Breastfeeding help!

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Breastfeeding is a learned art, and competent support for mothers is important. The answers to the questions in this article, while not being comprehensive, highlight aspects of breastfeeding that may be useful in practice.

In Australia breastfeeding initiation rates are relatively high, at about 86%; however, there is a rapid drop off with only about 54% of infants exclusively breastfed at 13 to 16 weeks of age.' The nadir for breastfeeding was in the 1970's, so most of the traditional supports - the grandmothers - have not themselves breastfed. Mothersto-be have a low exposure to breastfeeding: the average family size is only 1.9 children, and breastfeeding in public is uncommon. Hence mothers often turn to health professionals for advice in feeding their child. This article addresses some issues on breastfeeding that are often encountered in general practice.

Getting ready

Will promoting breastfeeding make those mothers who can't breastfeed feel guilty?

The number of mothers who 'cannot' breastfeed is inversely proportional to breastfeeding rates in the community. In populations with high breastfeeding rates, the proportion of mothers who are unable biologically to breastfeed is estimated to be about 5%. In our society most mothers who are not breastfeeding their infant have elected not to do so, have not accessed appropriate help early enough for breastfeeding problems, or have not responded to timely appropriate advice. A common reason for the latter would be unrecognised postnatal depression.

The most common reason given by the mother for early weaning is that she does 'not have enough milk'. With appropriate advice this problem can usually be resolved. Many mothers feel guilty about wanting to wean, and their presentation to health professionals with a feeding problem may be a subtle request for support in weaning. The dissemination of good health measures should not be muted for fear of alienating those who do not follow them. We should not be fearful of promoting optimum nutrition for infants - after all, we don't avoid telling people about the effects of passive smoking on children, or about reducing the risk of SIDS for fear of distressing families who lost a child before the risk factors were recognised.

Once a family has elected not to breastfeed, however, they need to be given appropriate information on all aspects of formula feeding. Health care facilities should have systems in place to identify those families who have made an informed decision not to breastfeed so that they are not subjected to 'education' with every new contact.

Does it really matter if a child is breastfed?

To the child? 2-3

One of the major benefits to infants of breastfeeding is protection from infection (Figure 1). Protection is afforded in a dose-response manner' and lasts beyond the period of breastfeeding. This is thought to be due to priming of the immune system. Significant protection is not limited to infants in developing countries. In developed countries, breastfeeding has been shown to protect infants from several infections.

Diarrhoea is the best studied example. Annually in Australia there are outbreaks of rotavirus gastroenteritis, and an estimated 2% of all 1 to 2-year-olds are admitted to hospital with dehydration. An early Australian study showed that exclusively breastfed or partially breastfed infants under 6 months of age had between one-half and one-third of the incidence of episodes of diarrhoea and vomiting of nonbreastfed infants.'

There are several factors in human milk that act against rotavirus. Lactadherin has been found in higher concentrations in the milk of mothers with asymptomatic infants infected with rotavirus than in those with infected infants who are symptomatic.' Lactadherin is one of a number of sugar-containing compounds in human milk that bind pathogens and prevent adherence to human cells. The pathogen is there but prevented from invading.

The evidence for long term health benefits, such as lower rates of insulin-dependent diabetes, inflammatory bowel disease and some forms of cancer, is based on more limited data. Evidence is accruing that breastfeeding has a small positive effect on the development of infants, including those delivered at term, that is not due to confounding factors.

The evidence for breastfeeding providing protection from later allergic manifestations is complex. It appears to be best for infants at high risk of allergies due to their family history who are exclusively breastfed for at least the first four months. There is no good evidence for a protective effect of an exclusion diet during pregnancy.7 In infants from atopic families it makes sense to avoid nonhuman proteins in the first six months until gut closure prevents ready absorption of intact proteins. Interestingly, evidence is accumulating that the composition of a mother's milk, including the cellular composition and activity and fatty acid composition, may affect the likelihood of atopy developing in her infant.

