

Results



Updated May 2004

A primary goal of the USAID-funded LINKAGES Project is to demonstrate in several countries an increase in optimal feeding practices among infants within a relatively short period of time (20–24 months) and at a scale that can achieve significant public health impact. LINKAGES supports the design and implementation of national-level advocacy, district-level programming, community-based counseling, and support groups to achieve measurable improvements in infant feeding behavior. Based on scientific evidence of the benefits of optimal feeding practices for child survival, growth, and development, LINKAGES focuses on the following objectives:

- ◆ Increase the timely initiation of breastfeeding rate (within the first hour of birth)
- ◆ Increase the exclusive breastfeeding rate of infants less than six months of age
- ◆ Improve the lactational amenorrhea method (LAM) rate as a proxy for expanding the offering of LAM
- ◆ Increase the timely complementary feeding rate of infants 6– < 10 months

This issue of *Experience LINKAGES* reports on the project's indicators and tools for measuring change, the results achieved, and lessons learned in collecting infant feeding data. For a description of LINKAGES' strategy for achieving results, see *Experience LINKAGES: Program Approach*. The publication series *World LINKAGES* describes specific interventions used in each country.

Behaviors and Their Indicators

LINKAGES uses a common set of breastfeeding and infant feeding indicators based on WHO definitions (1991) and Wellstart International's toolkit for monitoring and evaluating breastfeeding activities (1996). These standard indicators have all been field tested prior to application. They are limited in number and fairly easy to both measure and inter-

pret. This strong monitoring and evaluation base, with its clearly articulated indicators to measure progress in achieving results, set the direction for the project.

Increase timely initiation of breastfeeding (within one hour of birth)

Approximately one-fourth to one-half of infant deaths in developing countries occur in the first week of life. Exclusive and immediate breastfeeding—within the first hour—will improve the health and survival of newborns. In many developing countries initiation of breastfeeding is delayed by hours if not days. Early initiation provides newborns with high levels of antibodies, vitamin A, and other protective factors through colostrum, the sticky, yellow-white early milk. Skin-to-skin contact during breastfeeding stabilizes the baby's temperature, respiratory rate, and blood sugar level.

Timely Initiation of Breastfeeding (TIBF)

Rate: the percentage of infants less than 12 months of age who are put to the breast within one hour of birth. The rate is calculated as follows:

$$\frac{\text{\# of infants 0- < 12 months put to the breast within one hour of birth}}{\text{total \# of infants 0- < 12 months}} \times 100$$

Increase exclusive breastfeeding among infants less than six months

Breastmilk provides all the energy, nutrients, and water that an infant needs during the first six months. Exclusive breastfeeding reduces infant deaths caused by common

Experience LINKAGES is a series of publications on the strategies, tools, and materials used by the LINKAGES Project to achieve results.

childhood illnesses such as diarrhea and pneumonia, hastens recovery during illness, and helps space births. Survey data in 1999 from 43 countries indicated that less than half (48 percent) of infants 0– < 4 months of age were exclusively breastfed in the previous 24 hours. Increasing exclusive breastfeeding among infants in this age group as well as those 4–5 months of age is critical.

Exclusive Breastfeeding (EBF) Rate: the percentage of infants less than 6 months old who receive only breastmilk, and no other solids or liquids including water (based on 24-hour dietary recall), with the exception of drops or syrups consisting of vitamin or mineral supplements, and medicines. The rate is calculated as follows:

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

Expand the offering of the lactational amenorrhea method (LAM)

LAM is a modern contraceptive method based on the natural infertility resulting from full or nearly full breastfeeding in the absence of menses up to six months postpartum. LAM, under typical use, is more than 98 percent effective and contributes to the first six months of birth spacing. Safe and affordable, LAM is also the most effective short-term modern method of contraception available to all women right after delivery. Despite these benefits, LAM is often misunderstood and undervalued by family planning and MCH program planners and service providers. Consequently, many women are not presented with LAM as a family planning option. LINKAGES uses the LAM rate as a proxy for the expanded offering of LAM.

