



# Breastfeeding Briefs

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*Nancy Jo Peck, our Scientific Advisor and GIFA colleague for 20 years, began Breastfeeding Briefs in 1984 and edited the publication of 30 issues until her death in February 2001. We all remember with much appreciation her professional devotion to work for children and are pleased that Breastfeeding Briefs can continue in her memory.*

*The new editors are Dr. Marina Rea, Institute of Child Health in Sao Paulo, Brazil and Dr. Adriano Cattaneo, Istituto per l'Infanzia in Trieste, Italy.*

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## The optimal duration of exclusive breastfeeding

Since 1979, the WHO recommendation for the duration of exclusive breastfeeding has been “4-6 months”. In 1994 and 1996, the World Health Assembly (WHA) and UNICEF recommended introduction of complementary foods at the age of about six months, thus recognizing that exclusive breastfeeding should be fostered for about the first six months. But the WHO did not change its previous recommendation, stating that further evidence was needed despite the fact that the world's experts have argued that evidence supporting the change in the recommendation was sufficient. IBFAN has always maintained that the delay in changing the recommendation resulted mainly in large profits gained by infant food manufacturers from sales of complementary foods for two additional months of complementary feeding. During the 53<sup>rd</sup> WHA in the year 2000, the Brazilian delegation proposed a resolution in favour of exclusive breastfeeding for six months. The draft resolution did not pass and the WHO Secretariat tried to postpone any further resolution on infant feeding to 2002. But the members of the WHO Executive Board in January 2001 clearly stated the need for the resolution. Therefore the Board decided to keep the recommended duration of exclusive breastfeeding in brackets (“4-6 months” vs “about 6 months”) until an expert committee decided on this issue and also decided to forward the resolution to be discussed at the 54<sup>th</sup> WHA in May 2001. In March, the report issued by the Expert Committee which was finally convened by the WHO Secretariat put an end to the long debate by endorsing exclusive breastfeeding for 6 months.<sup>1</sup> Despite pressure from the baby food industry and some last-minute uncertainty, resolution WHA54.2 was eventually passed on 18 May 2001.

The resolution urges Member States to “... **support exclusive breastfeeding for six months as a global public health recommendation taking into account the findings of the WHO Expert Technical Consultation on optimal duration of exclusive breastfeeding and to provide safe and appropriate complementary foods, with continued breastfeeding for up to two years or beyond ...**”. The Expert Committee had identified, reviewed and evaluated more than 3,000 references. The studies comparing exclusive or predominant breastfeeding for about four months with the same pattern of feeding for about six months did not show an adverse effect of the latter on growth and major morbidity. The review, however, could not rule out an increased risk of growth faltering in some infants who are exclusively breastfed for six months, particularly in populations with severe maternal malnutrition and a high prevalence of intrauterine growth retardation. There might also be a risk of poorer iron status in infants exclusively breastfed for six months in populations in which maternal iron status and infant stores of iron are not optimal. On the other hand, the review confirmed that exclusive breastfeeding for six months protects against gastrointestinal infection, even in settings where hygienically prepared complementary foods are used, and confers an advantage in prolonging the duration of lactational amenorrhoea in mothers who breastfeed frequently (10-14 feeds a day). The recommendation to exclusively breastfeed for six months applies to populations. It is clear that some mothers will be unable to, or choose not to, follow this recommendation; they should be supported to optimize their infants' nutrition. Particular attention should be paid to the nutritional status of pregnant and lactating mothers, the micronutrient status of infants living in areas with high prevalence of iron, zinc, and vitamin A deficiencies, the routine care of individual infants, including assessment of growth and of clinical signs of micronutrient deficiencies.<sup>2</sup>

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<sup>1</sup>WHO. *Expert consultation on the optimal duration of exclusive breastfeeding. Conclusions and recommendations.* Document A54/INF.DOC./4, Geneva, 28-30 March 2001.

<sup>2</sup>WHO. *Global strategy for infant and young child feeding.* Document A54/7, Geneva, 9 April 2001.

## Highlight

Dewey KG. Nutrition, growth, and complementary feeding of the breastfed infant. *Pediatr Clin North Am* 2001;48:87-104

The following conclusions about infant feeding are well substantiated by the evidence available to date, although additional research is needed on many issues. Breastmilk alone can meet nutrient needs during the first 6 months, with the possible exception of vitamin D in certain populations, and iron in infants of relatively low birth weight. Complementary foods offered before 6 months of age tend to displace breastmilk and do not confer any growth advantage over exclusive breastfeeding. Breastmilk continues to provide substantial amounts of key nutrients well beyond the first year of life, especially protein, fat, and most vitamins. Breastfed infants tend to gain less weight and usually are leaner than are formula-fed infants in the second half of infancy. This difference does not seem to be the result of nutritional deficits but rather infant self-regulation of energy intake. New growth charts based on infants breastfed throughout the first year of life are being developed by WHO. The nutrients most likely to be limiting in the diets of breastfed infants are minerals, such as iron, zinc, and calcium. Using the following guidelines can help to ensure that the nutrient needs after 6 months of life of the breastfed child are met:

1. Continue to breastfeed as often as the infant desires.
2. Aim for a variety of complementary foods, with fruits, vegetables, and animal products (e.g., meat, fish, poultry, or eggs) offered daily.
3. Iron-fortified cereals and meats can provide adequate iron.
4. Calcium can be obtained from cheese, yogurt, and other dairy products (although fresh cow's milk is not recommended before 12 months).
5. Avoid giving too much juice.
6. Be alert to any signs that the child's appetite, growth, or development is impaired.
7. When in doubt, a balanced vitamin-mineral supplement is advisable.
8. Make mealtimes enjoyable.

## Breastfeeding, why...

Hop LT, Gross R, Giay T, Sastroamidjojo S, Schultink W, Lang NT. Premature complementary feeding is associated with poorer growth of Vietnamese children. *J Nutr* 2000;130:2683-90

Four cohorts of newborn children, consisting of 90 infants born in 1981, 90 in 1982, 60 in 1983 and 60 in 1984, were studied to investigate the association between premature initiation of complementary feeding and physical growth. The weights and heights of children were measured monthly up to 1 year, then every 3 months for year 2 and 3, and once every 6 months in year 4. Information on feeding practices and diseases of the children was obtained by interviewing the mothers at each home visit. All but three children (98.6%) were breastfed. Although 87% of the mothers breastfed their children for at least 1 year, only 3.3% of the infants were breastfed exclusively at the age of 4 months. Partially breastfed and weaned infants gained weight more slowly than those exclusively or predominantly breastfed. From 1 to 3 months, exclusively breastfed infants grew more quickly in both weight and length, followed by predominantly breastfed infants. From 3 to 6 months, exclusively breastfed infants gained more weight compared with the other groups. In the older period (6-12 months), exclusively and predominantly breastfed infants grew in length more quickly than partially breastfed and weaned groups. However, there was no difference in weight gain among groups. Morbidity from diarrhoea and acute respiratory infections was significantly lower for the 3 or more months exclusively breastfed group. These results show a long-term deterioration of physical growth in infants who received premature complementary feeding and confirm the importance of exclusive breastfeeding for at least 3 months.

