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Community-based strategies for breastfeeding promotion and support in developing countries.

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The importance of appropriate infant and young child feeding for child survival, growth and development is well known. Exclusive breastfeeding for the first six months of life confers important benefits on the infant and the mother. It protects infants against common childhood diseases, including repeated gastrointestinal infections and pneumonia, and hence against some of the major causes of childhood mortality. Timely introduction of adequate and safe complementary foods at six months of age helps to fill the dietary gaps that cannot be met by breast milk alone. Continued breastfeeding for two years or beyond confers major nutritional benefits and is an essential component of appropriate complementary feeding.

Unfortunately, infant and young child feeding practices world-wide are not optimal. Global monitoring indicates that only 39% of all infants world-wide are exclusively breastfed, even when the assessment is made in children less than 4 months of age. The timely complementary feeding rate is similarly low with a global average of 60% in 2002.

Much has been learned about effective interventions during the past decades. It is clear that mothers need support to initiate and sustain optimal breastfeeding and complementary feeding practices – within the family, community, workplace and health system. During the past decade, the Baby-friendly Hospital Initiative has been instrumental in directing necessary resources to improve the quality of feeding care in maternity services. As a result, there is an upwards trend in breastfeeding rates in various countries.

However, it is not enough to help a mother initiate exclusive breastfeeding. She needs to be able to go back to an environment that is conducive to sustaining appropriate feeding practices and to access skilled support when she needs it. This review examines the role of communities and community-based resource persons in providing this support. Based on a review of the literature and an analysis of three projects, it assesses the impact of interventions, the mechanisms through which behaviours can be changed, and the factors that are necessary to maximize and sustain the benefits of interventions.

The findings confirm the expectations: communities can make a major difference in improving infant and young child feeding. This is particularly so when community members participate in the design of interventions and, with expert support, contribute to shaping the content and mode of delivery. Full engagement of health care providers and supportive policies are other elements important for success.

Given the emphasis on breastfeeding as an issue of major public health importance over the past decades, experiences are more abundant in this area. Nevertheless, evidence is accumulating rapidly that similar achievements are possible for complementary feeding and one case study specifically reports on this.

WHO and UNICEF jointly developed the Global Strategy for Infant and Young Child Feeding to revitalize world attention to the importance of infant and young child feeding for child survival, growth and development. The strategy calls upon governments to ‘ensure that the health and other relevant sectors protect, promote and support exclusive breastfeeding for six months and continued breastfeeding for two years or beyond … and to promote timely, adequate, safe and appropriate complementary feeding with continued breastfeeding’.

Families and communities can and should be partners in this endeavour. They are not only the beneficiaries but also part of the plethora of resources that can be mobilized to reinstate infant and young child feeding as an area of public health importance and concern. By adopting the Millennium Development Goals, the global community has committed
to reducing childhood mortality by two-thirds and halving the proportion of people living with hunger by 2015. Improving childhood nutrition is essential to achieve these goals. It can be done – what is needed is increased commitment, investment, and innovation to engage all those who can help to make a difference. We hope that this review will provide all readers with new ideas and motivation for moving forward.

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Assistant Director-General
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World Health Organization
Breastfeeding is an extension of maternal protection that transitions the young infant from the shelter of the in utero environment to life in the ex utero world with its variety of potentially harmful exposures. The promotion, protection, and support of breastfeeding is an exceptionally cost-effective strategy for improving child survival and reducing the burden of childhood disease, particularly in developing countries (Horton et al., 1996; Morrow et al., 1999; Sikorski et al., 2002; Arifeen et al., 2001; Black et al., 2003; Jones et al., 2003).

Scientific evidence has guided the development of international recommendations for optimal infant feeding practices, which include exclusive breastfeeding for 6 months (breast milk only with no other liquids or foods given) and continued breastfeeding up to 2 years of age or beyond with timely addition of appropriate complementary foods. These recommendations were adopted following a systematic review of current scientific evidence on the optimal duration of exclusive breastfeeding and an expert consultation on the subject (Butte et al., 2002; Kramer and Kakuma, 2002; WHO, 2002). They are also included in UNICEF’s Facts for Life “Key Messages: What every family and community has a right to know about breastfeeding” (figure 1).

Compliance with these recommendations has significant child health and nutritional benefits. The Bellagio Child Survival Study Group has identified optimal breastfeeding in the first year of life as one of the most important strategies for improving child survival (Black et al., 2003; Jones et al., 2003). Increasing optimal breastfeeding practices could save as many as 1.5 million infant lives every year, given the significant protection that breastfeeding provides infants against diarrhoeal disease, pneumonia, and neonatal sepsis (UNICEF, 2002; Black et al., 2003; Jones et al., 2003). Improved breastfeeding practice can also have a positive effect on birth-spacing, which contributes to child survival (Labbok et al., 1997; Jones et al., 2003). Further, population-based studies in a number of developing countries have shown that the greatest risk of nutritional deficiency and growth retardation occurs in children between 3 and 15 months...
Introduction

of age, associated with poor breastfeeding and complementary feeding practices (Shrimpton et al., 2001).

The Global Strategy for Infant and Young Child Feeding (2002), co-developed by WHO and UNICEF with broad participation of governments and other stakeholders, is a blueprint for current and future public health action to improve infant feeding practices worldwide. The World Health Assembly and UNICEF’s Executive Board adopted the strategy in 2002. The foundation of this strategy is built on two decades of international and public health consensus and action, beginning with the Joint Meeting on Infant and Young Child Feeding (1979), the International Code of Marketing of Breast-milk Substitutes (1981), the Innocenti Declaration (1990), and the Baby-friendly Hospital Initiative (1991).

A novel contribution of the Global Strategy for Infant and Young Child Feeding is its comprehensive approach. The Global Strategy gives heightened attention to breastfeeding and complementary feeding in exceptionally difficult circumstances, such as in HIV-prevalent areas and emergency situations. The strategy also includes community-based interventions to promote and support infant and young child feeding as a new operational target. While significant progress in breastfeeding protection, promotion, and support has been made through emphasis on policy and maternity health services, experience suggests that achieving optimal infant and young child feeding requires an integrated, comprehensive strategy that includes community-based interventions as well as policy and health services (figure 2).

The purpose of this document is to provide the rationale and guideposts for community-based interventions to promote and support breastfeeding. This document focuses on the growing evidence that community-based approaches can significantly increase optimal breastfeeding in diverse settings, summarizes the lessons learnt from community-based breastfeeding interventions in a number of developing countries, and recommends approaches that can be applied by programme planners and managers worldwide. Few efforts to promote improved infant and young child feeding have yet expanded to a large scale. The lessons learnt from breastfeeding programmes should also be applied in the future to promotion of and advocacy for improved complementary feeding and to other aspects of child health and development.

The first chapter of the paper places community-based interventions in an historical and community development context and provides the scientific rationale for this approach. The second chapter describes key features of—and strategies for—community-based breastfeeding promotion and support, including integration with primary and preventive health services. The third chapter presents several countries’ experience implementing community-based strategies on a large population scale. The fourth chapter addresses challenging circumstances to consider in implementing community-based breastfeeding programmes around the world. The paper concludes with a summary of key issues regarding community-based breastfeeding promotion and support.

Figure 2

Elements of a comprehensive breastfeeding programme

(Wellstart International, 1996)
Background and Context

Throughout most of the twentieth century, initiation and duration of breastfeeding declined worldwide as a result of rapid social and economic change, including urbanization and marketing of breast milk substitutes. In recent years the global trend has shifted towards improved breastfeeding practices. However, the prevalence of exclusive breastfeeding and other optimal infant feeding practices is still low in many countries. Continued attention to breastfeeding is therefore needed to achieve the sustained behaviour change that will lead to significant improvement in child survival and development.

Breastfeeding practices in developing countries

In the past two decades, breastfeeding initiation and duration began to increase in many developing countries (Grummer-Strawn, 1996; Lutter, 2000; UNICEF, 2001). Survey data from 43 countries indicate a significant increase in exclusive breastfeeding, from 39% to 46% between 1989 and 1999, with wide variations within and between geographic regions (figure 3). For example, DHS surveys indicate that exclusive breastfeeding rates for infants 0–3 months of age range from 25% (Dominican Republic, 1996) to 78% (Peru, 2000) in Latin America, and from 4% (Côte d'Ivoire, 1998/99) to 63% (Malawi, 2000) in Africa.

In countries and regions where breastfeeding promotion and support programmes have been well enacted, notably some Latin American countries, rates of exclusive breastfeeding and other optimal breastfeeding practices appear to be improving more dramatically. Nevertheless, in many developing countries certain cultural beliefs continue to interfere with optimal breastfeeding, especially feeding colostrum and breastfeeding exclusively (Dimond and Ashworth, 1987; Martines et al., 1989). In every culture, specific beliefs that impede optimal breastfeeding need to be identified through formative research and addressed through effective, well-designed behaviour change communication to promote and support optimal breastfeeding practices (Wellstart, 1996; Guerrero et al., 1999; Green, 1989; de Zoysa et al., 1998).

Breastfeeding promotion and support: historical development

In May 1980 the World Health Assembly adopted the recommendations for promotion and support of breastfeeding that were made the previous year at a WHO/UNICEF Meeting on Infant and Young Child Feeding (WHO, 1980). In the 1980s, workshops on infant and young child feeding were organized in nearly 100 countries. National breastfeeding committees and national breastfeeding promotion programmes were established in various countries (Jelliffe and Jelliffe, 1988). In 1990 policy-makers from 31 governments, representatives of 8 UN agencies, and other participants at a WHO/UNICEF meeting in Italy produced and adopted the Innocenti Declaration on the Protection, Promotion, and Support of Breastfeeding. The Innocenti Declaration established operational targets
for breastfeeding that focused primarily on policy and health services (WHO, 1989).