LAM Rate: the proportion of eligible women who give birth in a given period of time who consciously and deliberately accept LAM as a modern contraceptive method. The rate is calculated as follows:

$$\frac{\text{\# of women using LAM as a family planning method}}{\text{total \# of women with infants < 6 months}} \times 100$$

Increase timely complementary feeding among infants 6 through 9 months

Rates of malnutrition usually peak between 6–24 months, the time of complementary feeding. During this period other foods or liquids should be provided along with breastmilk. The second half of the first

year is an especially vulnerable time because infants are learning to eat and must be fed soft foods frequently and patiently. If their nutritional intake is inadequate, the consequences persist throughout life.

Timely Complementary Feeding (TCF) Rate: the percentage of infants 6 through 9 months of age who receive breastmilk and a solid/semi-solid food (based on 24-hour recall). Solid foods are defined as foods of mushy or solid consistency, not fluids. The rate is calculated as follows:

$$\frac{\text{\# of infants 6– < 10 months breastfeeding and receiving solid foods}}{\text{total \# of infants 6– < 10 months}} \times 100$$

Results

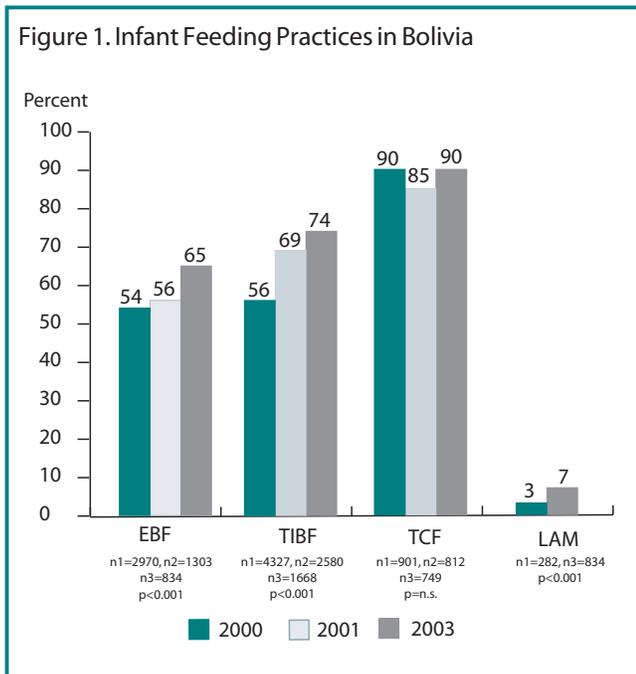
This section reports on the results of LINKAGES surveys in program sites in 2000, 2001 and 2002 and/or 2003. The table below shows program coverage at the time of the last survey. The three key indicators in LINKAGES programs in Bolivia, Ghana, and Madagascar are timely initiation of breastfeeding (TIBF), exclusive breastfeeding (EBF), and timely complementary feeding (TCF). Bolivia and Madagascar also collect data on LAM. Sample sizes and *p* values are presented in the graphs for each indicator.¹

Coverage at Time of Last Survey		
Country Population	Project Catchment Population	Catchment Area
Bolivia 8 million	1 million	149 districts throughout country
Ghana 18.8 million	3.5 million	Communities in 31 districts in 7 of 10 regions
Madagascar 15 million	6 million	23 districts in 2 of 6 regions

¹ In each graph, N1 equals the sample size at LINKAGES survey point 1, N2 the sample size at survey point 2, etc. The *p* values indicate the level at which the results are statistically significant. Results with a *p* value less than .05 are considered statistically significant.

In Bolivia, infant feeding practices improved steadily.