Coutsoudis A, Pillay K, Kuhn L, Spooner E, Tsai WY, Coovadia HM; South African Vitamin A Study Group. Method of feeding and transmission of HIV-1 from mothers to children by 15 months of age: prospective cohort study from Durban, South Africa. *AIDS* 2001;15:379-87

This paper represents the follow-up to 15 months of the study published by the same authors in 1999 (*Lancet* 1999;354:471-6), when the infants had been observed up to age 3 months. A total of 551 HIV-infected pregnant

women had been enrolled in a randomized trial of vitamin A. Women self-selected to breastfeed or formula feed after being counselled. Breastfeeders were encouraged to practice exclusive breastfeeding for 3-6 months. The probability of HIV was compared in three groups: 157 formula-fed (never breastfed); 118 exclusively breastfed for 3 months or more; and 276 mixed-fed. The three feeding groups did not differ in any risk factors for transmission, and the probability of detecting HIV at birth was similar. The probabilities of HIV detection remained similar among never and exclusive breastfeeders up to 6 months (19.4%), whereas the probability among mixed breastfeeders soon surpassed both groups, reaching 26.1%. By 15 months, the cumulative probability of HIV infection remained lower among those who exclusively breastfed for 3 months or more than among other feeding patterns (24.7% vs 35.9%). The authors conclude that infants exclusively breastfed for 3 months or more had no excess risk of HIV infection over 6 months than those never breastfed. These findings, if confirmed elsewhere, can influence public health policies on feeding choices available to HIV-infected mothers in developing countries.

Williams C, Birch EE, Emmett PM, Northstone K. Stereoacuity at age 3.5 y in children born full-term is associated with prenatal and postnatal dietary factors: a report from a population-based cohort study. *Am J Clin Nutr* 2001;73:316-22

Observational studies suggested that breastfeeding benefits the visual development of preterm children, which has been attributed to the presence of docosahexaenoic acid (DHA) in breastmilk. Randomized studies showed that preterm children require a dietary supply of DHA in the first few weeks of life for optimal visual development, but it is unclear whether full-term children experience similar benefits from breastmilk or DHA supplements. The objective of this study was to compare visual acuity at age 3.5 years in healthy, full-term children who were breastfed and in similar children who had not been breastfed after adjustment for socioeconomic status and maternal diet. The results show that children who had been breastfed for 4 months were 2.77 times more likely to achieve high-grade stereoscopic vision than were children who had not

been breastfed. Children whose mothers ate oily fish during pregnancy were also 1.57 times more likely to achieve high-grade stereoscopic vision than were children whose mothers did not eat oily fish. The authors suggest that for full-term infants, breastfeeding is associated with enhanced stereoscopic vision at age 3.5 years, as is a maternal DHA-rich antenatal diet, irrespective of later infant feeding practice.

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Horwood LJ, Darlow BA, Mogridge N. Breast milk feeding and cognitive ability at 7-8 years. Arch Dis Child Fetal Neonatal Ed 2001;84:F23-7

280 survivors from a national birth cohort of 413 New Zealand very low birthweight infants born in 1986 were assessed at age 7-8 years on measures of verbal and performance intelligence quotient (IQ). At the same time mothers were questioned as to whether they had elected to provide expressed breastmilk at birth and the total duration of breastmilk feeding. Some 73% of mothers provided expressed breastmilk and 37% breastfed for four months or longer. Increasing duration of breastmilk feeding was associated with increases in both verbal IQ and performance IQ: children breastfed for eight months or longer had mean verbal IQ scores that were 10.2 points higher and performance IQ scores that were 6.2 points higher than children who did not receive breastmilk. These differences were substantially reduced after control for selection factors associated with receipt of breastmilk. Nevertheless, even after control for confounding factors, there remained a significant association between duration of breastmilk feeding and verbal IQ. These findings add to a growing body of evidence to suggest that breastmilk feeding may have small long-term benefits for child cognitive development.

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Wright AL, Holberg CJ, Taussig LM, Martinez FD. Factors influencing the relation of infant feeding to asthma and recurrent wheeze in childhood. Thorax 2001;56:192-7

Is the relation between breastfeeding and childhood asthma altered by the presence of maternal asthma? Healthy non-selected newborn infants (n=1246) were enrolled at birth to investigate this hypothesis. Asthma was defined as a physician diagnosis of asthma plus asthma symptoms reported on at least 2 questionnaires at 6, 9, 11 or 13 years. Recurrent wheeze (4 or more episodes in the past year) was reported by questionnaire at seven ages in the first 13 years of life. Duration of exclusive breastfeeding was based on prospective physician reports or parental questionnaires completed at 18 months. Atopy (a skin manifestation of allergy, considered part of asthma syndrome) was assessed by skin test responses at the age of 6 years. The relationship between breastfeeding, asthma, and wheeze differed with the presence or absence of maternal asthma and atopy in the child. Children with asthmatic mothers were almost 9 times more likely to have asthma if they had been exclusively breastfed. This relationship was only evident for atopic children. In contrast, the relation between recurrent wheeze and breastfeeding was age dependent. In the first 2 years of life, exclusive breastfeeding was associated with about 50% lower rates of recurrent wheeze, regardless of the

presence or absence of maternal asthma or atopy in the child.

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Romieu I, Werneck G, Ruiz Velasco S, White M, Hernandez M. Breastfeeding and asthma among Brazilian children. J Asthma 2000;37:575-83

The authors examined the association of breastfeeding and the presence of chronic respiratory symptoms among 5,182 Brazilian schoolchildren 7-14 years of age. The prevalence of medically diagnosed asthma and current wheeze were respectively 4.6% and 11.9%. 90% of the mothers had breastfed their child. Differently from the previous study (Wright *et al.*) no exclusive breastfeeding was reported. Children who had not been breastfed were more likely to have a medical diagnosis of asthma, experience current wheeze, and wheeze after exercise, than children who had been breastfed for more than 6 months. This effect was only present among children with no family history of asthma. The low prevalence of asthma and wheeze observed in this population may be partly related to the high level of breastfeeding.