From that declaration emerged the Baby-friendly Hospital Initiative (BFHI), which has made a significant impact on breastfeeding practices globally through implementation of the “Ten Steps to Successful Breastfeeding,” focusing on maternity services and newborn care (WHO, 1998). The tenth step, the establishment of breastfeeding support groups, connects mothers to community support after discharge from the hospital. Two other steps—antenatal care (step 3) and breastfeeding guidance (step 5)—also involve maternal access to support and may reach beyond the health facility to the community.

The Global Strategy for Infant and Young Child Feeding advances breastfeeding protection, promotion, and support by building on these past and continuing concepts and achievements. Over the past few years, experience in enacting community-based strategies has grown, along with a scientific evidence base to address the efficacy and effectiveness of certain support strategies (Green, 1999). As a result of the confluence of policy development and the accumulation of scientific evidence, the promotion and support of optimal breastfeeding through community-based initiatives is now more widely understood and accepted.

Evidence of effectiveness

This section describes 1) the evidence that community-based breastfeeding promotion and support can improve breastfeeding practices in developing countries and 2) the efficacy of such interventions to reduce infant morbidity and mortality.

### Table 1

<table>
<thead>
<tr>
<th>Study (design)</th>
<th>Subjects</th>
<th>Intervention</th>
<th>Breastfeeding status at last assessment, &lt;6 mo. RR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barros et al 1994 (Randomized, controlled trial but method of randomization not stated)</td>
<td>Urban (Pelotas) Brazil, N=900 Enrollment site: Maternity unit Inclusion criteria: Hospital stay 5 days or less, wanted to breastfeed, living in Pelotas, family income &lt; twice minimum Brazilian wage</td>
<td>Three home visits at 5, 10, 20 days postpartum by a social assistant or nutritionist experienced in breastfeeding and trained in breastfeeding counselling</td>
<td>Any Breastfeeding Intervention - 38% Control - 35%</td>
</tr>
<tr>
<td>Froozani et al 1999 (Alternating allocation to intervention vs. usual care)</td>
<td>Urban Iran, N = 134 Enrollment site: Single hospital Inclusion criteria: Mothers without breastfeeding experience or chronic disease giving birth to normal birthweight, term infant</td>
<td>Contact by nutritionist in hospital immediately after birth and at home or in clinic on days 10–15, and monthly thereafter to 4 months (5–6 visits)</td>
<td>Any Breastfeeding Intervention - 84% Control - 75% Exclusive Breastfeeding* Intervention - 48% Control - 6%</td>
</tr>
<tr>
<td>Haider et al 2000 (Cluster randomized, controlled trial)</td>
<td>Dhaka, Bangladesh, N=726 Enrollment site: Community Inclusion criteria: Women aged 16–35 with 3 children or less and no serious illness, singleton birth, with no congenital birth abnormalities, birth weight 1800 g or more</td>
<td>Peer counsellors, home visits up to 15 occasions including 2 in last trimester of pregnancy, 4 in month 1 and every two weeks thereafter up to month 5. Visit duration 20–40 minutes</td>
<td>Exclusive Breastfeeding* Intervention - 56% Control - 5%</td>
</tr>
<tr>
<td>Leite et al 1998 (Randomized, controlled trial)</td>
<td>Urban Brazil, N = 1003 Enrollment site: 8 public health maternity units Inclusion criteria: Newborns weighing &lt; 3000 g, discharged &lt; 5 days, singleton birth, no important health problems in mother or infant</td>
<td>Peer counsellors made home visits up to 6 occasions, 5, 15, 30, 60, 90 and 120 days, visits lasting 30–40 minutes. Counsellors had personal experience with breastfeeding and had been associated with milk bank for 5 or more years. Trained with adapted WHO counselling course</td>
<td>Any Breastfeeding* Intervention - 65% Control - 53% Exclusive Breastfeeding* Intervention - 25% Control - 20%</td>
</tr>
<tr>
<td>Morrow et al 1999 (Cluster randomized, controlled trial)</td>
<td>Periurban, Mexico, N=130 Enrollment site: Community Inclusion criteria: All pregnant mothers wishing to be enrolled, perinatal deaths excluded</td>
<td>Peer counsellors made 3 or 6 home visits Group 1: 6 visits (2 in pregnancy, and 1, 2, 4, 8 wks post-partum) Group 2: 3 visits (1 late pregnancy, and 1, 2 wks post-partum)</td>
<td>Any Breastfeeding Intervention - 68% Control - 63% Exclusive Breastfeeding* Intervention - 55% Control - 15%</td>
</tr>
</tbody>
</table>

* Significant at two-sided p<0.05 (abstracted from Sikorski et al, 2002)
IMPROVING BREASTFEEDING PRACTICES. Sikorski et al. (2002) conducted a systematic review and meta-analysis of the efficacy of support for breastfeeding mothers. This study identified 20 randomized or quasi-randomized trials of breastfeeding support conducted in 10 countries. Breastfeeding outcomes of interest were “any breastfeeding” or “exclusive breastfeeding” for specific age groups. Overall the meta-analysis revealed a significant, beneficial effect of breastfeeding support on duration of any breastfeeding, with the greatest effect on exclusive breastfeeding. Both lay and professional support appeared to be effective, although in different ways. Lay counsellors appeared to be most effective in increasing the duration of exclusive breastfeeding, while professional counsellors appeared to be most effective in extending the duration of any breastfeeding.

Most of the studies cited were conducted in industrialized countries. Of the seven trials conducted in developing countries (Bangladesh, Brazil, Iran, Mexico, and Nigeria), five examined community-based breastfeeding counselling to mothers of normal newborn infants (table 1). The sample size of each individual study ranged from 130 to 1,003 (total for all five studies, n=2,893 mother-infant pairs). In four of these five studies, the intervention involved home visits by peer counsellors; the remaining study (Froozani et al., 1999) involved maternal contact in a hospital by a trained nutritionist followed by home visits. The number of visits made to mothers by breastfeeding counsellors in these trials ranged from 3 to 12 or more (Haider et al., 2000). In most of the studies, counsellors were trained using the WHO breastfeeding counselling course in its original or adapted form; one study used a training course developed by La Leche League (Morrow et al., 1999). Four of five trials examined exclusive breastfeeding, and each of these demonstrated significant impact of counselling on exclusive breastfeeding. Only one of the four trials that examined the duration of any breastfeeding as an outcome demonstrated a significant impact of counselling (Leite et al., 1998).

Two other trials in developing countries included in the Cochrane Review (Haider et al., 1996, in Bangladesh and Davies-Adetugbo, 1997, in Nigeria) tested the effectiveness of breastfeeding counselling of mothers whose infants were seen for diarrhoea in the hospital or health care centre. In both studies, for the 2–3 weeks following counselling, exclusive breastfeeding was significantly increased, and infants experienced fewer repeat cases of diarrhoea.

REDDING MORBIDITY AND MORTALITY. The WHO Collaborative Study Team on the Role of Breastfeeding on the Prevention of Infant Mortality found that in developing countries, any breastfeeding is associated with more than two-fold protection against infant mortality compared with no breastfeeding in the first year of life (WHO, 2000). A cohort study of 1,677 infants living in the slums of Dhaka, Bangladesh, found that the relative risk of mortality in the first 6 months was more than two-fold lower in infants who were exclusively breastfed than in infants who were partially or not breastfed (Arifeen et al., 2001) (table 2). Breastfeeding demonstrates a dose response relationship to infectious disease morbidity and mortality in infancy, with exclusive breastfeeding offering the most protection and partial breastfeeding intermediate protection when compared to no breastfeeding (Brown et al., 1989; Victora et al., 1989; Morrow et al., 1992). Thus, infants under 6 months of age who are not breastfed are estimated to have a greater than 5-fold increased risk of morbidity and mortality from diarrhoea and pneumonia compared to infants who are exclusively breastfed (Victora et al., 1989; Black et al., 2003).

<table>
<thead>
<tr>
<th>Causes of Infant Death</th>
<th>RR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Causes</td>
<td>2.2 (1.4 – 3.4)</td>
</tr>
<tr>
<td>Diarrhoea</td>
<td>3.9 (1.5 – 10.6)</td>
</tr>
<tr>
<td>Acute Respiratory Infection</td>
<td>2.4 (1.1 – 5.2)</td>
</tr>
</tbody>
</table>

(Arifeen et al, 2001)
described significant increases in exclusive breastfeeding and significant decreases in infant diarrhoea in intervention communities (Bhandari et al., 2003). These findings are consistent with a trial of the Baby-friendly Hospital Initiative intervention in Belarus, which reported that the rates of diarrhoea and of atopic disease were significantly reduced among infants in the intervention group compared with controls (Kramer et al., 2001). Thus, observational and experimental data provide compelling evidence that effective community-based breastfeeding interventions can result in significantly increased optimal breastfeeding and significantly lower infant morbidity and mortality.

**Framework and justification**

Optimal breastfeeding requires maternal choice combined with the ability to implement that choice (figure 4), which is in turn affected by social, physical, and logistical factors that are immediate to the mother’s experience. Influences that are a level removed from the mother’s personal experience, such as cultural attitudes and national policies, may or may not be directly perceived as affecting her choice. Nevertheless, they are powerful determinants that influence the degree to which a mother experiences support or barriers to optimal breastfeeding.

