

# Acknowledgements

These guidelines have been developed by TRIFIC (The Rotherham Infant Feeding Initiatives Committee). These are an update of the guidelines produced in 1992 and revised in 2000. This third update has taken place in 2007 to ensure continued accuracy. Hopefully this extensively revised format will provide a comprehensive, accessible source of information.

We gratefully acknowledge the contributions from the variety of professionals with a working interest in Infant Feeding who were involved in the past editions.

Many thanks to those who were involved with this edition:

Rebecca Atchinson	Public Health Specialist, Rotherham PCT
Eileen Atwood	Dental Health Education Officer, Rotherham PCT
Christina Dezelak	Medicines Information Service, Rotherham Hospitals NHS Foundation Trust
Catherine Dyson	Health Visitor, Rotherham PCT
Gail Hallsworth	NCT BFC & Central Sure Start BF Peer Support Co-ordinator
Jane O'Sullivan	Senior Paediatric Dietitian, Rotherham Hospitals NHS Foundation Trust
Sheila Turner	Community Dietitian, Rotherham PCT
Sue Winterburn	Health Visitor, Rotherham PCT
Hazel Woodcock	Infant Feeding Co-ordinator, Obstetrics and Gynaecology, Rotherham NHS Foundation Trust

## **TRIFIC Members LIST**

Rebecca Atchinson	Public Health Specialist, Rotherham PCT (Chair of T.R.I.F.I.C.)
Eileen Atwood	Dental Health Education Officer, Rotherham PCT
Julia Dickinson	Clinical Lead, Children & Young People Team, Rotherham PCT
Catherine Dyson	Health Visitor, Rotherham PCT
Gail Hallsworth	NCT Breastfeeding Councillor & Central Sure Start Breastfeeding Peer Support Co-ordinator
Jane O'Sullivan	Senior Paediatric Dietitian, RFT
Dr S. Suri	Consultant Community Paediatrician, RFT
Sheila Turner	Community Dietician, Rotherham PCT
Morag Walder	Health Visitor, Rotherham PCT
Hazel Woodcock	Infant Feeding Co-ordinator, RFT

Thanks also to the many people who commented on the various drafts of these guidelines.

# Executive Summary

## Introduction

The way that parents choose to feed their child in infancy is one of the most important decisions they will make. Breastfeeding has numerous short and long term benefits to mother and baby and great potential to reduce health inequalities across social class groups particularly the most deprived **(1), (2), (3)**. This has important implications, both for the individual mother and baby and on a wider public health level. It is understood that by breastfeeding a baby you are providing him/her with the best possible start in life.

Parents need to have all the facts about the benefits of breastfeeding and the risks of formula feeding (not breastfeeding), so that they can make an informed choice. Detailed information on these benefits and risks, together with Department of Health Recommendations, can be found at the start of the Breastfeeding section. Professionals need to be able to give up to date information to parents and then support them in their choice. It is important for health workers to understand the benefits of breastfeeding, and also the problems that may occur. This will help them support a mother to breastfeed for as long as she would like to.

Breastfeeding initiation rates in the UK are among the lowest in Europe, with rapid discontinuation rates for those who do start. Rates in Rotherham are lower than the national average, both at birth and at 6 weeks, as highlighted in the recent Director of Public Health Annual Report **(4)**. In 2006, five out of ten Rotherham mothers initiated breastfeeding in hospital; this figure reduces to between one to two out of ten at 6 weeks.

## Informed Choice

All mothers should have the opportunity to discuss infant feeding at least once during pregnancy, as part of their antenatal care. Several conversations with different people may have more effect than a single discussion. Different approaches work for different groups. An integrated approach of effective targeting, outreach and publicity, involving fathers and grandparents and making use of peer support networks is recommended by the Department of Health **(5)**. Informed choice should be the woman's decision based on accurate information and her preference and individual circumstances.

## Using the Guidelines

The Guidelines are split into five sections to help professionals carry out best practice, increase their knowledge and answer parents' questions. These are Breastfeeding, Formula Feeding, Preterm Infants, Weaning onto solids and Oral Health. The detailed table of contents means that each topic is easy to look up. Cross references are used when necessary.

The breastfeeding section lists the specific benefits of breastfeeding. It outlines how the normal process of breastfeeding works, together with the management of common breastfeeding problems and other issues. For ease of use, the section is split under the headings in the table of contents. Further resources, local and national contact details and additional information are in Appendix 2.

The formula feeding section provides information on the choice of infant formulae, providing comparisons between different types of formula. It investigates follow on milks and specialised formulae and the problems which can occur with formula feeding. It also discusses storage, sterilisation of equipment and new guidelines on the preparation of formulae, which should be as required, instead of several feeds made in advance.

In these revised guidelines there are separate sections on preterm infants and oral health.

The preterm infants section covers the specific benefits of breast milk for preterm infants and issues relevant to pre-maturity for breastfeeding, formula feeding and weaning.

The majority of mothers whose infants are preterm welcome information and the support to breastfeed their babies or express their milk, even if they had not intended to breastfeed originally and may not be planning to breastfeed once their baby is home.

The weaning section introduces the Department of Health recommendation that solids are not introduced until 6 months of age, for both breast and formula fed babies.

It provides information on the stages of weaning and the best time to introduce certain foods. It covers nutrition, vitamins and minerals, issues for vegetarian and ethnic minority parents and food allergy. It includes the recommendation for introduction of a cup for a baby's drinks from the age of 6 months

The oral health section covers diet, fluoride, oral hygiene (brushing teeth and attending dentists) and dummy use.

The Appendices contain extra information which will support you when speaking to women in the community setting. They are designed so that they can be replaced with updates if necessary. Information on the Rotherham Breastfeeding Policy is included – an updated policy will be sent following revision in 2007. Appendix 2 includes local as well as national resources. Full lists of resources will be available via Rotherham PCT Intranet facility in order to keep them updated.

If additional information is required on infant feeding issues it may be obtained by contacting the Infant Feeding Coordinator at Rotherham Hospital or members of the TRIFIC group. Comments are welcome and should be addressed to the Chair of TRIFIC at Rotherham Primary Care Trust.

## References

- (1) Promotion of breastfeeding initiation and duration: Evidence into practice briefing. National Institute for Health and Clinical Excellence. July 2006
- (2) Coordinated introduction of best practice for breastfeeding across a local authority area. Unicef UK Baby Friendly Initiative. Unicef UK 2005. [www.babyfriendly.org.uk](http://www.babyfriendly.org.uk) for details of studies and further information
- (3) Breastfeeding or bottle feeding – Informed Choice for professionals. Midirs in collaboration with NHS Centre for Reviews and Dissemination 2005
- (4) [Radford, J \(2005\) Rotherham PCT Director of Public Health Annual Report 2004/5 – Health for all Children in Rotherham](#)
- (5) Good practice and innovation in breastfeeding. Department of Health 265114 1p 70k Nov 2004

# Aims of the Guidelines

The aims of these guidelines are:

- To help promote good infant feeding practices through the provision of consistent, evidence based information on infant feeding to parents from the variety of health professionals whom they may have come into contact
- To reduce the confusion, anxiety and conflicting advice that often exists around infant feeding
- To support parents' to make an informed choice of feeding method for their infant
- To support the Rotherham Breastfeeding Strategy, contributing to increased rates of breastfeeding initiation and duration across Rotherham, meeting the DH target for a 2% increase in initiation rates per year
- To support the DH recommendation for weaning onto solids at 6 months
- To decrease dental decay
- To act as a resource for health professional training on infant feeding

# Key Recommendations

Infant Feeding Policy and Practice should be based on:

- Department of Health recommendations
- Unicef UK Baby Friendly Initiative – see [Appendix 1](#)
- guidance from the National Institute for Health and Clinical Excellence

All staff advising parents on infant feeding should receive appropriate training

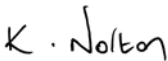
All health centres, GP surgeries, children's centres and maternity care facilities in Rotherham should have access to a copy of these guidelines

All staff advising parents on infant feeding should be aware of these guidelines and base their advice on the information in the guidelines

Signed



Dr John Radford, Director of Public Health, Rotherham PCT



Karen Norton, Head of Midwifery, RFI



Rebecca Atchinson, Chair of IRIHC

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# BREASTFEEDING

The support of health professionals is vital in enabling women who start breast feeding to continue for as long as they wish to – the longer the period of exclusive breastfeeding, the greater the health benefits to mother and baby. Department of Health Infant Feeding Recommendations, 2004 **(1)**, in line with those of the World Health Organisation, are that:

- Breast milk is the best form of nutrition for infants
- Exclusive breastfeeding is recommended for the first six months (26 weeks) of an infant's life
- Six months is the recommended age for the introduction of solid foods for infants
- Breastfeeding (and/or breastmilk substitutes if used) should continue beyond the first six months, along with appropriate types and amounts of solid foods – see [weaning](#) section.

Breastfeeding has a major role to play promoting health and preventing disease in both the short- and long-term for both infant and mother. It contributes to several current public health policy strategies and goals **(2)**:

- Addressing inequalities in health
- Breaking the cycle of deprivation
- Reducing infant mortality
- Reducing preventable infections and unnecessary paediatric admissions
- Halting the rise of obesity in under 11's
- Increasing breastfeeding initiation rates by 2% per year, focussing on women from disadvantaged groups

The benefits of breastfeeding – or rather the risks and consequences of not breastfeeding – are well researched and documented **(2), (3), (4)**. Breastfeeding provides:

- Complete nutrition for the first 6 months of life
- General development of the immune system **(5)**
- Antibodies to specific infections
- Optimal dental development
- Optimal neurological development
- Close physical and emotional contact with the mother
- Positive psychological effects for the mother. (Oxytocin and endorphins promote rest, bonding and a sense of well being and satisfaction)
- Faster return to pre-pregnancy weight

Artificial feeding increases the infant's risk of:

- Gastroenteritis
- Respiratory infection
- Otitis media
- Urinary tract infection
- Necrotising enterocolitis (preterm infants)

And possibly:

- Childhood obesity
- atopic disease
- juvenile onset insulin dependent diabetes
- high blood pressure and adverse high cholesterol levels in later life

Not breastfeeding increases the mother's risk of:

- Breast cancer
- Epithelial ovarian cancer
- Post-menopausal hip fractures

Breastfeeding for less than the recommended 6 months will still convey benefits to mother and baby compared to never breastfeeding, but the time may vary for specific benefits (4).

Other benefits relate to cost (approx £450 for one year of formula feeding, not including environmental costs of manufacture, packaging and disposal (4) and the broader issues, such as time off work for childhood illness, the impact of excess ill health on the population in general and on the health services (2).

There are no risks of breastfeeding to the infant, apart from rare metabolic conditions such as galactosaemia, mother on medication contraindicated in breastfeeding, mother HIV positive or having one of the few other infections possibly transmitted through human milk – see sections on [Drugs in breastmilk](#) and [HIV and other infections](#).

In November 2004 the Department of Health issued key recommendations for public health policy and practice in relation to breastfeeding (6).

- Education & Training for all Healthcare Staff
- Development of the Health Care Assistant role
- Interactive Antenatal Workshops
- Breastfeeding Support Centres, both health professional and volunteer led
- Peer Support Programmes
- Innovative Projects with Qualified Breastfeeding Counsellors/Supporters
- Reaching Women from Ethnic Minority Communities
- Projects for Adolescent Mothers
- Involving Partners, Mothers, Grandmothers
- Prison Outreach Programmes
- Media Promotion

In addition all healthcare facilities are required to have a breastfeeding policy. The DH highlights the UK Unicef Baby Friendly Initiative as an example of a good, standard of practice. Rotherham hospital policy and these TRIFIC guidelines are based on the BFI Standards. This is in line with NICE Clinical Guidance for Routine Postnatal Care of Mother and Baby (July 2006).

This section is designed as a practical guide for those involved in the care and support of breastfeeding mothers. It aims to promote evidence based best practice and reduce conflicting advice. The baby is referred to as 'he' for convenience, to avoid confusion with the mother.

## UNDERSTANDING THE NORMAL PROCESS OF BREASTFEEDING

An understanding of breast anatomy and the physiology of lactation are essential for the successful prevention and management of breastfeeding problems. Good information can be found in The Royal College of Midwives publication 'Successful Breastfeeding' (7).

### Breast milk

Each mother's breast milk is produced specifically according to her baby's needs – quantity and quality adjust to the baby's needs. Colostrum is produced from approximately the 20th week of pregnancy. It has high levels of protein and immunoglobulins, primarily IgA. This protects the intestinal mucosa and limits the multiplication of bacterial and viral pathogens within the digestive tract. Colostrum also has high levels of minerals and vitamins, especially A, E and K. It has a laxative effect which causes passage of meconium and helps minimise physiological jaundice.

Breast milk is a living substance, containing numerous immune factors, digestive enzymes, hormones, growth factors, transfer factors and complex inter-reactions which cannot be replicated in formula milk. For example – although the amount of iron in breastmilk is low, absorption is highly efficient, with up to 70% of available iron being absorbed. Lactoferrin, which increases iron absorption, also inhibits the growth of staphylococci, E Coli and candida, by reducing the iron available in the gut for them to multiply.

Breast milk changes in composition throughout a 24 hour period. This ensures a balanced intake to meet the baby's total nutritional need. Colour and consistency of milk will therefore vary and mothers should be reassured that whatever their milk looks like, it is perfect for their baby.

The fat content of breast milk increases throughout a feed, with milk at the start of a feed – sometimes called foremilk -having high protein and lactose levels whilst milk at the end of a feed (hindmilk) has lower protein but higher fat and energy content. However fat content also varies according to each mother, time of day and the stage of lactation. Mothers of preterm babies have milk which is higher in fat and protein than term breastmilk.

### Hormones

After the placenta has been delivered the level of progesterone drops, permitting prolactin to rise, initiating milk production. Suckling stimulates the production of hormones from the pituitary gland – prolactin for milk production and oxytocin for the let down reflex. Once lactation is established the sight, sound or thought of the baby can stimulate the let down reflex. However, anxiety or pain can interfere with the release of oxytocin. Oxytocin also aids the return of the uterus to the pre-pregnant state. Multiparous women often experience this process as painful contractions at the beginning of a feed for the first 24 – 48 hours. Oxytocin is also involved with orgasm. The lactating woman and her partner should be aware that she may let down her milk during lovemaking.

## Demand and supply

Breastfeeding works on a system of demand and supply. Each time the baby feeds the prolactin in the mother's bloodstream increases. This happens particularly at night, thus boosting the next day's supply. From about 7-10 days, while prolactin continues to be important, milk production is increasingly dependent on regular removal of milk from the breast, thus it is frequency, every 2-3 hours or so, rather than duration of feed that is important. Milk removal will only happen effectively when the baby is well latched on.

## Baby led feeding

Most babies are in an alert state after birth and show readiness to feed within the first hour. Skin to skin contact promotes early feeding, which is associated with subsequent successful breastfeeding.

Breastfeeding and milk supply work best when feeds are not timed healthy term babies may not feed very much in the first 24-48 hours – it is the quality of suckling that is important. However, some babies will feed frequently from birth. Early effective feeding is associated with the passage of meconium, the establishment of a good milk supply and a reduction in jaundice and maternal breast engorgement.

Around the third day, when mother's milk comes in, most babies have a day (and night) or two of very frequent feeding which will then settle down. Feeding should be baby led – 'demand' feeding, although this phase may lead to perceptions that breastfeeding is inherently demanding for the mother and if possible should be avoided.

While establishing breastfeeding in the first few weeks, mothers should be advised to let baby finish the first breast and then to offer the second. Once a baby is feeding and gaining weight well, some mothers find their babies feed from one breast each feed. She should be similarly reassured that if her baby requires both breasts at a feed, this is equally normal, and that he may change from one pattern to another as the volume of milk adjusts to his needs.

It should also be unnecessary to take the baby off the breast unless he is poorly positioned. Letting the baby come off the breast himself is the best way to ensure the baby has received sufficient fat rich hind milk.

Health professionals should not specify time scales to mothers, as every baby is different. Breast feeding babies generally feed 8-12 times in 24 hours, often with frequent feeds in the late afternoon/evening. This does not mean a mother has insufficient milk, but is part of the normal 24 hour variation in supply. A longer gap between feeds will usually occur at some point in the 24 hours, once breastfeeding is established. See also [Good Positioning and Attachment, Attachment](#).

## Urine and stools

Following the passage of meconium, a changing stool is usually passed between the 2nd and 4th day, indicating that milk is now passing through the digestive system. This is followed by loose yellow stools from the 3rd to 5th day onwards. By day 5 the baby should be passing at least 2 or more soft yellow stools each day and have at least 5 heavy wet nappies in 24 hours. See also [Other Issues, Weight gain](#).

## SUPPORTING THE BREASTFEEDING WOMAN

### Antenatal information

A mother's decision whether to breastfeed or not is strongly influenced by her partner and other relatives. Health workers should not assume that a woman has had adequate information to make an informed choice, without offering her an opportunity to discuss her plans. Women may change their plans during pregnancy, even if they initially express a specific feeding intention.

Mothers, partners and other family members should receive accurate and up to date information – this may include one to one discussions, antenatal classes or other venues and events such as drop in groups or workshops. Videos and leaflets are useful but should be backed up by discussion. Different approaches work best with different groups (2). ALL women should receive information about:

- The range of professional and peer support available to them, both nationally and locally – see [Appendix 2 Resources](#).
- How breastfeeding works and what to expect
- Skin to skin contact and the first breastfeed
- Good attachment and positioning and why they are important
- The risks to their own and their babies' health of not breastfeeding
- Practical issues such as cost, feeding whilst out and about, returning to work
- Possible difficulties they may encounter and how to overcome them

Ensuring parents have realistic expectations can be beneficial in establishing and maintaining breastfeeding.

### Postnatal support

“Freely available skilled help in the post-natal period will help ensure the establishment of breastfeeding” (2), (7). Positive support can build and maintain the confidence of mothers, enabling them to start and continue breastfeeding. Evidence based and consistent advice should be offered both proactively and whenever the mother requires it.

The National Infant Feeding Survey in 2000 (8) shows that ninety percent of mothers who gave up breastfeeding within six weeks of birth would have liked to continue for longer. The most common reasons why women stopped were

- baby rejected the breast
- painful breasts and nipples
- insufficient milk
- took too long/tiring

All of these suggest that appropriate support would have enabled women to carry on for longer. Women who give up breastfeeding because it did not go well will be less likely to breastfeed subsequent children.

### Leaflets and written information

The main leaflet used for routine antenatal and postnatal care in Rotherham is A Mother's Guide to Breastfeeding. See [Appendix 2](#). Mothers may also obtain useful information from breastfeeding support organisations.

Information for non English speakers – for written and pictorial information and how to contact an interpreter – see [Appendix 2 Resources](#).

### **Maternal nutrition**

The advice given to breastfeeding women about optimum food and drink intake has often been confused and conflicting. Based on research studies, current best advice is:

All mothers need to eat a healthy diet for their own general health and the demands of coping with small children. Mothers whose own diet is not optimal, either in calories or content, will still produce high quality breast milk, which will satisfy their baby's nutritional requirements. Mothers should not decrease food intake in order to lose weight whilst breastfeeding.

In general women do not need to eat or avoid particular foods during lactation. However, they should not have more than two portions of oily fish or more than one portion of shark, swordfish and marlin owing to the levels of pollutants in these fish. The Food Standards Agency advises breastfeeding women that it would be sensible to avoid eating peanuts or peanut products if they, or the baby's father or sibling, suffer from certain allergic conditions such as hay fever, asthma or eczema.

Vitamin supplements should be unnecessary if a mother's diet is well balanced. Mothers who choose to cover up or receive little exposure to sunlight may not produce Vitamin D effectively and are advised by the DoH to take a Vitamin D supplement. Mothers should not take multiple supplements from different sources as safe levels may be exceeded eg. Vitamin A. If a supplement is taken, the Vitamin A should be from betacarotene sources, not retinol. For the term baby having a good supply of breast milk from a well-nourished mother vitamin supplements are unnecessary in the first six months. See [Weaning, Vitamin Supplements](#).

Mothers should drink to thirst – there is no evidence for encouraging large quantities of fluids. If a mother's fluid intake is low, her breast milk is not affected but her urine may be concentrated and she may suffer from constipation. Milk is not necessary for the production of breast milk.

Tea, coffee and cola drinks should be drunk in moderation as caffeine passes into breast milk and excessive intake can result in restless babies. See also [Drugs, Alcohol](#).