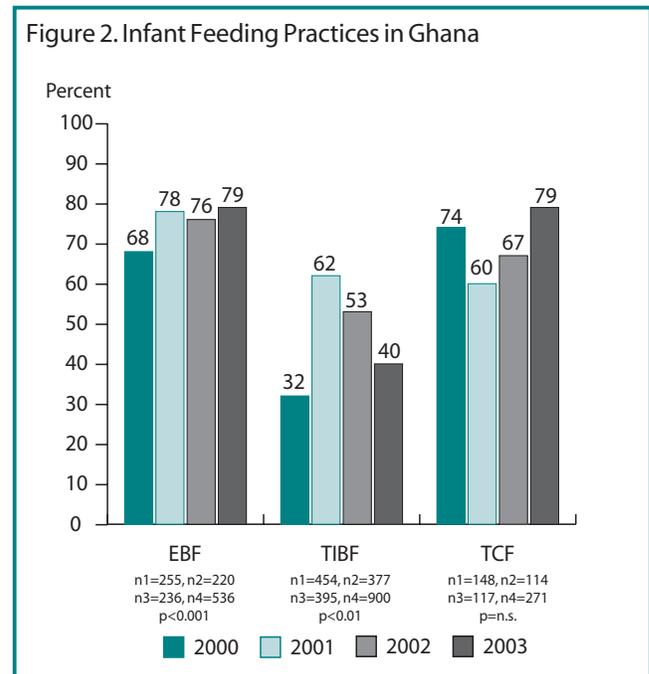
Although change in exclusive breastfeeding practices was slow in the early part of the project, by the end there was marked improvement, from 54 percent at baseline to 65 percent at endline (figure 1). The largest gain was made in the timely initiation of breastfeeding rate, which began at 56 percent in 2000, rose to 69 percent in 2001, and reached 74 percent by the endline in 2003. Timely complementary feeding started out high in program areas and remained stable, with 90 percent of infants 6– < 10 months old at the beginning and the end of the project receiving both breastmilk and complementary foods. The proportion of women with infants less than 6 months old who named LAM as their method of contraception increased from 3 percent in 2000 to 7 percent in 2003.



In Ghana, infant feeding practices improved but fluctuated in unexpected ways.

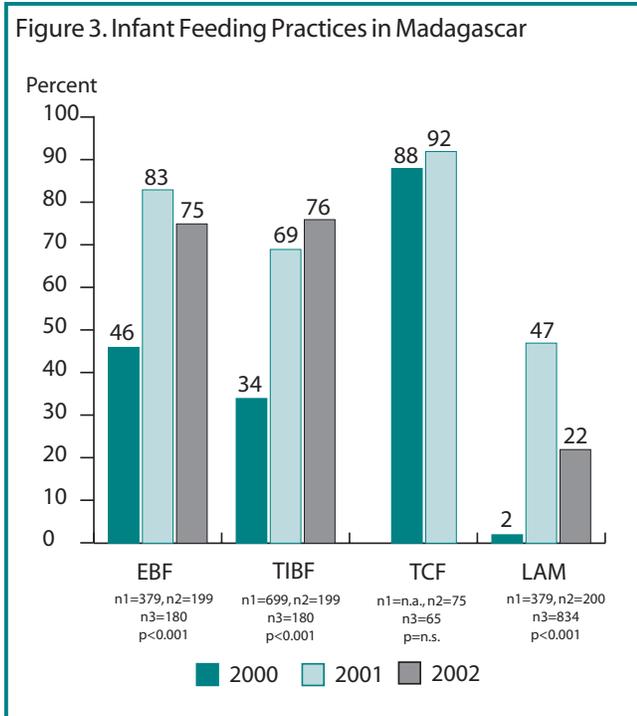
All three rates for optimal infant feeding indicators were higher at the fourth survey point than at the first survey point (figure 2). The exclusive breastfeeding rate increased in one year from 68 percent to 78 percent. This gain was sustained during the next two years. However, the dramatic doubling of the timely initiation of breastfeeding rate after one year of program implementation did not hold. In the first year the rate jumped from 32 percent to 62 percent and then dropped to 40 percent by the fourth survey. The timely complementary

feeding rate showed the reverse trend, dropping from 74 percent to 60 percent and then bouncing back and reaching 79 percent by the fourth survey. When the timely complementary feeding rate dropped, LINKAGES and its partners placed greater emphasis on complementary feeding messages. The project is consulting focus groups to explore the possible causes of the reported decline in the timely initiation of breastfeeding rate.



In Madagascar, sizable improvements withstood political and economic instability.