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Bener A, Denic S, Galadari S. Longer breastfeeding and protection against childhood leukaemia and lymphomas. Eur J Cancer 2001;37:234-8

The authors investigated the role of breastfeeding in protecting against childhood acute leukaemia and lymphomas in a case-control study comprising 117 patients, aged 2-14 years, with acute lymphocytic leukaemia, Hodgkin's and non-Hodgkin's lymphoma, as well as 117 controls matched for age, sex and ethnicity. The median duration of breastfeeding among patients was significantly shorter than among controls: 7 (range 0-23) and 10 (range 0-20) months, respectively. Breastfeeding of 0-6 months' duration, when compared with feeding of longer than 6 months, was associated with increased risk for acute leukaemia and Hodgkin's and non-Hodgkin's lymphomas (2.47, 3.75, and 4.06 times, respectively). In multivariate analysis, breastfeeding duration continues to be an independent predictor of lymphoid malignancies. In conclusion, breastfeeding lasting longer than 6 months may protect against childhood acute leukaemia and lymphomas.

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Jones G, Riley M, Dwyer T. Breastfeeding in early life and bone mass in prepubertal children: a longitudinal study. Osteoporos Int 2000;11:146-52

The aim of this study was to determine whether breastfeeding in early life is associated with bone mass in 330 8-year-old male and female children from Southern Tasmania, representing 47% of those who originally took part in a birth cohort study of risk factors for Sudden Infant Death Syndrome (Lancet 1991;337:1244-7; N Engl J Med 1993;329:377-82; JAMA 1995;273:783-9). Breastfeeding intention and habit were assessed in both 1988 and 1996. Bone mineral density was measured by X-ray densitometry. Children who were breastfed had higher bone mineral density at the femoral neck, lumbar spine and total body compared with those who were bottle-fed. This association with breastfeeding was present in children born at term but not those born preterm, and remained significant after adjustment for size, lifestyle factors and

socioeconomic factors. Breastfeeding for less than 3 months was not associated with increased bone mass at any site. In conclusion, this study has demonstrated a beneficial association between breastfeeding in early life and bone mass in 8-year-old children born at term, particularly those breastfed for 3 months or longer, which appears biological. If this association is confirmed in other populations and persists until the attainment of peak bone mass, then the implication would be that osteoporosis prevention programmes need to start very early in life.

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Leeson CP, Kattenhorn M, Deanfield JE, Lucas A. Duration of breast feeding and arterial distensibility in early adult life: population based study. *BMJ* 2001;322:643-7

This study tested the hypothesis that duration of breastfeeding is related to changes in vascular function relevant to the development of cardiovascular disease. Participants were 331 adults (171 women, 160 men) aged between 20 and 28 years, born in Cambridge Maternity Hospital, UK. The distensibility of the brachial artery was measured against type and duration of infant feeding determined by a retrospective questionnaire. The results showed that the longer the period of breastfeeding the less distensible the artery wall was in early adult life. The vascular changes observed were not explained by alterations in plasma cholesterol concentration in adult life. Participants, however, were self-selected and there might have been other infant feeding factors associated with the outcome that were not detected by the retrospective questionnaire. In addition, there is no evidence of an association between distensibility of the brachial artery and subsequent development of cardiovascular disease. To conclude, the possible causal relationship between breastfeeding in infancy and increased risk of cardiovascular disease is not demonstrated and these data should not alter current recommendations in favour of breastfeeding.

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Singhal A, Cole TJ, Lucas A. Early nutrition in preterm infants and later blood pressure: two cohorts after randomised trials. *Lancet* 2001;357:413-9

The research group that published the previous article reported also the follow up to 13-16 years of a cohort of 926 children who were born prematurely and had participated at birth in two parallel randomised trials in five neonatal units in the UK. The same children had been studied before for other outcomes (*Arch Dis Child* 1984;59:722-30; *BMJ* 1990;300:837-40; *Lancet* 1992;339:261-4; *BMJ* 1998;317:1481-7). The mean arterial blood pressure at age 13-16 years was lower in the 66 children assigned banked breastmilk (alone or in addition to mother's milk) than in the 64 assigned preterm formula (81.9 vs 86.1 mm Hg). No differences were found in the term formula (n=44) vs preterm formula (n=42) comparison. The children followed up at age 13-16 years were similar to those not followed up in terms of social class and anthropometry at birth. Breastmilk consumption was associated with lower later blood pressure, a protective factor for cardiovascular disease. The data provide experimental evidence of programming of a cardiovascular risk factor by early diet and further support the long-term beneficial effects of breastmilk.

Zheng T, Duan L, Liu Y, Zhang B, Wang Y, Chen Y, Zhang Y, Owens PH. Lactation reduces breast cancer risk in Shandong Province, China. *Am J Epidemiol* 2000;152:1129-35

The authors conducted a hospital-based case-control study in Shandong Province, China, in 1997-1999. A total of 404 cases and an equal number of controls were included. Detailed information regarding lactation, menstruation, and reproduction was collected through in-person interviews. The authors found a significant inverse association between duration of lactation and breast cancer risk. For women who breastfed for more than 24 months per child, the risk was about 50% lower when compared with those who breastfed for 1-6 months per child. A significantly reduced risk of breast cancer was also found for those whose lifetime duration of lactation totaled 73-108 months and for those who breastfed for 109 or more months. Further stratification by menopausal status resulted in the same conclusion. These data suggest that prolonged lactation reduces breast cancer risk.

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Chang-Claude J, Eby N, Kiechle M, Bastert G, Becher H. Breastfeeding and breast cancer risk by age 50 among women in Germany. *Cancer Causes Control* 2000;11:687-95

The authors report the results of a population-based case control family study of breast cancer among women diagnosed by the age of 50, conducted in two geographic areas in Germany, to evaluate the effect of breastfeeding on risk of breast cancer. Among parous women (553 cases, 1,094 age-matched controls), having ever breastfed a child for at least 1 month did not confer protection. However, risk of breast cancer significantly decreased with increasing duration of breastfeeding and the estimated risk was 40% lower for 13-24 months of cumulative breastfeeding and 50% lower for 25 months or more. These results support a protective role of prolonged breastfeeding against the development of breast cancer in predominantly premenopausal women.

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## Breastfeeding, how...

Deshpande AD, Gazmararian JA. Breastfeeding education and support: association with the decision to breastfeed. *Eff Clin Pract* 2000;3:116-22

To identify factors associated with the initiation and duration of breastfeeding in managed care enrollees who had had a normal vaginal delivery, a telephone survey of 5,213 new mothers (4 to 6 months postpartum) was conducted (response rate 72%). 75% of respondents reported ever breastfeeding, and of those women, 75% reported breastfeeding for more than 6 weeks. In adjusted multivariate analyses, breastfeeding was affected by education, employment, and marital status. Women who were more likely to breastfeed were those who attended childbirth classes, those who received prenatal breastfeeding advice, and those who received postpartum breastfeeding assistance. Breastfeeding for more than 6 weeks postpartum was associated with education, employment status, and the adequacy of postpartum information. These findings suggest that in the USA health plans and employees may promote breastfeeding by providing breastfeeding education and support.

