Breastfeeding – the significant other

Breastfeeding does not come naturally, it is a learned art, and for some women it does not come easily. The backing of a significant other – a competent health professional or supportive partner – can make the difference between a mother weaning and a mother having a successful breastfeeding relationship with her infant.

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The significant other (you)

Although the breastfeeding initiation rate of Australian infants is high, more than half of all infants are not receiving any human milk at 6 months of age.1 This is in spite of extensive knowledge about the deleterious effects of not breastfeeding, official recommendations of exclusive breastfeeding for about six months, and national targets of having 80% of infants being breastfed at 6 months of age.²

So why are we short changing so many infants? The literature describes many interventions during pregnancy and the neonatal period that have failed to prevent early weaning. Aside from adolescents, most women make up their mind about breastfeeding before they become pregnant, and so to be effective on a population basis, programs to promote breastfeeding need to target the wider community.

What has been shown to make a difference on

an individual basis is 'the significant other' - a competent health professional3 or a supportive partner.4 With small family sizes and the nadir of breastfeeding being in the 1970s, mothers often have no experience of babies being breastfed and they do not have their traditional supports, the grandmothers and family. So they rely more on their health professional. Breastfeeding is a learned art (Figure 1), and many women find it difficult. By having the skills to support a mother and her partner through doubts about her milk supply and to anticipate misinformation she will encounter, the health professional can make the difference between a mother weaning and a mother having a successful breastfeeding relationship with her infant.

This article addresses some common issues concerning breastfeeding that are often encountered in general practice.

- The backing of a competent health professional or a supportive partner can make the difference between a mother weaning and a mother breastfeeding her infant.
- We should not be deterred from promoting best nutrition for all infants or from ensuring that mothers who decide to wean their infant early are making an informed choice.
- Being aware of the natural history and variations in lactation is important for health professionals to help mothers prevent and manage breastfeeding problems.
- Have available contacts of others in your area who can provide additional support for mothers, such as counsellors from the Australian Breastfeeding Association, lactation consultants and early childhood nurses.

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

For any health prevention message there is a risk that some affected individuals or those who do not heed the message will be distressed. There appear to be four main reasons why this is a problem for the promotion of breastfeeding but not for other campaigns, such as stopping smoking around children:

- There is a misconception that breastfeeding doesn't matter much, particularly in countries that have clean water and commercial infant formula readily available. The reality is that we can make significant differences to the health of this nation by small changes in breastfeeding rates, and this message needs to reach the community.
- With most health prevention strategies it is expected that those with information, motivation and support can succeed; with breastfeeding there is a perception that there is a significant number of women who wish to breastfeed but can't. However, 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 biologically unable to breastfeed is estimated to be about 5%.
- You can choose when to quit smoking and if you fail you can try again until you succeed, whereas not breastfeeding is seen as a done deal. Messages aimed at those who are pregnant or breastfeeding also reach those who have abandoned breastfeeding; however, it is only the highly committed who will attempt to re-lactate.
- Breastfeeding is not just about nutrition and health; it has an emotional importance attached. Many women experience a profound loss when they stop breastfeeding.

We should not be deterred from promoting best nutrition for all infants or from ensuring that mothers who decide to wean early are making an informed choice. It is important to support a mother in providing what breast milk she can for as long as she can and to let her know that:

• there is a dose effect and she should value whatever human milk she can give her baby



- some human milk is better than none and a bit more is better than a bit less
- mothers don't have to wean just because they are returning to work. If they don't want to express milk, it is possible to combine breastfeeding when they are with their infant with formula feeding when they are not.

In our society most mothers who are not breastfeeding their infant have elected not to do so, have not accessed appropriate help for breastfeeding problems early enough, or have not responded to timely appropriate advice. A common reason for the last point is unrecognised postnatal depression.

