groups

- Community-based counseling

Appendix B

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Appendix C

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