### **Getting started, skin to skin contact, the first feed**

Research shows that babies who breastfeed soon after birth are more likely to breast feed for longer. A baby placed in skin to skin contact on his mother's abdomen after delivery is capable of crawling towards the breast, and will search and find the nipple and latch on. However, maternal opiates during labour can adversely affect both this process and the sucking behaviour of infants in the next few days. Delay of a few hours is associated with less successful breastfeeding and may be more critical for some mothers and infants than others. Frequent and prolonged skin to skin care in the early days may be useful for all babies, particularly those who did not feed well shortly

after birth. Some mothers may need support to encourage a sleepy baby to feed more regularly. See also [Understanding the normal process, Baby led feeding](#).

### Good positioning and attachment

A mother should be given a concise explanation as soon as possible after the birth about the principles of good attachment, how to recognise whether her baby is well latched on (well attached, fixed) and how to achieve this herself. She may also need support from health professionals to achieve this. Her partner should be involved where possible.

- The mother should have a comfortable posture
- The baby's position should also be comfortable (how the baby is held)
- The baby should be well latched on
- Correct attachment is of prime importance for successful breastfeeding. Poor attachment is the first and most usual cause of such problems as nipple trauma, mastitis, low supply, unsettled baby and poor weight gain. See **pictures in this section** [plus Appendix 3 for Breastfeeding Observation checklist](#).

### Mother's Posture

A breastfeeding woman should be in a comfortable position before she begins to feed. This generally means sitting with her back well supported, avoiding both leaning back or being hunched over, and with her feet able to reach the floor or on a footstool. Pillows or cushions may be useful **initially**, to support her back or arms, or raise the baby to a more comfortable level. Her breast should be in its natural position. Many mothers find it useful to support their breast, either while the baby latches or for the duration of the feed, but this will vary according to the mother's preference, the age of the baby and how well the baby latches on. The breast can be lightly cupped from underneath or the flat of the hand may be placed against the ribcage. Squeezing the breast in a scissor or V hold should be avoided, as it is likely to interfere with good attachment by preventing the baby coming to the breast bottom lip and chin first.

If the mother is more comfortable lying down eg. because of perineal pain, she may initially require help to help the baby latch on. Later on, an older baby will feed more easily in this position, and it may promote sleep and rest for the mother – see [Bed sharing and sleep issues](#).

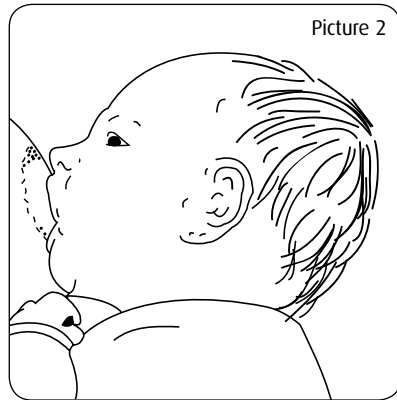
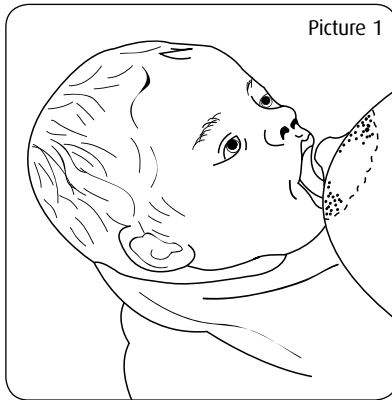
### Baby's Position

- The baby's body should be held close to the mother's
- Head, shoulders and body should be in a straight line, facing the breast
- The baby should not have to turn his head to feed
- Bring the baby to the breast, not vice versa

There are several ways for a mother to hold her baby, no one way being right or wrong. The cradle hold is the most instinctive hold a mother uses, but the cross-cradle and underarm ('rugby ball') are alternatives, which may be useful as a temporary measure if a baby is having difficulty latching on. During feeding, the baby's head is best supported on the mother's forearm and not in the crook of her elbow, which

tends to flex the head and distort the breast. Rough handling or pressing the head towards the breast will probably result in baby arching off the breast. Instead the mother can support her baby behind the neck and shoulders, giving some light support to the back of the head at the same time if necessary eg. preterm baby.

### Attachment – Latching on



The baby's nose or top lip should be opposite the nipple.

The baby's mouth must be wide open before being brought to the breast. To encourage a wide mouth, mother can hand express a drop or two of breast milk or brush baby's lips with the nipple, then wait a moment until he opens his mouth wide (Picture 1).

Baby should be brought gently but quickly to the breast, aiming the bottom lip and chin as far away as possible from the base of the nipple. The nipple is aiming towards the roof of baby's mouth. The mother may experience a strong drawing sensation as the baby attaches (Picture 2).

### How baby gets milk

The mother's let down reflex pushes milk down the milk ducts

The lower jaw and tongue rhythmically compress the milk ducts underneath the areola

A negative pressure is created inside the oral cavity

Baby uses the tongue to move milk along the ducts and into his mouth

### Signs of good attachment

- Baby's mouth is open wide
- Cheeks are full and rounded
- Chin is tucked closely into the breast
- More of the lower part of the areola is in the baby's mouth than the upper part
- Bottom lip is curled back – this may be difficult to see as the baby's mouth is often not visible with good attachment – the mother does not need to check for this

- Suckling pattern will change from initial short sucks which stimulate let down to long deep sucks and swallows with pauses
- After the initial drawing in of the breast as the baby attaches – no pain or discomfort
- Plenty of wet and dirty nappies

### Signs of poor attachment

- 'Prissy' rounded lips not flanged out and back
- Poor gape, with mouth opening less than 45 degrees
- Sucked in cheeks
- Noisy feeding – other than large gulps
- Pulling or slipping off the breast
- Space between chin and breast
- Tongue flicking the nipple
- Many short jaw movements to each swallow, few or no pauses
- Compressed or blanched nipple immediately after feeding
- Nipple trauma and pain, usually but not always
- Constant prolonged feeding, see below
- Low or poor weight gain.
- Colicky, unsettled baby – see [Problems, Unsettled Baby](#)

There is no set time within which feeds should take place, duration of feeds will vary depending on factors such as the individual baby, the time of day, the age of the baby. However, most babies who are well attached will take the milk they require within 30-40 minutes per breast, and may feed from one or both sides at a feed. Feeds which are regularly longer than this at each feed should raise the possibility of poor or sub-optimal attachment. Positioning and attachment which appears satisfactory can often be made better.

### Rooming in – hospital and home

Rooming in is the normal practice at Rotherham Hospital. It is helpful for a mother to experience her baby's feeding round the clock before going home and to gain confidence in her own ability to settle and comfort her baby.

As part of the standard advice for reducing the risk of cot death, it is recommended that babies sleep in the same room as their parents for the first six months.

### Bedsharing and sleep issues

New mothers need their rest and should be encouraged, when possible, to rest/sleep when the baby sleeps. Breastfeeding provides an ideal opportunity for the mother to put her feet up. The quality of sleep the new mother experiences may be improved by breastfeeding at night. It has been suggested that Dopamine is involved in oxytocin release and that dopamine receptors facilitate sedation and sleep (7).

Lying in bed to feed the baby during the day or night may enable mothers to get more rest/sleep and bedsharing may help to promote successful breastfeeding. All parents should receive up to date information on the risks of bedsharing and cot death. Whilst

it used to be thought that breastfeeding itself may have a protective effect against cot death, recent research is less clear, other factors are probably more relevant **(10)**. When the baby has finished feeding the safest place to sleep is in the cot by the parents' bed. Bedsharing is contraindicated if either parent is a smoker; falling asleep in an armchair or sofa increases the risk of SIDS; and parents should not bedshare if they are drowsy from drugs or alcohol or otherwise unusually tired. Information on bedsharing is given to all parents at Rotherham Hospital. The Unicef leaflet *Sharing a Bed with Your Baby* can be downloaded from [www.babyfriendly.org.uk](http://www.babyfriendly.org.uk)

### Avoiding unnecessary supplements

Fully breast fed babies do not need drinks other than breast milk unless medically indicated, this includes water. Supplementing breastfeeds with other fluids, particularly in the first 2 weeks, interferes with the establishment of breastfeeding and can undermine the mother's confidence. Giving water may increase the likelihood of jaundice.

Extra drinks of water are unnecessary for the breast fed baby even in very hot weather. The baby may want to go to the breast more frequently, but the mother should be reassured that she has plenty of milk- her baby is thirsty rather than hungry.

Breast fed babies whose mothers are well nourished do not require vitamin supplements before 6 months. – See also [Preterm Infants](#) and [Weaning](#) sections, [Vitamin supplements](#).

**Artificial teats (including dummies) are best avoided while breastfeeding is becoming established.** A different action is required and this may confuse some babies, making subsequent breastfeeding less efficient. If baby is rooting and wants to suck it is more important for the baby to feed. Frequent use of a dummy may interfere with demand and supply, resulting in decreased milk supply. If the baby is feeding very frequently – check he is well latched on (see [ORAL HEALTH Dummy use](#)).

Additional feeds should only be given for medical reasons or if mother has made an informed choice, aware of the potential adverse affect on breastfeeding. The preferred method of giving formula milk **while breastfeeding is being established** is with a small cup rather than a bottle, provided health professionals or parents have been taught the correct technique for cup feeding. See also [OTHER ISSUES, Weight gain](#).

At all times the health professional must respect each individual mother's wishes.

### Night Feeds

Once lactation is established, night feeds provide the infant with a substantial proportion of his 24 hour intake. It is therefore expected that the baby will be hungry at night and assuaging this hunger with formula feeds may lead to lactation suppression in the mother. A similar effect may occur if expressed breast milk given at night means that the mother's breasts become overfull for prolonged periods of time. Prolactin release in response to night time suckling is greater than during the day, thus milk production may get its greatest boost when the baby feeds at night.

### Caesarean section mothers

Mothers who have undergone Caesarean section or instrumental delivery may require additional help to achieve a comfortable position whilst feeding. There is no firm evidence to suggest that caesarean section in itself is associated in a delay in the milk coming in – this is more likely to be due to other factors such as a delay in early feeding.

### Babies in Special Care

Where babies are unable to feed due to prematurity or illness the mother should be helped to establish lactation by expressing milk as soon as possible after birth – see [Expressing and Storing Milk](#), also [Preterm Infant](#) section. Mothers whose babies are on SCBU will be offered the loan of an electric breast pump while their baby is in hospital.

### Continuing support

Many mothers benefit from ongoing support, particularly:

- mothers breastfeeding for the first time
- mothers who had a previous unsatisfactory breastfeeding experience
- single mothers
- mothers with infants in special circumstances
- mothers who do not have breastfeeding support within their family networks

Community midwives may visit up to 28 days after birth if necessary. Other professionals working with midwives and health visitors may be able to offer more extensive support eg. health care assistants, staff nurses or nursery nurses – **provided they themselves have received appropriate training**. Voluntary breastfeeding counsellors and peer supporters may be the best people to offer more intensive support, including home visits.

The health professional should ensure that mothers have all the necessary contact numbers – including any local breastfeeding groups and drop in sessions. The Mother's Guide to Breastfeeding contains a useful self help section at the back of the leaflet. See also [Appendix 2](#).

Good communication between professionals will help to avoid conflicting advice. The handover process from community midwife to health visitor should document the method of feeding, any changes since birth, any current concerns and advice given and what follow up plans are in place if necessary. Any concerns about feeding should always be passed on and recorded in the mother's and/or baby's notes.

## Growth spurts

The amount of milk produced is determined by how often the baby suckles at the breast. When breastfeeding is going well the breast will produce exactly the right amount of milk that the baby requires. However babies do have growth spurts when more milk is required. These can happen at any time, although are most common around 10 days, 2-3 weeks, 6 weeks and 3 months. The signs are:

- the baby will not settle after a feed
- the baby demands feeding at shorter intervals

Solution: The easiest way to increase the milk supply is to feed more often and the feeding pattern will usually settle down after 48 hours or so. If the baby remains unsettled, there may be other reasons or the baby may not be as well latched on as possible.

## Bowels, constipation

Healthy breast fed babies do not become constipated. Poor stool output is likely to reflect inadequate milk intake (or possibly a problem requiring medical assessment). See also [Understanding the normal process](#) and [OTHER ISSUES, Weight gain](#). There is a wide range of normal bowel habits for a baby 4-6 weeks old or more, ranging from small amounts every feed, to once every several days. In the unusual circumstances that a breastfed baby has diarrhoea, breast feeds should be continued. See [Appendix 5](#). In severe cases a doctor should be consulted.

## Teeth

Development varies, some babies get teeth at about 3 months and nipple biting may be a problem. This is more likely to occur at the end of the feed. Baby should be removed from the breast and a firm 'No' spoken, letting the baby know of the objection. However, if baby is positioned correctly he should not be able to bite. Babies' gums may be soothed by chewing on a hard object such as a rattle or teething ring. Any experimental chewing should be discouraged straightaway.

Frequent demand breastfeeding, through the night, has been thought to occasionally cause a baby's front teeth to decay. There is currently debate as to whether there is any direct association between frequent night feeds and dental caries in older infants or if other influences are involved – see [Oral Health](#).

## Returning to work

Many women feel torn emotionally, but it is possible to continue breastfeeding if returning to work. Health and Safety Legislation protects a breastfeeding mother's rights at work. The milk supply should ideally be well established (i.e. 6 weeks onward) and the options are:

- To feed the baby expressed breast milk only whilst the mother is away.
- The baby continues feeding during break time – if a creche is available.
- To feed before and after work and feed formula milk whilst mother is at work.

If the mother chooses the first option the following will need consideration:

- Can the baby feed from a bottle or feeder cup eg. Doidy cup See [WEANING, Drinks](#)
- Methods of expressing and storing milk
- Stockpiling milk which can be stored in the freezer for 3-6 months
- Facilities at the workplace for expressing and safe storage of breast milk
- Ensuring the baby minder has a supply of milk and safe storage facilities
- If the mother is away from the baby for long periods discomfort and possible engorgement may be experienced. She will need to express if she is unable to feed the baby
- Diet and fluid intake should continue as before, but if mother's work is particularly physical, extra carbohydrates and fluids may be needed

### Expressing and storing milk

Expressing can be done by hand, hand pump or electric pump. All breastfeeding mothers should be shown how to express by hand during the early days of breastfeeding. See [Appendix 5](#). Expressing helps to eliminate any feelings the mother may have of being tied to the baby, as she is able to leave a feed for someone else to give to her baby if she wishes.

Current advice is that all equipment and containers are sterilised after washing in hot soapy water and rinsing. There is some evidence for the safety of washing and dry storage of equipment – information will be circulated if Rotherham guidelines change in future. Milk can be expressed at various times, either:

- If the baby has fed from one side – express second breast
- In between feeds – about an hour after the previous feed
- During work breaks.
- Many mothers find they have more milk to express in the mornings

Mothers may obtain more milk by switching sides to encourage the let down reflex. Frequent shorter expressions are more effective at maintaining or increasing supply than fewer longer sessions. A suggested time of 20-30 mins in total is usually enough for most mothers, but individual mothers may need or prefer longer.

Expressed breastmilk (EBM) should be stored in sterilised containers, preferably with an airtight lid. Hard plastic containers with solid lids show the least loss of immunological factors during storage, reduce the risk of contamination and reduce the risk of exposure of the nutrients in the milk to oxidation. Mothers could also use milk storage bags or ice cube trays to freeze milk. Once frozen, the cubes can be placed in food storage bags, labelled and dated. Bags should not be reused. Milk may also be collected in sterilised breast shells, **while the baby is feeding**, if it leaks from the other breast. Prolonged use of shells in between feeds may predispose to mastitis and blocked ducts.

It is best to refrigerate expressed milk as soon as possible, but it can be stored at room temperature for use within 4-6 hours. Recommended storage times vary, depending on the source of information – the ones below are in the Mother's Guide to Breastfeeding:

- 5-10 C    use within 3 days
- 0-4 C    use within 8 days

It may be best to freeze any milk not intended for use within the next day or so. If milk is to be frozen it should be placed in the freezer within 24 hours. Frozen milk for preterm infants should be used within 3 months. For term infants it can be stored for up to 6 months (freezer at  $-18^{\circ}\text{C}$ ). Milk should be defrosted in a fridge overnight and used within 12 hours of removal from the fridge. If needed quickly milk can be thawed in a jug of warm water, replacing the water when it becomes cold. It should never be thawed in hot water or in a microwave oven. Milk, whether fresh or thawed, that has been in contact with the infant's saliva, must be discarded if unused during a feed.

If breast pumps are not available for loan in your local health care setting, a pump may be available from Ward B10 for **short term use, 1-2 weeks**, when supporting a mother with breastfeeding problems – contact Infant Feeding Coordinator. Pumps can also be borrowed within Rotherham Surestart areas, or hired from commercial companies. If not using single patient use breast pump kits, the kit should be autoclaved before being loaned to another mother (11).

### Travel and holidays

Travelling with a breast fed baby has a distinct advantage over one who is formula fed. Milk is instantly available. Extra fluid intake may be necessary for the mother in a hot climate and bottled water or cartons of juice are a sure way of obtaining clean fluids. Extra care should be taken to avoid contaminated water and food. If travelling somewhere hot, the baby may require more frequent feeds than at home and the milk supply will increase to meet the demand of baby's thirst. Extra fluids, other than breastmilk are not necessary and should be avoided in a baby less than 6 months. See also **Formula** section.

### Mixing breastfeeding and formula feeding

Mothers vary in how easily they can maintain a good breast milk supply while introducing formula feeds. Most mothers will have fewer problems if their milk supply is already well established ie at least 6 weeks after birth. Early mixed feeding with breast and formula milk will usually result in inadequate stimulation to the milk supply. If mother wishes to change to formula feeding she may wish to consider continuing some breastfeeding. As the daily volume of breast milk intake decreases, the amount of antibodies remains constant, thus the concentration increases, offering continued immunological protection.

If a mother has started to formula feed and wishes to change back to or initiate breastfeeding, this is usually possible within the first week or two after birth – refer the mother for additional breastfeeding support and information. Mothers who are HIV positive should not mix breast and formula feeding.

### Stopping Breastfeeding

Gradual reduction of breastfeeds is preferable to sudden stopping, to avoid the risk of mastitis. See also [Separation of Mother and Baby](#).

## MANAGEMENT OF COMMON BREASTFEEDING PROBLEMS

### Principles of Problem Solving

The key to effective problem solving is to:

- listen carefully to the mother
- take a feeding history
- observe a breastfeed
- offer information on appropriate solutions and alternatives, enabling her to make her own decisions

Useful sources of information include:

- Mother's Guide to Breastfeeding leaflet- problem solving chart on back page
- La Leche League Breastfeeding Answer Book (2003) (12).
- NCT Breastfeeding Counsellor's Checklist
- [Appendix 3: Taking a Feeding History and Observation Checklist](#)

Breastfeeding problems are likely to occur when the physiological process is impeded. This may happen either by imposing rules and regulations, or failing to ensure the baby is correctly positioned and attached at the breast. Good attachment is fundamental to successful breastfeeding and the majority of breast feeding problems can be attributed to poor attachment. If it appears good, but problems persist, it is often found that good attachment can be made better.

However it should also be remembered that breastfeeding affects every aspect of a nursing pair's life, therefore a comprehensive picture of the mother and baby needs to be obtained in order to establish other factors which **may** be causing or influencing a difficulty.

### Sore nipples and nipple pain

Sore and cracked nipples can cause excruciating pain, are often accompanied by an unsettled baby and women feel discouraged about breastfeeding. With good support, for most women soreness should be a temporary problem which can be overcome.

#### Causes of Sore Nipples:

- Poor or sub optimal attachment – this is by far the most common cause
- Contributing factors to the above may be incorrect positioning, engorgement or tongue tie
- [Thrush](#) – see separate section

#### Less common causes:

- Poorly fitting breast pump shield
- Taking baby off the breast without breaking the suction
- Bacterial infection
- Eczema, dermatitis or psoriasis
- Too long between nursing
- Use of soap as a cleansing agent
- Irritation from plastic backed nursing pads

- Pregnancy – this will cause nipple tenderness, rather than nipple trauma
- Nipple vasospasm
- Reaction to nipple cream

#### Treatment:

- Help to improve positioning and attachment

This by itself should prevent any further soreness. There is no evidence to support the use of ointments, sprays and other applications and over use may aggravate soreness. If the mother finds a particular cream soothing she can continue using it, as long as the underlying cause of soreness is rectified. In addition, the use of highly purified lanolin, such as Purelan or Lansinoh, for **cracked** nipples is often helpful, as it supports the principles of moist wound healing. Only a very small amount is applied and it should not be washed off before feeds.