Abada TS, Trovato F, Lalu N. Determinants of breastfeeding in the Philippines: a survival analysis. *Soc Sci Med* 2001;52:71-81

This study examines modern and traditional factors that may lengthen or shorten the duration of breastfeeding. Specifically, health sector, socio economic, demographic, and supplementary food variables are analysed among a large representative sample of women in the Philippines. The results show that traditional factors associated with breastfeeding (use of solid foods such as porridge and applesauce, and prenatal care by a traditional nurse/midwife) do not play a significant role in the mother's decision to continue breastfeeding. Factors associated with modernity are significant in explaining early termination of breastfeeding (respondent's education, prenatal care by a medical doctor, delivery in a hospital, and use of infant formula). The findings of this study suggest that health institutions and medical professionals can play a significant role in promoting breastfeeding in the Philippines; and educational campaigns that stress the benefits of lactation are important strategies for encouraging mothers to breastfeed longer.

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Arora S, McJunkin C, Wehrer J, Kuhn P. Major factors influencing breastfeeding rates: Mother's perception of father's attitude and milk supply. *Pediatrics* 2000;106:E67

To determine factors influencing feeding decisions, breastfeeding and/or bottle initiation rates, as well as breastfeeding duration, a mail survey was carried out in 245 mothers whose infants received well-child care from birth to 1 year of age in a family medicine practice of a 530-bed community-based hospital in northwestern Pennsylvania. The breastfeeding initiation rate was 44.3%. By the time the infant was 6 months old, only 13% of these were still breastfeeding. The decision to breastfeed or to bottle-feed was most often made before pregnancy or during the first trimester of pregnancy. The most common reasons mothers chose breastfeeding included: 1) benefits to the infant's health, 2) naturalness, and 3) emotional bonding with the infant. The most common reasons bottle-feeding was chosen included: 1) mother's perception of father's attitude, 2) uncertainty regarding the quantity of breast milk, and 3) return to work. By self-report, factors that would have encouraged bottle-feeding mothers to breastfeed included: 1) more information in prenatal classes; 2) more information from TV, magazines, and books; and 3) family support. To overcome obstacles, issues surrounding perceived barriers, such as father's attitude, quantity of milk, and time constraints, need to be discussed with each parent.

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Hannon PR, Willis SK, Bishop-Townsend V, Martinez IM, Scrimshaw SC. African-American and Latina adolescent mothers' infant feeding decisions and breastfeeding practices: a qualitative study. *J Adolesc Health* 2000;26:399-407

To explore minority teen mothers' perceptions of breastfeeding and the influences on infant feeding choices, a qualitative study using semistructured ethnographic interviews and focus groups was conducted with 35 Latina and African-American girls in Chicago between the ages of 12 and 19 years who were primiparous and were currently pregnant or had delivered within the past 3

months. Adolescents identified three main influences on infant feeding decisions and practices: (1) their perceptions of the benefits of breastfeeding, (2) their perceptions of the problems with breastfeeding, and (3) influential people. In this study, teens reported no single influence which determined infant feeding choices. The decision to breastfeed was a dynamic process. Teens recognized that breastfeeding offered many benefits including facilitating maternal-child bonding and promoting the baby's health, but concern was raised regarding a potential for excessive attachment between teen mother and baby. Fear of pain, embarrassment with public exposure, and unease with the act of breastfeeding acted as barriers for teenagers who were considering breastfeeding. The adolescents' mothers continued to be an important influence. The ranges of perceptions and influences that minority adolescent mothers have identified as affecting their infant feeding choices, illustrated and explained in the teens' own words, are helpful to health care providers as they counsel teen mothers about infant feeding options.

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Donath SM, Amir LH. Does maternal obesity adversely affect breastfeeding initiation and duration? *J Paediatr Child Health* 2000;36:482-6

To examine the relationship between maternal obesity and the initiation and duration of breastfeeding, an analysis was made of the 1995 National Health Survey, in which personal interviews were conducted on a sample of private dwellings and a list sample of non-private dwellings in all States and Territories of Australia. Mothers between the ages of 17 and 50 years (n=1991) with children under the age of 4 years in 1995 participated in the study. Of the group of mothers with a body mass index (BMI) of 20-25, 89.2% initiated breastfeeding, compared with 82.3% of mothers with a BMI of 30 or more. There was also a significant difference between the mean and median duration of breastfeeding of obese and non-obese mothers. These differences remained significant when maternal smoking, age and other sociodemographic factors were taken into consideration. Health professionals should be aware that obese women may be at increased risk of not breastfeeding or stopping breastfeeding prematurely.

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Volpe EM, Bear M. Enhancing breastfeeding initiation in adolescent mothers through the Breastfeeding Educated and Supported Teen (BEST) Club. *J Hum Lact* 2000;16:196-200

The purpose of this study was to determine if specific breastfeeding education, provided by a lactation consultant in group classes for pregnant adolescents, would increase breastfeeding initiation among students enrolled in a high school adolescent pregnancy program. 91 pregnant adolescents participated in the study and were divided into two groups: those who did not receive specific breastfeeding education and those who did. There were no significant differences in breastfeeding initiation with regard to age or ethnicity. Of the 48 adolescents who received no specific education, 7 (14.6%) initiated breastfeeding. Of the 43 adolescents in the education group, 28 (65.1%) initiated breastfeeding, which indicates a significant difference between groups with regard to infant feeding choice. The results of this study indicate that targeted educational programmes designed for the adolescent learner may be successful in improving

breastfeeding initiation in this population.

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Lu MC, Lange L, Slusser W, Hamilton J, Halfon N. Provider encouragement of breastfeeding: evidence from a national survey. *Obstet Gynecol* 2001;97:290-5

To examine the influence of provider encouragement on breastfeeding among women of different social and ethnic backgrounds in the United States, a nationally representative sample of 2,017 parents with children younger than 3 years was surveyed by telephone. The responses of the 1,229 women interviewed were included in the analysis. Respondents were asked to recall whether their physicians or nurses had encouraged or discouraged them from breastfeeding. 34.4% of respondents did not initiate breastfeeding. 73.2% of women reported having been encouraged by their physicians or nurses to breastfeed; 74.6% of women who were encouraged initiated breastfeeding, compared with only 43.2% of those who were not encouraged. Women who were encouraged to breastfeed were more than 4 times as likely to initiate breastfeeding as women who did not receive encouragement. The influence of provider encouragement was significant across all strata of the sample. In populations traditionally less likely to breastfeed, provider encouragement significantly increased breastfeeding initiation, by more than 3-fold among low-income, young, and less-educated women; by nearly 5-fold among black women; and by nearly 11-fold among single women.