To the mother? 8

Breastfeeding has obvious advantages for the mother and family, including cost, convenience and lack of errors that may occur when making formula (e.g. in selection, mixing, heating and sterilising), In addition, there are several psychological and physical health advantages for the mother. Oxytocin released by suckling, besides helping with involution of the uterus, has several 'feet good' effects.

Blood pressure and cortisol levels decrease in response to breastfeeding, and oxytocin levels are inversely correlated with maternal levels of aggression and anxiety.' Looking at mothers' health in the longer term, a meta-analysis showed a protective effect of prolonged breastfeeding on premenopausal breast cancer."

Is formula nutritionally adequate?

Yes, any infant who is not being breastfed for any reason should be given a commercial, suitable from birth, infant formula. Mothers of infants over 6 months of age may elect to change to 'follow on' formulas, but there is no nutritional need for this. Commercial infant formula will meet the nutritional requirements of the infant but will not have the numerous complex biological functions of human milk.

Does breastfeeding exclude the father?"

Research in the USA and UK suggests that some fathers feel excluded when their infants are breastfed. In the Perth 1993 infant feeding study the father's preference was the most important factor influencing a woman's decision to breastfeed. Other studies have shown that the father's knowledge of infant nutrition and breastfeeding influences his support. Including fathers in antenatal and postnatal education would appear important; however, one South American study found that when fathers were included in directed prenatal and postnatal education, there was much earlier termination of breastfeeding. On reviewing their material, the authors found that videos and images relating to how Dad could help showed him at the sink or mopping the floor. Apparently that was not a hit with their clientele!

Fathers can relate to their babies in bathing, playing and settling. Presumably they are as keen as mothers are for their child to have optimum nutrition. One father told me the best thing about breastfeeding was that at night his role was simply to bring the infant to mum and then go back to sleep - no hanging around heating bottles!

Getting going
Breastfeeding is natural so it should be easy, shouldn't it?"

No, many women find that breastfeeding is difficult. It is a learned art, and hence competent support for mothers is important.

Should mothers continue breastfeeding if their infant has breast milk jaundice?

Yes, mothers should continue breastfeeding if their infant has breast milk jaundice. About two-thirds of infants have persisting jaundice due to an unidentified factor in human milk, Fortunately, they can continue feeding. This jaundice is due to an elevation in unconjugated bilirubin (<35 mmol/L conjugated bilirubin), is mild (<200 mmol/L total bihrubin), and persists beyond the usual period of physiologic jaundice (> 10 days) in an otherwise well breastfed infant with a normal newborn screening test for hypothyroidism. (Note: tests may miss hypothyroidism of pituitary origin if only thyroid stimulating hormone is measured.)

Keeping going
What are the most common reasons for early weaning?

As mentioned above, the most common reason for early weaning is that the mother does not think she has enough milk. Below are eight common misconceptions that a mother may have suggesting that her milk supply is insufficient.

- the baby is 6 weeks old and unsettled in the evening
- the mother can express only 20 mL milk after a feed
- the mother offered a complementary formula feed after a breastfeed & baby took another 100 mL
- the baby is 3 months old and has started feeding more frequently
- the baby is a five-minute guzzler
- the baby is an easy to distract 6-month-old who is more interested in everything happening around him or her than feeding (Figure 2)
- the mother no longer feels the marked change in fullness in the breast after a feed
- the baby is over 4 months old and is starting to drop centiles on the growth charts. All these situations are common, normal physiological events. They need to be assessed in their full context and do not on their own indicate that the mother has insufficient milk (Figure 3).