If the nipple is cracked and bleeding do not be alarmed by the appearance of a small amount of blood in the baby's mouth or posset. This will not hurt the baby. However, if the underlying cause is not treated, a cracked nipple may allow thrush or other infection to develop, necessitating anti-fungal or antibiotic treatment.

Other suggestions which may help:

- Gently apply EBM onto the nipple after feeding (breastmilk contains epidermal growth factor)
- Allow air to the nipples
- Wear a soft cotton T shirt instead of a bra for a while
- Avoid soap

Nipple shields are not recommended as first line management for sore nipples as they may cause further problems – see [Nipple Shields](#). However, they can be helpful temporarily for some mothers, who would otherwise stop breastfeeding.

#### Engorgement

**Vascular Engorgement** – Blood flow to the breasts is increased when the milk comes in and the discomfort the mother experiences in the first 2-4 days after the birth will depend on the extent of the increase.

**Milk Engorgement** – This is a common and largely preventable condition, which may occur as a result of any restriction in the frequency and duration of breastfeeding. There is a degree of overlap between vascular engorgement and milk production. The milk 'comes in' around 48-96 hours after the birth and the mothers breasts become fuller – the extent of fullness varying from one mother to another. The milk, once secreted, is stored in the alveoli. If the milk is not removed as it is formed – the volume of milk in the breast will exceed the capacity of the alveoli to store it comfortably. Further milk production begins to be depressed. In some instances the pressure in the alveoli causes substances from the milk to move into the capillaries or connective tissue. This process will activate the mother's immune system, her pulse and temperature will rise and if engorgement persists it may develop into mastitis.

**Causes:**

- poor attachment
- restricted feeds
- Formula feeds
- separation of mother and baby
- temporary oversupply
- an older baby going for longer intervals between feeds
- too sudden weaning (cessation of breastfeeding)

**Treatment – Any or all of the following may be helpful:**

- Frequent effective feeding – good attachment is essential
- Heat and breast massage before feeding – warm flannels/bath/shower
- Cold compresses/bathing with cold water after the feed
- Cold cabbage leaves, ideally Savoy, worn inside the bra between feeds (only for treatment, not prevention) – replace with fresh ones as they warm up – 20 mins or so
- Hand express a little milk before feeding to allow baby to latch on more easily
- Express by hand or pump until breasts feel comfortable
- Paracetamol or Ibuprofen for pain relief

**Blocked Ducts****Symptoms:**

Tender, hard area in the breast, may have a red area of skin over it, which may feel hot. Skin may be dimpled. Baby may be fussy at the breast. Possible slight raised temperature.

**Causes:**

- Poor attachment or positioning
- Pressure from a tightly fitting bra (particularly trap door type) or other source eg sleeping position
- Gripping the breast too tightly during feeding
- Scar tissue from cosmetic surgery
- Rushing feeds
- Rough handling
- Engorgement, swollen alveoli press on and block the duct

When the baby sucks, more milk is produced but is unable to reach the nipple because the main duct is blocked. Pressure increases and milk escapes into the surrounding tissue.

**Treatment**

- Identify the possible causes and remedy them
- Frequent feeding, starting with the affected side first (as a rough guide – 5 minutes every hour from the affected side)
- Try different feeding positions – the baby may attach better and drain the breast more effectively in a different position eg. lower jaw is in line with the affected area
- Breast massage – during and between feeds, often works well with breast submerged in hot bath. See also [Appendix 4 Hand expression technique](#).

- Check for white spot on the nipple – fatty blockage, warm compress may help dissolve, if persistent can use a sterile needle to unblock
- Increase arm movements to stimulate vascular flow
- Paracetamol or Ibuprofen for analgesia if necessary

See GP if:

- The mother feels generally unwell, with a high temperature – possible breast infection
- The lump does not resolve over several days – exclude more serious causes.

### **Mastitis**

#### **Symptoms:**

Red, painful area of the breast, either localised, sometimes wedge shaped, or over the whole breast

Aching flu-like feeling, possibly accompanied by rigors

Raised temperature

Mastitis means inflammation of the breast – this may be infective or non-infective initially. Untreated non infective mastitis may progress to infective mastitis and even form an abscess.

**Causes** – as for blocked ducts, primarily:

- Poor attachment leading to milk stasis
- Infection due to cracked nipples
- Unresolved engorgement
- Unresolved blocked duct
- Sudden cessation of breastfeeding
- Unusually long gaps between feeds
- Substituting Formula for some breast feeds
- Mother tired, under stress or run down
- Anaemia – if mastitis is recurrent
- Over abundant milk supply

**Treatment** – As for blocked ducts plus:

- Keep feeding
- Good attachment
- Express after feeds if necessary, to prevent further milk stasis
- Rest as much as possible
- Possible antibiotics

**It is vital that the mother continue to breastfeed as abrupt weaning off breastmilk will increase the chance of abscess formation.**

Antibiotics **may** be necessary if symptoms do not start to improve within 24 hours using above methods. The possible antibiotic side effects on the baby – loose stools and more frequent feeds – should be explained to the mother. Carers should not be surprised to observe a drop in baby's weight gain during antibiotic therapy. This will correct itself. Breastfeeding should continue.

Recurring mastitis needs a full assessment of possible causes – refer the mother for experienced breastfeeding support and also to her GP, to exclude underlying illness. The Breastfeeding Answer Book (La Leche League 2003) contains useful advice in the chapter on breast problems.

### Abcess

This is rare and mainly avoidable by correct management of earlier problems. An abcess is a collection of pus which forms in an area of the breast that cannot drain. Ultrasound may help with diagnosis. Prompt, correct treatment of mastitis should prevent the formation of an abscess. Prompt treatment of any abscess is essential.

### Treatment

- Aspiration (which avoids the necessity of hospital admission) or incision of the breast will be required, along with antibiotic treatment
- **Breastfeeding should continue, any restriction may cause further problems**
- Feeding should continue uninterrupted on the unaffected side
- Feeding may continue from the affected side, unless pus drains from the nipple or the incision is too close to the nipple for the baby to feed
- If the mother is not feeding from the affected side she should express her milk, which can generally be given to the baby, and return the baby to feeding on the affected side as quickly as possible. Continued breastfeeding may speed healing

If the mother wishes to stop breastfeeding, she is best to do this gradually once the abscess has resolved.

### Thrush

Thrush infections can affect both mother and baby whilst breastfeeding, and can often occur following nipple damage or antibiotic treatment. Other contributing factors may be use of poorly cleaned and sterilised dummies and nipple shields or the practice of adults and older children putting the dummy in their mouth. Either mother **or** baby **or** both can be affected. Other causes of breast and nipple pain should be excluded before treatment – it is particularly important to check attachment and address any problems at the same time.

#### Signs of thrush in a baby:

Baby pulls away from the breast whilst feeding, he will appear unhappy or uncomfortable as his mouth will be sore.

Creamy white patches, which will not rub off, are visible inside the baby's mouth or on the tongue, possibly far back in the mouth.

Baby may have a nappy rash which is difficult to heal

Baby may be fretful, 'windy' and difficult to settle.

#### Signs of thrush in the mother:

Sudden start of breast and/or nipple pain after pain free breastfeeding – the nipple may be itchy or very sensitive to any touch.

Intense pain in the nipple or breast which is NOT resolved by improving attachment.

Shooting pains in the breast during or after feeding (maybe deep in the breast) which can last for up to an hour after. Pain which worsens during the feed

Cracked nipples which do not heal.

Loss of colour in the nipple or areola – or pink, shiny areola.

### Treatment

Check attachment – thrush may be secondary to poor positioning and attachment

Topical antifungals

Strict hygiene measures

Treat vaginal thrush if present

It is important the both mother and baby are treated with antifungal medication in order to get rid of the infection. Once treatment begins, the pain and other symptoms will begin to improve in 2-3 days. A full recovery may take longer and treatment should be continued for 10-14 days.

Mother – Miconazole 2% cream to the nipples after each feed

Baby – Miconazole oral gel may be effective more quickly than Nystatin suspension **13**

Deep breast pain or symptoms which do not respond to topical treatment indicate that thrush may have entered the milk ducts, in which case systemic antifungal treatment may be required, for example oral Fluconazole. A loading dose, followed by treatment for at least 10 days may be necessary **12,13**. Fluconazole (Diflucan) is not currently licensed for use by lactating mothers (or infants under 4 weeks of age – who would be receiving it via the milk). See also [Drugs](#). Nystatin is a well established treatment, which appears to be sufficient to treat thrush in the breast, but oral absorption is poor. There is no contraindication to use, but pain does not generally resolve for 10 days.

Thrush can be passed between mother, baby and father. Suggest the following:

- Wash hands thoroughly, especially after nappy changing
- Use a separate towel for each family member
- Boil dummies, teats and nipple shields daily for 20 minutes
- Discard after one week and use new ones
- Wash any plastic toys which have been in the baby's mouth
- Wear a clean bra every day and use disposable breast pads
- Any breast milk expressed while mother or baby has thrush should be discarded, including any milk stored in the freezer

See also [Reference 13](#).

## The unsettled baby

Attachment may not be optimal, even if the baby appears reasonably well latched, if any of the following are present.

If baby is:

- Generally unsettled
- Regularly feeds for 40 minutes or more on each breast
- Feeds frequently, falls asleep and appears satisfied, but wakes within half an hour or so wanting to feed again
- Slow to regain birthweight

then attachment may not be optimal, even if the baby **appears** reasonably well latched on. What may appear to be good positioning and attachment can generally be improved. Sore nipples are nearly always caused by poor attachment but poor attachment **can** be present without this warning sign.

See also [Good positioning and attachment](#) and [Tongue tie](#).

Observe a breastfeed, and refer the mother for further help if you are unable to assess or help the mother improve the situation.

Lactose overload can occur if a mother has an overabundant milk supply or if the baby is not well latched on. Weight gain may be normal. The baby receives primarily foremilk with its higher lactose content. The milk passes through the gut quickly, the lactose ferments, producing explosive stools which may be green and frothy and the baby is very unsettled, requiring frequent feeds. Improving attachment and continued feeding from the same breast, within a 2-3 hour period before switching sides will increase the amount of fat rich hind milk the baby receives and this will slow down gastric emptying.

## OTHER ISSUES AND SPECIAL SITUATIONS

### Weight gain

Term well babies are weighed at birth and routinely at 10-14 days at the first health visitor contact. Additional weighing at 6 days may be introduced in 2007. Some initial weight loss from birth is common in the first 3 days. The pattern of weight gain may vary considerably between infants, but most babies will either regain their birthweight or be moving towards it by 2 weeks of age. Weight gain may be high in the first 3 months and then slow down. New World Health Organisation Child Growth Standards may be adopted by the Department of Health in future. Breast from birth, Preterm charts and thrive lines may be useful additional tools. See [Appendix 2](#).

Weight loss of more than 10% from birthweight should be a cause for concern. The baby should have a full feeding assessment (see [Appendix 3](#)) as well as paediatric referral to exclude illness or other problems. Check that the baby is having plenty of wet and dirty nappies. See [Understanding the normal process, urine and stools](#).

Poor urine and stool output indicates the need for naked weight on digital scales before the usual time. Weight loss of 15% or more requires urgent investigation, paediatric referral and experienced breastfeeding support.

### The 'good baby'

Occasionally a baby may seem contented, sleeping for long periods, not crying frequently or appearing hungry, yet their poor weight gain and increasingly small urine output give cause for concern. The mother may be pleased that the baby is going for long periods between feeds, especially at night. Or the mother may wake the baby to offer extra feeds but if these coincide with a deep sleep they will be largely unsuccessful.

Since crying in these babies is a late sign of hunger and may indicate over hunger, being left to wake himself and cry for a feed may result in frantic behaviour at the breast and poor feeding.

It is appropriate to weigh the baby, assess weight, feeding and the need for medical referral. See [Weight gain](#).

### The mother should be encouraged to:

- Feed at least 8-12 times in 24 hours
- Offer both breasts at each feed
- Avoid dummies
- Have plenty of close contact with her baby, including skin to skin
- Feed when the baby is in a quiet alert, or possibly light sleep state
- Watch for early feeding cues:
  - rapid eye movements under lids
  - increased restlessness
  - small sounds
  - sucking and mouthing movements
  - hand to mouth movements and thumb sucking
- Elicit a let-down reflex before putting baby to the breast:
  - breast massage and/or warm flannels
  - gently rolling the nipple
  - hand expressing some milk onto the end of the nipple
- Supplement with expressed breastmilk in the first instance to maintain and increase milk supply. If formula supplements are medically indicated it is best to give EBM in addition, preferably before the formula feed

### Contraception

Breastfeeding can provide 98% protection from pregnancy, provided that **(14)**.

- the baby is less than 6 months old
- day and night feeds are completely unrestricted
- intervals between feeds should not be longer than 4 hours
- levels of prolactin are sufficient to suppress ovulation
- the baby is not receiving **any** other food or drink besides breastmilk (apart from token or ritual supplements for religious reasons)

In some women ovulation occurs before menstruation and unless a second pregnancy is wanted women need to use a reliable contraceptive. A baby may sometimes be temporarily fussy at the breast around the time of ovulation.

Oral contraceptives containing oestrogens may decrease milk production, particularly if medication is started in the first few weeks after delivery. The progestogen only pill is preferred to the combined pill and is not likely to affect milk supply. Depo Provera and other long acting reversible contraceptives may be used. Levels of hormones passing into breastmilk are not thought to have any effect on sexual development in infants. Breastfeeding can continue if emergency hormonal contraception is required. If a mother prefers to discard her milk she should do so for 12-24 hours after the second tablet.

### **Tandem nursing**

Breastfeeding can continue if the mother becomes pregnant again. Some women experience nipple tenderness which may be the first indication of pregnancy.

Babies have been known to refuse the breast at this time possibly owing to an altered taste. Breast milk may sometimes diminish during pregnancy but there is no decrease in quality. Prior to labour the milk will change to colostrum ready for the new baby. This will continue to be produced until the birth. After birth it is best to let the new baby feed first, particularly before the milk comes in, to ensure the new baby has maximum access to the colostrum, which is high in immunoglobulins.

### **Maternal exercise**

Babies of mothers who regularly do strenuous aerobic type exercise may become fussy at the breast if the mother feeds immediately after exercising – this is likely to be due to the temporary salty taste of the milk due to raised levels of lactic acid in the mother's bloodstream.

### **Separation of mother and baby – mother unwell, hospital admission, away from home**

If the mother becomes unwell or is unable for some reason to breastfeed even for a short time, it is important that she express regularly – as often as the baby would normally be feeding – otherwise lack of breast emptying will result in decreased milk production. The longer the period of time without either feeding or expressing, the harder it can be to reverse this decline. See [Expressing and storing milk](#).

### **Nipple shields**

**These should not be used as first line management of sore and cracked nipples.**

Mothers may buy or be given nipple shields for soreness, but their continued use can cause many problems. A mother should always receive enough information to make an informed choice and enough support to discontinue using the shield wherever possible. If the person giving the nipple shield cannot provide follow up support, they must direct the mother to alternative sources of support.

Disadvantages are:

- the baby does not learn correct attachment when feeding through a nipple shield
- the breasts may not be emptied well, leading to decreased milk supply
- incomplete emptying will also predispose to mastitis and possible abscess
- thrush or other infections of the nipple are more likely to occur due to warm moist environment around the nipple

If unavoidable, a thin, silicone nipple shield, preferably one with a cut away area to position by the upper lip is preferable to other types. They should be well cleaned and sterilised after use and can then be stored clean in a covered container until required at the next feed.

### **Poorly Protractile and Inverted Nipples**

The situation should not be judged by antenatal appearance, as breast shape can change postnatally. Skilled help to position the baby at the breast may be required initially, but some babies may have few or no problems attaching. Once correctly positioned, in most cases the baby will help to draw out the nipple.

In the past, Woolwich shells, and Hoffman's nipple stretching exercises were used during pregnancy. Current research does not support these practices and therefore should not be advised. The Nipplette device for the cosmetic correction of inverted nipples has no evidence base and should not be recommended.

### **Breast surgery – reduction, augmentation and nipple piercing**

Breastfeeding is not contra-indicated with any of the above.

Mothers with breast implants may have problems with blocked ducts or mastitis, related to scar tissue or pressure from the implant, but these can usually be managed with the self help measures discussed in the relevant section. Silicone implants are considered compatible with breastfeeding. A small number of women have polyurethane coated silicone implants – under laboratory conditions the coating may release small amounts of a substance carcinogenic in animals but it is not known whether there are any concerns for breastfeeding mothers (12).

Breast reduction surgery usually involves cutting some or all of the milk ducts. How much milk is available for the baby may depend on how many ducts have re-canalised, whether the nerve supply was cut or damaged and how much breast tissue was removed. If a mother is unable to fully breastfeed her baby, she may progress to mixed breast and formula feeding, which maintains an immunologic benefit to the baby. She may wish to do this using a nursing supplementer, so that the baby receives as much breastmilk as possible. Weight gain should be carefully monitored. Support from an experienced breastfeeding counsellor or group, or mothers in similar circumstances will usually be helpful.

Nipple piercing is becoming more common. A mother may experience no problems or may have problems secondary to scar tissue. The ring should be removed for breastfeeding. Mothers may use a retainer for easier removal. If only one nipple is pierced, the baby could feed exclusively from one breast.

## **Jaundice**

### **Normal/Physiological Jaundice**

This is a common condition found in many healthy preterm and full term babies. However, it should always be assessed by a health professional. The normal breakdown of extra red blood cells produces bilirubin, an orange/yellow pigment normally metabolised by the liver and excreted in the stools. Any excess bilirubin passes into

the circulation, causing the distinct yellow appearance. In a normal, healthy, full term baby physiological jaundice appears after 48 hours but before the 5th day. It usually disappears after about a week or so with no treatment needed. If the level is high, it may be necessary to give baby phototherapy and occasionally supplementary feeds may be indicated. Breastfeeding is particularly important at this time. Delay in feeding and restricted feeds will aggravate jaundice. Colostrum is important because of its cathartic effect on meconium, preventing re-absorption of the bilirubin through the intestine. Giving the baby supplementary water to flush jaundice out has a negative effect, as bilirubin is fat, not water soluble. It can increase jaundice and will reduce the number of breastfeeds – this will delay passage of meconium and interfere with establishing a good milk supply. Early and effective feeding is the best way to prevent and treat normal jaundice.

### Pathological Jaundice

This is visible at birth or within 24-48 hours. This is due to blood incompatibilities or other pathological conditions. Breastfeeding should continue but further treatment and additional fluids are usually necessary.

### 'Breast Milk' Jaundice or late onset jaundice

This develops 5-7 days after birth and may last up to 10 weeks. It may be an extension of normal physiological jaundice or due to a factor in mother's milk <sup>15</sup>. Apart from jaundice the baby is generally healthy and develops normally, therefore there is no reason to discontinue breastfeeding. Levels of bilirubin should be monitored and advice sought from a paediatrician in order to rule out any other condition. Babies passing pale stools should always be referred for medical assessment.

### Allergies

If there is a family history of allergy, mothers should be encouraged to breastfeed. Mothers should eat a healthy balanced diet during pregnancy and lactation, including all major allergens, although those at highest risk may wish to avoid peanuts. If a mother wishes to avoid a major allergen or food group, she should be referred for specialist dietary advice. If the baby appears to be showing signs of allergy, or the baby suffers frequently from colic and loose stools, medical or dietetic advice should be sought before maternal dietary restrictions are proposed. It is possible for cows milk protein to be transmitted through breast milk. Peanuts should be avoided in pregnancy if there is a strong history of allergy from either parent or siblings.

### Lactose intolerance

A genetic inability to metabolise the lactose in breastmilk is extremely rare. Age onset lactose intolerance does not usually appear until later childhood. Temporary lactose intolerance may follow a gastrointestinal infection in the baby. Breastfeeding can continue. Seek advice if not resolved in 3 months. See [Appendix 5](#). Lactose intolerance should not be confused with lactose overload.

See [Management of Common Breastfeeding Problems, Unsettled Baby](#).

### Twins and other multiple births

See also [Preterm Infant](#) Section.