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Sheehan A. A comparison of two methods of antenatal breastfeeding education. *Midwifery* 1999;15:274-82

The objective of this study was to compare a woman-centered antenatal breastfeeding programme based on concepts of peer and husband/partner support with a control group, who received antenatal breastfeeding education led by a midwife childbirth educator. In a large private hospital in Sydney, Australia, 154 highly educated primiparous women who attended childbirth classes were assigned to the control group (n=86) or to the experimental group (n=68) in which representatives of the Nursing Mothers Association of Australia, their male partners and a mother who was willing to demonstrate breastfeeding provided the intervention. No differences were found between groups in relation to maternal perceptions of success or duration of breastfeeding, which was overall very high when compared to previously reported breastfeeding duration rates in Australia. This research found that a peer-led model of breastfeeding education was as effective as a midwife-led group in producing breastfeeding initiation and duration rates higher than others previously reported, with the potential to enhance social support networks.

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McCarthy JJ, Posey BL. Methadone levels in human milk. *J Hum Lact* 2000;16:115-20

Pregnant women on methadone maintenance therapy frequently want to nurse yet are often discouraged from doing so because of concern about the amount of methadone that may be in the breastmilk. This study analyzed the levels of methadone in the milk of nursing mothers and compared these levels to those in other published reports. 14 breastmilk samples were obtained

from 8 women maintained on methadone doses of 25 to 180 mg/day. Methadone levels in milk ranged from 27 to 260 ng/ml, with a mean level for the group of 95 ng/ml. The mean daily methadone ingestion, based on a newborn intake of 475 ml/day of breastmilk, was 0.05 mg/day. This level is small and consistent with those in other published reports. Breastfeeding duration ranged from 2.5 to 21 months. There were no adverse effects associated with breastfeeding or weaning. This study supports the compatibility of breastfeeding and methadone maintenance therapy.

Riordan J, Gross A, Angeron J, Krumwiede B, Melin J. The effect of labor pain relief medication on neonatal suckling and breastfeeding duration. *J Hum Lact* 2000;16:7-12

The relationship of labour pain relief medications with neonatal suckling and breastfeeding duration was examined in 129 mothers delivering vaginally. Suckling scores for intravenous and epidural groups were similar while those who received a combination of both intravenous and epidural medications were lower. Breastfeeding duration did not differ between unmedicated and medicated groups; however, dyads with low suckling scores weaned earlier than those with medium or high scores. Labour pain relief medications diminish early suckling but are not associated with duration of breastfeeding through 6 weeks postpartum.

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Hoseth E, Joergensen A, Ebbesen F, Moeller M. Blood glucose levels in a population of healthy, breast fed, term infants of appropriate size for gestational age. *Arch Dis Child Fetal Neonatal Ed* 2000;83:F117-9

The blood glucose concentration of 223 healthy, breastfed, term infants of appropriate size for gestational age was determined at different times (between one and 96 hours) after delivery. One sample of blood glucose was taken from each infant independent of the feeding time. Infants suspected of suffering from intrapartum hypoxia were excluded. Blood glucose concentration one hour after delivery was not significantly lower than at any other time. Only two infants had low blood glucose concentrations one hour after delivery (1.4 and 1.9 mmol/l). There were no significant differences in blood glucose concentration between sexes, methods of delivery, infants delivered with or without analgesia, and infants born to smokers or non-smokers, and there was no further correlation between blood glucose concentration and gestational age, umbilical cord pH, or Apgar score. The authors conclude that very few healthy, breastfed, term infants of appropriate size for gestational age have low blood glucose levels, and there is no indication for blood glucose monitoring in these infants.

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Meier PP, Brown LP, Hurst NM, Spatz DL, Engstrom JL, Borucki LC, Krouse AM. Nipple shields for preterm infants: effect on milk transfer and duration of breastfeeding. *J Hum Lact* 2000;16:106-14

This study reports breastfeeding outcomes for 34 preterm infants whose mothers used ultrathin silicone nipple shields to increase milk transfer. Mean milk transfer was compared for two consecutive breastfeedings with and without the nipple shield. Total duration of breastfeeding was calculated for a maximum of 365 days. Mean milk

transfer was significantly greater for feedings with the nipple shield (18.4 ml vs. 3.9 ml), with all 34 infants consuming more milk with the nipple shield in place. Mean duration of nipple shield use was 32.5 days, and mean duration of breastfeeding was 169.4 days; no association between these variables was noted. The nipple shield was used for 24.3% of the total breastfeeding experience, with no significant association between the percentage of time the shield was used and total duration of breastfeeding. These findings are the first to indicate that nipple shield use increases milk intake without decreasing total duration of breastfeeding for preterm infants.

Killersreiter B, Grimmer I, Buhner C, Dudenhausen JW, Obladen M. Early cessation of breastmilk feeding in very low birthweight infants. *Early Hum Dev* 2001;60:193-205

This investigation was carried out to assess the duration of breastmilk feeding and to analyze risk factors for early cessation of breastmilk feeding in term and very preterm infants. A cohort study was performed in 89 consecutive very low birthweight (VLBW) infants (<1500 g) who survived for at least one week, and 177 term infants with birthweights >2500 g born in the same hospital matched for gender and multiplicity. Median duration of breastmilk feeding, as determined from charts and questionnaires mailed to the mothers at 6 and 12 months corrected age, was 36 days in VLBW infants, compared to 112 days in control infants. In both VLBW and control infants, smoking during pregnancy, low maternal and paternal school education were each significantly associated with short duration of breastmilk feeding. In VLBW infants, multiple pregnancy and gestational age <29 weeks were each associated with prolonged breastmilk feeding, as were maternal age >35 years and spontaneous pregnancy (as opposed to pregnancy following infertility treatment) in term infants. Multivariate analysis revealed that VLBW, smoking and low parental school education were independent negative predictors of breastmilk feeding. While these results emphasize the need for special support of VLBW infant mothers promoting lactation, the relationships between smoking, school education and breastmilk feeding in both strata show that efforts to increase breastmilk feeding require a public health perspective.

Cohen RJ, Brown KH, Rivera LL, Dewey KG. Exclusively breastfed, low birthweight term infants do not need supplemental water. *Acta Paediatr* 2000;89:550-2

Breastmilk intake, urine volume and urine-specific gravity (USG) of exclusively breastfed, low birthweight (LBW) term male infants in Honduras were measured during 8-hour periods at 2 (n=59) and 8 (n=68) weeks of age. Ambient temperature was 22-36 C° and relative humidity was 37-86%. Maximum USG ranged from 1.001 to 1.012, all within normal limits. It is concluded that supplemental water is not required for exclusively breastfed, LBW term infants, even in hot conditions.

