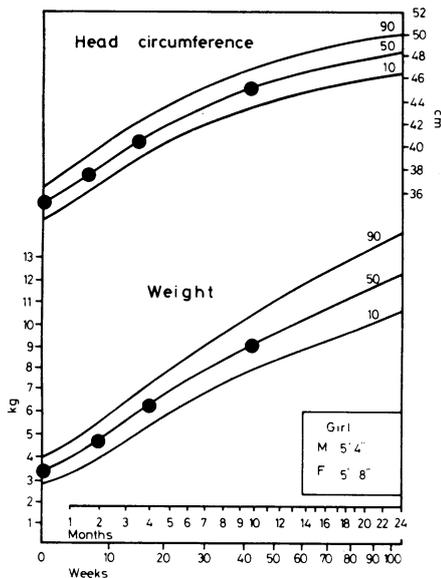


The First Year of Life

H B VALMAN

FEEDING AND FEEDING PROBLEMS



During the past few years the incidence of breast-feeding has increased sharply in many parts of Britain, while older full-cream and half-cream cows' milk preparations have been replaced by low-solute preparations containing complete vitamin requirements.

Full-term infants usually regain their birth weight between the 7th and 10th day, and thereafter the infant should gain about 20-40 g/day for the next 100 days. Infants receiving breast milk or bottled milk ("doorstep" milk) should receive vitamin supplements, particularly vitamin D, until the age of 2 years. Progress on a growth chart is the best guide to ensuring that an infant is receiving the correct amount of milk.

Breast-feeding

Breast-feeding should be encouraged.

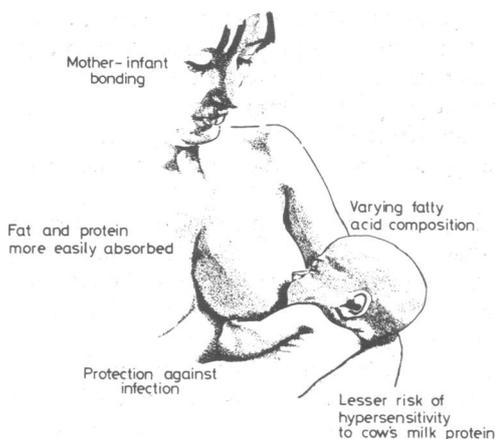
Firstly, the fat and protein of human milk are more completely absorbed than those of cows' milk. The composition of human milk varies during a feed, and these subtle changes cannot be mimicked by cows' milk preparations. The significance of these changes is unknown but may be related to the control of intake by appetite.

Secondly, although the fat composition and therefore the fatty acid composition of breast milk vary during a feed, these changes cannot be replaced exactly by cows' milk preparations, and the differences in body composition resulting from these different milks may have a long-term effect.

Thirdly, human milk contains antibodies and iron-binding protein (lactoferrin) which may protect the infant against infections. Gastroenteritis is rare in breast-fed infants.

Finally, exclusive breast-feeding (without the odd night feed of cows' milk) for the first six months of life may lessen the risk of hypersensitivity to cows' milk protein.

Breast-feeding also plays an important part in mother-infant attachment. If the mother is encouraged during the antenatal period to expect to be able to breast-feed her baby and eventually to enjoy it, she is likely to accept early difficulties with patience and understanding. The close contact and intimacy, and often supreme enjoyment, of breast-feeding provide the best "feedback" between the baby and the mother. The mother's intimate personal relationship with her baby is something which she has to work out for herself. Many feel insecure and inadequate at first and are only too glad to change to bottle feeding whenever the slightest difficulty arises. The attendant should resist such requests and instead use sympathy, understanding, and skill to encourage the mother to gain confidence in handling her own baby.