Many mothers succeed in exclusively breastfeeding twins, and indeed find this an easier option once breastfeeding is established. Until confident a mother may wish to feed twins separately. If one twin is bigger or feeds better the mother may find that switching breasts at each feed will stimulate milk supply. Mothers may value the opportunity of talking to experienced mothers of twins – Sheffield Twins and Multiples Club. See [Appendix 2 Resources](#).

It is possible to breastfeed triplets, but this requires a very committed mother and a lot of extra help and support.

### **Breastfeeding an adopted baby**

Induced or relactation may be possible for an adoptive mother. Experienced breastfeeding support will be important. The baby can feed from the breast using a nursing supplementer initially containing formula.

### **Tongue Tie**

Many babies with tongue tie can feed effectively, and some problems resolve as the baby gets older. However, there may be nipple pain and damage, poor weight gain, unsettled feeding. It is essential to check the baby's tongue if there is a positioning and attachment problem. The mother will need help to improve attachment, a few millimetres may make a difference. If the tongue is restrained to the point where the baby is unable to get his tongue far enough over his lower gum to feed effectively, even with skilled help, the baby should be referred to a paediatric surgeon for assessment (9). Frenulotomy, snipping of the tongue tie, may be helpful and is recommended for consideration by NICE (17). At present opinion is divided on this issue and there is no local protocol or easy NHS referral path. Contact Infant Feeding Coordinator at RFT for further information and see [www.babyfriendly.org.uk](http://www.babyfriendly.org.uk)

### **Babies who may require more specialised feeding support as part of medical management eg. Cleft, neurological impairment, Down's syndrome.**

#### **Cleft Lip and/or Palate**

Babies should be referred immediately after birth to the Regional cleft lip and palate team, based at Nottingham, Contact 0115 969 1169. The nurse specialist will visit within 24 hours of referral.

Breast milk is particularly advantageous for these babies, due to protection against respiratory, ear, nose and throat infections. However, direct breastfeeding is often not the most effective way to feed a baby with a cleft palate, due to lowered intake and increased energy expenditure leading to slow weight gain. A mother's options include combinations of breastfeeding, breastmilk feeding and formula feeding and she should be supported in her choice. Mothers are loaned a breastpump from the regional team. Breastfeeding encourages normal muscular movement of the mouth and face, so it benefits speech development. Maintaining a milk supply with expression will allow the option of direct breastfeeding after palate repair. Temporary medication to increase prolactin levels may be helpful for mothers who find it difficult to maintain milk supply over several weeks by expressing.

Babies who have a cleft lip but intact palate can often breastfeed successfully, For a small cleft the mother can use her thumb or support the breast in such a way as to close the gap, thus creating a good seal, and enabling the correct negative pressure to be achieved.

### **High or other unusual shaped palate**

Can cause sucking problems with limited milk intake. Refer the mother to an experienced breastfeeding supporter. The exaggerated attachment technique shown in the Mothers Guide to Breastfeeding may be helpful in the meantime.

### **Downs Syndrome or Neurological Impairment**

These babies may need extra help to establish breastfeeding. The mother may need extra help with positioning, and may need to express her milk while the learning process is proceeding. Refer for experienced breastfeeding support.

### **Diabetes**

Diabetes in a breastfeeding mother is not a contra-indication to breastfeeding, although the diabetes should be closely monitored. Breastfeeding may reduce the amount of insulin needed. Mothers with gestational diabetes may reduce their subsequent risk of developing insulin dependent diabetes by breastfeeding 18. Breastfeeding also helps reduce future Type 2 diabetes (19). Mothers may wish to express colostrum antenatally at the end of pregnancy, to reduce the need for formula supplements in the early days, as these may increase the risk of subsequent childhood diabetes. Refer mother to Infant Feeding Coordinator.

### **Phenylketonurea**

This is an enzyme defect that results in the baby being unable to break down and excrete phenylalanine, an amino acid. All babies are tested for this via the Guthrie test. If diagnosed, breastfeeding can continue with specialised guidance and monitoring of phenylalanine levels.

### **Human Immunodeficiency Virus (HIV) and other infections**

In September 2004 the Department of Health Expert Advisory Group on AIDS produced updated guidance for health professionals (20). The guidance applies to the UK, not to less developed countries where the risks associated with infant formula milk feeding are much higher. Breastfeeding is a route of HIV transmission to the infant of an HIV positive mother. This risk is in addition to that of transmission in utero. The risk of transmission is higher if a breastfeeding mother newly acquires HIV infection, due to a high viral load. It is therefore important that uninfected women who are considered at risk of exposure to HIV, and intending to breastfeed, are offered appropriate advice, to help reduce their risk of becoming HIV infected whilst breastfeeding. Mixing breast and formula appears to carry the highest risk of transmission.

Ongoing studies are exploring the association between mode of feeding (exclusive breastfeeding versus mixed feeding) and transmission risk. However, the Guidance concludes that there is no scientific basis for departure from its current advice and that **'In the UK avoidance of all breastfeeding by HIV-infected women is recommended to prevent breastfeeding transmission of HIV'**, and that 'HIV-infected women in this country need to consider carefully the information about relative risks and benefits to their babies of breastfeeding, compared with alternatives.'

Current World Health Organisation recommendations (21) are that when breastmilk substitutes are acceptable, feasible, affordable, sustainable and safe, then mothers should be advised not to breast feed. If an HIV positive mother chooses to breastfeed, exclusive breastfeeding is recommended for the first months of life, but for no more than 6 months. To minimise risk, breastfeeding should be discontinued as soon as feasible. The mother should have knowledgeable support to assess and reduce the risks in her individual situation.

Pasteurisation of human milk should destroy the virus. Although HIV free donated human milk could be given to babies of HIV positive mothers, there is currently no NHS provision for this.

**Hepatitis A** – Breastfeeding can continue (give gamma globulin to infant)

**Hepatitis B** – Carriers of Hepatitis B virus should be identified during pregnancy. Infant will be offered immunisation and can be breastfed from birth

**Hepatitis C** – The risk of transmission is uncertain, and may depend on the mother's viral load. Breastfeeding may be contraindicated

**HTLV-1 virus** – not common in Europe. Generally considered a contra-indication

**Herpes Simplex Infection** – Babies less than 4 weeks are at particular risk. If the lesion is not on the breast and the baby not likely to come into direct contact with it, breastfeeding can continue, but the mother should be advised to pay particular attention to washing her hands before feeding the baby. Other possible risk factors include genital herpes or cold sores in other family members.

If a woman has a herpes simplex lesion on her breast, it should be regarded as infectious for the first 5 days. She should be encouraged to obtain treatment from her General Practitioner (topical Acyclovir). The baby should not be fed directly from that breast as it may be at risk of infection. The mother will have been infectious before the lesion developed and the milk will contain antibodies to the virus. These will remain in the milk after expression and give some measure of protection for the baby. Lactation may be maintained by expressing milk and feeding this to the baby via a cup or spoon after a few hours have elapsed. Allowing a few hours to elapse between expressing and feeding the baby may result in a lowered level of the virus in the milk as a result of its anti-viral properties.

**Group B streptococcus (GBS)** – not a contra-indication to breastfeeding

## Drugs in Breast milk

### Prescription and over the counter medicine

The following information is provided as a guideline. Clinical decisions remain the responsibility of the medical practitioner and further information can be sought from:

**Medicines Information Service Rotherham General Hospital Tel. 01709 304126**

Information in the British National Formulary (BNF) provides accurate, up to date but limited information on drugs and breastfeeding. Other sources of information include:

- The National Medicines Information website may have additional information [www.ukmicentral.nhs.uk](http://www.ukmicentral.nhs.uk)
- Medications in Mother's Milk, Thomas Hale 2004 and subsequent editions

Many drugs taken by the mother can be passed to the baby through breast milk. Mothers should be encouraged to inform their doctor and pharmacist if they are breastfeeding and check that any over the counter medicines are compatible with breastfeeding. Often, a mother's need for medication is viewed as a reason to discontinue breastfeeding. Some drugs do not pass into breastmilk, others are not harmful. Many drugs do pose a risk, but it may be possible to use an alternative or interrupt breastfeeding only briefly. It is the responsibility of the mother's prescribing physician to check the safety of the drugs with regard for mother and baby. Concerns stem mainly from the risk of drugs causing:

- Harm to the infant e.g. a toxic effect, hypersensitivity reactions or long term exposure effects
- A change in milk composition or taste
- The milk to dry up

The aim is to minimise infant drug exposure with minimal disruption of nursing, whilst not compromising maternal drug treatment. A stepwise approach to minimising infant drug exposure should be adopted:

- Is it possible to withhold the drug or delay therapy – is the drug essential? Is there an alternative?
- Antibiotics – is there an alternative treatment? If antibiotics are necessary there are several which are safe to use
- If possible, use topical or local treatment or drugs not absorbed systemically
- Avoid feeding at times of peak drug concentration. This may not be practical for new-borns or relevant for long acting drugs. Continuation of demand feeding should be encouraged as much as possible.
- Temporarily withhold breastfeeding, when necessary.

### Anticoagulant therapy

Warfarin, heparin and low molecular weight heparins are all suitable for use in breastfeeding. For other drugs seek expert advice.

### Antidepressants

Non-sedating tricyclic antidepressants (TCA's) such as imipramine and nortriptyline are the drugs of choice for the treatment of depression during lactation. Amitriptyline is

more sedative for the mother but studies have not detected the drug in the breastfed infant's serum and its use is acceptable.

If TCA's are inappropriate, the selective serotonin reuptake inhibitors (SSRI's) sertraline, fluvoxamine or paroxetine may be used second line.

Fluoxetine and citalopram should not be used during breastfeeding as they have long half-lives and there is a risk of drug accumulation in the infant. There have been reports of adverse effects occurring in breast fed infants exposed to these drugs.

Monoamine oxidase inhibitors (MAOI's) and moclobemide should be avoided due to lack of data.

The serotonin/noradrenaline re-uptake inhibitors and the miscellaneous newer antidepressants should be avoided if possible until more data are available.

The clinical condition of the mother and infant should be considered before a drug is prescribed.

In general, all drugs should be avoided in premature or low birthweight infants, or in those who have underlying medical conditions.

Drugs should be prescribed at the lowest effective dose and for the shortest time required.

Although adverse effects are uncommon, the infant should be monitored for signs of drowsiness and poor feeding.

### **Codeine**

At the point of writing (February 2007) codeine is no longer classed as a safe drug for breastfeeding due to isolated reports of serious adverse effects. Use Paracetamol or Ibuprofen. Contact [www.ukmicentral.nhs.uk](http://www.ukmicentral.nhs.uk)

### **Substance misuse**

All drugs used pass into breast milk. Contact Clearways Community Drug Team on 01709 382733 or the substance misuse liaison midwives. Certain drugs, such as cocaine and benzodiazepines, are absolutely contraindicated. With others, breastfeeding may be possible and help to minimise withdrawal problems in the newborn – eg. Methadone maintenance programmes. However, it is important to remember that the mother may be using other drugs than those disclosed.

Mothers should not use cannabis and breastfeed. Although acute adverse effects have not been described, long term effects are unclear and follow up studies inadequate. In adults a single dose can take up to one month to be eliminated from the body. If cannabis is smoked mothers should also be made aware of the risks of smoking.

### **Alcohol**

Alcohol passes into the breast milk, peak levels appearing after 30-90 minutes, but the effect is not considered to be significant, except with high or regular intake. It is recommended that daily consumption should not exceed 2 units.

## Tobacco

Smoking mothers should be strongly advised to stop or reduce their smoking whilst breastfeeding, as nicotine passes into the breast milk. Mothers who continue to smoke whilst breastfeeding should be given the following advice:

- Smoke as little as possible and not in the same room as baby
- Do not smoke before or during feeds
- Clearance time for nicotine is 90 minutes+
- Babies of mothers who smoke are more likely to suffer from colic
- Nicotine decreases prolactin levels
- Smoking can decrease the let down reflex
- The use of nicotine replacement therapy exposes the baby to less nicotine than smoking, but mothers should not use nicotine patches and continue to smoke. Patches should be removed at night-time to limit exposure. Nicotine gum and nasal sprays can produce rapid high levels and should be used immediately after feeds not before. Mothers should not breastfeed for 2-3 hours after using the gum

## Complementary and alternative medicines

Extreme caution should be exercised with regard to herbal remedies, including herbal teas. Contact Rotherham General Hospital Antenatal Clinic for information on aromatherapy.

## Environmental contaminants

Both breast milk and formula can be contaminated with a variety of pollutants. When considering the background level of general pollution, there is as yet no clear evidence of harm in either case and mothers should not therefore be discouraged from breastfeeding. Specific incidents would require local and individual assessment.

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# FORMULA FEEDING

If parents are undecided about continuing to breast feed or whether to change to formula milk, the Health Professional should reinforce the advantages of continuing to breast feed even if it is only one or two feeds per day. This may have psychological benefits for the mother and will certainly benefit the infant.

However parents must be supported fully in whatever decision they make. It is also the responsibility of Health Professionals to ensure that parents have received guidance on the correct choice of formula as well as storage and preparation of the formula by thorough sterilisation of all equipment. It is important that sterilisation occurs with the aid of a chemical or boiling or steam as well as the use of appropriate equipment. Teats should not be rubbed with salt. The European Food Safety Authority has warned that there is a risk of contamination of powdered infant formulae by various micro-organisms. Infections from this source are very rare, however the risk has led to the Department of Health making the following statement and recommendations about preparation of feeds, both of standard and follow on formulae:

**“Infant formula powder is not sterile; the risks associated with using powdered infant formula milk are reduced if:**

- Feeds are made up using boiled water that is greater than 70°C; in practice this means using water that has been left to cool for no more than half an hour.
- Feeds are made up fresh for each feed; storing made up formula milk may increase the chance of a baby becoming ill and should be avoided.
- Any left over milk is thrown away.
- Carers who require a feed for later are advised to keep water they have just boiled in a sealed flask and make up fresh formula milk when needed or use a liquid ready-to-feed formula.” (1)

## Infant Formula Milks

Standard infant formulae are either whey protein or casein protein dominant. The whey dominant formula is closer to human milk whereas the casein dominant formula is similar to cows milk. There is no evidence to suggest that there are any benefits in changing from whey dominant to casein dominant milks or changing brands of milk.

Formula milk provides all vitamins and minerals indicated by current research to be necessary and present in human milk. Normal healthy babies should be allowed to regulate their own feeds whenever possible. The feeding requirements of babies of the same age vary as do those of individual babies from day to day. Therefore the indications of feed volumes that can be found on the formula packaging should be used as a guide only. Preparation methods should be followed as per the manufacturer’s instruction unless advised otherwise by a Doctor or Dietitian for medical reasons.

Parents should be aware of the risks of excess weight gain, constipation and hypernatraemic dehydration if feeds are prepared more concentrated than recommended by the manufacturer.

The table below tabulates infant formula according to dominant milk protein. Whey dominant formula are popularly referred to as Stage 1 and casein dominant as Stage 2. There is no need however to change from the whey based formula chosen at birth until the child is given cow's milk at the age of a year.

Whey Dominant Formula	Casein Dominant Formula
60% Whey, 40% Casein	80% Casein, 20% Whey
Cow & Gate Premium Farley's First Milk Milupa Aptamil First SMAGold	Cow & Gate Plus Farley's Second Milk Milupa Milumil Milupa Aptamil Extra SMA – White

#### IMPORTANT COMPARISONS BETWEEN INFANT MILKS

Per 100mls	Nutriprem	Breast Milk	Whey based Formula	Casein Based Formula
<b>Average Calories</b>	80	70	67	67-69
<b>Simple Sugar</b>	Lactose	Lactose	Lactose	Lactose/sometimes maltodextrin
<b>Protein</b>	2.4	1.3	1.45	1.7
<b>Sodium (mg)</b>	0.041	15	17	20
<b>Renal Solute Load</b>	148	86	91-97 (range)	109-113 (range)
<b>Calcium (mg)</b>	100	35	39-52 (range)	56-80 (range)
<b>Iron (mg)</b>	0.9	0.076	0.66	0.7
<b>Vitamin C (mg)</b>	16	3.8	8.0	8.0
<b>Vitamin A (_g)</b>	227	60	72	70
<b>Vitamin D (_g)</b>	5.0	0.01	1.1	1.1
Per 100mls	Follow On Formula	Soya Formula	Cows Milk	
<b>Average Calories</b>	67-64	67	67	
<b>Simple Sugar</b>	Lactose/ sometimes maltodextrin	Glucose syrup or sucrose	Lactose	
<b>Protein</b>	2.0	1.8	3.4	
<b>Sodium (mg)</b>	30	18	50	
<b>Renal Solute Load</b>	119-150 (range)	108	223	
<b>Calcium (mg)</b>	72-90 (range)	54	120	
<b>Iron (mg)</b>	1.3	0.8	0.05	
<b>Vitamin C (mg)</b>	10	8.0	2.0	
<b>Vitamin A (_g)</b>	70	80	31	
<b>Vitamin D (_g)</b>	1.1-1.8	1.1	0.02	

The figures in the table are averages of the formulae produced by different manufacturers, with the exception of the premature formula where Nutriprem 1 is quoted, as this is the formula of choice for premature babies in Rotherham. Nutriprem 1 is only recommended for babies of up to 2000g and, since it is not prescribable, only while staying on SCBU. Once discharged home, Nutriprem 2 will usually be prescribed by the child's General Practitioner for a period up to the age of 6 months uncorrected age. Beyond this age it is recommended that a whey based first stage infant formula is chosen.

The whey dominant formulae are as close as the manufacturers can get to an average breast milk without the advantage of fore and hind milks being offered at different stages of the feed. They are based on dialysed cow's milk whey protein, whereas the casein dominant formulae are made from the entire protein fraction. The formulae are prepared by removing excess protein and minerals and adding carbohydrates, fats, vitamins, iron and other trace ingredients. Formulae produced by the reputable manufacturers noted above are constantly being altered in their composition depending upon the results of ongoing research. It should be noted that babies fed on these formulae that are as close as the manufacturers can get to breast milk will begin to exhibit feeding patterns similar to those of a breast fed baby. **Parents should be warned that, as the formulae become more sophisticated the child's feeding pattern may more nearly approach that of a breast fed baby – that is the child demands to be fed on a more regular basis than the traditionally held belief of four hourly intervals.** It should be pointed out that this is a good sign and not an indication that the formula is not satisfying the child, thus prompting a change.

#### Points to note from the table are:

The energy content of whey dominant, casein dominant, soya formula and cow's milk are the same. Follow-on formula is slightly higher in energy and breast milk is higher still even though this is traditionally perceived as being 'thin'. Formulae designed for premature babies have the highest energy content.

Casein dominant formulae are perceived to be more satisfying than whey based, despite the equal calories. This may be because the higher protein content (largely of casein origin) slows digestion.

Maltodextrins and the glucose which has to replace lactose in the soya formulae are cariogenic (potentially lead to dental caries). Where the infant has teeth it is important to limit the frequency of feeds and discourage the use of a feeding bottle.

Renal solute load is lowest in breast milk and gradually increases through the series. It is high in preterm formula, which probably explains some of the constipation problems in these babies.

Calcium is considerably lower in formula than in cow's milk. This underlines the value of using cow's milk after a year where the child has a good diet and is decreasing milk intake below 500mls.

Iron is very well absorbed from breast milk, hence the low content is not of concern. The increased iron content of follow-on formula (well above that of cow's milk, which is a poor source) means that the main value of follow-on formula is for children over

1 year whose iron intake is poor due to slow development of a good mixed family diet pattern. Otherwise there is no need to use follow-on or in fact move from breast or whey formula before cow's milk is introduced once the baby is a year old and taking a good mixed diet. The use of tea should be discouraged with any milk fed to a baby because tea prevents iron absorption in addition to diluting the nutrients in the milk (2).

Cow's milk is low in vitamin C, needed in its own right as well as its role in aiding iron absorption. By the time cow's milk is being offered as the main drink fruit, vegetables and potatoes should be regularly included, which then makes the vitamin C content of any milk offered irrelevant (2).

Recommendations for vitamin supplementation are that from six months of age, babies on breast milk and infants of any age who are having less than 500mls formula milk a day should be given age-appropriate supplements of vitamins A,D and C. This should continue until weaning is complete and a good varied diet is being taken (3). Vitamins can be obtained from pharmacies, supermarkets and through 'Healthy Start'.