Many mothers who want to stop breastfeeding visit their health professional with a feeding problem as a subtle request for support in weaning, often stating that they do 'not have enough milk'. With appropriate advice this problem can usually be resolved, so it is important for the health professional to establish the underlying reason for the mother's visit. Other women may have been given inappropriate advice by a health professional to stop weaning, and are later distressed to find that they need not have weaned their infant.

If a family has elected to wean their infant, however, they need to be given appropriate information on all aspects of formula feeding. Healthcare facilities should have systems in place to identify those families who have made an

Figure 1. Breastfeeding is a learned art.

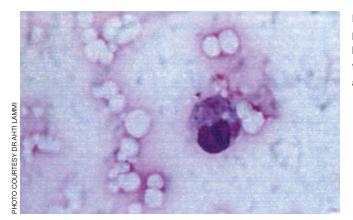


Figure 2. High powered view of human milk showing fat globules and active macrophage.

informed decision not to breastfeed so that they are not questioned about this at every new contact.

What's the fuss about breastfeeding?

Only breastfed babies receive food made from human proteins, food that forms part of their immune system to protect them from infection when they are most vulnerable and that meets the specific requirements of the developing human brain. Human milk adapts to the needs of the baby in volume and content, and responds to the mother's environment by producing components directed to the pathogens she encounters. Commercial infant formula meets the basic nutritional requirements of the infant but does not have the numerous complex biological functions of human milk.

Infection

Human milk provides ongoing protection against a range of infectious agents in many ways, not just by providing live white cells, immunoglobulins and copies of human cell membrane oligosaccharides to act as decoys for pathogen binding sites (Figure 2).

The antimicrobial activity in human milk results from protective factors working individually, additively and synergistically to target multiple early steps in pathogen replication, and to target each step with more that one antimicrobial compound.⁵ For example, high concentrations of alpha1,2-linked fucosylated glycans in human milk are associated with protection of breastfed infants against diarrhoea caused by *Campylobacter*, caliciviruses, and stable toxin of enterotoxigenic *Escherichia coli*, and moderate-to-severe diarrhoea of all causes.⁶

Human milk-fat globule protein lactadherin inhibits rotavirus binding and protects breastfed children against symptomatic rotavirus infection. There are annual outbreaks of rotavirus gastroenteritis, and an estimated 2% of all 1- to 2-year-old Australians 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-third and one-half the incidence of episodes of diarrhoea and vomiting of nonbreastfed infants.⁷

Protection from infection is afforded in a dose–response manner and lasts beyond the period of breastfeeding. For example, after adjustment for demographic variables, childcare, and smoke exposure, children aged 6 to 24 months who were fully breastfed for four to six months were shown to be at a higher risk for both pneumonia and recurrent episodes of otitis media than infants fully breastfed for six months or longer.8

The protective effect may also be long lasting. One example is *Helicobacter pylori* infection. Neonates of *H. pylori*-infected

women have large amounts of transplacentally transferred specific IgG *H. pylori* antibodies. Most lactating women who are seropositive for *H. pylori* have IgA in their colostral milk, but breastfed neonates can receive specific IgA antibodies even if their mothers are urea breath test negative. Seropositivity to *H. pylori* in subjects aged 50 years was related to the length of exclusive breastfeeding but, curiously, the protective effect was only seen in males. 11

Allergy

The evidence for breastfeeding providing protection from later allergic manifestations is complex, and studies have been confounded by numerous problems. There is no good evidence for a protective effect of an exclusion diet during pregnancy. Breastfeeding appears to work best in infants who are at high risk of allergies due to their family history and who are exclusively breastfed for at least the first four months. Shorter periods of breastfeeding are associated with later bronchial reactivity.¹²

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 (Figure 3). However, food proteins do appear in human milk in a dose–response manner, and rarely infants may become sensitised (Figure 4). The presence of food proteins in human milk varies among mothers. In one study, a quarter of mothers did not have egg protein detectable in their milk in the eight hours after egg ingestion.¹³

The Australasian Society of Clinical Immunology and Allergy position statement on allergy prevention recommends:¹⁴

- breastfeeding
- for infants at high risk, the use of a hydrolysed formula if breastfeeding is not possible
- delaying complementary foods (including normal cow's milk formula) until a child is aged at least 4 to 6 months, although a preventive

effect from this measure has only been demonstrated in infants at high risk of allergies.