On demand feeding



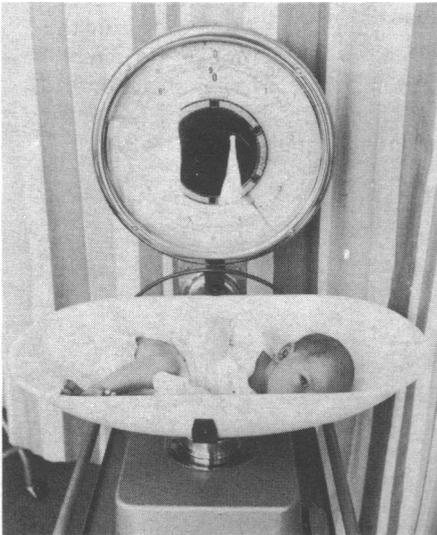
A normal infant is put to the breast for a few minutes at each side either immediately or a few hours after birth. Only a small amount of colostrum is obtained but sucking by the infant stimulates the production of more milk. Some infants are reluctant to take the nipple initially and the mother needs strong reassurance that this occurs commonly.

During the first week, and probably later, most of the feed is obtained within 2 minutes. Thus the length of time that the baby is on the breast bears little relation to the amount of milk received by the infant.

The most satisfactory method of breast-feeding is "on demand." Babies commonly feed every two or three hours during the first few weeks and these frequent feeds are a powerful stimulus to lactation. This is the main advantage of "rooming in," where the infant's cot is always by the side of the mother's bed and she can pick him up and feed him when he cries. She should be encouraged to do this. Infants who are initially fed on demand usually settle down to a regular schedule after a few weeks. Most breast-fed infants feed three hourly rather than four hourly.

After the 4th day, if the infant appears to be hungry after a feed or is progressively losing weight test feeding may be considered.

Test feeding



Test feeding should be avoided whenever possible as it can create anxiety in some mothers. The infant is weighed, without changing the napkin or clothes, before and after each feed during a 24-hour period. If the feed is deficient, putting the baby to the breast more frequently may stimulate increased lactation in the early days or the deficit may be made up with bottle feed (complementary feeding). Fortunately a well-nourished full-term infant can tolerate a degree of underfeeding without harm for several days, especially if given extra water.

Complementary feeds are rarely necessary in the first five days, and after this they should be used only when absolutely necessary. The feel of the bottle teat is quite different from that of the nipple, and when the infant is accustomed to one it may be difficult to persuade him to take from the other. The introduction of one or two artificial feeds, given by the staff at night, may be enough to break down the barrier to infection provided by breast-feeding, and there is evidence that some infants may develop eczema by being exposed to cows' milk protein before acquiring immunological competence.

Contraindications to breast-feeding

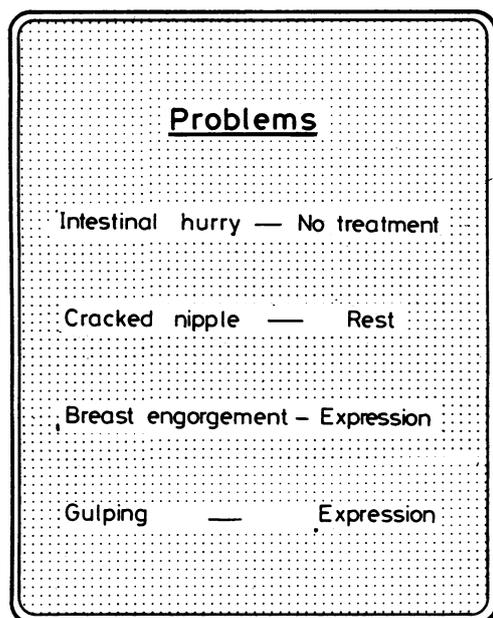


There are few contraindications to breast-feeding. Some women have a revulsion to the idea and it would be a mistake to try to persuade them, but psychiatric illness in the mother may be aggravated if the baby is taken off the breast. Severely cracked nipple is a temporary contraindication to feeding from the affected breast but feeding can continue from a breast with an early abscess while the mother is receiving an antibiotic.

No drugs should be taken by a lactating mother unless there are strong clinical indications. Most drugs that are essential for the mother are excreted in the milk in insignificant amounts, so breast-feeding should not be stopped unless there is a special reason. Antibiotics are excreted in minute amounts in the milk but there is the theoretical possibility of sensitising the infant. Warfarin, senna, barbiturates, phenytoin, digoxin, steroids, and occasional doses of acetylsalicylic acid pass into the milk in unimportant amounts. Oestrogens in oral contraceptives may reduce lactation, but the progesterone-only pill is an effective contraceptive and has no effect on lactation. A mother receiving carbimazole may continue to breast-feed provided that the infant's plasma thyroxine concentration is monitored.