All reputable first stage (whey dominant), and some casein dominant products now have the addition of Long Chain Polyunsaturated Fatty Acids (LCPUFA) in varying concentrations. These are important for the development of cognitive skills and eye sight. Farley's, Cow & Gate and Milupa source these from fish and vegetable oils and SMA from fungi and algae. This makes SMA the better choice for a family that prefers to be vegetarian. Research by Lucas (4) concludes that the addition of LCPUFA to formula is safe. Although there is insufficient evidence to conclude that development of term infants can be improved by LCPUFA supplements, there is reasonable certainty that any benefits are likely to be modest and smaller than the advantage of breast milk over formula for infants.

Breast milk is the best means of supporting the child's immune system. Different formula manufacturers have approached this shortfall in their products by including nucleotides or the prebiotic fructo-oligosaccharides. Nucleotides are postulated to enhance the immune response and prebiotics to promote an optimal gut flora.

## Other Milks

**The continued use of breast milk or whey based infant formula up to one year of age is recommended, at which time doorstep cows milk may be introduced.** This is because all infant formula are fortified with minerals and vitamins to recommended levels and therefore provide a safety net for those most likely to be deficient in an infants diet (Vitamin D and Iron for example) (3).

### Follow On Milks

These are not recommended as a replacement for breast milk or infant formula before six months. They are suitable for use from 6 months. The content of iron, vitamin D and some other minerals is higher than formula milks. Consequently they have been marketed as helping to prevent iron deficiency anaemia. **There is as yet no evidence that they are more effective than ordinary infant formula in helping to prevent iron deficiency anaemia.** However ordinary formula milks, which are recommended for the first year, are fortified with iron and have been shown to be effective in preventing iron deficiency anaemia.

The continued use of infant formula up to one year and introduction of iron and vitamin C rich foods early in the varied weaning diet is the preferred choice of action for most infants. Follow on milks may be useful beyond the age of 1 year, if the weaning diet is of particularly poor quality and if the cost is not prohibitive.

Examples are:

- Step Up (Cow & Gate)
- Comfort Follow on (Cow & Gate)
- Farley's Follow on Milk (Farley's)
- Forward (Milupa)
- Progress (SMA)
- Follow on Milk Drink (Hipp Organic)

One major disadvantage of follow on milks is that they are not included in the Healthy Start Initiative.

All the above is also true of the emerging selection of "toddler" formulae. There is no substitute for persevering with developing a varied and nutritious diet which includes iron rich foods alongside three portions of unmodified cow's milk products each day.

## Specialised Formulae

### Soya Infant Formulae

Soya infant formulae should only be used for infants with proven cows milk intolerance who refuse hydrolysed or elemental formula despite perseverance. There is evidence that some babies allergic to cows milk will also be allergic to soya. These milks should only be used on medical recommendation. There has been some research recently (6) (BDA Paediatric Group Statement on Soya) that indicates that the phytoestrogen content of soya beans too closely mimics the effect of human oestrogen and can therefore produce changes in the sexual development of a baby who is exposed to large quantities. It is therefore particularly important that alternative cow's milk free formulae are considered within the period when the baby is getting all its nourishment from the formula and especially in the very early months of development in boys. Dietetic advice is essential at the weaning stage as these children will need to avoid all milk products during weaning and may need advice about the cautious introduction of other potentially allergenic proteins.

Examples are:

- Farley's Soya Formula
- Infasoy (Cow & Gate)
- Isomil (Abbott)
- Prosobee (Mead Johnson)
- Wysoy (SMA)

As noted above, there has been concern about the potential link between soya infant formula and nursing bottle dental caries. The non-milk extrinsic sugars used in soya infant formula in place of lactose have a greater cariogenicity. This reinforces the need to only use these formulae where there is clear medical need.

When used, parents should avoid using a feeding bottle as a comforter, or feeding for prolonged periods of time or leaving it with the baby at night time. Normal dental hygiene practice is also an important preventative measure. As with all infants, feeding from a cup as soon as they are able to safely drink in this way should be encouraged (3).

There are several types of soya milks available in the shops, particularly from health food stores. These milks are not the same as infant formula and should not be used as a substitute. Many have low energy, vitamin and mineral contents. However once a child has reached their first birthday these can be used instead of cow's milk, if the family prefer, provided a fortified product is selected.

### **100% Whey Formulae**

Comfort First (Cow and Gate). This product is 100% whey that is partially hydrolysed. It also contains modified vegetable oil and oligosaccharides (prebiotics). It is claimed to aid digestion and thus reduce discomfort.

### **Lactose Free Formulae**

These are appropriate for children who are intolerant of lactose but can tolerate the milk protein. Many occurrences of lactose intolerance are short-lived and lactose can be cautiously reintroduced after a period of one to three months. The formulae are cow's milk protein based and, in fact are only different from the standard formulae in that the lactose is replaced by glucose. They can be prescribed or may be purchased in pharmacies and supermarkets. As noted in the section above, there is a danger to teeth from the glucose in these formulae.

Examples are:

- Enfamil LF (Mead Johnson)
- SMA LF
- Galactomin 17 (SHS) – prescription only

### **Hydrolysate based Formulae**

These feeds have their protein source in a hydrolysed (peptides) form and are therefore suitable for use where the child cannot tolerate cow's milk protein. The protein could be sourced from whey, casein, soya or pork. Care needs to be taken in the choice of these products if the family have religious or other reasons for wishing to avoid pork. These are highly specialised feeds and must only be used on medical/dietetic recommendation and with dietetic support. Glucose syrup and corn starch are used as the carbohydrate source in many, again with implication for dental disease if fed for long periods of time, especially from a bottle. The fat sources vary, those with medium chain triglycerides (MCT) will cost more and are only necessary where the infant has impaired fat digestion. See table below which summarises the feeds available on ACBS prescriptions. Pepti is usually tried first in Rotherham because it is considered to have a more acceptable taste. However care should be taken if there is a possibility of lactose intolerance because this feed contains lactose.

Formula name	Manufacturer	Protein source	Fat source	CHO source
<b>Alfare</b>	Nestle	Whey	MCT, milk and corn	Maltodextrin, potato, residual lactose
<b>Nutramigen</b>	Mead Johnson	Casein	Mixed vegetable oils	Glucose, corn starch
<b>Nutramigen 2</b>	Mead Johnson	Casein	Mixed vegetable oils	Glucose, corn starch
<b>Pregestimil</b>	Mead Johnson	Casein	Vegetable oils and MCT	Glucose, corn starch, dextrose, maltodextrine
<b>Prejomin</b>	Mead Johnson	Soya and pork	Mixed vegetable oils	Starch, maltodextrin
<b>Pepti</b>	Cow and Gate	Whey	Vegetable oils	Glucose, lactose
<b>Pepti-Junior</b>	Cow and Gate	Whey	Vegetable oils and MCT	Glucose
<b>Pepdite</b>	SHS	Soya and pork	Mixed vegetable oils	Glucose
<b>MCT Pepdite</b>	SHS	Soya and pork	Vegetable, nut and maize oils and MCT	Glucose

If the child is unable to tolerate the hydrolysed protein feeds there is also an amino acid based feed available called Neocate (and Neocate advanced for older children). This feed contains glucose syrup and the fats are 95% long chain triglycerides (LCT) and 5% MCT. The formula is manufactured by SHS.

There are a large number of specialised formulae available for use with chronic and metabolic disorders and unusual intolerances. These feeds should always be supervised by a Paediatrician and Dietitian.

### Thickened Formulae

Pre-thickened formulae are now available for infants with reflux or possetting. They are casein based infant formulae with added pre-gelatinised starch. This allows them to thicken when in contact with the acid in the stomach and thus increases the feed thickness while still flowing easily through the teat. Children taking these formulae should not be prescribed thickeners or anti reflux medication such as Gaviscon since this can lead to over thickening. It is possible to purchase these over the counter or they may be prescribed. Most infants no longer need this sort of preparation once solids have been established as part of their diet. However they are suitable for use up to the age of one year.

- Enfamil AR (Mead Johnson)
- SMA Stay Down

## High Energy Formulae

These are available on prescription only. They are more energy and protein dense than the standard formulae and are designed for promoting catch up growth. They are only available ready to feed. There are two of these available:

- Nutricia Infatrini
- SMA High Energy

## Formula Feeding Problems

### Constipation

- Check it is constipation i.e. small, hard, maybe greenish pellets
- Return to whey dominant formula
- Check feed concentration
- Advise extra cooled boiled water.
- Refer to GP

Sugar should not be added to drinks or feeds to relieve constipation. Very dilute fruit juice would be unlikely to be more effective than water alone unless the taste encouraged the infant to drink more water. However care should be taken, especially in infants who are very small, or are failing to grow adequately, that they do not compromise their intake of milk by taking too much alternative fluid.

### Colic, unsettled baby

- Check bowels
- Check feeding position
- Check feed concentration
- Check winding method
- Check over feeding
- Check teat size
- Observe a feed (HV or Midwife)
- Offer Support/Self Help Groups
- Develop Feeding Diary
- Some parents find colic preparations helpful

### Excessive Possetting

- Check for overfeeding
- Support and reassure
- Observe feed
- Review weight gain
- Examine feeding position
- Develop a Feeding Dairy
- Refer to GP if possetting is excessive and weight gain is inadequate.

### Poor weight gain

- Check formula preparation
- Check amount and frequency of feeds
- Observe feeds
- Refer to GP/CMO if appropriate

### Acute Diarrhoea

(See policy in appendix) Breastfeeding should continue but bottle feeding can be stopped for 24 hours and then reintroduced at full strength. Never use oral re-hydration solution alone for more than 24 hours.

### Water

Water is the main source of microbiological hazard in infant formula feeding (3). Water for feeds should only be taken from the cold water tap and should have been boiled once only for infants up to 6 months. Please see note at the beginning of this section about the new guidelines for making up individual feeds.

Water softeners should be avoided for babies' feeds due to the risk to kidneys of increased sodium in the water. Many of the natural mineral bottled waters are unsuitable for infants due to their mineral (sodium, nitrate, fluoride, sulphate) content. However there are bottled waters that are suitable for infant feeding which may state 'suitable for infant feeding' on their labels. When travelling abroad where labels may not state a bottled water is safe for infant feeding (or where the language is not understood) a bottled water with a sodium content less than 20mg of Sodium (Na) per 100ml should be used, as the reconstituted feed should not contain more than 35mg sodium per 100ml. This is useful for families travelling abroad or when tap water is unsafe for consumption, although in Britain bottled water is seldom advantageous over tap water. Bottled water should be boiled and cooled before use as with ordinary tap water (1).

Water filters should not be used for babies until more research is available on the ingestion of silver (found in the cartridges) and on the levels of sodium (7).

### Storage and Preparation of Milk

Bottles used for milk should be sterilised, even for the older infant. Feeds should ideally be made as required (see start of formula feeding section) if it is necessary to make up multiple feeds they should be cooled as quickly as possible and then stored in the fridge. Putting a batch of hot feeds immediately into the fridge could raise the temperature and compromise the safety of all the contents (1).

Use a thermometer to check the temperature of the fridge is kept at 5°C or less.

No feed should be stored for longer than 24 hours (8).

**It is not advisable to use a microwave oven to warm feeds as heating is uneven, giving hotspots.** Heating continues after the milk is removed from the oven, giving a risk of scalding (9).

**Microwave ovens should not be used to sterilise feeding equipment without the correct microwave equipment (10)** Sterilising equipment suitable for use in the microwave ovens is readily available for purchase.

Testing the milk will not necessarily give an indication of the overall temperature.

## Obtaining Formula Milk

Formula milk can be obtained at most chemists, supermarkets and some local shops now it is no longer available from NHS clinics. As the Welfare Food Scheme is replaced by Healthy Start the tokens available to those on low incomes and to teenage mothers will be accepted in payment for fruit, vegetables, formula and cow's milk at participating outlets throughout the borough. See [Appendix 2](#) for website address.

## Cows Milk

Whole cows milk is not recommended as a drink until one year of age. It contains little vitamin D and iron and has been shown to cause sub-clinical gastrointestinal bleeding in some children (11). Low fat, skimmed milk and dried milks, evaporated and condensed milk are unsuitable as infant feeds. When a child starts on cows' milk as the main drink, attention should be paid to the amount of iron in the child's diet and vitamin supplements given if there is any doubt about the nutritional adequacy of the diet.

These recommendations refer to using milk as drinks. **Milk however can be used in milk puddings, custards, sauces and yoghurts from six months in non-atopic children and in families where there is no family history of atopy (2).**

Use of low fat milks is not recommended until the child is older and is eating well on a varied diet and is growing well. **Semi-skimmed milk can be used from 2 years of age and fully skimmed milk from 5 years of age (3).**

## Goat and Sheep's Milk

These should not be given to infants under 1 year, this includes goats' milk infant formula (3). They are generally unpasteurised and not tuberculosis tested. The content of iron and various vitamins is low. Claims that these milks are less allergenic than cows milk have not been substantiated. Goats' milk protein and lactose content is similar to that in cows' milk and therefore makes it unsuitable for the treatment of either cows' milk protein or lactose intolerance

From the age of one year these may be given as long as precautions against mineral and vitamin deficiencies are taken and due regard is paid to microbiological safety.

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# PRETERM INFANTS

## Breastfeeding the Preterm Infant

Breastmilk is able to provide protection against infection. This is particularly important for preterm infants who have the disadvantage both of a significant immature immune system and the deprivation of placental transfer of immune protection such as immunoglobulin G, which predominately occurs during the third trimester. Some mothers who may not intend to breastfeed in the longer term still wish to provide expressed milk for their babies initially. Preterm milk is higher sodium, protein and can be higher in fat, depending on the degree of breast emptying, which are all good for growth. Preterm infants receiving breastmilk are substantially less likely than formula fed infants to develop necrotising enterocolitis **(1)**.

Mothers of preterm infants who wish to breastfeed should receive prompt, expert advice and continuing emotional and practical support. Infants below 34 weeks gestation and ill infants of any gestation may be unable to suck or absorb feeds satisfactorily. Infants from 34 weeks onwards can generally coordinate sucking and swallowing, but may require supplemental feeds of expressed milk initially **(2)**.

A mother will need to express milk to initiate and maintain her milk supply. Expressing is best started within the first 24 hours, ideally as soon after birth as possible. Although some mothers prefer to hand express their milk, it is often easier for mothers expressing frequently to use a hand or electric breast pump. The mother should express at least 6-8 times in 24 hours, including at least once at night. Short frequent sessions are better than fewer long ones. Dual pumping increases the amount of milk and may result in milk with a higher fat content, to promote growth. Skin to skin contact (Kangaroo Care) at the breast should be encouraged whenever possible to stimulate the baby's feeding reflexes and the mother's milk supply **(3)**. Breast pump loan is available whilst baby is in the Special Care Unit.

Expressed breastmilk can be frozen until required or given by naso-gastric tube or cup if the infant is unable to suck. Cup feeding, rather than bottle feeding, may help the baby move from tube feeds to breastfeeding. The baby can also take expressed milk or formula via a supplementer if mother wishes **(1)**.

If milk supply begins to diminish after a few weeks, in spite of regular expressing, medication to boost prolactin levels may be helpful. Typical times for this to happen are around 4-6 weeks and 3 months. Metoclopramide or Domperidone have been used in this situation, but should only be considered after first line measures such as increased frequency of expressing and other physiological means **(1)**.

See [Expressing and storing breastmilk \(Breastfeeding Section\)](#). The medical practitioner must take responsibility for prescribing drugs off license – contact Medicines Information Service, SCBU or Infant Feeding Coordinator for more information see [Drugs in Breastmilk \(Breastfeeding Section\)](#).

Human Milk Banking – donated milk is not available routinely in Rotherham – the nearest Milk Bank is at Huddersfield Royal Infirmary.

Babies under 1500gm at birth have higher requirements of protein, calories and minerals than term babies. Their requirements are less likely to be met by expressed breast milk in the early weeks and breast milk fortifier is added to expressed breast milk if needed (4).

### Breast Milk Fortifiers

In hospital some babies who are fed expressed breast milk will have their breast milk supplemented with a breast milk fortifier to promote adequate growth. These add additional protein, energy, minerals and vitamins to the expressed breast milk. These fortifiers are useful as they can prevent the need for various additives such as sodium and potassium being given to the infant. However, larger and older infants may tolerate up to 220ml/kg of breast milk, which may prevent the need for fortification (4). Therefore it is advisable to look at increasing the volume of milk before the use of breast milk fortifiers is considered.

Examples are:

- Nutriprem Breast Milk Fortifier (Cow & Gate)
- Eoprotin (Milupa)
- Enfamil (Mead Johnson)
- SMA Breast Milk Fortifier (SMA)

Nutriprem Breast Milk Fortifier is routinely used in Rotherham. Infants are not discharged from hospital on breast milk fortifiers as they should be growing well without breast milk fortifiers by the time they are ready for discharge.

### Low Birth Weight Formulae

These formulae provide more energy, protein and minerals per unit of volume than standard whey based formula. They are intended for preterm and low weight babies and should be used on medical/dietetic recommendation.

Examples are:

Feed	Use	Approved for hospital use	Approved for Community use
Nutriprem 1 (Cow & Gate)	< 2000g	Yes	No
Nutriprem 2 (Cow & Gate)*	>2000g	Yes	Yes
Osterprem (Farleys)	<2000g	Yes	No
SMA Gold Prem (SMA)	Until deemed as term	Yes	No
Preaptamil (Milupa)	<2000g -2500g	Yes	No
Prenan (Nestle)	LBW infants up to 4-5kg	Yes	No

\*At present the only Nutrient Enriched Post Discharge Formula ACBS approved

At present none of the manufacturers are adding prebiotics to these preterm infant formulae, however, some companies are running trials in the United Kingdom at the moment to establish whether this practice would be safe and/or beneficial.

Some formulae are enriched with Long Chain Polyunsaturated fatty acids (LCP) both AA and DHA, nucleotides, selenium and b-carotene as these have been proven to be safe and beneficial for preterm infants through various clinical trials.

### **Post discharge Nutrition for the Breast and Formula Fed Preterm Infant**

Around 33-34 weeks gestation feeding by breast or bottle can take place normally, if the infant is well. If not specialist help is given in hospital.

There are two very significant implications for post discharge nutrition for the breast-fed and bottle-fed infants. Firstly, there is the increased demand for nutrients as shown by the very high volume intake and secondly an accelerated rate of bone mineralization at approximately 42-43 weeks post conception age (1).

At this stage parents say their child is always hungry and needs to be fed all the time. Parents find it very difficult, as the routine that was established exists no longer and they feel they have taken a few steps back with feeding. We need to reassure parents that this is normal and a manageable feeding pattern can be established once the growth spurt has passed. Referring mothers for additional breastfeeding support at this stage may be helpful.

Therefore it is crucial for the breastfeeding mother to achieve good lactation before the infant is exclusively fed at the breast. For the breastfeeding mother to meet the demands of catch up growth she may need to produce significantly more than her infant needs while the infant is still hospitalized (1).

Formula-fed infants now have the alternative of Nutrient Enriched Post Discharge Formula (NEPF). These are designed to bridge the gap between the term and preterm formulae and allow the infants to ingest comparable amounts in smaller volumes than would be needed with a term formula.

Rotherham Special Care Baby Unit uses Nutriprem 2 as their post discharge NEPF for bottle fed infants who are over 2kg and recommend that it is used till six months actual age (age from birth date), however it is prescribeable to 6 months corrected age in the Children's BNF.

Once catch up growth has been achieved the infant should be changed on to a standard whey based term formula. The term "catch-up growth" implies that an infant or child is demonstrating accelerated rates of growth following a period of growth failure or faltering. The higher calorie, vitamin and mineral composition of NEPF, is of no benefit for prolonged use therefore no infant should be on a NEPF after the age of 6 months corrected or catch up growth is achieved and parents should be advised and encouraged to change to a standard whey based term formula. Furthermore, a disproportionate amount of catch up growth at this age has been correlated to obesity, hypertension and diabetes in later life (5).

The NEPF should be replaced by standard whey term formula (first milk), which should be used until 14-18 months corrected age, depending on the adequacy of the weaning diet. It is advisable to avoid using a casein based formula (second milk) as these are not formulated for preterm babies. Organic formulae may not be advisable, due to the absence of LCP's. Vegan parents should be informed that soya based formulae are also not recommended due to the high amounts of phytoestrogens. Contact Dietitians for further advice.