Should complementary feeds be given to a 6-month infant who drops a centile for length and weight? No, complementary feeds do not need to be given to a 6-month-old infant who drops a centile for length and weight. Breastfed infants usually drop a centile in length and weight at about this age if plotted on National Center for Health Statistics (NCHS) charts."" These charts were largely derived from data from artificially fed infants and are inappropriate for assessing the growth of breastfed infants. New references for appropriately breastfed infants are expected to be available from WHO in about 2003. In the interim we should anticipate anxiety that may be generated by plotting the lengths and weights of fully breastfed infants on the charts currently in use (see the box on Growth Charts of Breast Fed Infants).

Figure 2 An easy to distract feeder

Which medications boost supply?"

Medication to boost supply should be used only when physiological stimulation has been ineffective - that is, feeding the infant more frequently, expressing after feeds, using a supply line (Figure 4) and giving the mother rest. Most often metoclopramide (Maxolon, Pramin) in the dose of 10 to 15 mg three times daily for one to two weeks has been used. Some mothers do not respond to this medication, and for others supply diminishes once it is stopped. Hence tapering the dose is usually recommended. Use for longer than four weeks is not recommended as the incidence of depression increases.

Figure 3 Breast milk supply increases to meet demand

The medication domperidone (Motilium) also increases prolactin levels and does not have the central nervous system side effects such as depression. Its dose is 10 mg orally three to four times daily. There has been less experience with its use to augment milk production. The American Academy of Pediatrics has approved it for use in breastfeeding mothers, but it is not approved in Australia for this indication.

Figure 4 The use of a supply line increases the time an infant suckles,stimulating milk production by prolactin release and milk removal.

Should breastfed babies be given water or juice to avoid dehydration?

Breastfed infants should not be given water or juice. Water intoxication has been reported in infants orally supplemented with water. This is most likely to occur in neonates who have a lower glomerular filtration rate and cannot excrete a water load as rapidly as older I children. Healthy breastfed babies can adjust their intake to meet their water requirements. They should be put to the breast more often in hot weather. Hypernatraermic dehydration in exclusively breastfed infants has been reported in the following two situations: where the mother has a high sodium level in her milk and, more often, in infants who are discharged from hospital within the first few days of life without the mother establishing effective lactation. Overt signs of dehydration may not be present at discharge.

Dehydration in the neonate may occur when:

- the mother's breasts did not develop during pregnancy or postnatally
- the mother's breasts do not feel full before a feed and soft afterwards
- there are problems with attachment of the infant to the breast
- the mother had significant postpartum haemorrhage or retained products
- a term infant loses more than 7% of his/her birth weight or has not regained birth weight by day 10
- an infant feeds less than three to four hourly, develops fever, has fewer than five wet nappies in 24 hours, is jaundiced or is sleepy.

Can a mother's milk be 'too weak' for her baby?

It is rare in our culture for human milk not to provide all the nutrients required by a term healthy infant. A mother's milk may not provide sufficient nutrients, however, when an infant has:

- -vitamin K deficiency (in infants who did not received vitamin K after delivery)
- vitamin D deficiency (in infants who are not exposed to enough sunlight, which is more likely in dark skinned children)
- vitamin B12, deficiency (in infants of vegan mothers not taking vitamin B12, supplements [Figure 5] or of mothers with undiagnosed pernicious anaemia) zinc deficiency (in infants whose mother's milk is low in zinc; this is more common in premature infants [Figure 6]).

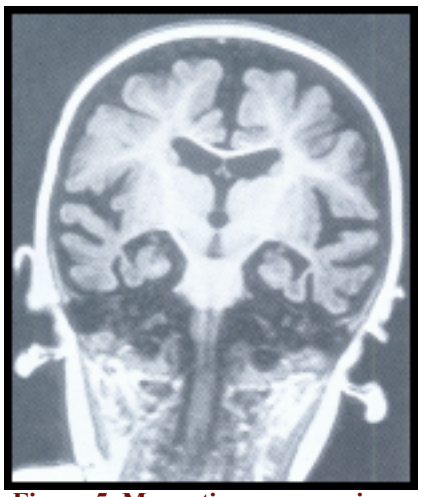


Figure 5 Magnetic resonance image showing cerebral atrophy and lack of myelination in a breastfed infant of a vegan mother who was not taking Vitamin B12 supplements

Will a baby's use of a dummy interfere with the mother's milk supply?