It does not recommend maternal dietary restrictions during breastfeeding.

Benefits for mum

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). There are also several psychological and physical health advantages for the mother. Oxytocin released by suckling, besides helping with involution of the uterus, has several 'feel 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.15 In the longer term, on meta-analysis, prolonged breastfeeding had a protective effort on premenopausal breast cancer.16

Should mothers breastfeed if their infant has breast milk jaundice?

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 con-

tinue breastfeeding. Breast milk jaundice is due to an elevation in unconjugated bilirubin (<35 mmol/L conjugated bilirubin), is mild (<200 mmol/L total bilirubin), and persists beyond the usual period of physiological 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.)

Why is there a high drop out rate from breastfeeding in the first six months?

The most common reason given for early weaning is the belief that the mother's milk supply is inadequate. Below are eight scenarios that are often interpreted by the mother or significant other as 'not enough

- the baby is 6 weeks old and unsettled in the evening
- the mother can express only 20 mL of milk after a feed
- the mother offered a complementary formula feed after a breastfeed and the 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 a distractible 6-month-old

- who is more interested in what's happening around him or her than feeding
- the mother no longer feels the marked change in fullness in the breast after
- the baby is over 4 months old and is starting to drop centiles on growth charts (see below).

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.

Are WHO growth charts relevant for Australian children?

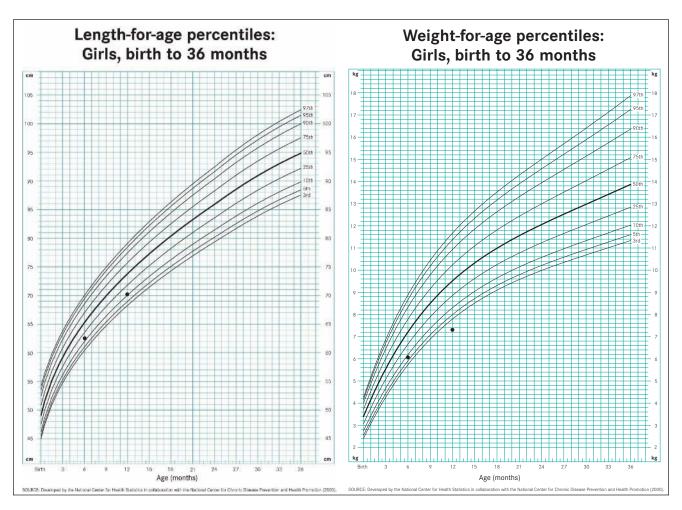
At the time of writing, children's growth has usually been plotted on the US NCHS growth charts. These charts were derived largely from data on artificially fed infants and are inappropriate for assessing the growth of breastfed infants. Healthy breastfed infants appear to drop length and weight percentiles when plotted on these graphs, which may lead to inappropriate anxiety on the part of health professionals and parents. Recently, the NHMRC has recommended that the CDC2000 growth charts be used to assess children's growth. These charts were created from data collected between



Figure 3. Contact dermatitis in a mother whose baby had consumed cow's milk based formula before breastfeeding. Not only the child, but occasionally the mother may be affected by contact with nonhuman proteins in infant formula.



Figure 4. Rarely an infant may develop an allergic reaction to nonhuman food proteins present in the mother's milk.





Figures 5a and b. Growth chart comparisons for a girl who was 62.5 cm long and 6.1 kg at 6 months of age and 70 cm long and 7.3 kg at 1 year of age. Children such as this are at risk of being the subject of inappropriate concern and unnecessary intervention because of their apparent growth faltering when plotted on a growth reference (CDC2000), not a growth standard (WHO). a (top). CDC2000 charts of length-for-age and weight-for-age. b (bottom). WHO charts of length-for-age and weight-for-age.