Almroth S, Mohale M, Latham MC. Unnecessary water supplementation for babies: grandmothers blame clinics. *Acta Paediatr* 2000;89:1408-13

This study was designed to obtain policy- and programme-relevant data on exclusive breastfeeding in Lesotho. Qualitative information was obtained through focus groups and individual interviews with mothers, grandmothers and nurses. This was complemented with quantitative data collected through a clinic-based survey of mothers. The qualitative and the quantitative findings consistently converged, illustrating a culture of infant feeding in which breastfeeding was central, but exclusive breastfeeding was an unknown concept and not practised. Grandmothers seemed to be more in tune with the ideal of exclusive breastfeeding as they had given their young infants thin gruel only occasionally. Contemporary mothers, in contrast, regularly gave their young infants water. Mothers and grandmothers frequently cited nurses as the source of advice for giving water. Grandmothers were adamant in pointing out that they had never given water to their own young infants and asserted that they avoided giving it to their grandchildren as they considered it unnecessary and harmful. According to the grandmothers, water supplementation was a new practice that had been introduced through the clinics. Efforts to discourage water supplementation and encourage exclusive breastfeeding in this setting need to be directed both at mothers and health providers.

Margolis LH, Schwartz JB. The relationship between the timing of maternal postpartum hospital discharge and breastfeeding. *J Hum Lact* 2000;16:121-8

This study examines the association between discharge timing and breastfeeding, controlling for demographic, economic, and health factors that influence both. The results demonstrate that mothers who spent 1 night in the hospital were almost twice as likely to breastfeed than mothers who spent 2 or 3 nights in the hospital. Instead of basing discharge solely on predetermined rules, derived largely from financial criteria, attention to the decision-making process should be an important part of newborn discharge policies.

Hall RT, Simon S, Smith MT. Readmission of breastfed infants in the first 2 weeks of life. *J Perinatol* 2000;20:432-7

The purpose of the study was to look at factors associated with readmission of breastfeeding infants for jaundice and/or dehydration. The records of 125 breastfeeding infants who were admitted to hospital from 1995 to 1997 in the first 2 weeks of life with diagnoses of jaundice, dehydration, or feeding problems were reviewed. Infants with hemolytic disease, infection, or other underlying causes were excluded. This study confirms that prematurity and short hospital stay (less than 3 days) are risk factors for readmission of breastfeeding infants with jaundice and/or dehydration.

Kramer MS, Chalmers B, Hodnett ED, Sevkovskaya Z, Dzikovich I, Shapiro S, Collet JP, Vanilovich I, Mezen I, Ducruet T, Shishko G, Zubovich V, Mknuk D, Gluchanina E, Dombrovskiy V, Ustinovitch A, Kot T, Bogdanovich N, Ovchinnikova L, Helsing E, for the PROBIT Study Group. Promotion of Breastfeeding Intervention Trial (PROBIT): a randomized trial in the Republic of Belarus. *JAMA* 2001;285:413-20

The objective of this study was to assess the effects of breastfeeding promotion on breastfeeding duration and exclusivity and gastrointestinal and respiratory infection and atopic eczema among infants. 31 maternity hospitals and polyclinics in the Republic of Belarus were randomly assigned to receive an experimental intervention (n=16) modeled on the Baby-Friendly Hospital Initiative (BFHI) of the WHO and UNICEF, which emphasizes health care worker assistance with initiating and maintaining breastfeeding and lactation and postnatal breastfeeding support, or a control intervention (n=15) of continuing usual infant feeding practices and policies. A total of 17,046 mother-infant pairs consisting of full-term singleton infants weighing at least 2500 g and their healthy mothers who intended to breastfeed were followed-up for 12 months; 16,491 (96.7%) completed the entire follow-up. Infants from the intervention sites were significantly more likely than control infants to be breastfed to any degree at 12 months (19.7% vs 11.4%), were more likely to be exclusively breastfed at 3 months (43.3% vs 6.4%) and at 6 months (7.9% vs 0.6%), and had a significant reduction in the risk of one or more gastrointestinal tract infections (9.1% vs 13.2%) and of atopic eczema (3.3% vs 6.3%), but no significant reduction in respiratory tract infection. Implementation of the BFHI increases the duration and degree (exclusivity) of breastfeeding and decreases the risk of gastrointestinal tract infection and atopic eczema in the first year of life. These results provide a solid scientific underpinning for future interventions to promote breastfeeding.

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Shariff F, Levitt C, Kaczorowski J, Wakefield J, Dawson H, Sheehan D, Sellors J. Workshop to implement the baby-friendly office initiative. Effect on community physicians' offices. Can Fam Physician 2000;46:1090-7

To assess the effect of a self-appraisal questionnaire and a workshop for office staff in promoting the "10 Steps to Baby-Friendly Office" in Canada, an early intervention group of primary care pediatricians attended the workshop in October 1997 (n=23) and a late-intervention group in April 1998 (n=23). Self-appraisals were completed before the workshops by all participants in October 1997, by 37 offices in April 1998, and by 34 offices in October 1998. Of the 34 offices completing all assessments, none followed all 10 steps. Initial mean score was 4.4 steps. The workshop intervention improved overall mean scores from 4.3 to 5.6. The self-appraisal tool alone had no effect on scores. Areas of improvement were noted in providing information to patients and displaying posters to promote breastfeeding. Key steps, such as not advertising breastmilk substitutes and not distributing free formula, did not change. The workshop effected a modest but positive change in breastfeeding promotion. The change was maintained at 6 and 12 months after the intervention.

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Porteous R, Kaufman K, Rush J. The effect of individualized professional support on duration of breastfeeding: a randomized controlled trial. J Hum Lact 2000;16:303-8

A trial was conducted with 51 women randomly assigned either to a conventional nursing care group or to an individualized professional support group to examine the effect of professional support on breastfeeding status at 4 weeks postpartum. All participants identified themselves as

having no prior support. At 4 weeks postpartum, 17 out of 25 (68%) and 26 out of 26 (100%) women in the control and intervention groups, respectively, continued to breastfeed. Results indicate that postpartum care augmented with individualized professional support commenced in the hospital and continued in the community, significantly increases the duration of breastfeeding among women who identify themselves as being without support for the first month postpartum.