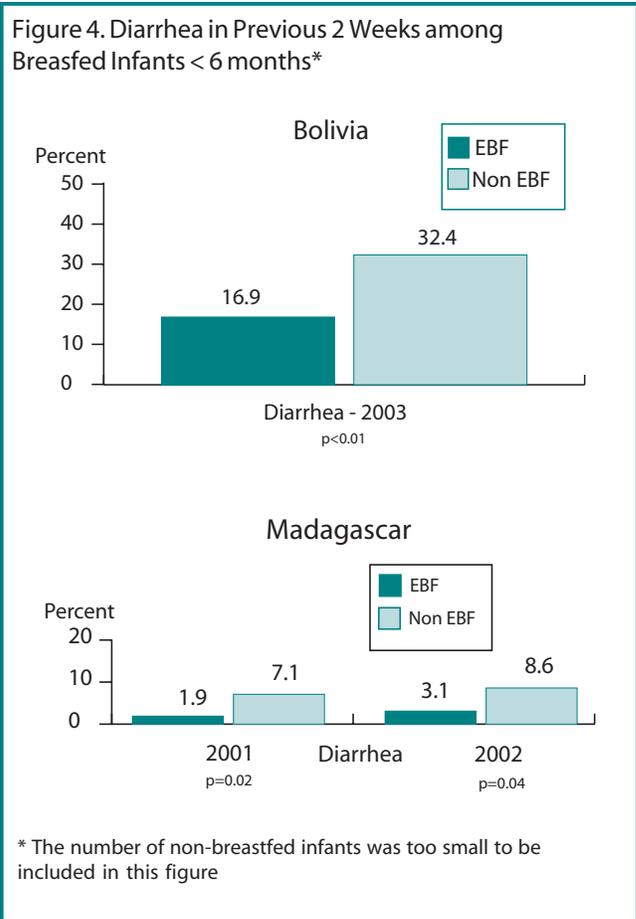
In all key infant feeding indicators, the Madagascar program performed strongly despite one year of limited program activities and many months of political and economic crisis (figure 3). The exclusive breastfeeding rate almost doubled in one year (46 percent to 83 percent) and then settled to 75 percent. The timely initiation of breastfeeding rate continued to climb, from a baseline of 34 percent to 69 percent and then 76 percent. The timely complementary feeding rate, with two points of measurement, remained strong (88 percent to 92 percent). Although the LAM rate made a sizable drop between the second and third surveys, it still represented a 10-fold increase when compared with baseline (2 percent versus 22 percent). One of the explanations put forward for the decline in the LAM rate is inaccurate and inconsistent promotion of the LAM criteria by some community health volunteers. LAM is a relatively new concept in Madagascar and will require continual promotion of the LAM criteria.



Improved breastfeeding practices prevented diarrhea.

In Bolivia and Madagascar, LINKAGES asked mothers of infants less than six months if their infants had experienced diarrhea in the previous two weeks (figure 4). In Bolivia, non-exclusively breastfed infants less than 6 months old were nearly twice as likely to have had diarrhea in the two weeks before the endline survey as infants who were exclusively breastfed (32 percent versus 17 percent). This suggests that nearly half the cases of diarrhea among non-exclusively breastfed infants could have been prevented had they been exclusively breastfed. The most plausible explanation for this association is the strong protective effect of exclusive breastfeeding against diarrheal disease often described in the literature.

In Madagascar, illness-related data were collected in 2001 and 2002. Non-exclusively breastfed infants less than 6 months old were about three times more likely to have had diarrhea in the previous two weeks than exclusively breastfed infants (2001: 7 percent versus 2 percent; 2002: 9 percent versus 3 percent).



Evaluation Reports

More information on the country data and surveys is available in the following reports:

- ◆ Guyon A, Rambelison Z. Assessment of the Behavior Change Strategy for Young Child Nutrition, Vaccination, and Family Planning: Antananarivo and Fianarantsoa, Madagascar. October 2002.
- ◆ MOH/LINKAGES, Adjei E, Schubert J. A Follow-up Survey on Breastfeeding and Complementary Feeding Knowledge and Practices in Northern Ghana. November 2003.
- ◆ PROCOSI/LINKAGES. Final Survey of the Breastfeeding and Complementary Feeding Program in Bolivia. May 2003.

Measuring Progress

Measuring progress requires appropriate instruments to assess current feeding practices and monitor program impact. LINKAGES' approach to monitoring and evaluating its country programs includes the following activities:

Baseline surveys: Data are collected on key indicators and other program-related questions using large sample sizes to detect a small, yet significant change in behaviors. In some instances where Demographic and Health Survey (DHS) results are timely and available, DHS data serve as a baseline. Indicator targets are established based on baseline or DHS data.

Rapid assessment procedure (RAP) surveys: On an annual basis, LINKAGES collects data on key indicators using a shorter questionnaire and smaller sample sizes than those used for baseline and endline surveys. RAP surveys serve as a tool to quickly measure progress in achieving targets for key indicators and inform program management of areas that may need special attention. The RAP survey methodology employed by LINKAGES varies by country.