Several studies show that mothers who give their infant a dummy are more likely to wean early. Whether these mothers are those who are likely to feed for shorter periods, or whether there is a causal relationship, is unclear. My advice is don't use them if you don't need them. However, some unsettled infants are best soothed by sucking, and a dummy is the best option for some families, particularly when factors such as family stresses or postnatal distress make other settling strategies more difficult to apply. For these infants, using dummies judiciously while other management plans take effect is appropriate.

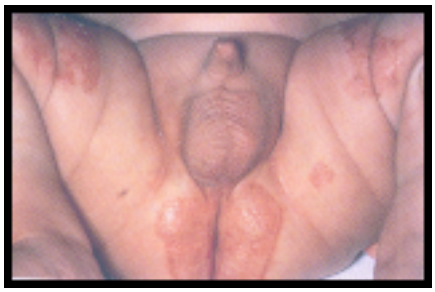


Figure 6 Acrodermatitis in a breastfed infant delivered prematurely whose mother's milk was low in zinc.

Can the lactose in cows' milk consumed by a mother unsettle her baby?

Primary lactose intolerance in the infant is extremely rare. Galactosaemia occurs in one in 40,000 infants. Consider other causes of being unsettled. Lactose is manufactured in the breast and is not affected by the mother's milk intake.

Can human milk be contaminated with chemicals?

Figure 7. Human milk banks may become available in Australia for infants with special needs, such as prematurity, and whose mothers are unable to meet their requirements.

An article on pollutants in breast milk made the provocative statement that 'breast milk, if regulated like infant formula, would commonly violate Food and Drug Administration action levels for poisonous or deleterious substances in food and could not be sold'." Human milk is sold in many countries from human milk banks (Figure 7). Except in circumstances of prolonged or intense exposure, contamination levels are low, and the advantages of breastfeeding outweigh any theoretical concerns of contamination. Except in postnatal environmental disasters, the infant would have been exposed in utero to higher amounts of natural substances in the mother's system. For substances for which the data are available, in utero exposure is more toxic than that via breastfeeding.

Infant formula may also be contaminated, either directly or via the natural composition of the water used in mixing or of the powder. For example, high fluoride or lead levels due to the water content have been reported, and soya formulas are high in aluminium and phytoestrogens, the long term effects of which are not known.

Can I give formula samples to mothers to try?

Australia is a signatory to the International Code of Marketing of Breast-Milk Substitutes. Among the articles directed to health professionals is 7.4: 'Health care workers should not give samples of infant formula to pregnant women, mothers of infants and young children, or members of their families.'"

Few problems are best managed by introducing or switching infant formula. In those rare cases where infants require complementary formula feeds or a clinical trial of a specialised formula, a sample will not provide sufficient feeds on which to make an assessment. There is evidence of long term effects on parental perception of their child's wellbeing when formula switches have been recommended." Formula introduction or switching is best avoided except if there is strong clinical evidence that it is likely to be effective.

Weaning - For how long should a baby be breastfed?

The length of time a mother breastfeeds her baby is an individual decision for the mother and her baby. The baby often takes the lead. Some discerning infants flatly refuse a bottle. Sometimes, to the mother's disappointment, the baby makes a unilateral decision to wean. This most often occurs when the infant is about 9 months of age.

The optimum length of time to exclusively breastfeed is about six months, and thereafter the baby should be given appropriate solids. The WHO recommends breastfeeding to 2 years of age. However, as noted above, a dose response effect has been shown for some benefits to the infant. Some human milk is better than none, and more is better than less.

A mother returning to work wants to wean her child. What advice should I give her?