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Hoddinott P, Pill R, Hood K. Identifying which women will stop breastfeeding before three months in primary care: a pragmatic study. Br J Gen Pract 2000;50:888-91

In Britain only 42% of women who initiate breastfeeding are still breastfeeding at four months, despite well documented health benefits. To explore whether sociodemographic and social support information collected routinely by health visitors at the new birth assessment can help predict which women will give up breastfeeding before three months, a survey of 279 consecutive births in three general practices was carried out in an inner-London borough. Health visitors collected sociodemographic, infant feeding, and social support data at the new birth assessment 10 to 14 days after birth and at an immunisation visit at three to four months after birth. Three variables were found to be significantly associated with breastfeeding at three months. Younger women and women with moderate to poor emotional support as assessed by their health visitor were less likely to still be breastfeeding at three months. White women who left full-time education at age 16 years or below were least likely to be breastfeeding at three months but educational level was not a significant predictor for women from other ethnic backgrounds. This pragmatic study illustrates how information collected during routine clinical care by health visitors can help predict which women will give up breastfeeding before three months. This could be useful to identify women whose social support needs are not being met and who may benefit from local initiatives.

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McInnes RJ, Love JG, Stone DH. Evaluation of a community-based intervention to increase breastfeeding prevalence. J Public Health Med 2000;22:138-45

The aim of the study was to determine whether peer counselling in the antenatal and post-natal period would increase the prevalence and duration of breastfeeding among low-income women in Glasgow. The intervention comprised peer counselling of pregnant women, support of breastfeeding mothers and local awareness-raising activities. The study subjects were all women attending the antenatal booking clinic resident in either the intervention or control area. Of the 995 women enrolled in the study, data were available for analysis on 919 (92%) to 6 weeks postnatally. At booking, 18% of the intervention group and 21% of the control group stated an intention to breastfeed. At delivery, the proportions initiating breastfeeding were 23% of the intervention subjects and 20% of the controls, and by 6 weeks post-natally, the proportion providing any breastmilk had declined to 10% of the intervention group and 8% of the control group. The breastfeeding prevalence was twice as high in the intervention group relative to the controls at delivery; by 6 weeks post-natally the difference between the two groups was not statistically significant. As



the impact of the intervention was not sustained even for the modest duration of 6 weeks postnatally, it would be premature to justify widespread use of peer support programmes to increase the prevalence of breastfeeding in socially disadvantaged communities.

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Ladzani R, Steyn NP, Nel JH. An evaluation of the effectiveness of nutrition advisers in three rural areas of northern province. S Afr Med J 2000;90:811-6

To evaluate the efficacy of a nutrition education intervention programme undertaken by trained local women (nutrition advisers) in rural villages in South Africa, a cross-sectional survey was undertaken in 1989 and again in 1992. Six trained nutrition advisers delivered nutrition education to female caregivers of infants in three study villages, but not in three control villages, between the surveys. Households were randomly selected. The response rate of households was 70% (n=1040) at baseline and 84% (n=1263) after intervention. The percentage of women who initiated breastfeeding on the day of birth improved significantly in the study area from 60% to 90%. The frequency of feeding infants at 6 months improved too. The introduction of solid foods to infants on the first day of life decreased from 26.5% to 6.3% in the study area. A nutrition education programme undertaken by trained local women can significantly improve breastfeeding and infant feeding practices in rural areas.

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Valdes V, Pugin E, Schooley J, Catalan S, Aravena R. Clinical support can make the difference in exclusive breastfeeding success among working women. J Trop Pediatr 2000;46:149-54

Exclusive breastfeeding has generally been considered incompatible with working separated from the infant. This prospective, controlled intervention trial conducted in Chile shows that breastfeeding support, including anticipatory counselling and monthly clinical follow-up of the mother and infant, can significantly increase the percentage of infants exclusively fed with breastmilk at the end of 6 months of life. Over 80% of women from control and intervention groups expressed a desire to breastfeed for more than 6 months and more than 50% thought it was best for the infant to be exclusively breastfed for 6 months. Only 6% of women in the control group were able to complete 6 months of exclusive breastfeeding compared to 53% of those in the intervention group. The most important difference between the strategies used by both groups of mothers for maintaining exclusive breastfeeding after returning to work was that only 23% of the control group practiced milk expression compared to 66% in the intervention group. All women from the supported group stated that they would advise a friend to combine exclusive breastfeeding and work and that they would like to do so again with another child.

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Horta BL, Kramer MS, Platt RW. Maternal smoking and the risk of early weaning: a meta-analysis. Am J Public Health 2001;91:304-7

This study reviewed evidence on the effect of maternal smoking on early weaning. Analysis was restricted to studies in which infants who had never been breastfed were excluded or the prevalence of breastfeeding initiation was more than 90%. The risk for weaning before 3 months

was almost 100% higher in smoking than in nonsmoking mothers. A 50% higher adjusted risk was shown in studies that had lost-to-follow-up rates below 15% and included adequate adjustment for confounding. This review confirms that maternal smoking increases the risk of early weaning.

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Hamprecht K, Maschmann J, Vochem M, Dietz K, Speer CP, Jahn G. Epidemiology of transmission of cytomegalovirus from mother to preterm infant by breastfeeding. Lancet 2001;357:513-8

151 mothers and their 176 preterm infants (gestational age at birth <32 weeks or birthweight <1500 g) were prospectively screened for cytomegalovirus infection by serology, virus culture, and PCR. Of the 69 seronegative breastfeeding control mothers, none had detectable cytomegalovirus DNA in breastmilk and none of their 80 infants shed the virus in urine. The proportion of cytomegalovirus reactivation in seropositive breastfeeding mothers was 96% (73 of 76). The cumulative rate of transmission was 37% (27 of 73 mothers; 33 infants). The infection of the neonates had a mean incubation time of 42 days. About 50% of the infected infants had no symptoms, but four had sepsis-like symptoms. This study shows that breastfeeding as a source of postnatal cytomegalovirus infection in preterm infants has been underestimated and may be associated with a symptomatic infection. Measures, such as milk pasteurization, should be taken to inactivate the virus in breastmilk from seropositive mothers given to preterm infants.

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Jeffery BS, Mercer KG. Pretoria pasteurisation: a potential method for the reduction of postnatal mother to child transmission of the human immunodeficiency virus. J Trop Pediatr 2000;46:219-23

HIV can be transmitted by breastfeeding. The virus is inactivated by heating. A simple and inexpensive method has been devised by which expressed breastmilk may be pasteurised in a domestic setting. The method uses the principle of heat transfer from 450 ml of water heated to boiling point in an aluminum pot to a smaller volume of milk in a glass jar placed into the water. The method was tested using differing starting values for volume of milk (between 50 and 150 ml); initial temperature of milk (between 37 C° and the ambient temperature); and ambient temperature. Each of the parameters was varied within the range indicated while all other conditions were kept constant. Milk temperature remained between 56 and 62.5 C°, the ideal range, for a period ranging from 10 to 15 minutes depending on the combination of variables. The peak temperature and duration of time in the ideal temperature range was minimally sensitive to volume of milk, starting temperature of milk, and ambient temperature. This method of pasteurisation is feasible and reliable under a range of conditions, but it requires refinement and further testing under different conditions.