Mothers receiving radioactive antithyroid treatment or cytotoxic drugs should not breast-feed. Lithium given to the mother may cause hypotonia, hypothermia, and episodes of cyanosis in a breast-fed infant.

Problems with breast feeding



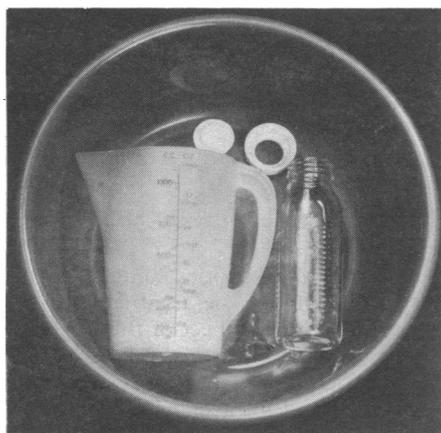
On the 4th or 5th day, when there is a plentiful supply of breast milk, the infant may take up to eight feeds or more a day. Intestinal hurry is common at this stage and frequent loose green stools are common. Conversely, some normal breast-fed infants pass stools only once a week when they reach the age of a few weeks, and this also requires no treatment.

Cracked nipple is usually due to malplacement of the infant on the nipple so that the whole of the pigmented area is not in the infant's mouth. Pulling the infant off the breast abruptly is another cause. The infant should be taken off that breast for a day or so and a bland ointment, such as lanolin, placed on the nipple every few hours.

Feeding on demand usually prevents maternal breast engorgement, which can occur towards the end of the first week of the baby's life. This is easily alleviated by expression after feeding, preferably with an electric pump. If engorgement has already occurred the help of an experienced midwife is necessary.

During the first feed of the morning milk may spurt quickly from the breast and a ravenous infant may swallow excessive air, which may be regurgitated later with milk. This is often accompanied by severe crying. It can be alleviated by manual expression of the first 30 ml of milk, which can be given to the infant later if necessary.

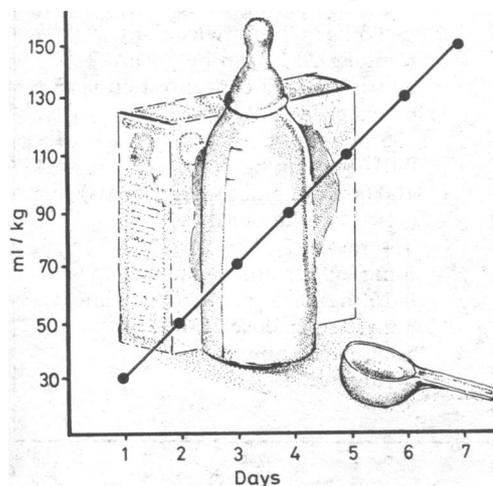
Bottle-feeding



All the cows' milk preparations available in Britain are the low-solute type. These have sodium and protein concentrations similar to those of human milk. Unlike the older cows' milk preparations, they are less likely to be associated with hypernatraemia, hypocalcaemia, and obesity. The powder should be measured accurately, avoiding heaped or packed scoops. The instructions on each packet must be followed. Some preparations are available in liquid form and although heavier parcels need to be carried from the clinic, the milk can be measured out more accurately. Ready-to-feed bottles are used in most obstetric units but cannot be obtained for use at home except under special circumstances.

If feeds are made up for a 24-hour period they should be stored in the refrigerator. Bottles can be sterilised in dilute hypochlorite solution, but processing in an autoclave is the best method in hospitals. The size of the hole in the teat should allow individual drops of milk to follow each other quickly when the bottle is inverted.

On-demand feeding



Feeds are usually given on demand or three or four hourly. With the newer cows' milk preparations most infants need to be fed every three hours. Mothers who have had infants fed on the older preparations will be disappointed with the newer ones as the infants sleep for a shorter time before demanding a feed. But the milk must not be made up to a stronger concentration than that recommended on the packet. Few babies can manage without a night feed for the first few months.