Social support for optimal breastfeeding can take many forms. The elements of social support relevant to breastfeeding are emotional, informational, and instrumental (Raj and Plichta, 1998). In practical terms, these elements translate into providing mothers with acceptance, encouragement, timely and salient information regarding breastfeeding, and practical skills and strategies for overcoming socioeconomic, cultural, or biomedical obstacles to optimal breastfeeding.

Involving community leaders, social support networks, the health sector, and community members in breastfeeding promotion and support provides a mechanism for shifting cultural knowledge, norms, and expectations (WHO, 2002). In short, community-based breastfeeding promotion and support can be justified on grounds not only of effective breastfeeding behaviour change leading to increased child survival, but also of women’s empowerment and community development. The following chapter addresses the concepts and strategies that underlie community-based breastfeeding promotion and support.
Approaches to Community-based Breastfeeding Promotion and Support

An interagency working group including WHO, UNICEF, USAID, the World Bank, the Department for International Development (DFID) and the CORE consortium of nongovernmental organizations has targeted the reduction of childhood morbidity and mortality using an approach that works with and through communities, and extends integrated facility-based care for management of common childhood illnesses to support for prevention and good home care (WHO et al, 2002). The working group advocates a community-based approach that involves people from the community, adapts to community needs, builds on existing resources and avoids duplication, strengthens links and builds bridges between groups in the community and between those groups and the formal health system, focuses on outcomes, and is cost-effective and sustainable. At the heart of efforts is the promotion and support of a set of key family behaviours to improve child health and development. These behaviours include optimal infant and young child feeding practices.

Community-based breastfeeding promotion and support is important insofar as this approach can achieve sustained population-level breastfeeding behaviour change. This ambitious goal requires systematic application of behaviour change theory to strategies that engage individuals and multiple levels of society. Community-level change involves attention to community capacity (the foundation for change) as well as specific interventions intended to produce behaviour change (Wandersman et al., 1996). The section below considers the foundation for community-level breastfeeding behaviour change, describes specific interventions, discusses the integration of community-based breastfeeding initiatives with preventive and primary health care services, and considers the argument for integration of breastfeeding and early childhood development initiatives.

Foundation for community behaviour change

Community-based intervention strategies include those that mothers experience directly, as well as elements that individual mothers may not experience but that create and sustain the community’s capacity for breastfeeding promotion and support. These latter elements, which can be considered the foundation for effective and sustained action, include the development of intersectoral partnerships or coalitions, formative research, monitoring and evaluation, training and supervision, strong management, and visionary leadership.

Partnerships. The formation of intersectoral partnerships or coalitions increases the capacity for effective and sustainable community-based behaviour change (Butterfoss et al., 1993). At the community level in developing countries, such partnerships may include the ministry of health, other ministries concerned with social welfare, community health centre staff, identified opinion leaders, nongovernmental agencies, and women’s groups.

Formative research. Formative research can be invaluable to guide effective action on breastfeeding as well as other public health concerns (Pelto et al., 1991; Guerrero et al., 1999; Martines et al., 1989). The purpose of such research is to clarify the values, beliefs, and practices that most significantly affect breastfeeding behaviour, and with that understanding to shape messages and approaches that are likely to result in positive breastfeeding behaviour change. For example, formative research conducted in Mexico indicated that mothers believed they should introduce another liquid or food when the baby was “thirsty,” the baby or mother was ill, or the mother was emotionally upset (Guerrero et al., 1999). These findings were used to develop messages, materials, and training programmes for physicians and lay counsellors to influence attitudes and behaviours that impeded exclusive breastfeeding in the periurban Mexican setting. “Breast milk is sufficient to quench a baby’s thirst, even in hot weather” was one of the messages developed in response to the formative research. “Mother’s milk is better than any other method of feeding a young infant, even when a mother is emotionally upset (has coraje or susto)” was another key message. These specific messages helped to ensure that
the lay counselling intervention achieved significant change in exclusive breastfeeding behaviour (Morrow et al., 1999).

**MONITORING AND EVALUATION.** Another way to tie data to action is through monitoring and evaluation. Data can provide potent motivation for action when specific behaviour change goals are identified, measured as indicators, and used for local ongoing evaluation of effectiveness. The development of a monitoring system that allows local and routine use of data builds capacity for community-level change and creates a needed evidence base for effective public health action (De Zoysa et al., 1998; Morrow, 2000).

**TRAINING AND SUPERVISION.** Training and supervision of health-care providers and lay volunteers for breastfeeding counselling and community outreach are also important elements of the foundation for change and an effective community-based breastfeeding behaviour strategy. Providers and volunteers need accurate information and mastery of skills in counselling and communication to support and motivate community members.

**MANAGEMENT AND LEADERSHIP.** Finally, the foundation for change requires vision and managerial and leadership skills. Implementation falters in the absence of these elements. Managers’ failure to adjust programmes to new realities jeopardizes programme sustainability.

**Community-level interventions**

With the elements outlined above in place, the specific community-based interventions are more likely to succeed. An effective community-based breastfeeding behaviour change strategy is multifaceted, with attention to behaviour change communication, partnership with the health sector, and involvement or mobilization of the community through engaged opinion leaders, women’s support groups, and trained health-care workers and lay counsellors.

**Behaviour change communication.** Improved breastfeeding practices are more likely to occur if women perceive them as beneficial, feasible, and socially acceptable. Improving practices at the community level requires behaviour change strategies that lead to changes in community norms, including individual and group approaches. A breastfeeding woman typically does not make decisions alone. For example, a woman may hear about exclusive breastfeeding at the health facility but then be told by her mother-in-law that babies need additional water to quench thirst. If giving only breast milk to her three-month-old baby will result in the disapproval of her mother-in-law and potentially her community, the woman may decide that the risk of adopting the recommended practice is too great. Communication strategies must therefore address not only individual behaviour change of the mother, but also the beliefs of those who influence her at all levels: health workers, family members, elders, and community members.

Two broad paradigms are currently used for improving health behaviours: 1) the behaviour change approach, with its roots in individual psychology and behaviourism and 2) community-based participatory approaches to empower people to improve their communities in a sustainable way. Successful breastfeeding programmes have employed both of these approaches. The Transtheoretical (Prochaska, 1982) or Stages of Change Model is a useful tool for looking at the process of individual change. In this model the individual moves from pre-awareness of the recommended practice to awareness, contemplation of trying the new practice, trial of the practice, adoption of the practice, maintenance, and finally advocacy of the new practice. This model enables practitioners first to identify the stage of the target audience and then to structure interventions to move individuals along the process of change.

In the past health communicators often focused entirely or disproportionately on one or more stages, such as providing information to increase knowledge, only to find themselves frustrated when practices did not change. The Stages of Change Model indicates that “knowledge” is not enough. A woman may be able to recite messages about exclusive breastfeeding (“knowledge”) but may not think that they apply to her. If health workers ask the woman to try a new practice such as not giving water to her baby for a week, the woman and her family will immediately see for themselves the advantages of exclusive breastfeeding and may be convinced to adopt it. Thus, the individual is persuaded through negotiation to move along the change process from “knowledge” to “trial,” increasing the chances of adoption. Figure 5 shows specific interventions that can be used to promote change in individual behaviour or community norms at various stages.

To maintain the new practice, a woman needs support from her family and community. Successful breastfeeding programmes have used group approaches that address special audiences or the collective community while strengthening the capacity of
Community-based Strategies for Breastfeeding Promotion and Support in Developing Countries

Movement from one stage of change to another requires a mix of appropriate communication interventions from the following categories:

- Mass, electronic, and print media (e.g., radio, TV, newspaper, flyers)
- Community advocacy and events (e.g., theatre, fairs, community gatherings)
- Interpersonal communication (community groups, individual counselling, mother-to-mother support groups, home visits)

These approaches help change individual behaviours and social norms and are directed to mothers as well as to family members, community leaders, and other social, religious, and political influentials.

<table>
<thead>
<tr>
<th>Stages of Change</th>
<th>Level of knowledge and attitude toward or experience with the new practice</th>
<th>Purpose of appropriate communication interventions to move individual to next stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-awareness</td>
<td>Has not heard of new practice</td>
<td>Provide information</td>
</tr>
<tr>
<td>Awareness</td>
<td>Has heard of new practice</td>
<td>Provide more information and begin to focus on persuasion</td>
</tr>
<tr>
<td>Contemplation</td>
<td>Considers the resources and tasks needed to actually perform the practice</td>
<td>Provide encouragement that practice is “do-able” and introduce role playing, role modeling</td>
</tr>
<tr>
<td>Intention</td>
<td>Intends to try new practice</td>
<td>Focus on appreciating benefits and overcoming obstacles; introduce negotiation of trying new practice; home visits are very appropriate</td>
</tr>
<tr>
<td>Trial of new practice</td>
<td>Tries new practice to experience benefits and overcome obstacles</td>
<td>Reinforce benefits and overcoming of obstacles with family and community influentials; provide additional support to mother through home visits and support groups</td>
</tr>
<tr>
<td>Adoption of new practice</td>
<td>Appreciates benefits and has overcome obstacles during trial of new practice; adopts practice</td>
<td>Continue to reinforce and support practice, including praise from influentials</td>
</tr>
<tr>
<td>Maintenance</td>
<td>Decides to continue new practice</td>
<td>Continue to reinforce and support practice, including praise from influentials</td>
</tr>
<tr>
<td>Telling others</td>
<td>Believes in new practice and wants to tell others</td>
<td>Provide opportunities for practitioners to communicate their messages to other women widely (mass electronic and print media) or within the community (community events and advocacy; interpersonal communication)</td>
</tr>
</tbody>
</table>

(linkages Project)

Figure 5

Stages of change and communication approaches

Community organizations. Encouraging community groups to identify and solve problems increases support for the mother’s decision and increases the likelihood that she will maintain the new behaviour.