### **Poor Weight Gain**

When faltering growth occurs in breast-fed infants referral for experienced breastfeeding support is strongly advised. Encourage skin to skin contact (Kangaroo Care), check that the infant is latching on correctly, a period of relaxation for the mother and concentrating on feeding for few more days may all be beneficial to improve weight gain (1). See appendices See [Breastfeeding](#) section and [Appendix 3 Taking a Breastfeeding History and Breastfeed Observation Checklist](#).

If poor weight gain is a concern for bottle fed infants a referral to a Dietitian is needed so that the patient can be assessed and the necessary adjustment to feeds and or the addition of supplements can be prescribed and monitored. Continuing on a NEPF is not best management as there are better formulae available.

Preterm infants with poor weight gain who are weaning need their foods fortified to help them gain weight. Their parents should be given advice about food fortification of solids with household foods such as cheese, double cream, jam and fats. A dietetic referral can be considered for further intervention should there be no improvements in weight gain. It is important that parents should be discouraged from pushing as much food and milk as possible into the baby to maximise weight gain as this may lead to feeding problems.

### **Weaning onto solids**

The majority of premature infants will move towards normal patterns of feeding as they pass their full term gestational age.

The Department of Health acknowledges that the Infant Feeding Recommendations are for healthy, term babies and are not appropriate for premature or sick infants (6). Due to prematurity it varies for each child when they are ready to wean. It is advised that weaning should be started in preterm babies at 6 months uncorrected age following the same guidelines as for any baby at this age. However, weaning should not start until the infant has lost the extrusion reflex and is able to eat from a spoon.

If an infant is used to a spoon and semi-solids by 7 months the introduction of lumps should be easier. If this is left till later there may be a higher chance of feeding difficulties (7). Children who continue to experience difficulties in the control and management of small lumps, causing choking and gagging beyond 12 months, may need referral to a specialist speech and language therapist for feeding assessment and/or advice.

Fussy eaters who are difficult to feed may need expert advice from a Dietitian to ensure that the diet remains adequate at all times.

## Cows' Milk

It is important that pasteurised cow's milk is not introduced before 14-18 months (7), as there is a risk of iron deficiency anaemia if introduced before. Once cow's milk is the main milk drink, all infants should receive children's vitamin drops containing Vitamin A and D until 5 years of age according to government guidelines.

## Vitamins and Minerals

Vitamin D is needed for bone growth and mineralization, preterm infants who are exclusively breast fed should have a vitamin D supplement as their needs exceed the low levels supplied in breast milk.

Preterm infants who are exclusively breast fed should have vitamin A supplement as their needs exceed the low levels supplied in breast milk. Both Vitamin A & D are found in Department of Health Vitamin Drops for Children at appropriate levels and should be given from starting on expressed breast milk until 5 years of age as per the Coma report (8).

## Iron

Preterm and low birth weight infants have much depleted iron stores compared to term infants and require iron supplementation at an earlier age than term infants. It is recommended that iron supplements are started between 4-6 weeks of age. The recommended enteral intake is around 2mg/kg per day. Preterm formula should contain 1.3mg/100ml in order to ensure 2mg/kg when fed at 150ml/kg. For those below this level an iron supplement is needed<sup>1</sup>. Infants who are breast fed post discharge will need an iron supplement, Sytron 1ml per day until their weaning diet contains sufficient iron.

Rotherham Special Care Baby Unit starts supplementing iron at 4 weeks of age if the infant has breast milk. For formula fed infants the NEDF contains sufficient iron and supplements are not required. Once they are changed over to standard milk formula, which has less than 1.3mg/100ml iron the infants needs Sytron 1ml per day until their weaning diet contains sufficient iron.

Iron should not be given at the same time as calcium or phosphorus supplements as insoluble compounds may be formed, reducing the bioavailability of each mineral. Ideally supplements should be given after a feed, however, some babies may refuse to take it after a feed. Therefore it is given with small amounts of milk at the beginning of the feed. Further information about iron can be found in the [weaning section see Minerals](#).

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# WEANING

## Weaning onto solids

This is the process of gradually introducing semi-solid food, whilst milk feeding is continued. Weaning extends over a period of months during which time the infant progresses through a change in food consistency from pureed, to mashed, to cut up until the child is able to eat normal family foods.

Introducing solid foods is often a confusing process and many parents feel a lack of confidence about deciding which foods their baby should have, making this a potentially stressful time.

Advice on weaning should be offered to parents at an early stage before the decision is made to start giving a baby solids.

Good nutritional habits begin at an early age. Health professionals should take the opportunity to give healthy eating advice to the family whilst discussing weaning. The benefits of eating meals together should also be mentioned. (Details on nutritional requirements for all family members can be found in the DHSS Report 41 (1).

It is not recommended that infants and young children have a high fibre, low fat diet. They have relatively high energy requirements per kg of body weight.

Such diets can be bulky and of low energy density making it difficult to eat enough to meet energy requirements. Fat is a useful energy source. Fibre may impair the absorption of important minerals. (Stevens 1990) (2).

Advice given should be sensitive to individual circumstances; religion, culture, finances, resources, etc.

## When to wean

The age at which individual infants will require solid food varies.

Government recommendations published in 2004 (3) advocate the first introduction of solids to both breast and formula fed infants to be at 26 weeks (6 months). It is acknowledged that many parents will prefer to introduce solids at an earlier date, in these cases the earliest possible age that they are advised to do so is 17 weeks (4 months) (4), (5), (6).

### Why is it important not to introduce solids too early?

- Milk continues to meet all nutritional needs and would not be able to do so if volumes were to be reduced to make room for less nutrient-rich foods. In addition solids may reduce the bio-availability of nutrients in breast milk (7), (8).
- The immature gut is more vulnerable to infection and permeable to antigens which may cause allergic reactions, particularly as the immune system is poorly developed.
- The immature kidneys may not be able to cope with the renal solute load and create a risk of hypertonic dehydration.

- Neuromuscular co-ordination is not well enough developed to assist in the feeding process
- Stopping predominant feeding with breast milk before 6 months has been associated with an increased risk of wheezing and lower respiratory infections (9)

Care needs to be taken however that the mother's nutritional status is good as maternal anaemia can impact on the infants iron status (10).

### Reasons for starting to introduce solids at 6 months

- To meet increasing nutritional requirements not met by breast or formula milk alone
- Baby's store of some nutrients, notably iron and Vitamin D (11), (12) are becoming depleted
- To encourage chewing which helps in the development of the muscles used in speech
- To reduce the chance of food refusal. It is important that a wide range of tastes are introduced and repeatedly reintroduced from the outset. This is because infants will accept diversant flavours at this age but are more suspicious of unfamiliar tastes as they get older
- Babies are developmentally ready to wean at about six months because this is the time when they can be actively spoon fed with the upper lip moving down to clean the spoon. By nine months they are able to control their tongue to enhance swallowing of mixed texture foods and by twelve months they are able to swallow with closed lips
- During this time the infant becomes more adept at picking up and moving things towards the mouth and therefore will be developing self feeding and be able to take finger foods

### Stages of Weaning

Weaning does not really occur in stages but is in fact a progression from soft, sloppy, single consistency food to a diet containing a wide range of tastes and textures.

Suitable initial weaning foods include smooth purees of non-wheat cereals, fruit, vegetables and potatoes, e.g. baby rice, puréed home cooked rice, apple or other pip or stone fruit puree, carrot or other root vegetable puree, mashed potato.

Parents who choose to wean their baby earlier should be particularly encouraged to use such suitable first weaning foods, and should not introduce wheat before the age of six months. Delaying the introduction of solid foods until the infant is six months old will usually result in the stage where only very smooth, sloppy foods are taken being very short, or even being bypassed completely. Children will quickly be able to process thicker foods with soft lumps and those that need chewing. In fact this should be encouraged to prevent rejection of lumpy foods if they have not been introduced when the baby's development is ready for them (at about 7 months) (13).

Just 1-2 teaspoons should be offered at first at one 'meal' of the day at the most convenient time of day for mother and baby. Some breast or formula milk may need to be given first to take the edge off the baby's hunger.

When taking food from the spoon, the baby will initially try to suck. This reflex action results in the food being pushed out of the mouth, especially when the baby is not ready for solids. It may take a few attempts to master the skill of eating from a spoon. Parents need to understand this and have patience.

Solids should not be added to the bottle as this can lead to excessive calorific density of feeds, it defeats the purpose of initiating chewing and there is a risk of choking.

When the baby has accepted eating from a spoon, different tastes and textures can be introduced, e.g. well cooked pureed meat and pulses, plus a wider variety of fruit, vegetables and cereals.

It is no longer recommended that all infants be introduced to one new food at a time. However babies from atopic families may still find this useful to identify any potential allergies **(14)**. There should be no reduction in the baby's usual milk.

After the initial introduction and acceptance of 'solids' there should be a gradual increase in quantity and further variety of stronger tastes and textures towards a balanced diet, e.g. meat, fish, eggs, dairy food, all cereals and pulses as well as a varied selection of fruit and vegetables. Weaning should be a process not two or three distinct changes, where chewing should be encouraged by the gradual introduction of less smooth foods.

The pace is still dictated by the child. The number of milk feeds can now start to be reduced.

Soft finger foods may now be tried e.g. toast, banana, green beans.

Family foods can be mashed or blended to a texture containing some soft lumps. Where commercial (jars and packets) infant foods are used they should now be second stage. However these should be chosen carefully because it is not a good idea to feed mixed consistency foods, for example where a thin, watery component contains hard lumps. Such foods require too many processes to be performed in the mouth at the same time (i.e. suck and swallow for the fluid part, moving puree around the mouth and chewing and managing harder lumps).

Infants may reject some foods initially as they are unfamiliar rather than through dislike. It is important to repeatedly re-introduce such rejected foods again later.

In the later stages of weaning, three meals per day are suggested with two or three snacks in addition. Food should be chopped.

Finger foods continue to be important towards full self feeding. Small cubes of fruit, vegetables, toast or soft bread should be included at each meal.

By the age of one year the diet should be mixed and varied. By this time, separately prepared foods are no longer needed and the full family diet can be offered, although care should be taken to limit the salt content of the diet.

Bottles and teats used for milk should always be sterilised irrespective of the age of the child. Bowls, spoons, cups and other utensils used in the preparation and serving of food for children over six months can be washed up using hot water or a dishwasher taking into account normal food hygiene considerations.

## Home made versus commercial weaning foods

### Home Prepared Weaning Foods

A weaning diet of home prepared foods provides an excellent start to mixed feeding and seems to encourage easier progression to normal family foods than when the infants are fed mainly on commercially produced foods.

Parents should be advised to avoid adult convenience foods such as gravy mixes, instant potato, soups, sauces and ready meals because of their dangerously high salt content. Home cooked foods should contain no added salt.

It is seldom necessary to add sugar to first foods although a very small amount may be necessary to make foods such as sour fruits acceptable. Small children are usually more tolerant of a sour taste than adults.

The nutrient content of home prepared foods reflects that of the foods used! Limited analyses have found the nutrient content very variable with a tendency for sampled foods to be low in fat, protein and iron. The low energy densities also found were ascribed to lower sugar content when compared to manufactured foods (15).

Appropriate advice and support is essential to encourage parents to use suitable family foods for weaning.

### Commercially Produced Infant Foods

These can be very convenient but an infant fed a diet of commercial foods may be reluctant to change later to home prepared foods.

Many are mixed foods and do not give the child a chance to learn to identify individual tastes.

Iron fortified foods can be useful to reduce risk of iron deficiency.

Some first weaning foods contain inappropriate food items, e.g. milk and milk products and wheat or oats in products labelled as suitable as initial or first stage weaning foods. These are likely to be fed to babies younger than six months.

Foods labelled as “organic” will not be fortified with vitamins or have any other additives.

Some foods marked for a 7 month baby have the mixed consistency of a watery part, a paste and hard lumps that is very difficult for “learners” to manage in their mouths.

## Vegetarian Weaning

The proportion of people in Britain eating a vegetarian diet is increasing. This could be a result of a number of factors including culture, religious belief, animal welfare or health concerns.

The general term vegetarian is not specific and covers a wide variety of diets with different restrictions.

**Demi/Semi Vegetarian** – Eats no red meat – Often eats poultry or fish

**Lacto-Ovo Vegetarian** – Eats no meat or fish – Eats dairy produce and eggs

**Lacto Vegetarian** – Eats no meat, fish or eggs – Eats dairy produce

**Vegan** – Eats no animal products

Weaning a baby onto a vegetarian diet is the same process as weaning onto a normal diet, but extra care must be taken to compensate for removing animal products from the diet. Care needs to be taken that the child is consuming enough of the right foods to provide the correct levels of nutrients to avoid nutritional deficiency.

It is very difficult to achieve nutritional adequacy for energy, minerals and certain vitamins during weaning on Fruitarian, Rastafarian or Macrobiotic diets. These extreme diets are not to be recommended.

Awareness of potential difficulties with vegetarian weaning can help prevent nutritional deficiencies and preserve the potential benefits that a vegetarian diet can offer.

Information on the specific nutritional aspects of a vegetarian diet are included in the following section – Nutrients of Concern in the Diets of Infants and Young Children.

### **Ethnic Minority groups weaning**

Rotherham has a sizeable ethnic minority population. The largest ethnic minority group being Moslem Asians from the Mirpur area of Northern Pakistan. Other groups include Yemenese, Somali and Chinese.

When making dietary recommendations it is imperative to recognise that dietary practices can be as important as dress, language or religion (each supporting each other). Traditional eating patterns have assisted with transmitting cultural values through society. It is therefore essential that all health professionals giving advice on diet should understand and be aware of traditional eating customs and foods, religious restrictions, cooking methods and possible nutritional related problems.

Generalisation of the degree of adherence to religious dietary constraints is impossible and assumption on the basis of people's religion should not be made.

Information on the specific nutritional aspects of an Asian diet are included in the following section – Nutrients of Concern in the Diets of Infants and Young Children.

[Weaning the Preterm Baby – See Preterm Section](#)

### **Food allergies and intolerances**

FOOD ALLERGY is a condition whereby the body's immune system produces an abnormal reaction to a food. It can cause or contribute to the variety of conditions including eczema, urticaria, hay fever, asthma and gastrointestinal disorders, especially diarrhoea with failure to thrive. It may even lead to anaphylaxis. FOOD INTOLERANCE is an abnormal reaction to food not mediated through the immune system, but because of an effect of a food component.

Breast Feeding is thought to give some protection against allergies so where there is a family history of allergy or gluten enteropathy, mothers should especially be encouraged to breast feed for six months or longer.

Weaning before four months should particularly be discouraged and the introduction of foods traditionally regarded as allergenic should be delayed until six months at the earliest e.g. cows milk protein, gluten, eggs, shellfish and fish. By twelve months these should have been introduced but peanuts should not be introduced until the age of three (16) or five if there is a family history of allergies. It is advisable to introduce new foods one at a time (14).

Diagnosis of food intolerance (allergic/non allergic) can be difficult, but self diagnosis (e.g. milk, wheat or peanuts) is definitely to be discouraged. Unsupervised self treatment is likely to include inappropriate dietary manipulation which could harm the developing child. No child should be placed on an abnormal diet without good reason. Medical advice must be sought and appropriate diagnostic testing carried out if food intolerance is suspected.

All cases of suspected food allergy and intolerance should be referred to a Paediatrician and then the Dietitian. This is especially important if the food is a major source of nutrients i.e. milk, wheat or eggs.

Some allergies can be outgrown. Any reintroduction of allergenic foods should initially be carried out under strict medical supervision due to the risk of acute anaphylaxis in a very small number of children. This cannot be predicted from the severity of initial symptoms. Intolerances can be tested by reintroduction of the foods at home, indeed this often happens by mistake when the child eats something at nursery or another family's home.

### **Prevention of Cow's Milk Intolerance**

Breastfeeding should be encouraged and if the mother chooses to breastfeed, the baby should not be given any additional formula feeds. If a bottle or sip feed is necessary for some reason, cooled boiled water should be given. Where the choice is to formula feed, standard whey based infant formulae should be advised unless intolerance or allergy are confirmed.

Be aware if an alternative to breast milk or modified cow's milk formula is used.

- The choice of a cow's milk protein free formula is not the best choice for a child with lactose intolerance – where a lactose free cow's milk modified formula should be used (see formula feeding section page)
- The infant should be referred to a Dietitian for advice both about a suitable alternative and suitable weaning foods
- Intolerance can also occur to soya protein. In addition, soya formulae have cariogenic sucrose or maltodextrins as their carbohydrate source. Advice should be given to change the infant from a bottle to a cup as soon as it is practical after teeth appear, and to limit the number of occasions in a day when the formula is offered
- Goat's and sheep's milk are not suitable alternatives because of possible cross reactivity, incomplete nutrient content and poor sterility

## Atopic Mothers

Mothers with a family history of atopy do not need to keep a milk free diet when pregnant or breastfeeding but it may be advisable to avoid high intakes of milk products. Occasionally, such mothers are insistent that they should totally exclude milk. If this is the case, then they should be referred to a State Registered Dietitian to ensure that the diet contains adequate calcium to meet their requirements.

## Additives

Intolerance to food additives is uncommon, however some infants do display adverse reactions to synthetic colours, preservatives or antioxidants added to foods during manufacturing. There is no nutritional advantage to taking these and a healthy balanced diet is easy to achieve when foods containing a lot of added chemicals are avoided. Therefore avoidance is to be recommended for all children.

There are many misconceptions about hyperactivity in children. Hyperactivity can only be diagnosed by paediatric assessment. When it has been properly diagnosed and when (rarely) a specific link with food or additives has been demonstrated by appropriate testing, remedial action can be undertaken under medical/dietetic supervision. Some benefit of a diet may come from the attention given, the healthy choices substituted or the strict discipline involved.

The best advice to give is to:

- Use fresh foods as often as possible
- Use home prepared foods rather than processed dishes
- Look at the labels and choose foods with fewer additives

## Coeliac Disease

Suspected Coeliac Disease should be diagnosed by a Paediatrician. This disease is the development of a permanent intolerance to gluten. This causes damage to the small intestine which leads to malabsorption of nutrients. Gluten is contained in wheat, rye, barley and oats. Advice for a gluten free diet needs to be given by a Dietitian.

Research suggests that delaying the introduction of wheat into the diet until the age of six months contributes to a reduction of the disease.<sup>(25)</sup> For susceptible infants, the onset of the disease is delayed and nutrition and health spared from adverse effects during vulnerable early rapid growth. Susceptible infants cannot be identified in advance.

The gluten free food sign has recently been restricted to Coeliac Society use only, so will no longer appear on food packaging. Lists of gluten free foods are available from the Coeliac Society. Many supermarkets also produce lists of their gluten free products, both from the normal shelf stock and their special diet ranges.

## Nutrients of concern in the diets of infants and young children

Weaning is a nutritionally vulnerable time for infants. The role of particular nutrients in the weaning diet is described below.

Ensuring adequate dietary energy for normal growth and development should be a priority in diets for children under five years.

### Fats

Is the main source of energy for infants less than 6 months old. Fat contributes 50% of energy from breast and infant formula milk. Foods containing fat will also provide the fat soluble vitamins A, D E and K

The high energy density of fat allows infants and growing children to obtain their energy requirements from a manageable volume of food.

As the infant's diet diversifies, energy rich foods should continue to be included. The diet should not be modified to a lower fat content by inclusion of low fat foods before the age of 2 years, although it is not recommended that the habit of eating fried foods is encouraged. Diets which are energy deficient lead to faltering growth.

Mono (olive and rapeseed) and poly (sunflower, safflower and soya) unsaturated fats should be included in the diets of young children. The omega 3 fatty acids in oily fish are especially beneficial

A flexible approach is necessary for the timing and extent of dietary changes towards the dietary recommendations from the COMA Working Group on Nutritional Aspects of Cardiovascular Disease (17) for individual children between the ages of 2 and 5 years.

These recommendations apply in full by five years.

## Carbohydrates

### Starch

As weaning progresses, provided energy intake is adequate, the proportion of energy supplied by starch (bread, cereals, rice, pasta, potatoes, other low fat and low sugar flour products) in the weaning diet should increase as the proportion derived from fat decreases.

### Non Starch Polysaccharide NSP (Dietary Fibre)

The recommendations of the COMA Panel on Dietary Reference Values are limited to adults as there was insufficient data on the physiological effects of NSP in children. Foods rich in NSP have a low energy density and some foods e.g. cereal products, contain high levels of phytates which impair absorption of some minerals, e.g. iron and zinc. However, NSP rich foods are often good sources of micro-nutrients. They can be used in the weaning diet if adequate intake of energy and micro-nutrients is achieved. A diet with too many NSP rich foods can give infants diarrhoea.