If a mother is returning to work and requests help with weaning check that she has considered the option of partially breastfeeding. A surprising number of mothers think that breastfeeding is an all or none event. They can opt to express their milk to provide a supply for their infant while they are at work (Figure 8), or to breastfeed their infant when they are together and formula-feed when they are apart. Receiving some human milk will give infants going into care with other children some protection against the increased exposure to infectious agents.

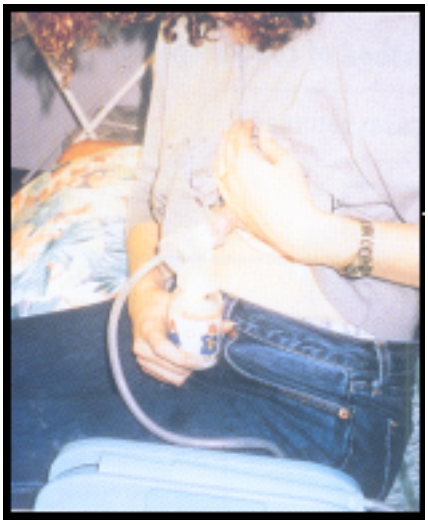


Figure 8 Information on hiring an electric breast pump can be obtained from the local Nursing Mothers of Australia Association

Some mothers who are anxious about whether their child will take a bottle elect to wean well before their return to work. Again, because of the dose-response effect, breastfeeding close to the time of their return will give their child extra protection.

Medication is not recommended for decreasing milk supply in established lactation.

For those mothers who elect to wean, doing it slowly by replacing one feed at a time will minimise the risk of developing engorgement. Babies who are developmentally ready can go straight to a cup (Figure 9) and avoid the possible complications of bottlefeeding, such as dental caries (Figure 10), increased ear infections, and increased lead levels (from dust or dirt contaminating the teat when the bottle is dropped). If a mother feels engorged she can express just sufficient milk for comfort or she can briefly feed her baby. During weaning the mother should observe her breasts for lumps and massage the breasts to remove these thus preventing blocked ducts or infection.

Figure 9 Babies who are developmentally ready can go straight from the breast to a cup

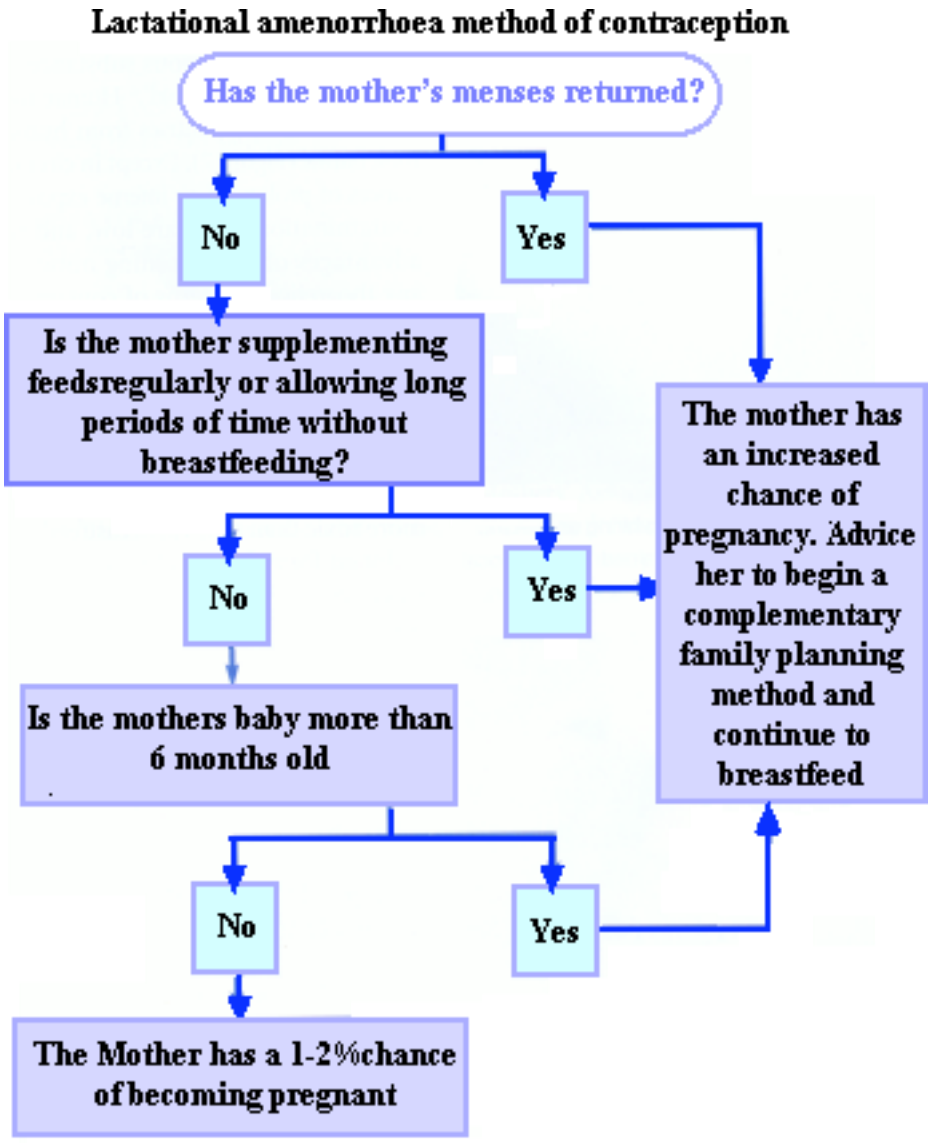
Figure 10 Dental caries resulting from bottle feeding