A normal full-term infant receives 30 ml of milk per kg body weight during the first day of feeding by bottle. Feeds should be increased by 20 ml/kg each day until a maximum of 150 ml/kg is reached on the 7th day of feeding. If for any reason the baby needs more fluid water can be added to the feeds to increase the volume up to the maximum requirement for day 7. Underfeeding causes small amounts of green mucus to be passed frequently, but this is more likely to be found with breast-fed than with bottle-fed infants.

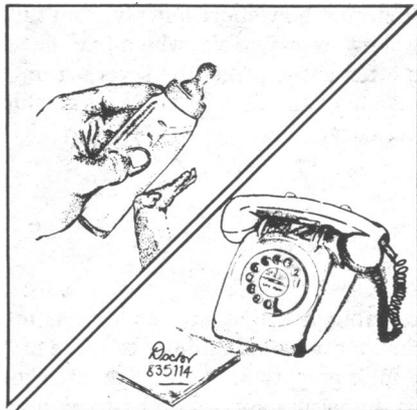
Problems with bottle-feeding



If the hole in the teat is too small the infant may swallow excessive air during the feed and regurgitate it later with milk accompanied by bouts of crying. It is valuable to observe the rate at which the drops of milk are formed when the infant's bottle is inverted. The drops should follow each other quickly but there should not be a continuous stream. If the hole is too small it may be made larger with a hot needle.

By taking a careful history it is usually possible to determine the likely cause of any symptoms. If growth is poor he needs more frequent or larger feeds. If the weather is hot and the infant is not receiving extra water he may be thirsty and should have additional water. Rarely he may be too greedy, and then he needs a small dose of a mild sedative such as chloral hydrate 30 mg before alternate feeds for a week only. Mothers tend to use gripe water as a panacea, not realising that it contains only a mild acid and base, which produce carbon dioxide in the stomach, and alcohol, which sedates the infant.

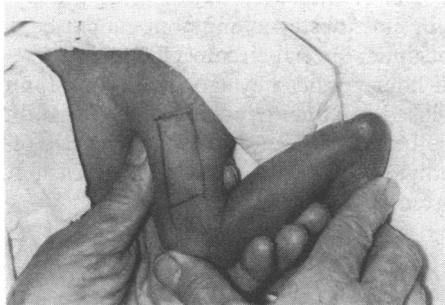
Reluctance to feed



In an infant who has fed normally before, reluctance to feed may be a dangerous symptom. It may be due to any severe disease such as congenital heart disease or a lower respiratory tract infection. On the other hand, when an infant has a mild upper respiratory tract infection his nose may become blocked with mucus, making it difficult for him to feed. Thrush produces white plaques on the buccal mucosa and tongue, which become sore.

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Selected drugs in the newborn



Intestinal absorption is variable and regurgitation of antibiotics common, so the intramuscular or intravenous route should always be used initially. Intramuscular injections are given into the upper lateral aspect of the thigh. Schemes for rotation of sites are essential to prevent local necrosis and to avoid further injections being given into a relatively avascular area. Drugs are usually given intramuscularly or orally every eight hours and intravenously by slow bolus injection every four or six hours. We have used one dosage *not* adjusted for gestational or postnatal age as it has proved safe in our hands.

Ampicillin	(oral, IM, or IV)	100 mg/kg/24 h
Chloral hydrate	(oral)	30 mg/kg/24 h
Cloxacillin	(oral, IM, or IV)	100 mg/kg/24 h
Diazepam	(IM or IV)	0.04-0.2 mg/kg once only
Ferrous sulphate	(oral)	≤ 2.5 kg: 30 mg twice daily; > 2.5 kg: 60 mg twice daily
Gentamicin	(IM or IV)	6 mg/kg/24 h (can be given 12-hourly). Blood concentration <i>must</i> be checked
Hyaluronidase	(IM)	300 units/dose
Naloxone	(IM or IV)	0.01-0.02 mg/kg per dose
Nystatin	(oral)	100 000 units/dose (after feeds)
Paraldehyde	(IM)	0.1-0.2 ml/kg per dose
Benzylpenicillin	(IM or IV)	150 mg/kg/24 h
Phenobarbitone	(IM)	3 mg/kg per dose 12-hourly
Phenytoin	IV:	8-16 mg/kg per dose slowly once;
	IM:	3 mg/kg per dose 12-hourly;
	oral:	5 mg/kg/24 hours
Triclofos	(oral)	50 mg/kg/24 h