The Diffusion of Innovation Theory (Rogers, 1983) is useful for examining how innovative ideas are introduced and adopted in a community. “Early adopters” are the risk takers; “late adopters” are the ones who wait to see how well the innovation works. Innovations are more easily adopted when they have certain characteristics, such as ease of adoption, similarity to current practice, low level of risk in trying out the practice, and benefits that outweigh the disadvantages. When an innovation is introduced to a community by a risk-taking early adopter, others observe the results and gradually adopt the practice themselves. Long-term change of a community norm occurs when a critical mass of community members have tried the innovation and begun to see its benefits. Communication strategies can hasten this process through the use of lay counsellors to facilitate discussions in mother support groups, community development groups, credit associations, or religious groups for men or women.

Formative research can help target clear and effective messages to specific populations or community groups. Such tailored messages can help reduce the perceived risk of trying the new behaviour and enable people to understand how adopting the new practice brings benefits to them and to the community. Strengthening community organizations can increase the community’s capacity to change norms and improve infant feeding behaviours.
Training Community Health-Care Providers.

Mothers in many countries cite the advice of health-care providers as the reason for their making specific infant feeding decisions. Unfortunately, advice from health-care providers is too often uninformed, undermining efforts to support mothers who elect to breastfeed. Breastfeeding has been neglected in pre-service and in-service training of most health workers, leaving a serious gap in their knowledge and skills. As a result WHO, UNICEF, and others have placed a major emphasis on training health-care workers in the fundamentals of lactation and breastfeeding counselling (Rea et al., 1999; Cattaneo et al., 2001). WHO and UNICEF have created several standardized breastfeeding courses. These include an 18-hour course designed to help staff of maternity facilities make maternity care “baby-friendly” (UNICEF, 1993) and a 40-hour course to develop clinical skills in breastfeeding counselling for health-care workers in all parts of the health system (WHO, 1993). Basic knowledge and skills promoted in these tools are also applied in case management guidelines and an 11-day training course for first-level health workers developed as part of the Integrated Management of Childhood Illness (IMCI) strategy (see discussion on integration of breastfeeding with primary and preventive health services – page 12).

A randomized controlled trial of the effectiveness of the 40-hour WHO training course was conducted in Brazil with health workers from 60 health units. This study found that participants’ knowledge and skills in breastfeeding counselling improved significantly, both immediately after the course and three months later (Rea et al., 1999). The responses of participants and observation, however, suggested that the skills involved in clinical practice and management of lactation needed more time for development and reinforcement.

Although increasing the breastfeeding knowledge and skills of health-care providers has been an important and necessary element to promote and sustain breastfeeding behaviour change, this training is not readily available to all health-care workers and tends to be expensive and hard to sustain. To address the training gap, some countries are undertaking a systematic review of their pre-service curricula for training doctors, nurses, and midwives and are strengthening the lactation management and infant feeding components of those curricula so that providers do not need to be retrained after they have started practice. Use of the 40-hour and 18-hour breastfeeding courses continues to be recommended for health-care providers who typically lack appropriate pre-service education in this area.

Lay Counsellors. Even community health professionals who are well trained in breastfeeding and lactation management typically lack sufficient time to promote and support breastfeeding. As a result, lay counsellors have become critical to providing accessible breastfeeding counselling in many communities. When lay breastfeeding counsellors, who are not professional health-care workers, are trained to provide breastfeeding counselling to mothers of their communities, they can be highly effective in increasing exclusive breastfeeding and, potentially, early initiation and longer duration of breastfeeding (see Evidence of effectiveness, Chapter 1).

The terms “lay counsellor” or “peer counsellor” are often used interchangeably. More precisely, however, peer counsellors are typically women who have given birth to at least one child and have breastfed successfully. Peer counsellors have a background similar to that of the people they are counselling. Some propose that to be credible, lay counsellors should be peers. However, experience in many circumstances suggests that committed and well-trained lay counsellors, like health professionals, can be successful even when they themselves have not had personal breastfeeding experience. Indeed, La Leche League International, which has been training breastfeeding peer counsellors since 1987, notes that the demand for peer counsellors is so great that many such counsellors are now women and men who do not meet the traditional concept of peers.

Haider and others (2002) recommend systematic and well-supervised training, recruitment, and deployment of lay breastfeeding counsellors. Lay counsellors also need ongoing connection to an organization that can sustain their efforts. Such a connection could be to a nongovernmental organization such as La Leche League or through the community outreach activities of the health system. Depending on the community and circumstances, lay counsellors may serve entirely as volunteers or receive stipends to help support their activities. Some organizations have reported a high turnover rate among volunteer counsellors and have found that some form of stipend helps volunteers to continue in this role. Others have retained volunteers primarily through personal connection, praise, recognition, and continuing education (Green, 1998).

Studies of the effectiveness of lay counsellors in increasing breastfeeding have examined their role in home visitation. The specific activities of lay counsellors can vary substantially. Depending on circumstances, lay counsellors may work alongside community health workers in clinic settings or may focus on making...
WOMEN’S GROUPS. Community-based support for breastfeeding mothers often focuses on breastfeeding support groups. The first formal recognition of a breastfeeding support group might be the 1956 formation of La Leche League, which provides the prototype for such groups. The purpose of a breastfeeding support group is to provide "mother-to-mother" encouragement and assistance to initiate and sustain breastfeeding. Trained volunteers lead group meetings. The focus of the meetings is almost entirely on breastfeeding, with consideration of related topics. The atmosphere of breastfeeding support groups is one of acceptance and equal participation. In this atmosphere mothers feel comfortable sharing experiences, asking questions, and obtaining answers regarding their experience with breastfeeding. This model is now being used in many countries.

In addition to women’s groups focused primarily on breastfeeding, other forms of women’s groups have become involved in breastfeeding promotion and support (figure 6). Some women’s groups address breastfeeding as part of their discussion of parenting or nutrition and health topics. Other women’s groups, founded for economic development, community service, or social, political, or religious reasons, have also participated in breastfeeding promotion and support. These groups may include breastfeeding-related topics as part of their programmes to educate and support members or attendees and may provide volunteers for breastfeeding education support as part of their community service and outreach. Available data suggest that participants in women’s support groups improve their breastfeeding behaviour, but questions remain whether volunteer groups alone are sufficient to affect and sustain population-level behaviour change.

Despite their growing popularity for breastfeeding promotion and support, women’s groups have not been studied extensively (Green, 1998). La Leche League’s model, however, has been evaluated in Honduras and Guatemala, which have had exceptional programmes. In Honduras La Leche League trained peer counsellors in a low-income, periurban area. On follow-up, mothers of infants under 6 months of age who had contact with the peer counsellors practiced exclusive breastfeeding for an average of 10 weeks compared with 4 weeks for mothers in the control group (Rivera et al., 1993). In another study La Leche League of Honduras trained peer counsellors in 20 rural communities to lead monthly breastfeeding support meetings and visit 1–2 mothers each at home. Mothers who had contact with the peer counsellors were three times more likely than other mothers to practice exclusive breastfeeding at three months postpartum (AHLACMA et al., 1993). In Guatemala, La Leche League trained peer counsellors and formed breastfeeding support groups in about 10 periurban communities. A study conducted more than three years after the end of funding found that the programme had been sustained: one-quarter of women in the community had contact with a breastfeeding peer counsellor either through support groups, home visits, or other contacts (de Maza et al., 1997).

A community intervention trial undertaken in periurban Guatemala as a collaboration of La Leche League and the LINKAGES Project found that after one year the rate of exclusive breastfeeding in intervention areas with peer counsellors did not significantly increase compared with the control communities (Dearden et al., 2002a). However, only...
31% of mothers in the intervention communities with infants under 6 months of age had any contact with a peer breastfeeding counsellor. As in previous studies, exclusive breastfeeding was higher among women in intervention communities who were exposed to La Leche League support groups and home visits than among women who were not exposed (Dearden et al., 2002a).

Microenterprise programmes represent another model of women’s groups. An evaluation of Freedom from Hunger’s Credit with Education Programme, managed by the Lower Pra Rural Bank in Ghana, found major improvements in breastfeeding practices among programme participants between the 1993 baseline and 1996 follow-up surveys. Women not involved in the programme did not show improved practices: 98% of programme participants gave colostrum, compared with only 71% of non-participants and 78% of women in control communities. Further, programme participants delayed introduction of water to their infants until an average of 125 days of age, compared with 63 days for non-participants and 51 days for women in control communities (McNelly, 1997; Green, 1998).

As experience with community-based breastfeeding promotion and support deepens, diverse approaches are being used for forming and involving women’s groups. In some regions existing women’s groups provide volunteers to work with the breastfeeding initiatives of the health sector. In other regions new support groups are formed focused on the breastfeeding experiences of the women who attend. More rapid change may be achieved by using existing women’s groups for outreach purposes than by establishing new groups focused on breastfeeding support. However, experience suggests that either approach may be effective for breastfeeding promotion and support, depending on the aims, time frame, culture, and circumstances.