What is the contraceptive effect of breastfeeding?

The contraceptive effect of breastfeeding is equivalent to the oral contraceptive pill if three conditions are met:

- the mother is almost exclusively breastfeeding
- her infant is under 6 months of age
- her menses have not returned (see the flowchart below).

If these conditions are not met and the mother wishes to avoid becoming pregnant, other forms of contraception are needed.



Summary

Women who are breastfeeding often seek advice from their general practitioners. By being aware of the natural history and variations in lactation, general practitioners can help women prevent and manage problems with breastfeeding.

Resources are available to provide additional support to breastfeeding mothers, including counsellors from the Nursing Mothers' Association of Australia , lactation consultants, early childhood clinics and numerous publications (see the reference below).

GROWTH CHARTS OF BREAST FED INFANTS

When compared with the National Center for Health Statistics (NCHS)-WHO reference (derived from data from mainly artificially fed infants breastfed infants are usually smaller in the second half of their first year (Figure A). 15 This may be seen more clearly in the growth charts of length and weight quartiles (Figures B to E). With rare exceptions, notably hydrocephalus, an infant's head circumference reflects is or her brain growth. It is not surprising that the head circumference of breastfed infants is greater than that of formula-fed infants (Figures F and G) because human milk is rich in components necessary to grow and develop human brains?