1963 and 1994 within the USA National Health and Nutrition Examination Survey (NHANES) program, and, again, included a low proportion of breastfed infants (as is the case in the US population). Weight data were subsequently excluded because of the burgeoning obesity problem in the US population. These graphs are equally alarming when the growth of healthy breastfed infants is plotted on them. The NCHS and CDC2000 charts are reference charts, recording the population as it was rather than representing how children should grow.

Fortunately, last year the WHO produced growth standards aimed at representing how populations of healthy children should grow. They are derived from data from infants from several countries who were free of debilitating diseases, who had access to good health care, whose families were likely to follow health recommendations, who were fed according to the WHO recommendations and whose mothers did not smoke. This major undertaking started in 1997 and involved 8500 children from widely different ethnic backgrounds and cultural settings (Brazil, Ghana, India, Norway, Oman and the USA; unfortunately, China had too many protocol violations and was excluded). According to the WHO, 'The new growth curves are expected to provide a single international standard that represents the best description of physiological growth for all children from birth to 5 years of age and to establish the breastfed infant as the normative model for growth and development.' This group of children is an appropriate standard for Australian children. Apart from pygmies who have a growth hormone receptor defect, populations of children grow very similarly to 5 years of age if they have the same access to environments that support healthy development.

About 50% of children whose growth falls below the third percentile on the

NCHS and CDC2000 charts have a disorder affecting their growth, and so it is not surprising that the weights and lengths of young infants under the third percentile on the WHO graph are higher. The 50th and 97th percentiles are similar but generally marginally higher on the WHO chart. This pattern continues for height and length during the 5 years but from about 6 months of age, on the WHO chart the weights for both sexes drops, resulting in lower BMIs. So there are dangers in plotting children's growth on the NCHS or CDC2000 charts because the growth of healthy children will appear to falter after 6 months (Figures 5a and b), causing unnecessary concern, whereas children who are too heavy may not be apparent. The use of the WHO charts will allow better detection of infants at risk of becoming over- or underweight and describe how all children show grow if their needs are met. These charts are available from the WHO website (www.who. int/childgrowth/en).

Because to date the WHO graphs cover only children to 5 years of age, there are concerns about the effect of changing to reference graphs at that age. Children's heights will go up a centile, their weights will go down a centile and their BMI percentile will be lower. This is going to cause some problems, but much fewer than those caused to date by plotting healthy children on reference charts. It is argued that if the WHO graphs were available and in use in the USA 20 years ago, the current obesity epidemic would have been detected much earlier.

How can supply be boosted?

In those rare instances when an infant appears to be getting insufficient milk, the following physiological principles should be used to help the mother–infant dyad get in synch: feeding the infant more often, expressing after feeds, using a supply line and giving the mother rest. Breasts normally produce as much milk as is needed.¹⁷ Human milk contains a peptide that

inhibits milk synthesis. This is removed as the infant feeds or milk is expressed, thereby allowing the milk to be replenished, then production switches off again as the inhibitory peptide reaccumulates. Supplementary formula should be kept to a minimum as this circumvents the system and is not registered by the mother's body. The baby should be breastfed frequently and expression used after feeds to increase production. The expressed milk can then be used as complementary feed if needed.

Medication to boost supply should be used only when physiological stimulation has been ineffective. Domperidone (Motilium) increases prolactin levels and because it does not cross the blood-brain barrier is not associated with the side effect of depression seen with metoclopramide (Maxolon, Pramin). Oral domperidone is not approved in Australia for use as a galactogue, but it has a low incidence of side effects, lacks the extrapyramidal side effects of metoclopramide, and is of proven efficacy for mothers of premature infants. The dose used is 10 mg orally three to four times daily. The mean level of domperidone excreted in the milk of women taking this amount was shown to be only 2.6 ng/mL,18 so the total amount of drug that the infant might ingest is extremely small. The dose should be tapered to avoid sudden drops in prolactin levels that might inhibit lactation.