Integration of breastfeeding with primary and preventive health services

Community-based approaches to breastfeeding are unlikely to succeed or to be sustained without the involvement of the health sector. Breastfeeding counselling should be supported within the health care system at a number of contact points that correspond to time points along the maternal-child life course, including antenatal, postnatal, well-baby, sick-baby, and immunization health service visits. In other words, support for breastfeeding should be interwoven with reproductive health, primary care, and maternal and child nutrition messages delivered in clinical settings and through the media and other channels of communication. Reproductive health services, including maternity care and family planning services, are critical avenues for breastfeeding promotion and support. Many studies have shown that early initiation of breastfeeding and later breastfeeding practices are strongly associated with the support or the barriers experienced with maternity services. The Baby-friendly Hospital Initiative was designed to address this issue, although the concept should be extended to perinatal care delivered in homes and clinics.

A natural point of integration between reproductive health services and breastfeeding is education and support of mothers regarding use of the lactational amenorrhoea method (LAM), a well-documented method of contraception. This method has been shown to have 98% efficacy for the first 6 months postpartum (Labbok et al., 1997). Use of LAM requires that mothers practice full or nearly full breastfeeding1, do not experience return of their menses, and have not passed the first six months postpartum. Mothers who practice this method are also encouraged to switch to other family planning methods when any of one of these criteria is no longer met.

Breastfeeding promotion and support is also a key intervention in the IMCI strategy (WHO, 1999). This strategy is championed by WHO and health agencies worldwide as the foundation for pediatric primary care and improved child health outcomes in developing countries. The strategy involves strengthening the quality and accessibility of primary care by addressing three major dimensions of the care delivery process—the health system, the skills of health staff, and family and community practices. Based on this comprehensive approach, IMCI encompasses a range of specific interventions to prevent and manage the major causes of childhood morbidity and mortality, integrating feeding counselling as an essential aspect of clinical care. At this stage of implementation, substantial integration of IMCI with other breastfeeding promotion and support initiatives has been achieved in only a few places in the world, but emphasis has been given to creating more effective approaches to outreach and developing community-based breastfeeding support that is well integrated with IMCI. There is a need for additional well-designed trials to examine the impact

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1 Full breastfeeding is the term applied to both exclusive breastfeeding (no other liquid or solid given to infant) and almost exclusive breastfeeding (vitamins, water, juice, or ritualistic feeds given infrequently in addition to breastfeeds). Nearly full breastfeeding means that the vast majority of feeds are breastfeeds.
of breastfeeding support in the primary care setting (Guise et al., 2003).

**Integration of breastfeeding and early childhood development strategies**

To maximize resources and population coverage, breastfeeding promotion and support should, to the extent possible, be effectively integrated with all initiatives and services that affect infant and young child health and development. UNICEF encourages countries to integrate breastfeeding promotion and support in their early childhood development initiatives. A number of studies have reported breastfeeding to be associated significantly with measures of psychological development (de Andraca et al., 1998; Lucas et al., 1992; WHO, 1999). Mechanisms for the psychoneurologic impact of breastfeeding may include improved mother-infant bonding and communication and the presence of long-chain polyunsaturated fatty acids in human milk that have been shown to be important to infant neurologic development (Lanting et al., 1994; Innis et al., 2001).

The beneficial effects of feeding human milk to infants is best evidenced in preterm infants. Lucas et al. (1992) examined the effects of tube feeding of preterm infants (<1,850 grams) using human milk vs formula feedings. Infants fed human milk had higher cognitive scores at 18 months and at 7–8 years of age compared with those who did not receive their own mothers’ milk. This study controlled for potential confounding factors but may not have fully controlled for differences in parenting and genetic capacity. While randomized trials have not been conducted to address the impact of breastfeeding promotion on psychological development of infants in developing countries, evidence suggests that breastfeeding has a modest but significant impact on both physical and psychological development in the infant. Thus, breastfeeding should be considered the foundation for effective early childhood development programmes in developing countries.
Chapter 3

Case Studies of Community-based Breastfeeding Promotion

This section provides case studies of community-based breastfeeding promotion and support in three developing countries: Madagascar, Honduras, and India. The Madagascar and Honduras case studies represent large-scale projects that involve major regions of each country. The case study in Haryana, India, was a large randomized, controlled trial. The Haryana study is included because it was designed to provide a pilot for sustainable services at scale through the mobilization of existing community resources. It also provides evidence that it is possible to improve complementary feeding practices through well-targeted community interventions.

Each case study builds on intersectoral partnerships and uses community-based approaches to increase exclusive breastfeeding. Core elements of successful community-based breastfeeding promotion and support are evident in these three examples, but each has unique elements and strategies. Different approaches used in these programmes in measuring breastfeeding status are discussed in the annex to this paper.

**Madagascar: Integrated child survival, family planning, and nutrition**

In Madagascar the Ministry of Health and the LINKAGES Project developed a programme to improve breastfeeding practices at a scale that would achieve significant public health impact. LINKAGES is a global project funded by the United States Agency for International Development (USAID) and managed by the Academy for Educational Development. The project’s goal is to improve breastfeeding and related complementary feeding and maternal dietary practices and to increase the offering of the lactational amenorrhea method of family planning.

During the first two years of the programme (1997–1999), LINKAGES provided support to the Ministry of Health for national policy activities, particularly the establishment and coordination of an intersectoral nutrition action group representing approximately 50 organizations. The mobilization of a critical mass of nutrition advocates at the national level; the harmonization of nutrition messages by this group; and the group’s development and use of the same communication materials, nutrition guidelines, and protocols helped create a favorable environment for behaviour change (LINKAGES, 2002).

In 1999 LINKAGES, in partnership with Jere Salama Isika (JSI), initiated district and community activities in 10 districts in 2 of the country’s 6 provinces and in 2001 expanded to 13 more districts. These activities now reach about 6 million people. Grassroots organizations and district and local “champions of change” implement the vast majority of the activities, with LINKAGES providing technical assistance, training modules, and materials to help them succeed in their efforts. By integrating behaviour change interventions with existing community programmes, LINKAGES was able to expand its reach and coverage and “fast track” the programme.

The community approach in Madagascar builds on the IMCI strategy adopted by the Ministry of Health and supported by other donors and organizations. Elements of reproductive health related to breastfeeding, such as LAM, are incorporated in the approach. As illustrated in Figure 7, breastfeeding serves as an entry point to the community to address nutrition, child health, and family planning issues.

![Figure 7](LINKAGES Project, Madagascar)
In Madagascar LINKAGES promotes breastfeeding as part of seven action areas: exclusive breastfeeding for the first six months, appropriate complementary feeding beginning at six months with continued breastfeeding to two years and beyond, feeding of the sick child, women’s nutrition, control of vitamin A deficiency, control of anemia, and consumption of iodized salt by all families. These behaviours are promoted at six critical health contact points: 1) antenatal, 2) delivery and immediate postpartum, 3) postnatal and family planning, 4) immunization, 5) growth monitoring and well child consultations, and 6) sick child consultations. This integrated strategy greatly expands nutrition contacts beyond traditional growth monitoring and promotion programmes.

The programme uses a combination of interpersonal communication strategies, group activities, and media to change individual behaviour, while at the same time educating and engaging those who influence mothers’ choices. Home visits and counselling at health facilities provide opportunities for health workers and community volunteers to negotiate with mothers to “try out” a new practice. Nutrition promoters drawn from women’s groups engage in outreach activities, including lay counselling, health talks, and facilitated drama to stimulate participants to think about trying the new behaviour and supporting their family members’ decisions. In addition to scheduled activities, the volunteers promote better infant and young child feeding practices during informal contacts with women in their communities.

Media strategies feature radio and television spots, traditional singers, and songs by a popular singer who serves as the country’s breastfeeding and nutrition ambassador. Journalists participate in many of the training activities and project events, resulting in free press and media time, stories, and special shows. Community events such as village theatre and festivals offer forums for conveying key messages. Service providers and community volunteers receive training in the Essential Nutrition Actions; key messages; counselling and negotiation techniques; and the use of counselling cards, job aids, and child health booklets. In this way specific audiences repeatedly hear the same key messages from health professionals, community volunteers, and the media.

In sum, LINKAGES’ behaviour change strategy includes the following elements:

- **Formative research** to identify factors (benefits and barriers) to change and key actions (specific behaviour changes that are feasible and “do-able” to achieve the desired outcomes)
- **Targeted, concise messages** to promote “do-able” actions
- **Short, periodic, and practical training** for health workers, community volunteers, and members of women’s groups, in counselling techniques so they can negotiate trial of small do-able actions
- **Consistent messages and materials** across all programme channels to address critical behaviours
- **Saturation of specific audiences with messages** through all appropriate media (electronic, print, interpersonal, traditional)

LINKAGES’ multifaceted behaviour change approach has resulted in measurable change in knowledge and behaviour within a short period of time. Using a rapid assessment procedure (RAP), LINKAGES collected quantitative and qualitative data in October 2000, October 2001, and November 2002 to evaluate the effectiveness of its district-level behaviour change strategy to improve breastfeeding and complementary feeding practices.

The rapid assessments were conducted in communes in each of the 10 districts where LINKAGES had initiated activities in 1999 and in 1 control district. Because the goal of the evaluation was to assess the effectiveness of the behaviour change strategy, communes with active women’s groups that showed evidence of embracing this strategy were included.