- ◆ *Bolivia:* Lot quality assurance sampling (LQAS) methodology was used so that each partner NGO would be able to assess results within their respective program areas.
- ◆ *Ghana:* Cluster sampling methodology was used with stratification by NGO to ensure representative results for each of the three NGO partners.
- ◆ *Madagascar:* Cluster sampling methodology was used. Communities included in the survey were not selected randomly from all possible communities in the program area. To assess appropriateness of program design, only communities in each of the intervention districts that were observed to be most actively promoting program strategies were included in the sampling framework.

Endline surveys: To evaluate the effectiveness of interventions, LINKAGES will undertake an endline survey at the end of a country program using large sample sizes and the same questionnaires used during the baseline survey. At the time this document was written, an endline survey had been conducted in Bolivia.

Special surveys: LINKAGES occasionally conducts special surveys and studies to evaluate program activities. These include training evaluations, media evaluations, qualitative studies, and cost-effectiveness analyses.

Program results are compared with several data points depending on the local circumstances and data availability, including baseline surveys, survey results from control communities, Demographic and Health Surveys, Multi-Indicator Cluster Surveys, and data from other organizations working within or near LINKAGES program areas. Different sampling methodologies are used depending on circumstances in each country. For this reason, statistical comparisons across different countries are not made although comparisons across time within a country are made. Multistage cluster sampling is used in most countries, and depending on the particular needs of local clients and the specifics of the program, various levels of stratification and/or parallel sampling are included. In some countries control groups are also surveyed.

In Bolivia, because of the large number of individual NGO partners, LINKAGES trained each participating NGO in applying LQAS for monitoring and evaluation purposes. The NGOs were encouraged to use LQAS for their internal monitoring needs. However, during the period of LINKAGES' assistance, LQAS-based surveys were coordinated to take place simultaneously for all participating NGOs so that data could be aggregated to provide program-wide indicator rates.

Lessons Learned Using Infant Feeding Indicators

LINKAGES' experience confirms that the more complex the feeding practice, the harder it is to change and measure. The challenges of evaluating infant feeding programs are summarized below.

Infant feeding behavior data rely on precise age data. While many health interventions can be tracked with only a general reference to the child's age (e.g., less than five years), tracking breastfeeding practices requires more precise assessment of the infant's age. The birth date a mother gives for her infant can be checked against a child health card or other official registry of the child's birth date.

The use of 24-hour recall data overestimates the percentage of infants exclusively breastfed. The exclusive breastfeeding rate should be interpreted as the percent of infants who received only breastmilk in the past 24 hours rather than the percent who have been exclusively breastfed since birth. In the 24 hours before the survey, a mother may have practiced exclusive breastfeeding but she could have fed her infant other liquids at another point in time. Despite its shortcomings, the advantage of this approach is that it is not subject to recall error because the recall period is limited to the previous 24 hours.

A single complementary feeding indicator gives an incomplete picture of this complex feeding behavior. The timely complementary feeding rate—an accepted, standard indicator—reflects general dietary intake of solid and semi-solid foods along with breastmilk during a specified time period. The indicator does not, however, capture factors such as quantity and quality of food, frequency and timeliness of feeding, food hygiene, and feeding during/after illness. LINKAGES is working with the World Health Organization and other groups to define indicators that would measure these factors.

Infant feeding questions typically require more interviewer time and training than “yes” or “no” questions. Interviewers must ask respondents about a series of foods given within the previous 24 hours to calculate exclusive breastfeeding and timely complementary feeding rates. In recall questions, foods should be grouped into major categories to minimize interviewer fatigue and interviewee boredom with a long, detailed list of foods. Interviewers should undergo intensive training on infant feeding questions related to infant food groups.

The LAM rate does not report on appropriate use of the method. The LAM rate is based on a woman's indication that LAM is deliberately used as a method of family planning. As with other methods of family planning, no determination is made as to whether the woman who states she is using LAM meets the criteria for its use or can identify on her own the criteria for its use. LINKAGES does, however, capture additional survey data to determine whether a woman knows the criteria and currently uses LAM.

Related LINKAGES Publications

For copies, contact LINKAGES, or visit www.linkagesproject.org

Experience LINKAGES

Behavior Change Communication
Program Approach
Training Tools

World LINKAGES

Bolivia (2004) Jordan (2004)
Ghana (2002) Madagascar (2002)
India (2004) Zambia (2002)



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