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Aarts C, Kylberg E, Hornell A, Hofvander Y, Gebre-Medhin M, Greiner T. How exclusive is exclusive breastfeeding? A comparison of data since birth with current status data. Int J Epidemiol 2000;29:1041-6

There is no accepted and widely used indicator for exclusive breastfeeding since birth. Indeed, the difference between "current status" data on exclusive breastfeeding

and data on "exclusive breastfeeding since birth" is rarely recognized. The authors of this paper used data from a longitudinal study on 506 mother-infant pairs in Sweden to examine this issue. The mothers completed daily recordings on infant feeding during the first 9 months after birth. A research assistant conducted fortnightly home visits with structured interviews. The results show a wide discrepancy between the data obtained from the two sources. The difference in the exclusive breastfeeding rate was 92% vs 51% at 2 months, 73% vs 30% at 4 months, and 11% vs 1.8% at 6 months. Current status indicators based on a 24-hour period may be inadequate and even misleading for many purposes.

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## Cochrane reviews

Renfrew MJ, Lang S, Woolridge MW. Early versus delayed initiation of breastfeeding. [Cochrane Database Syst Rev 2000;\(2\):CD000043](#)

It has been suggested that the timing of a baby's first breastfeed may influence breastfeeding duration and emotional attachment. The objective of this review was to assess the effects of breastfeeding soon after birth (within 30 minutes) compared to being breastfed later (between 4 to 8 hours after delivery) on the duration of breastfeeding and the mother/infant relationship. Three controlled studies involving 209 women were included. Compared with late contact and breastfeeding, early contact and breastfeeding was associated with greater communication between mother and infants in a two-minute observation period (OR 0.14, 95% CI 0.03 to 0.61). There was no difference detected for numbers of women breastfeeding after birth (OR for 12 weeks after birth 0.73, 95% CI 0.34 to 1.54). The reviewers found no differences between early and delayed contact in regard to breastfeeding duration. Early contact was associated with greater communication between mothers and infants.

Renfrew MJ, Lang S, Martin L, Woolridge MW. Feeding schedules in hospitals for newborn infants. [Cochrane Database Syst Rev 2000;\(2\):CD000090](#)

Regular breastfeeding times have been thought to help establish routines and promote infant digestion, while frequent breastfeeding has been recommended to enhance breastfeeding and infant growth. The objective of this systematic review was to assess the effects of frequent breastfeeding compared with less frequent breastfeeding in the early days after birth. Three controlled trials involving 400 women were included. There were significant methodological limitations in some of the studies. Compared to two-hourly, three-hourly or on demand breastfeeding, restricted (less frequent four-hourly breastfeeding) was associated with greater discontinuation of breastfeeding by four to six weeks postpartum (RR 1.53, 95% CI 1.08 to 2.15). Restricted breastfeeding was associated with increased incidence of sore nipples (RR 2.12, 95% CI 1.22 to 3.68), engorgement (RR 2.10, 95% CI 1.25 to 3.21) and the need to give additional formula feeds (RR 3.14, 95% CI 1.24 to 8.00). There appear to be a number of disadvantages from restricting breastfeeding to a four-hourly schedule in the first few days after birth. More frequent or on demand breastfeeding is associated with

fewer complications and longer duration of breastfeeding.

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Renfrew MJ, Lang S, Woolridge M. Oxytocin for promoting successful lactation. [Cochrane Database Syst Rev 2000;\(2\):CD000156](#)

A rise in the concentration of oxytocin causes contraction of cells around the alveoli and milk ducts, in preparation for suckling. Lactation failure may result from insufficient oxytocin. The objective of this systematic review was to assess the effects of using oral or nasal oxytocin on lactation. Four controlled trials of 639 women were included. There was potential for significant bias in these trials: restricted breastfeeding schedules may have contributed to inadequate production of milk by the participants. Sublingual and buccal preparations of oxytocin were associated with an increase in milk production. Oxytocin did not appear to increase the incidence of breast pain and 100 IU of oxytocin appeared to be slightly more beneficial than 10 IU. The reviewers conclude that an appropriate dose of sublingual or buccal oxytocin may help augment lactation where necessary. However, if women are encouraged and supported with unrestricted breastfeeding, the need for oxytocin would probably be diminished. Sikorski J, Renfrew MJ. Support for breastfeeding mothers. [Cochrane Database Syst Rev 2000;\(2\):CD001141](#)

Exclusive breastfeeding rates at three to four months remain low in many health care settings. In economically advantaged countries, young mothers, those in low-income groups or those who ceased full-time education at an early age are least likely to breastfeed. In poorer countries, more affluent groups may breastfeed less. The objective of this systematic review was to assess the effects of breastfeeding support. 13 controlled trials were included. The relative risk for stopping exclusive feeding within two months was 0.83 (95% CI 0.72 to 0.96). The relative risk for stopping breastfeeding within two months was 0.74 (95% CI 0.65 to 0.86). One more mother will breastfeed for two months if support is provided for nine women (95% CI 6 to 21). Similarly, one more woman will breastfeed exclusively if support is given to nine women (95% CI 6 to 40). It is concluded that the provision of extra support by professionals with special skills in breastfeeding appears to result in more mothers breastfeeding their babies until two months of age, and more mothers breastfeeding their babies exclusively to two months of age.

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Donnelly A, Snowden HM, Renfrew MJ, Woolridge MW. Commercial hospital discharge packs for breastfeeding women. [Cochrane Database Syst Rev 2000;\(2\):CD002075](#)

Exclusive breastfeeding until around six months of age, followed by the introduction of solids with continued breastfeeding, is considered to be the optimal nutritional start for newborn infants. To determine whether the exclusivity and duration of breastfeeding is affected by giving mothers commercial discharge packs in hospital which contain artificial formula or promotional material for artificial formula, all randomised controlled trials that examined the effects of commercial discharge packs on breastfeeding were systematically reviewed. Nine randomised controlled trials involving a total of 3,730 women were analysed. The studies only included women from North America. The analysis showed that when

comparing commercial discharge packs with any of the controls (no intervention, non-commercial pack and combinations of these), exclusive breastfeeding was reduced at all time points in the presence of commercial hospital discharge packs. There was no evidence to support the conjecture that use of hospital discharge packs causes the early termination of non-exclusive breastfeeding. Where the introduction of solid food was measured, giving a commercial pack (with or without formula) reduced the time before solid food was introduced.

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Layout: Dorothée Haller

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