Participants were selected to represent all activity target groups, both those trained directly by LINKAGES or, in the case of mothers, the intended beneficiaries of the training. The findings are based on interviews with mothers of children less than 12 months of age (303 women in 2000, 693 in 2001, and 670 in 2002). The 1997 Demographic Health Survey, the project’s baseline surveys, control data, and other country studies serve as points of comparison.

In the 2000 RAP, the rate of exclusive breastfeeding of infants less than 6 months of age in the past 24 hours was 68% in the programme area, compared with 45%–47% from DHS, baseline, and control surveys (p<0.001). In the 2001 RAP, the exclusive breastfeeding rate rose to 79%. In 2002, after one year of no direct programme intervention because of political crisis, the rate was 76% (figure 8). The most dramatic increases in exclusive breastfeeding were among infants 4 and 5 months of age—12% at baseline to 61% at the 2001 RAP, although this dropped to 58% in 2002.
during a political crisis in the country (Guyon et al., 2001; Rahantanirina et al., 2002).

Data collected in the 2000 RAP indicated that early initiation of breastfeeding more than doubled in the programme area to 73%, compared with 34% in the DHS, baseline survey, and control site \(p<0.001\), as shown in figure 9. The slight decrease (to 71%) in the 2001 RAP is not statistically significant and the rate increased in 2002 to 77%.

In both 2001 and 2002 RAP surveys, infants less than 6 months old who were not exclusively breastfed were significantly more likely to have had a diarrhoeal episode in the 2 weeks prior to the survey than infants who were exclusively breastfed. In 2001 infants who were not exclusively breastfed had a relative risk of diarrhoea of 3.75 compared with exclusively breastfed infants \(p=0.02\). In 2002 infants who were not exclusively breastfed had a 2.7-fold relative risk of diarrhoea compared with exclusively breastfed infants \(p=0.04\).

In the first year of the programme, complementary feeding was not a major focus. Consequently no data on complementary feeding were collected during the baseline survey or the 2000 rapid assessment. In 2001 the programme placed greater emphasis on this critical aspect of infant and young child nutrition. The 2001 RAP showed no difference in the programme and control areas in the proportion of mothers of infants 6–<10 months who fed their infants complementary foods in the previous 24 hours (92% and 89%). In 2002 the respective rates were 93% and 80%.

The approach used by LINKAGES in Madagascar encouraged the coordination of efforts to improve child survival, growth, and development and brought partners together to achieve results. The Madagascar programme can serve as a model for countries wanting an integrated approach that can be adapted to address specific nutrition problems.

**Honduras: Growth monitoring and promotion**

In Honduras the Ministry of Health developed and championed a national growth monitoring and promotion strategy known as *Atención Integral a la Niñez* (AIN), or Integrated Child Care. This programme has been advanced in partnership with BASICS, a global child survival project funded by the United States Agency for International Development.

BASICS in Honduras focuses on four strategic objectives to achieve sustainable improvements in family health: 1) increased use of oral rehydration therapy (ORT) for diarrhoea, 2) appropriate care seeking for acute respiratory infections (ARI), 3) appropriate child feeding, and 4) appropriate breastfeeding. Major partners include UNICEF, PAHO, the American and Honduran Red Cross, Mercy Corps, Save the Children, CARE, and PRAF (a government social welfare programme). AIN has become a model for targeting services to those most in need by focusing on health promotion as well as disease treatment and by empowering community management of health services. To strengthen household practices related to

**Figure 8**

**Exclusive breastfeeding in the first 6 months of life, Madagascar**

<table>
<thead>
<tr>
<th>Year</th>
<th>Programme</th>
<th>DHS</th>
<th>Baseline</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td>Oct 2000</td>
<td>42</td>
<td>46</td>
<td>45</td>
</tr>
<tr>
<td>2000</td>
<td>Oct 2001</td>
<td>45</td>
<td>47</td>
<td>40</td>
</tr>
<tr>
<td>2001</td>
<td>Oct 2002</td>
<td>79</td>
<td>68</td>
<td>76</td>
</tr>
</tbody>
</table>

**Figure 9**

**Initiation of breastfeeding within first hour, Madagascar**

<table>
<thead>
<tr>
<th>Year</th>
<th>Programme</th>
<th>DHS</th>
<th>Baseline</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td>Oct 2000</td>
<td>34</td>
<td>35</td>
<td>35</td>
</tr>
<tr>
<td>2000</td>
<td>Oct 2001</td>
<td>34</td>
<td>35</td>
<td>35</td>
</tr>
<tr>
<td>2001</td>
<td>Oct 2002</td>
<td>73</td>
<td>71</td>
<td>77</td>
</tr>
</tbody>
</table>

(Linkages Project, Madagascar. Guyon et al., 2001 and Rahantanirina et al., 2002)
AIN themes, the programme Comunicación en salud infantil, or Communication in Child Health, was developed. This programme reinforces key practices and mobilizes important community agents, such as radio broadcasters and religious leaders.

The AIN programme in Honduras began in the early 1990s when the Ministry of Health chose adequate growth—measured by assessing monthly weight gain—as the primary indicator of child health. The programme emphasized solving problems of illness, poor feeding practices, and general child care at the household level in the critical first two years of life, when children are most susceptible to permanent damage from malnutrition. To maximize population coverage, the Ministry of Health offered growth promotion in the community in selected areas in 1992 and 1993. In 1994 the ministry defined AIN as its primary child health strategy, implemented AIN in government facilities, included standard case management in the strategy, and expanded the community programme.

From 1995 to 1997 the Ministry of Health, in partnership with BASICS, introduced new strategies to strengthen the AIN programme, including simple, standardized information feedback to each community on its progress; a stronger emphasis on illness management; development and use of counselling cards; and application of the trials of improved practices (TIPS) methodology to identify appropriate feeding recommendations and engage families in improving the dietary intake of their children. Using newly developed materials for the community programme, AIN began in 1997 to train nursing staff from 9 of its 42 health areas. The programme was then introduced in intervention communities, with IMCI instituted at the facility level to strengthen the clinical component.

The midterm evaluation of the AIN programme compares intervention communities with control communities served by the same health centres. The evaluation included 474 AIN households and 464 control households in the 1998 baseline survey and 596 AIN households and 572 control households in the 2000 follow-up survey. The follow-up survey results demonstrated that the AIN programme coverage was high in the intervention communities: 92% of children under 2 years of age were enrolled in growth monitoring and promotion programmes compared with only 21% of children under 2 years of age in control communities. Breastfeeding was assessed by asking mothers whether they had ever breastfed their children, whether they were currently breastfeeding their children, how frequently they breastfed, and generally how they were feeding their children (breastfeeding exclusively, giving breast milk with other liquids, giving breast milk with other foods, or only giving other foods with no breast milk).

In both AIN and control communities, nearly all mothers indicated that their children under two years of age were ever breastfed. However, 39% of mothers of children under six months of age in the AIN communities, compared with 13% in the control communities, practiced exclusive breastfeeding ($p \leq 0.001$). The pattern was similar for children under four months of age (figure 10). In addition, the mean age for introducing specific liquids or complementary foods was significantly higher in AIN communities than in control communities.

Caregivers’ knowledge about optimal infant and young child feeding practices improved significantly. AIN households were more likely than control households to identify improved growth as a benefit of breastfeeding. The majority of women in AIN households were aware of exclusive breastfeeding, and 80% of those women correctly identified 6 months as the appropriate duration of exclusive breastfeeding. As the AIN programme continues to grow, the expectation is that it will reach approximately 60% of Honduran children under 2 years of age.

**India: Integrated community-based interventions to promote infant and young child feeding**

A large-scale cluster randomized controlled trial was conducted in Haryana, India, from January 1998 to March 2002 to evaluate the effect of community-based
interventions to improve infant and young child feeding, specifically, exclusive breastfeeding during the first six months, complementary feeding at later ages, and the impact on infant diarrhoeal illness and growth. The study was conducted under the auspices of a team of researchers from the All India Institute of Medical Sciences and involved health workers from the district, the integrated child development services (ICDS) programme, and a local non-governmental organization. WHO funded the study and provided technical oversight. The study covered a population of about 40,000, out of which a cohort of 552 infants in 4 communities in the intervention group and 473 infants in 4 matched communities in the control group (Bhandari et al., 2003) were followed to evaluate intervention impact.

At baseline, exclusive breastfeeding was uncommon and complementary feeding practices were poor in the target population. In developing the project, problem identification was followed by formative research, participatory design of the intervention, implementation, and evaluation. Formative research assessed barriers to appropriate feeding practices and motivating factors for behaviour change. To develop feeding recommendations, the project team identified common feeding problems and local ways to solve them. Household trials were conducted to test acceptability of different recommendations.

Design of the intervention was highly participatory and involved the community from the outset. Community representatives and health workers helped convert nutrition recommendations to messages in the local vernacular, identify themes for songs and theatre, and select appropriate pictures for posters. The communications materials developed included clinic posters, flip books, and feeding recommendation cards for ready reference by health workers.

Nutrition messages included initiating breastfeeding immediately after birth, feeding only breast milk for the first 6 months of life, and breastfeeding the infant day and night and at least 8 times in 24 hours. The communications strategy targeted specific foods and fluids commonly given to non-exclusively breastfed infants, such as water and ghutti (an herbal mixture) and their adverse effects. The intervention messages also included introduction of complementary foods at six months; the types of foods, meal frequencies, and amounts to be fed at different ages; continued breastfeeding; ways to encourage children to eat more food; hand washing before a meal; and continued feeding during illness.