## Sugar

Is another source of energy but makes no other nutritional contribution to the diet. The intake of non-milk extrinsic sugars should be limited to improving the acceptance of foods such as stewed fruits and desserts.

The weaning diet should offer a variety of tastes so that infants should not come to expect that their food and drink will always be sweet. Unsweetened cereals and yoghurts should be encouraged in preference to those containing sugar. There is no dental health advantage from using honey, fruit juices, fruit concentrates or fructose to replace sugar. Artificial sweeteners are chemicals that have not stood the test of time, it is therefore advisable to limit their use in the diets of young children and instead build up the habit of enjoying less sweet foods.

### Hints to achieve adequate energy

- Ensure the infant is fed frequently
- Include energy dense foods at each meal – cheese, meat, oily fish, margarine, vegetable oils
- Home prepared food can be made more energy dense than commercially prepared foods
- Give milk, water and juice after meals rather than before
- Avoid specific/exclusive use of fat reduced products

### Protein

This is important for growth and many bodily functions. Adequate protein with a good balance of essential amino acids should be ensured during weaning. Any diet that is restricted should particularly offer a variety of foods at each meal, providing a mixture of protein sources.

Protein is found in meat, fish, milk, cheese, yoghurt, eggs, cereals, nuts, pulses, soya, quorn and seeds. Proteins from animal sources contain all the essential amino acids and are used efficiently by the body. Protein from plant sources lack one or more essential amino acid.

Vegetarians consuming milk and dairy products (cheese, yoghurt and eggs) have good sources of essential amino acids and protein if these are eaten regularly.

Infants whose diets do not regularly contain meat, fish, eggs, dairy produce or reasonable quantities of milk by 9 months may be at risk of becoming protein deficient.

Where animal products are not eaten (e.g. vegans) a mixture of plant protein sources is essential to provide adequate amounts and quantities of protein, e.g. cereals, nuts, seeds, pulses (peas, beans, lentils), soya products, tofu, Quorn. There is a danger that if a large proportion of protein intake is from low fat products such as tofu, Quorn and unprocessed pulses, children will have too little fat in the diet to sustain their energy needs. Indeed the manufacturers of Quorn do not recommend it for children younger than the age of two. There also needs to be caution that these products are not purchased in a form with a high level of added salt.

## Minerals

Dietary sources of minerals should be provided by offering a variety of foods.

### Iron

Iron deficiency is the most commonly reported nutritional disorder during early childhood. Studies have shown anaemia in Asian toddlers (18), (19), (20) as well as in other inner city children (21).

Iron deficiency can cause apathy and reduced exercise capacity. Poor appetite is also common. In toddlers it is associated with psychomotor delay. Factors contributing to iron deficiency:

- Babies born preterm with low body stores of iron
- Diet deficient in iron
- Diet very high in unmodified cow's milk – especially if taken from a feeding bottle. This is a commonly reported cause of anaemia
- Presence of foods containing iron inhibitors e.g. tannins in tea and phytates in cereal and legumes
- Lack of foods containing iron absorption promoting factors e.g. vitamin C in fruit and vegetables

Iron is found in food in 2 forms. Haem iron and non-haem iron. Haem iron (mainly from meat) is readily absorbed.

Non-haem iron found in vegetable foods is not so well absorbed. However, its absorption can be enhanced when eaten with vitamin C rich foods. This point is particularly important where a meat free diet is followed.

Hints to achieve good iron status

- Introduce a wide range of solids from the initiation of weaning
- Use infant formula or follow on milk (can be used after 6 months but is not recommended) as main drink during the first 12 months, unless breast feeding
- Consider continued use of infant formula or follow on milk after the first year if there are concerns about adequacy of iron in the diet
- Discourage use of a bottle after the age of one year as this often encourages children to fill up on cows' milk instead of eating sufficient solid foods
- Vitamin C rich foods should be included at each meal to assist absorption e.g. lightly cooked or raw vegetables or fruit
- Foods containing haem iron (meat, chicken, fish, egg) should be introduced by 6-8 months unless the infant is being weaned onto a meat free diet
- Meat free diets should include regular non-haem sources of iron e.g. wholegrain cereals, lentils, beans, peas, dark green leafy vegetables and dried fruits e.g. apricots and dates. It is particularly important to include vitamin C at each meal
- Tea should be avoided and never taken with meals since it reduces the absorption of iron from the diet
- Iron fortified commercial weaning foods can be a useful source of iron

## Calcium

The major role of calcium in the body is in the structure of bones and teeth. It is also needed for normal function of all cells.

Milk and milk products provide the richest and most easily absorbed dietary source of calcium. Calcium from plant sources is less easily absorbed due to binding by phytate and other components.

Infants who eat no animal products are most at risk of inadequate calcium intake unless they are still being breast fed. Useful plant sources of calcium include soya milk formula, soya milks fortified with calcium, soya beans and Tofu, sesame seeds and sesame paste (Tahini) and green leafy vegetables. Products made with fortified white flour can also make an important contribution.

Adequate vitamin D is required for efficient utilisation of calcium.

## Sodium

In order to reduce the risk of developing hypertension it is recommended that both adults and children moderate their intake of sodium (**22**). In addition, whereas infants, as adults, are efficient at conserving sodium by reducing losses in the urine, they are less efficient than adults at excreting an excess. Sodium intakes of infants should therefore be moderated. By the age of 4 months, healthy infants increase their ability to excrete sodium. However, it is prudent to moderate dietary salt levels throughout weaning. This can be achieved by not adding salt to foods, during cooking or at the table and by avoiding adult savoury convenience foods, soups and gravies.

## Vitamins

### Vitamin A

Is required for growth and for development and differentiation of tissues. It is obtained from animal products such as retinol or is made from beta-carotene in plant foods. Only a limited number of foods provide vitamin A and intake can vary greatly between individuals. For this reason vitamin supplements are recommended where dietary intake is likely to be inadequate. There is a risk of toxicity following a single very large dose or excessive dose over a long period of time. Vitamin A is concentrated in the liver, therefore liver should be limited in the diet to once a week. There is also a potential danger that parents may buy fish liver oils rather than fish oils with the intention of increasing the child's intake of Omega 3 fatty acids. It would then be possible to overdose on vitamin A while taking larger doses than recommended on the packaging.

### B Vitamins

#### Vitamin B12

This vitamin is found in animal products. Vegetarians will obtain small useful amounts in milk, yoghurt, cheese and eggs. Infants who eat no animal products are at risk of deficiency. Useful sources for them include soya formula, fortified vegetable protein, fortified breakfast cereals and yeast extract.

Vegan mothers who do not take additional vitamin B12 have low concentrations of the vitamin in their milk foods fortified with vitamin B12 or a vitamin B12 supplement are recommended for pregnant and breast feeding vegan mothers.

### **Riboflavin (B2)**

Food sources of this vitamin are also limited for vegetarians and vegans. These include milk, cheese, yoghurt, eggs, green leafy vegetables and yeast extract.

Sources for vegans are therefore extremely limited. They tend to have low intakes and are at risk of deficiency.

### **Vitamin C**

Contributes to protection from infection and is particularly valuable in assisting the absorption of iron from vegetables and other non-haem sources. This is especially useful for vegetarians and vegans. Good sources should be included in the weaning diet. Vegetables and fruits are the best sources of vitamin C. It is easily destroyed by light, heat and oxygen. Raw vegetables, salads, fruit and fruit juice are therefore good sources and should be served with stews and curries that have prolonged cooking times. Fresh and lightly cooked foods retain more vitamins.

### **Vitamin D**

Is naturally present in only a few foods. The best sources include fish with less in eggs, milk and milk products. Fortified foods are useful sources – margarine, breakfast cereals, yoghurt, some infant cereals. Breast milk contains little vitamin D.

Breast fed infants rely on their body stores at birth and exposure to sunlight to maintain adequate vitamin D status. Infant formulae are fortified with Vitamin D so infants receiving adequate amounts are unlikely to be deficient in Vitamin D. It is also obtained through the action of sunlight on the skin. Vitamin supplements are recommended where less than 500 mls formula milk is taken in a day and where the diet is likely to be inadequate.

Pregnant Asian mothers, especially those who eat no meat have a greater risk of vitamin D deficiency. Asian infants and young children are also more at risk as are children fed strict vegan diets from Rastafarian families. The combination of restricted diet and pigmented skin which may be less efficient at synthesising vitamin D is associated with a higher risk of Vitamin D deficiency. People from the South east of Asia are particularly at risk due to a genetic resistance to the utilisation of Vitamin D in the body.

Infants are particularly vulnerable to high intakes of vitamin D causing toxic effects. Excess will be avoided by giving just one form of supplementation together with a balanced diet. Care is also needed to avoid excess exposure of skin to summer sunlight to avoid sunburn.

Exposure at lower sun intensity is preferred to the shade. Moderate exposure of lower arms, legs and face from 30 minutes a day during the summer is probably sufficient in the UK.

## Vitamin Supplements

A varied diet and moderate exposure to summer sunlight should be encouraged for mother and baby to provide adequate vitamin status. However supplementary vitamins are recommended **(23)**.

Vitamins A & D.

Breast Feeding mothers of doubtful vitamin status should begin supplementation at age 1 month.

Infants from six months receiving breast milk as their main drink.

Infants on formula milk or follow on milk receiving less than 500mls/day.

Children between the ages of one to five years where adequate vitamin status cannot be assured due to a diet limited in variety and Vitamin A and D rich foods and with limited exposure to sunlight.

Vitamin C is often found in vitamin preparation designed for infants but, since the vitamin is found in a wide range of suitable first foods there are no recommendations for supplementation.

## Drinks

Breast fed babies do not need extra fluids.

Cooled boiled water is the preferred drink for formula fed babies.

From the age of six months drinks can be given from a feeder cup or, preferably, an ordinary beaker. Breast fed babies who are still taking all their milk from the breast at 6 months do not need to be introduced to a bottle at all.

Cup feeding should completely replace bottle feeding after the age of one year **(24)**.

Any diluted fruit and herbal drinks should only be given at meal times, and are not necessary. Avoid giving these drinks little and often between meals. Keep drinking times short and if possible, take the drink away as soon as the child has had enough. Feeding bottles should only be used for milk or water.

Sugary drinks given in bottles tend to cause more dental problems because the flow of liquid is slower and sucking pushes it back behind the front teeth, and therefore the teeth are bathed in the sugary solution for long periods. Tooth decay is caused by repeated intake of sugars throughout the day, especially in the form of sugary drinks.

Commercial baby fruit drinks, i.e. baby fruit juices and herbal drinks, contain sugars, whether natural or added.

Adult pure fruit juices, squash and fizzy drinks all contain high levels of sugar and are also very acidic. If used, squashes and juices must be well diluted. Ready diluted products may well need further dilution. Use of these drinks should be discouraged, particularly between meals.

Parents should be cautioned about the use of low calorie drinks to avoid over use of artificial sweeteners.

Many flavoured milk drinks also have a high sugar and additive content.

Since the flow of saliva decreases while sleeping, its protective effect on teeth is greatly reduced, therefore sugary drinks left by the bed at night should be avoided. If drinks are offered at nights, water or milk are most suitable.

Dummies with small reservoirs for fluid and dummies dipped in sweet products i.e. sugar, honey and syrup should be avoided.

As with prolonged bottle feeding, breast feeding, if continued until at least 2 years of age on many occasions during the day and night, may cause caries (Johnson 1994).

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# ORAL HEALTH

Tooth decay is often said to be the most common disease that affects the population with its peak occurring during childhood. The Department of Health set targets of no more than one decayed, missing or filled primary tooth per 5 year olds by 2003; Rotherham did not achieve this. Local statistics for 5 year olds in 2003/04 are still being evaluated but an interim assessment shows some areas still seeing on average evidence of disease in nearly 25% of a child's primary dentition. However, in other areas in Rotherham, the average is only 0.5 of a tooth.

Even though there is some evidence of improvement we are not seeing the decrease in dental disease needed for this age group. Sure Starts, Five-a-Day and other local interventions are still 'young' and there are many areas yet to be covered by oral health promotion interventions. However in the light of the current situation in Dentistry, preventing dental disease is still "demonstrably the way to approach improving dental health for Rotherham Children".

## Brushing

Parents should be advised that as soon as teeth appear at around 6 months they should be brushed using a soft bristled, small headed 'baby' toothbrush. **They should use a smear of family toothpaste (1000 ppm fluoride)**, as there is no clear evidence that toothpastes containing less fluoride are effective.

**Teeth should be brushed a minimum of twice a day** with particular emphasis placed on the nighttime brushing. However professionals should consider the family situation and age of the baby when advising brushing at night after the last feed.

Parents should continue to brush their children's teeth until the age of at least 7 years but continue to check and supervise from there on.

## Fluoride

**Fluoride (toothpaste) is thought to be the main reason for decline in caries prevalence in Europe during the last 30 years. Therefore oral health interventions should always contain advice about use of fluoride, particularly toothpaste.**

**Toothpastes – These come in three concentrations:**

**Low** – containing less than 600 ppm (parts per million)

**Standard** – 1000 to 1500 ppm

**High** – over 2000 ppm

Effectiveness of the toothpaste increases with the fluoride concentration therefore **it is not generally recommended that pastes containing less than 600 ppm** are used in Rotherham. Some children's paste are 1000 ppm and are acceptable for use and generally have a mild taste making them more palatable.

Rinsing – There is evidenced that rinsing with water straight away after brushing reduces the benefits of fluoride. Therefore, **it is advised not to rinse but to spit out the paste and if needed to brush round with a wet brush to remove any slurry.**

All children over the age of 7 years should use family toothpaste.

**Fluoridation** – The safety of water fluoridation is well documented and numerous studies in both natural and artificially fluoridated areas have failed to show any adverse affect on general health at a level of 1 ppm (part per million). An analysis of treatment need after fluoridation has shown savings in both staffing and resources. There is also a reduction in the number of children experiencing caries and general anaesthetics administered for extractions. Therefore the benefits of water fluoridation for Rotherham's Children would be great.

However, Rotherham water supply is not as yet fluoridated but developments in legislation have opened the gate for future opportunities.

**Supplements** – **Generalised use of fluoride supplements are no longer recommended, as they have not shown to be an effective public health measure and compliance is an issue.** If questions arise about fluoride supplements a dentist who can make a clinical decision about the need for this intervention should assess the family to provide an appropriate answer.

Fluoride supplements are used in cases where tooth decay could pose a hazard to general health e.g. children with health problems or cardiac defects, children with special needs and those whose physical condition or behaviour would prove difficult to treat.

**Fluoride milk** – fluoride (dental milk) schemes are a public health intervention intended to increase exposure to fluoride during the day and affect the strength of the developing permanent dentition. It is aimed at children aged 3 to 7 years and Rotherham has one very successful school where if pupils drink milk 100% choose fluoride milk.

## Attending a Dentist

**Parents should be encouraged to take their baby to a dentist from birth.** It is important that young children visit a dentist as early as possible. This will help them to become familiar with the dental environment and perhaps avoid anxieties in later life. **Health Visitors and other professionals can access advice from the Community Dental Service if they feel there is a particular need within a family.**

## Diet and Dental Health

The two main ways to prevent tooth decay are twice daily brushing with fluoride toothpaste and the control of sugars in the diet. The fissures of young children's teeth are very deep and food gets packed in and isn't cleared out the same as with an adult making them more prone to decay if not cared for carefully. The weaning section covers advice to help prevent the development of tooth decay but the general guidance from the dental profession is:

“Reduce the consumption, amount and **especially the frequency** of intakes of drinks, confectionery and foods containing sugar.”

Sugars naturally present in fruit, vegetables and milk have not been linked to tooth decay and are an important part of a balanced diet. However, it is advised that **fruit juices (which should be well diluted) and dried fruit should be kept to meal times only** as they have high concentrations of sugar that can contribute to the development of tooth decay. **Processed fruit such as fruit wafers and fruit flakes/bars need to be treated the same as dried fruit and fruit juice but the natural fruit is the better choice.**

**Savoury corn type snacks, which are not a healthier snack option, should be avoided to prevent tooth decay**, as many are exudates. An exudate is an unstable starch that is converted quickly to sugar by saliva. These are often the first crisp parents give to very young children.

Avoid sugary foods that stick around the teeth or take a long time to eat as these are particularly harmful for young children’s teeth.

Sugars in medicines can also cause decay. Many paediatric medicines including those sold without prescription have sugar-free alternatives. Clinicians should prescribe sugar-free medicines and parent/carers should request them.

## Dummy Use

If a dummy is to be offered to a breastfeeding infant it should once breastfeeding is well established. See [Breastfeeding, Avoiding Unnecessary Supplements](#).

A dummy should only be used as a comforter and not offered continuously.

Dummies should never be dipped in any substance before being given to the infant.

They need to be kept clean and checked regularly for signs of wear. A dummy must never be placed in anyone else’s mouth prior to being placed in the infants.

For more in-depth information please refer to ‘The Scientific Basis of Oral Health Education or the Oral Health Team.

## Reference

The Scientific Basis of Oral Health Education. RS Levine and CR Stillman-Lowe

# APPENDIX 1

## THE UNICEF UK BABY FRIENDLY INITIATIVE

The Baby Friendly Initiative is a worldwide programme of the World Health Organization and UNICEF. It was launched in 1992 to encourage maternity hospitals to implement the Ten Steps to Successful Breastfeeding and to practise in accordance with the International Code of Marketing of Breastmilk Substitutes.

The Baby Friendly Initiative provides support for health care facilities, and for universities training midwifery and health visiting students, to implement best practice. It offers an assessment and accreditation process which recognises the required standards.

The National Institute for Health and Clinical Excellence recommends that all maternity facilities, whether in hospital or community, implement Baby Friendly or an equivalent process. Rotherham policies and practice guidelines are all based on Baby Friendly standards. Planning for possible Baby Friendly Assessment is included in the Rotherham Breastfeeding Strategy. At the time of writing Unicef UK BFI receives no funding from the Department of Health.

### 10 Steps to Successful Breastfeeding for Hospitals:

1. Have a written breastfeeding policy that is routinely communicated to all healthcare staff.
2. Train all healthcare staff in the skills necessary to implement the breastfeeding policy.
3. Inform all pregnant women about the benefits and management of breastfeeding.
4. Help mothers initiate breastfeeding soon after birth.
5. Show mothers how to breastfeed and how to maintain lactation even if they are separated from their babies.
6. Give newborn infants no food or drink other than breast milk, unless medically indicated.
7. Practice rooming in, allowing mothers and infants to remain together 24 hours a day.
8. Encourage breastfeeding on demand.
9. Give no artificial teats or dummies to breastfeeding infants.
10. Foster the establishment of breastfeeding support groups and refer mothers to them on discharge from the hospital or clinic.

### Seven Point Plan for the Promotion, Protection and Support of Breastfeeding in Community Health Care Settings:

1. Have a written breastfeeding policy that is routinely communicated to all healthcare staff.
2. Train all staff involved in the care of mothers and babies in the skills necessary to implement the policy.
3. Inform all pregnant women about the benefits and management of breastfeeding.
4. Support mothers to initiate and maintain breastfeeding.
5. Encourage exclusive and continued breastfeeding, with appropriately-timed introduction of complementary foods.
6. Provide a welcoming atmosphere for breastfeeding families.
7. Promote co-operation between healthcare staff, breastfeeding support groups and the local community.

The Baby Friendly website includes information on the benefits of breastfeeding, latest research, training courses, publications, including leaflets for parents in English and other languages and lists of accredited facilities. See [www.babyfriendly.org.uk](http://www.babyfriendly.org.uk)

## APPENDIX 2

### RESOURCES

To obtain references used in these guidelines and other resources listed below contact Rotherham PCT Knowledge Service or Rotherham Hospital Library. Some resources for each section are listed below. A full list of resources for each section of the Guidelines will be available via the Rotherham PCT Intranet facility and will be updated regularly. Where possible, individual resources will be available to download or request by email or paper copy.

Leaflets from the Department of Health and some others are available via the PCT orderline.

[www.rotherhampct.nhs.uk/shops/ShopCart/pickshop.asp](http://www.rotherhampct.nhs.uk/shops/ShopCart/pickshop.asp)

For other leaflets please check the PCT intranet facility before using, to check that the leaflet is still current and in date.

### Breastfeeding

#### A Mother's Guide to Breastfeeding

This leaflet provides comprehensive information on breastfeeding, expressing, weaning and problem solving in a concise format with photographs. Given to all women in pregnancy as part of antenatal care and used for all new breastfeeding mothers giving birth in Rotherham (2007).