Concerns about the use of domperidone were raised when intravenous domperidone was withdrawn following reports of cardiac arrhythmia and sudden death in patients with malignant disease who received relatively high intravenous doses for nausea and vomiting induced by cytotoxic therapy. All patients whose serum potassium was measured had low levels (between 2.0 and 3.3 mmol/L).

Herbal preparations are popular galactogues, with fenugreek being the most commonly used. Although there are some case reports on these preparations, there is not good evidence of efficacy or safety on which to recommend.



Figure 6. The chance of successful breastfeeding is reduced in women with breast dysplasia.

Early discharge and hypernatraemic dehydration

There have been a few worrying reports of exclusively breastfed newborns developing hypernatraemic dehydration. This may occur when the mother has a high sodium level in her milk or, more often, in infants who are discharged from hospital before the mother has established effective

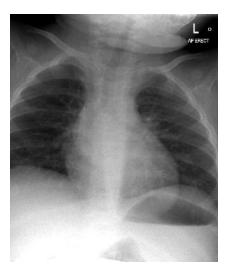


Figure 7. Chest x-ray showing rickets in a dark skinned, fully breastfed infant who presented with bronchiolitis.

lactation. Overt signs of dehydration may not be present at discharge, so infants need early follow up. Clues to possible dehydration occurring in the neonate include:

- 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 (this applies only to the first couple of months; later these changes may not be obvious)
- 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 or 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.

When concerns about dehydration occur, the mother, the infant and feeding should be assessed fully. Systemic illness or oromotor or metabolic problems in the infant and breast dysplasia (Figure 6) or nipple problems in the mother may lead to ineffective lactation. Once these

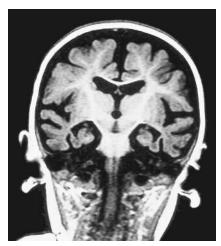


Figure 8. MRI showing lack of myelination and cerebral atrophy in a breastfed child whose vegan mother did not take vitamin B_{12} supplements.

problems have been excluded, steps should be taken to improve lactation; this often involves improving attachment and feeding more often.

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 healthy term infant. However, before reassuring a mother that her milk is more nutritious than infant formula, you need to exclude the following conditions:

- vitamin K deficiency (in infants who did not receive vitamin K after delivery)
- vitamin D deficiency (in infants who are not exposed to enough sunlight, which is more likely in dark skinned children [Figure 7])
- vitamin B₁₂ deficiency (in infants of vegan mothers not taking vitamin B₁₂ supplements [Figure 8] or of mothers with undiagnosed pernicious anaemia)
- zinc deficiency (in infants whose mother's milk is low in zinc, which is more common in premature infants).

Is breastfeeding an adequate contraceptive?

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.

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

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 relation, is unclear. My advice is don't use them if you don't need them. 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.

Could lactose intolerance cause unsettled behaviour?

Primary lactose intolerance in the infant is extremely rare. Galactosaemia occurs in one in 40,000 infants. Consider other causes of an infant being unsettled. Lactose is manufactured in the breast and is not affected by a mother's milk intake. Galactose, derived from lactose, is essential for brain development and human milk has very high lactose levels compared with that of other mammals. We should be cautious of inappropriate use of low lactose formula.

Can human milk be tainted with chemicals?

Human milk does contain chemicals; however, 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 any unnatural substances in the mother's system. For substances for which data are available, in utero exposure is more toxic than that via breastfeeding.

Infant formula may also be contaminated. This may be due to the water used to reconstitute it. High fluoride and lead levels have been reported in infant formula due to the water content. Infants may be exposed to chemicals via the normal constituents of the powder, such



Figure 9. Is your practice breastfeeding friendly?

as aluminium and phytoestrogens in soy formula, the long term effects of which are not known. Enterobacter sakazakii can survive for extended periods in powdered infant formula,19 and has caused outbreaks of neonatal meningitis, with a high mortality rate.