In collaboration with representatives from different categories of health workers, health authorities, and community members, the project team selected the channels for delivery of nutrition messages and the points at which families would receive counselling. Routine interactions between families and different categories of workers were observed to learn how they could be used for nutrition counselling without affecting their other work. In intervention communities the opportunities used for counselling were deliveries assisted by traditional birth attendants and monthly home visits by anganwadi workers (women selected from within the communities and trained to provide nutrition and preschool education services) to mothers and their infants during the first year of life. Nutrition counselling also occurred during quarterly weighing of children under two years of age, immunization clinics run by auxiliary nurse midwives, and sick child contacts with health-care providers.

At each contact with the caregivers, health workers assessed infant feeding practices, identified specific problems, and then counselled the caregivers. In addition, four workers — one for each intervention community — were selected by the local health authorities from an existing local non-governmental organization to support the government team in the community-based components of the intervention. Opportunities used to deliver nutrition messages included monthly meetings held by the auxiliary nurse midwives with community representatives, neighbourhood meetings conducted by community representatives with caregivers of children under two years of age, fairs, school debates, and other community events.

To increase breastfeeding knowledge and skills, a three-day training course was conducted for health and nutrition workers. Half of the training time was used to practice counselling individuals or groups of caregivers. The training was based on an adaptation of the IMCI training manual on breastfeeding counselling and included training on communication skills, detection of problems with positioning and attachment to the breast, and resolving breastfeeding difficulties.

The trial results indicated significant positive impact of the intervention (Bhandari et al., 2003). In the first 3 months postpartum, 33% of the intervention group mothers recalled having been counselled on exclusive breastfeeding immediately after birth, 45% recalled having been counselled at an immunization session, 32% at a home visit, and 26% at a weighing session.
Evaluation data indicated that prelacteal feeds of honey, tea, and diluted milk were fed to newborns less often (31% vs 75%) in the intervention communities than in the control communities (p<0.001). The corresponding rates for exclusive breastfeeding in the previous 24 hours among infants at 3 months of age in the intervention and control communities were 79% and 48% (p<0.001). The positive effect of the intervention on exclusive breastfeeding was also seen up to six months of age. Further, the seven-day diarrhoea prevalence rate was significantly lower in intervention group infants at three months and six months of age in the intervention communities compared with control communities. Infant growth up to six months of age was similar in intervention and control communities (Bhandari et al., 2003).

The impact of counselling on complementary feeding practices was also assessed in the study. Meal frequencies, protein, energy, and micronutrient intakes were significantly higher among infants in the intervention communities at 9 and 18 months of age. The increase in calories resulted from increased intake of milk, other foods, and the extra oil added to foods in the intervention communities. When the infants were 9 months of age, 35% of mothers in the intervention group, compared with 8% in the control group, reported that they encouraged them to eat more food. At 18 months of age, practices that were reported more often in the intervention than the control communities included feeding with love and affection, repeatedly encouraging the child who refuses to eat, and holding the child in the mother’s lap during feedings. More mothers in the intervention group reported washing their hands and their child’s hands before feeding. Intervention group children also had significantly higher mean attained length at 12 months of age.

This large community-based trial conducted in rural north India demonstrated an effective and potentially sustainable educational intervention to promote optimal infant and young child feeding. Programme activities continue without donor involvement one year after conclusion of the study. The intervention, integrated into existing services and designed to be sustainable at scale, illustrates an effective approach to community IMCI that could serve as a model in many regions.
Application to Special Circumstances

The studies and experiences described in this paper are intended as a general overview but must be applied thoughtfully to particular communities and circumstances. In some communities a significant proportion of women return to work outside the home in the first few months postpartum. Mothers’ return to work deserves special attention and can be considered a difficult circumstance in which to maintain optimal infant feeding. Two other exceptionally difficult circumstances that require special attention to breastfeeding are HIV-prevalent areas and emergency situations.

**Mothers’ return to work**

In many areas of the world, maternal work outside the home in the first few months postpartum is associated with shortened duration of breastfeeding or lower rates of exclusive breastfeeding (Ashworth et al., 2000; Dearden et al., 2002b; Valdes et al., 2000). When a mother resumes work outside the home, optimal breastfeeding can be sustained. However, if the infant is young, exclusive breastfeeding often becomes more complicated because of the geographic separation of the mother and infant and, in many cases, greater maternal time constraints. The 88th session of the International Labour Conference held in June 2000 adopted a revised Maternity Protection Convention that significantly strengthened the previous convention adopted in 1952. Provisions of the 2000 Convention include an increase in the minimum length of maternity leave from 12 to 14 weeks, entitlement to paid breastfeeding breaks, and application of the convention to women in nonformal forms of work.

Breastfeeding counselling and lactation support programmes in the work environment can contribute to success (O’Gara et al., 1994). In a study of working mothers in Turkey, Yilmaz et al. (2002) concluded that support for breastfeeding women should involve longer leave from work and improved breastfeeding conditions at work. Rea and others (1999) reported that duration of exclusive breastfeeding in Sao Paulo, Brazil, was longer among factory workers who had support for breastfeeding at work, did not do shift work, and did not work on weekends.

Valdes et al. (2000) conducted a prospective, controlled intervention trial among working mothers in Santiago, Chile. Breastfeeding support that included anticipatory counselling combined with monthly postpartum clinical follow-up visits significantly increased the proportion of working women who exclusively breastfed their infants to 6 months of age (53% of women in the intervention group compared with 6% of women in the control population). Most of the working women who maintained exclusive breastfeeding expressed and stored their breast milk.

Community-based breastfeeding initiatives should identify the extent to which work outside the home is a barrier to optimal breastfeeding and offer practical alternatives to working women and their families. Several options should be considered to sustain breastfeeding, including supporting the mother to keep the baby with her or with a caregiver at or near the workplace. In the latter situation, the caregiver brings the infant to the working mother or the working mother visits the infant when the child is ready to nurse. Another option is for the caregiver to feed the infant expressed breast milk, although in some cultures breast milk expression may not be common. Any option requires levels of support from family members, employers, caregivers, and individuals in the community, such as lay breastfeeding counsellors and health-care providers. Education and support of working women and their families can open new and helpful options for infant care and feeding.

**Infants born to HIV-positive mothers**

Each year approximately 800,000 children become infected with HIV, largely in developing countries and mainly through mother-to-child transmission during pregnancy, delivery, or breastfeeding (UNAIDS/WHO 2002). Research indicates that 5%–20% of infants of HIV-infected mothers who breastfeed become infected through breastfeeding (de Cock et al., 2000).
Transmission of HIV through breastfeeding is associated with several factors including infant age (<6 weeks), longer breastfeeding duration, poor breast health (mastitis or lesions), poor maternal immune status, increased maternal viral load, and infant oral and gastrointestinal tract health. There is some evidence that feeding mode may also be a factor, with exclusive breastfeeding being of lower risk than mixed feeding. Given the benefits of breastfeeding for infant survival, the problem of HIV transmission through breastfeeding has made safer infant feeding counselling for HIV-positive mothers a complex task.

WHO (2000) provides the following global recommendations on infant feeding for HIV-positive mothers:

- When replacement feeding is acceptable, feasible, affordable, sustainable and safe, avoidance of all breastfeeding by HIV-infected mothers is recommended. Otherwise, exclusive breastfeeding is recommended during the first months of life.
- To minimize HIV transmission risk, breastfeeding should be discontinued as soon as feasible, taking into account local circumstances, the individual woman’s situation, and risks of replacement feeding (including malnutrition and infections other than HIV).
- When HIV-infected mothers choose not to breastfeed from birth or stop breastfeeding later, they should be provided with specific guidance and support for at least the first two years of the child’s life to ensure adequate replacement feeding.
- Programmes should strive to improve conditions that will make replacement feeding safer for HIV-infected mothers and families.

Global policy on infant feeding and HIV emphasizes the importance of informed choice. Women need to know their status to make a choice, because breastfeeding is the recommended mode of feeding for women who are HIV negative or of unknown status. Programmes should provide HIV-positive women with information and support to enable them to make fully informed infant feeding decisions. The infant feeding options for HIV-infected women include commercial infant formula, home-prepared infant formula, breastfeeding (with early cessation where appropriate), expressed and heat-treated breast milk, donor milk from milk banks, and wet nursing.

A cohort study conducted in South Africa suggests that exclusive breastfeeding may be safer than mixed feeding in terms of reducing mother-to-child transmission of HIV through breastfeeding (Coutsoudis et al., 2001). Further research is on-going to confirm this result.

In areas where HIV infection is present, the promotion and support of breastfeeding remains critical from a population perspective. Special care is needed to avoid inadvertently discouraging breastfeeding and inappropriate distribution of breast milk substitutes, which could undermine optimal breastfeeding by HIV-negative mothers and mothers who do not know their status. Community-based care and support for HIV-positive mothers and their infants requires a high level of confidentiality and sensitivity. HIV-positive mothers should have access to appropriate individual counselling and care regarding prevention of mother-to-child transmission of HIV and safer infant feeding practices.