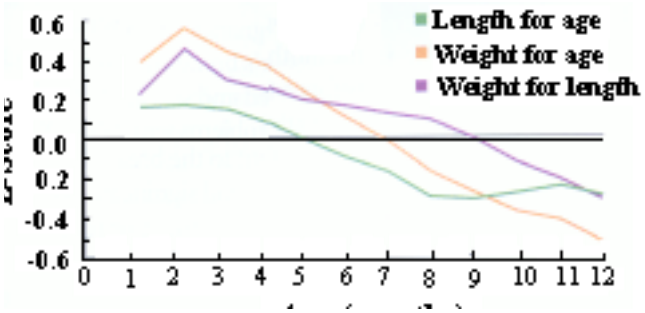
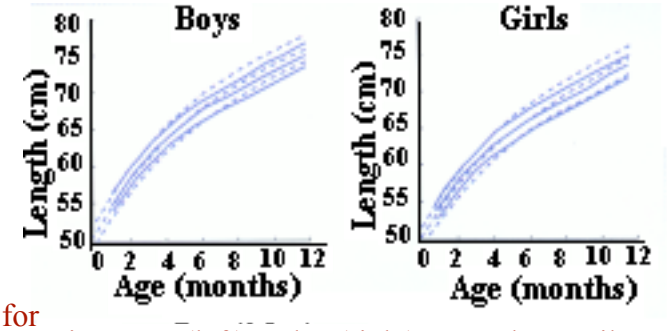
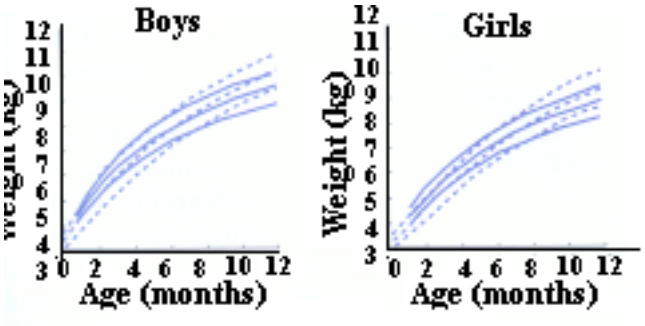


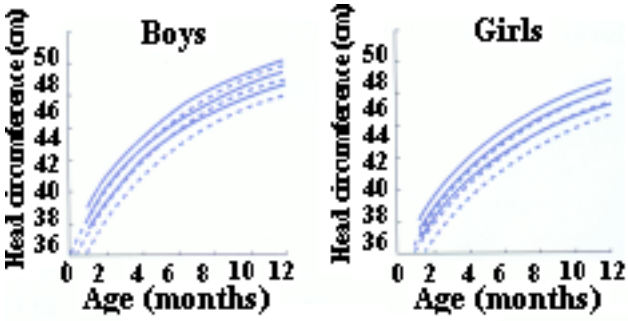
Figure A. Mean Z-scores of infants breastfed for at least 12 months relative to the NCHS-WHO reference." Note that children today are born larger than those born when the original NCHS-WHO data were collected (1929 to 1975) but at between 5 and 7 months of age both the length and weight centiles; cross the 0 line. Thus breastfed infants are smaller in the second half of,their first year than reference children.



Figures B (left) and C (right). Length quartiles of infants breastfed at least 12 months (n=226) compared with the current NCHS-WHO reference.



Figures D (left) and E (right). Weight quartiles of infants breastfed at least 12 months (n=226) compared with the current NCHSWHO reference.



Figures F (left) and G (right). Head circumference quartiles of infants breastfed at least 12 months (n=226) compared with the current NCHS-WHO reference

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Sucking triggers pituitary release of the hormones prolactin and oxytocin. Prolactin stimulates and sustains milk production. Oxytocin, transported by blood to the breast, enhances the flow of milk to the ductules. Oxytocin levels are inversely correlated with maternal aggression and anxiety.

Useful resources on breastfeeding

NHMRC. Naturally, the facts about breastfeeding. Canberra: AGPS, 1997. A companion document to the NHMRC's Infant Feeding Guidelines for Health Workers (Canberra: AGPS, 1996).

Brodribb W (ed). Breastfeeding management in Australia. East Malvern: Merrily Merrily Enterprises, 1997 (ISBN 0 949637 75 0). Available from the Nursing Mothers' Association of Australia, phone 03 9885 0855.

Child and antenatal nutrition manual ($12) and Child and antenatal nutrition bulletin ($15 annual subscription for three issues), produced by the Health Department of Western Australia and Princess Margaret Hospital for Children. Available from Department of Nutrition and Dietetics, Princess Margaret Hospital for Children, GPO Box D1 84, Perth WA 6001.