Should I give formula samples to mothers to try?

Australia is a signatory to the International Code of Marketing of Breast-Milk Substitutes, which aims to promote and protect breastfeeding. 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.'20

In those rare cases in which 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. When formula switches are recommended some parents develop ongoing negative perceptions of their child's wellbeing.21 Formula introduction or switching to formula is best avoided except if there is strong clinical evidence that it is likely to be effective.

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. Others may make a unilateral decision to wean, often around the age of 9 months.

The optimum time to breastfeed exclusively is about six months. Thereafter the baby should continue breastfeeding and be given appropriate solids. The WHO recommends breastfeeding to 2 years of age. Not many in our society choose to feed for that long but, as noted above, a dose-response effect has been shown for some benefits to the infant. I suggest feeding to at least 1 year of age and thereafter as long as both mother and infant enjoy it.

What advice should I give the mother returning to work who wants to wean her child?

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

Useful resources to help you be that significant other

- Breastfeeding for health professionals (NSW Government's Healthy Kids Website): www.healthykids.nsw.gov.au/infopages/2065.html
- Australian Breastfeeding Association: www.breastfeeding.asn.au/index.html
- · The Academy of Breastfeeding Medicine: www.bfmed.org
- Lawrence RA, Lawrence RM. Breastfeeding: a guide for the medical profession. Vol 6.
 St Louis: Mosby; 2005

or none event. They can opt to express their milk to provide a supply for their infant while they are at work or to breast-feed their infant when they are together and formula-feed their under 1-year-old or offer cow's milk from a cup for the over 1-year-old 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.

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 a mother's milk supply in established lactation. For mothers who elect to wean, doing it slowly by replacing one feed at a time will minimise problems. Babies who are developmentally ready can go straight to using a cup and avoid the possible complications of bottle feeding, such as dental caries, increased ear infections, and increased lead levels (from dust or dirt contaminating the teat when the bottle is dropped). If a mother's breasts are uncomfortable she can express just sufficient milk to relieve this or 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.

What's new in breastfeeding research?

Interest is being shown in the differences in the milk of individual women, and in the future more attention may be paid to specifics of the mother's intake. It is too early to make recommendations yet but some tantalising data are available:

- Protection from infection may be boosted by the provision of probiotics to the mother during pregnancy and the breastfed infant. Probiotics may boost the number of immunoglobulinsecreting cells in breastfed infants and this may positively influence gut immunity.²²
- Maternal intake of vitamin C in the diet, but not as a supplement, has been shown to determine the concentration of vitamin C in the mother's milk.
 A higher concentration of vitamin C in breast milk was associated with a reduced risk of atopy in the infant.²³
- A mother's intake of very-long-chain n-3 polyunsaturated fatty acids during pregnancy and lactation may be favourable for later mental development of her children.²⁴

Summary

Women who are breastfeeding often seek support, directly and indirectly, from their family doctor. Whether you are perceived as being supportive and knowledgeable will make a difference. Are your rooms breastfeeding friendly (Figure 9)? Do they say so? Do you have the contacts of your local additional supports on hand? These may include counsellors from the Australian Breastfeeding Association, lactation consultants and early childhood nurses. The box on page 36 lists some useful resources.

By being aware of the natural history and variations in lactation, you can help women prevent and manage breastfeeding problems. You may not have the time to watch a feed and help a mother with attachment and other difficulties, but knowing who to refer to and letting her know that you believe that what she is

doing is important will help see her through those vulnerable first six months. You can be that significant other.

A list of references is available on request to the editorial office.

DECLARATION OF INTEREST: Dr McVeagh is the Royal Australasian College of Physicians representative on the Administrative Body for the Baby Friendly Hospital Initiative in New South Wales. From 1998 to 2002 Dr McVeagh was the Community Representative appointed by the Commonwealth Government to the Advisory Panel on the Marketing in Australia of Infant Formula.

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