The Ndola Demonstration Project1 in Zambia is an example of a programme that aimed at promoting better infant and young child feeding practices among all women, in an area of high HIV prevalence. Health workers and community-level workers were trained in topics related to infant feeding, and also related to HIV. Due to a combination of health-facility and community-level counselling and support activities, rates of exclusive breastfeeding in the community increased, from 57% at baseline in April 2000 to 70% at endline in April 2002. It was concluded that increasing knowledge of MTCT did not erode good breastfeeding practices. However, acceptance of HIV testing and counselling remained low, so that mothers could not receive specific counselling and support based on their HIV status. HIV-positive mothers did not practice the recommendation for early cessation, because it was considered contrary to community norms (Horizons, 2003).

Emergency situations

The care and feeding of infants is especially important in emergencies such as famine or refugee situations, when infants and young children are particularly vulnerable. In emergency situations misconceptions and adverse living conditions may present special barriers to breastfeeding that need to be addressed and overcome. A common but unfounded belief is that malnourished mothers in emergency situations cannot breastfeed. On the contrary, malnourished mothers can breastfeed; the

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1 The Ndola Demonstration Project was a partnership of the National Food and Nutrition Commission, Central Board of Health, District Health Management Team, Hope Humana, and three USAID-supported projects (LINKAGES, Horizons, and the Zambia Integrated Health Program).
amount of breast milk produced depends primarily on
the frequency of breastfeeds and the effectiveness of
the baby suckling on the breast. The best solution is to
feed the mother, not the infant, and to give her whatever
support she needs for breastfeeding. Providing the
mother with additional foods and fluids will improve
her nutritional status and provide additional energy to
care for herself and her child.

Additional barriers to breastfeeding may arise from the
environmental conditions that occur during emergencies,
such as the need to queue for food and to fetch water.
These barriers can be overcome by giving breastfeeding
mothers priority access to food, water, and shelter. In
many emergencies, an extraordinary quantity of free
breast milk substitutes is provided in a misguided effort
to assist. Negative effects that have been associated with
free breast milk substitutes include increased risk of
morbidity and mortality in formula-fed infants who do
not receive the benefits of immunologic protection
conveyed through breast milk, unintentional marketing
of formula products to mothers who would otherwise
breastfeed, and undermining of mothers’ confidence and
motivation to breastfeed. While the availability of
substitutes is important for infants who do not have
access to breast milk, access to breast milk substitutes
should be controlled.

Because emergency situations often arise in HIV-
prevalent areas, concerns about HIV and breastfeeding
may need to be addressed, as noted in the HIV and
breastfeeding discussion above. Additional guidance on
this topic is available in a publication of the Emergency
Nutrition Network (ENN), developed in collaboration
with WHO, UNICEF, the International Baby Food
Action Network (IBFAN), and the LINKAGES Project
(Emergency Nutrition Network et al., 2001)
Summary and Conclusions

Ideally, infant and young child feeding should be viewed from a life course perspective that begins with a well-nourished woman and proceeds through a healthy pregnancy and a safe and supportive delivery and postpartum period. Following childbirth, women continue to need timely and accurate information, encouragement, and support to address their concerns and to enable them to practice optimal breastfeeding, which includes timely initiation of breastfeeding; exclusive breastfeeding for six months; the introduction of adequate, safe, and appropriate complementary foods at six months; and continued breastfeeding up to two years of age or beyond.

In the life course perspective, infant and young child feeding is the concern of mothers, families, communities, and the health sector. Community-based strategies, health system strategies, and national policies all have a role in creating a supportive environment for optimal infant and young child feeding, growth, and development.

The development of community-based initiatives for breastfeeding promotion and support is an extension of more than two decades of global advocacy and systematic research. Evidence indicates that community-based breastfeeding promotion and support can be effective in increasing optimal breastfeeding and improving infant health. As experience with community-based approaches increases, the elements that define the capacity for behaviour change and specific strategies for success are becoming clear.

The capacity for breastfeeding behaviour change at the community level requires effective leadership, forming intersectoral partnerships, informing and engaging opinion leaders, conducting formative research to shape explicit and effective messages, and monitoring and evaluating programme progress. Strategies for improving breastfeeding behaviour include approaches that focus on individual as well as group behaviour based on behaviour change theory and address stages of change, including trials of improved practices. Well-designed behaviour change communication, training of healthcare workers and lay counsellors to provide accessible and appropriate counselling support to mothers, and active involvement of women’s groups are important elements of effective breastfeeding behaviour change strategies that may be applied somewhat differently in diverse circumstances.

Attention is required to integrate breastfeeding with multiple programmes affecting maternal and child health and nutrition in the formal health sector and the community at large. Attention is also needed to support breastfeeding mothers in circumstances that require them to return to work in the first few weeks or months postpartum. Special care must also be taken regarding breastfeeding promotion and support in HIV-prevalent areas and emergency situations.

The Global Strategy for Infant and Young Child Feeding calls on governments, international organizations and other concerned parties to work together to achieve fully the Strategy’s aims and objectives. The research literature and case studies cited in this paper indicate that such mobilization can be highly effective in increasing optimal infant feeding and decreasing infant morbidity and mortality. This document aims to provide helpful guidance and support to governmental and nongovernmental agencies that are working towards effectively reaching all mothers through community-based approaches to breastfeeding promotion and support. We hope that this document will encourage commitment to breastfeeding promotion and support from all sectors and result in gains in optimal infant feeding that in turn produce significant gains in child survival.
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Issues in Breastfeeding Measurement

Standardized breastfeeding indicators are recommended by the World Health Organization (1991) and endorsed by the Demographic and Health Surveys (DHS) and UNICEF’s Multiple Indicator Cluster Surveys (MICS) to provide valid data that are comparable across studies and populations. Recommended international indicators for assessing breastfeeding include the following:

- Percentage of infants less than 12 months of age breastfed within 1 hour of birth (timely initiation of breastfeeding rate)
- Percentage of infants less than 6 months breastfed exclusively (exclusive breastfeeding rate)
- Percentage of infants 6–9 months (180–299 days) fed breast milk and complementary foods (timely complementary feeding rate)

WHO defines exclusive breastfeeding as maternal milk being the only food source, with no other liquids or food given except medicines, minerals, and vitamins. Infants described as predominantly breastfed may receive breast milk as the main source of nourishment but also receive water, water-based drinks, fruit juice, herbal mixtures, and vitamins, minerals, or medicines.

All of the studies cited in this monograph were understood to adhere in principle to these internationally accepted breastfeeding definitions. However, studies and evaluations cited differed in some aspects of measurement, such as time frame for classifying infants as exclusively breastfed (since birth, in the past 24 hours, in the past month) and employed differing wording of items used to assess exclusive breastfeeding. These differences in methods may have some implications for data interpretation across studies.

The internationally recognized set of standard breastfeeding questions used by DHS includes the following:

- Did you ever breastfeed (CHILD’S NAME)?
- How long after birth did you first put (NAME) to the breast?
- Are you still breastfeeding (NAME)?
- IF NO: For how many months did you breastfeed (NAME)?
- How many times did you breastfeed last night between sunset and sunrise?
- How many times did you breastfeed yesterday during the daylight hours?
- Did (NAME) drink anything from a bottle with a nipple yesterday or last night?
- At any time yesterday or last night, was (NAME) given any of the following:
  - Plain water?
  - Milk other than breast milk?
  - Fruit juice?
  - Any other liquids such as sugar water, tea, coffee, carbonated drinks, or soup broth?
  - Any food made from wheat, maize, rice, sorghum (OR LOCAL GRAIN) such as …?
  - Any food made from pumpkins, carrots, red sweet potatoes, green leafy vegetables, mango, papaya?
  - Any other food made from cassava, plaintain, yams (OR LOCAL TUBER) such as …?
  - Any other fruits and vegetables (e.g. bananas, apples, avocados, tomatoes)?
  - Meat, eggs, fish, poultry, cheese, or yoghurt?
  - Any food made from legumes (e.g. lentils, beans, soybeans, pulses, or peanuts)?
  - Any food made with oil, fat, or butter?
  - Any other solid or semi-solid foods?

Answers to the 24-hour food recall question (items given during the previous night and day) are required to calculate the exclusive breastfeeding rate. The LINKAGES Project used these standardized items to guide its project evaluations, but not all projects presented in the case studies used these methods precisely in this way. For example, the AIN programme evaluation in Honduras used a 24-hour food recall question at baseline but at midterm surveyed caregivers on the current status of breastfeeding using a combination of questions that included current breastfeeding status coupled with a question on whether the infant had begun receiving foods and liquids. For
validation this rate was compared to a question that asked the caregiver to classify the infant as being breastfed exclusively, receiving breast milk with other liquids, receiving breast milk with other foods, or receiving only other foods with no breast milk. Because of the differences in calculating the exclusive breastfeeding rate between baseline and midterm surveys, there are some limitations to the comparability of the data.

The study by Bhandari et al. (2003) classified infants at 3 months of age as exclusively breastfed based on 24-hour recall as described above. However, classifications of infants as being exclusively breastfed during the first 4, 5, and 6 months of life were based on recall data obtained at the 9-month visit, when the age was asked at which the mother had introduced any other liquids or foods to the infant. A 24-hour recall provides reliable dietary recall, but because infant feeding behaviour is not constant from day to day, some infants may be misclassified as exclusively breastfed for the entire period between birth and 6 months of age when they have been given other liquids or foods at least once by that age. Maternal recall at 9 months is likely to be reasonable for classifying the age at which a liquid or food was routinely introduced into the infant diet, but the validity of this approach is not clearly established and the results are not necessarily consistent with the results obtained from age-specific 24-hour recalls.

The issue of breastfeeding status measurement is noted here to alert readers to issues of data interpretation and comparability of results across studies discussed in this and other publications.