Originally produced by Infant Feeding Advisor at Derby City Hospital, Issue 7 updated 2007.

Available from Charnwood Marketing 01509 221373, contact Infant Feeding Coordinator at Rotherham Hospital or Rotherham PCT to check future practice in Rotherham.

### **Other Leaflets used in Rotherham**

Feeding Your Baby Breast or Bottle – MIDIRS Informed choice leaflet for mothers 2005. Detailed version with references for professionals [www.infochoice.org](http://www.infochoice.org).

Sharing a Bed with Your Baby – a leaflet for breastfeeding mothers Unicef UK Baby Friendly 2005.

Breastfeeding Peer Support Group leaflets, 2006, including:

- What Fathers can do to Support Breastfeeding
- What Grandparents can do to Support Breastfeeding
- What Employers can do to Support Breastfeeding

Reasons to be Proud –benefits of breastfeeding over time – information sheet from National Childbirth Trust

Available via the PCT Knowledge Service or can be downloaded from

[www.dh.gov.uk](http://www.dh.gov.uk)

The NHS Directory of Breastfeeding Resources, Department of Health 2004.

Good Practice and Innovation in Breastfeeding, Department of Health 2004  
Includes summaries of effective projects and a list of addresses and contact details.

Breastfeeding - Resource Material for Schools. Nottingham Health Breastfeeding Group.  
A resource pack with information, activities, and sheets to photocopy, aimed at children from primary to secondary school.

List of breastfeeding publications in addition to those given in the references.

Recommended Videos and DVD's suitable for staff training or parent information.

Good Books for Mothers:

- Bestfeeding – Breastfeeding Your Baby. Celestial Arts 2004
- Breastfeeding for Beginners – National Childbirth Trust
- Breastfeeding Twins, Triplets or More [www.tamba.org.uk](http://www.tamba.org.uk)
- Breastfeeding and Returning to Work – National Childbirth Trust

Any publications from the following breastfeeding organisations will be suitable for use and are easily obtainable.

### **National Breastfeeding Organisations**

The National Childbirth Trust

[www.nctpregnancyandbabycare.com](http://www.nctpregnancyandbabycare.com)

0870 444 8708

The Breastfeeding Network (BfN)

[www.breastfeedingnetwork.org.uk](http://www.breastfeedingnetwork.org.uk)

0870 900 8787

**La Leche League**[www.laleche.org.uk](http://www.laleche.org.uk)

0845 120 2918

**Association of Breastfeeding Mothers**[www.abm.me.uk](http://www.abm.me.uk)

0870 401 7711

**Breastfeeding Support in Rotherham**

A list of up to date contact details is available as above or from Rotherham Hospital Infant Feeding Coordinator. At the time of writing this includes Breastfeeding Peer Support Groups within Surestart areas – it is hoped to extend peer support to other areas of Rotherham in future.

There is a weekly Breastfeeding Drop In session on a Thursday afternoon, contact **Infant Feeding Coordinator, Ward B10, Rotherham Hospital**  
01709 304265

**National Childbirth Trust Breastfeeding Counsellor**

01709 545760

**Sheffield Twins and Multiples Club**[www.sheffieldtwinsandmultiples.co.uk](http://www.sheffieldtwinsandmultiples.co.uk)

07944 0585509

Where to Feed your Baby in Rotherham – Rotherham PCT leaflet in preparation.

**Baby Friendly Information**

For information about the Unicef UK Baby Friendly Initiative and breastfeeding in general and to sign up to the free email service, for summaries of new research and breastfeeding related news items. [www.babyfriendly.org.uk/subscribe](http://www.babyfriendly.org.uk/subscribe)

**Breast Pump Hire**

Medela UK 0161 7760400

Egnell Ameda 01823 336362

**FORMULA**

NHS Bottlefeeding, Feed preparation, pictures with brief text, Department of Health 2006

DH Formula preparation guidance December 2006 [www.dh.gov.uk](http://www.dh.gov.uk)

Preparing a Bottle Feed and Sterilising Equipment [www.babyfriendly.org.uk/leaflets](http://www.babyfriendly.org.uk/leaflets)

Choosing a Formula Milk for your Baby – TRIFIC leaflet, out of stock, due for reprinting

Formula Policy for Rotherham Children's Centres – in preparation

**Kangaroo Care**

Kangaroo Mother Care has been variously defined, but two essential components are skin-to-skin contact and breastfeeding. From the biological perspective, in the immediate

newborn period of Homo sapiens, skin-to-skin contact represents the correct "habitat", and breastfeeding represents the "niche" or pre-programmed behaviour designed for that habitat.

Useful Links

<http://www.kangaroomothercare.com>

<http://www.ucl.ac.uk/kangarooocare/index.html>

Poster you can download about kangaroo care:

[http://www.bliss.org.uk/pagebuild.php?texttype=howbliss\\_publications\\_kangaroo](http://www.bliss.org.uk/pagebuild.php?texttype=howbliss_publications_kangaroo)

## Preterm

[www.bliss.org.uk](http://www.bliss.org.uk)

020 7378 1122 or download:

Breastfeeding Your Premature Baby 2nd edition

Weaning Your Premature Baby 3rd edition

Going Home – Your Questions Answered

## Resources

A good reference book about Preterm infants is the Bliss Community Health Professionals Information Guide, which is available from Bliss – the premature baby charity

[www.bliss.org.uk](http://www.bliss.org.uk)

## Weaning

Cool Kids Use Cups, Department of Nutrition & Dietetics, RFT

Weaning, NHS, Department of Health

First Tastes, Weaning Your Baby, Department of Nutrition & Dietetics, RFT, Rev. 2006

Feeding 1-5's, Nutrition Information Pack, Department of Nutrition & Dietetics, RFT

Rotherham Children's Centres Snack Policy

British Dietetic Association Fact Sheets

## Oral Health

Contact Oral Health Promotion or PCT Knowledge Service for recommended leaflets

## Information for non-English speakers

Contact Rotherham Multi Cultural Centre, The Gate Surgery

[www.babyfriendly.org.uk/leaflets](http://www.babyfriendly.org.uk/leaflets) in English and other languages

Feeding Your New Baby – benefits of breastfeeding

Breastfeeding Your Baby – information on breastfeeding and expressing

Sharing a Bed with Your Baby – leaflet for breastfeeding mothers

Preparing a Bottlefeed

Sterilising Baby Feeding Equipment

## Other Addresses and Website

Department of Nutrition & Dietetics, Rotherham NHS Foundation Trust,  
Oakwood Hall Annexe, Moorgate Road, Rotherham S60 2UD  
01709 824297

British Dietetic Association, 5th Floor, Charles House,  
148/9 Gt Charles St, Queensway, Birmingham B3 3HT  
0121 200 8080  
[www.bda.uk.com](http://www.bda.uk.com)

Vegetarian Society, Parkdale, Dunham Road, Altrincham, Cheshire WA14 4QG  
0161 925 2000

Vegan Society, 7 Battle Rd, St Leonard's on Sea, East Sussex TN37 7AA  
01424 427393  
[www.vegsoc.org](http://www.vegsoc.org) [www.vegansociety.com](http://www.vegansociety.com)

Royal College of Midwives, 15 Mansfield Street, London W1G 9NH  
020 7312 3535  
[www.rcm.org.uk](http://www.rcm.org.uk)

Community Practitioners & Health Visitor Assoc, 33-37 Moreland St, London EC1V 8HA  
0207 505 3000  
[www.amicus-cphva.org](http://www.amicus-cphva.org)

Baby Milk Action, 23 St Andrew's St, Cambridge, CB2 3AX  
01223 464420  
[www.babymilkaction.org](http://www.babymilkaction.org)

UK Association of Milk Banks, The Milk Bank, Queen Charlotte's and Chelsea Hospital  
Du Cane Road, London W12 0HS  
020 8383 3559  
[www.ukamb.org](http://www.ukamb.org)

Coeliac UK, Suites A-D, High Wycombe, Bucks HP11 2HS  
01494 437278  
[www.coeliac.co.uk](http://www.coeliac.co.uk)

Child Growth Foundation, 2 Mayfield Avenue, Chiswick, London W4 1PW  
020 8995 0257  
(breast from birth charts and others)  
[www.childgrowthfoundation.org](http://www.childgrowthfoundation.org)

Department of Health  
020 7210 4850  
[www.dh.gov.uk](http://www.dh.gov.uk)  
National Infant Feeding Survey 2005 – results due 2007  
[www.healthystart.nhs.uk](http://www.healthystart.nhs.uk)

Information about the voucher scheme

World Health Organisation Child Growth Standards2006 [www.who.int](http://www.who.int)

# APPENDIX 3

## TAKING A BREASTFEEDING HISTORY AND BREASTFEED OBSERVATION CHECKLIST

When a mother and baby present with a breastfeeding problem, taking a breastfeeding history and observing a breastfeed are an important part of assessing the causes of the problem and how to provide help and support. Time taken will usually uncover the cause of the problem. Is the problem purely related to breastfeeding or are there other factors, including any underlying illness in the baby? This appendix can be downloaded for clinical use via the PCT Intranet facility [www.rotherhampct.nhs.uk](http://www.rotherhampct.nhs.uk)

### Taking A Breastfeeding History

- Mother's name and DOB
- Baby's name, DOB and current age
- Address and contact details
- Names and contact details of other relevant health professionals
- Reason for consultation
- Details of the following – all are factors which may be relevant for the effectiveness of breastfeeding.

### Mother's Health

- General health and medication history
- Current health
- Current medication
- Allergies
- Diet (include caffeine and alcohol consumption)
- Smoking
- Contraception

### Pregnancy and birth

- Duration of pregnancy ie. Gestation
- Any complications
- Was breastfeeding discussed?
- Mother's experience of pregnancy
- Type of delivery, analgesia, blood loss, any birth complications or retained products
- Skin to skin contact at birth and for how long
- Apgar scores
- Age at first feed
- How did baby feed in the first few days

### Baby's current health and behaviour

- Birthweight, current weight and centile
- Birth and current centiles for Length and H.C
- Any congenital abnormalities
- Any illnesses to date
- Where does baby sleep – day/night

- Is mother away from baby eg. at work. For how long?
- Mother's feelings about baby's health and behaviour

### Current feeding situation

- Approximate number of feeds in 24hrs
- Average length of feeds
- Usual/Longest gap between feeds
- One or both breasts
- Does baby demand feeds or need to be woken/offered?
- Urine and stool output (frequency, colour and consistency) and any changes
- Behaviour during feeds
- Any vomiting
- Supplements, if any – type, amount, frequency, age when started, given by cup or bottle, mother's choice or suggested by someone else?
- Dummy use, if any – how often, for how long, age when started, mother's choice or suggested by someone else?
- Milk expression, if any – method of expression, how often, average quantities expressed, milk stored or given to baby
- Previous advice given
- Support from breastfeeding counsellor or supporter?

### Previous infant feeding

- Number and age of previous babies
- Whether breastfed or not and for how long (include any complications and supplements)
- Mother's feelings about previous feeding

### Family and Social Support

- Other members of household
- Support from partner
- Support from other family members
- Planning to return to work?
- Occupation and working hours
- Help with child care
- Any financial concerns
- Mother's feelings about overall situation
- Future hopes and plans

Observe a breastfeed –use the attached checklist to help assess the feed

### Breastfeed Observation Checklist

This appendix can be downloaded for clinical use via the PCT Intranet facility [www.rotherhampct.nhs.uk](http://www.rotherhampct.nhs.uk)

Observation of a breastfeed is an important part of assessing feeding. Observing a baby after the feed has already started will give some information but for the best assessment a breastfeed should be observed in full, to include:

- how the mother gets ready to feed
- how the baby latches on
- the breastfeed itself
- the baby's behaviour after the feed

All the following are signs that breastfeeding is going well. If not observed, this indicates possible difficulty.

### Getting ready to feed

- Mother's is relaxed and comfortable (No tension in back, shoulders, arms, hands, legs, feet)
- Breast is not restricted by clothing
- Breast full, soft and rounded, no skin redness
- Nipples prominent, not cracked or bruised

### Latching on

- Baby reaches for the breast, roots, opens wide
- Tongue movement explores the breast
- Baby's body is in a straight line
- Baby comes to the breast (not breast to baby) chin and bottom lip first
- Upper lip opposite the nipple before latching on
- There may be signs of milk release

### The feed itself

- Baby is held securely, with touching and eye contact from mother
- Baby is held close to mother's body, whole body supported, not just head or shoulders
- Head slightly extended, chin touching breast
- Baby stays attached, does not slip off
- Calm and alert, though eyes may close towards end of feed
- Lower lip curled out –generally hidden by the roundness of the breast
- If visible, more areola above the baby's top lip
- Cheeks rounded, not sucked in, no clicking sounds
- Slow deep sucks, bursts with pauses
- Rhythmic swallowing seen and heard
- Baby releases breast spontaneously at end of feed (differentiate this from the poorly attached baby who may either pull off or stop before they are full, due to tiredness)

### After the feed

- Evidence of milk transfer – milk in the baby's mouth and around the nipple
- Nipple undamaged, normal shape and colour
- Areola – no bruising or compression marks
- Breast softer – some mothers feel this more than others
- Contented baby

## Other signs of possible difficulty

### The baby seems sleepy, but frequently wakes within half an hour to feed again

Length of feed? – Feed time varies considerably according to the individual baby and the baby's age. The time taken may vary from a few minutes to around half an hour on each breast. If feeds are regularly taking 45 minutes or so on each breast and there are other signs that feeding is not going well, it is likely that the baby is not as well latched on as he appears to be. More frequent feeding is normal when the baby is having a growth spurt.

### If there are signs of poor attachment, look for tongue tie

If the mother does not feel a let down reflex (pins and needles/tingling/other sensation in the breast shortly after the baby begins to feed) but weight gain is good and everything else indicates good feeding, reassure her that this is completely normal. If there are other signs of difficulty, not feeling the let down reflex may be completely normal or may indicate that latching could be better.

# APPENDIX 4

## HAND EXPRESSION TECHNIQUE

### Teaching mothers to hand express

All breastfeeding mothers should be taught how to express by hand during the early days of breastfeeding. Having the knowledge and confidence to express by hand is useful for all mothers, not just for obtaining milk, but also for self help with blocked ducts, mastitis and engorgement. Hand expression becomes easier with practice. Many mothers prefer hand expressing to using a breastpump.

Each mother will find her own best technique with practice. Below is a useful guide for teaching the basic technique to mothers.

### Before expressing

- Wash hands
- Collect a sterilised container, if milk is to be given to baby
- Collect a clean container if discarding milk
- If baby is not nearby, it may help to have a photo or an item of baby's clothing

### Stimulate the hormonal reflexes

Breast massage:

- The fist may be gently rolled over the breast
- The flat of the hand or fingers maybe used to press or stroke gently
- Circular movements of the fingertips may be used
- There should be no rubbing or pulling of the skin
- The technique should feel pleasant to the mother

Now roll the nipple gently between thumb and forefinger.

Breast massage and nipple rolling will cause prolactin and oxytocin release.

### Find the right place

- Cup the breast with the palm of your hand or fingers
- Use your thumb to 'walk' down the breast, feeling the underlying tissue
- Stop about 2-3 cms away from the nipple - you may feel a difference in the texture of the breast
- Hold thumb and forefinger in a 'C' shape, with fingertip opposite the thumb
- Compress the breast at this point, if necessary pressing slightly backwards slightly beforehand
- Release and repeat, continue until the milk flow subsides
- Rotate fingers and thumb to a new position around the areola and repeat the process
- Avoid sliding fingers on the skin

Store milk in accordance with current advice, labelled with date and time (and name if not at home).

## APPENDIX 5

### GUIDANCE ON THE TREATMENT OF GASTROENTERITIS, PROLONGED DIARRHOEA AFTER GASTROENTERITIS AND OTHER COWS' MILK INTOLERANCES IN THE COMMUNITY.

These guidelines have been drawn up so that parents will be given consistent advice on these problems from General Practitioners, Health Visitors, Practice Nurses, Dieticians, Paediatricians and Hospital Nursing Staff.

#### a) Gastroenteritis

##### Assessment

Assess risk of dehydration on the basis of age (the highest risk is in the youngest infant) and on the frequency of watery stools and vomiting.

Assess presence/severity of dehydration on the basis of recent weight loss (if possible) and clinical examinations. The signs of proven value in assessing dehydration include "prolonged" skin fold, dry oral mucosa, sunken eyes, altered neurological state and dry nappies.

##### Management

If not dehydrated and the risk (based on age, vomiting and stool frequency) of developing dehydration is low, advise on risk and feed ordinary milk feeds as usual. Advised to give little and often to avoid vomiting. Breast feeding should continue throughout rehydration and formula feeding should be recommence on day two, at full strength.

If not dehydrated and the risk of becoming dehydrated (based on age, vomiting and stool frequency) is high, advise on risk, feed milk feeds as usual, but also give oral rehydration solution. Advised to give little and often to avoid vomiting.

If mildly dehydrated, give oral rehydration solution 50mls over kilo over 4 hours and then continue with maintenance fluid:

### Volume

- 100mls per kilogram per day first 10kgs body weight
- 50mls per kilogram per day next 10kgs
- 25 kilograms per day for weight excess of 20kgs

Type – Maintenance fluids can be breast milk, formula or any other fluid appropriate for age.

If the child continues to vomit or have diarrhoea, this should be replaced by extra feeds of oral rehydration solution.

Even if there is persisting diarrhoea and vomiting, continue with milk and restart solids, if the child is old enough, as soon as possible.

### **b) Prolonged/Protracted Diarrhoea after an attack of Gastroenteritis**

This is a common problem and is usually not due to either cow's milk intolerance or secondary lactose intolerance.

The first difficulty with this problem is the definition of "diarrhoea" in such a situation and the definition of "prolonged".

It is common for diarrhoea to last 7-10 days after the start of an attack of acute gastroenteritis without there being any secondary pathology.

If diarrhoea is prolonged stools should be cultured at day 2 if there is pain and at day 4 if no pain!

Infants should not be kept on oral rehydration fluid alone indefinitely (not for longer than 24 hours) but should then be given milk and solids.

If it is decided that there is prolonged diarrhoea, a trial of lactose free cow's milk protein free formula should be tried.

- Enfamil LF
- SMA LF

If the infant improves, continue on that formula for six weeks then re-introduce ordinary formula. If the diarrhoea recurs, refer to Paediatrician.

Referral to a Paediatrician should be considered:

- If there is blood in the stools
- Large or prolonged weight loss
- Any pre-existing or suspected abnormalities of the bowels
- If a trial of lactose free, cow's milk protein free formula fails
- If diarrhoea recurs or doesn't improve after 5 days on lactose free formula

### c) Cow's Milk Protein Intolerance

Protracted diarrhoea and/or vomiting; together with other, less well defined symptoms, suggest an intolerance or allergy to cow's milk protein (CMPI). CMPI is more likely if the baby is from an atopic family. Purely breast fed babies rarely suffer from CMPI.

Symptoms of cows milk protein intolerance are:

- Abdominal distension
- Vomiting
- Diarrhoea
- Failure to thrive

Other presentations:

- Wheeze or recurrent chestiness
- rectal bleeding
- recurrent colic

These babies should be referred to a Paediatrician and no further cow's milk feeds or solids containing cows milk should be given.

Reintroduction of milk should be in accordance with the Rotherham Milk Challenge Protocol – as a day case on the ward.

## APPENDIX 6

### THE ROTHERHAM BREASTFEEDING POLICY

The Rotherham Breastfeeding Policy is being revised in 2007 and will be sent out once completed. It will also be available on the Intranet.

[www.rotherhampct.nhs.uk](http://www.rotherhampct.nhs.uk)

Like the previous policy, it is based on Unicef UK Baby Friendly Standards of best practice. it covers hospital and community healthcare facilities and should apply to any facilities which provide services for pregnant women, breastfeeding mothers and babies and their families. Other organisations such as Children's Centres will be encouraged to sign up to the policy.

There are sections on:

Principles and Aims

Mandatory Compliance

Twelve key points for practice:

- Communicating the Breastfeeding Policy
- Training Healthcare Staff
- Information and support in pregnancy
- Supporting the initiation of breastfeeding
- Maintaining lactation
- Recognition and management of problems
- Supporting exclusive breastfeeding (avoiding unnecessary supplements)
- Rooming In

- Baby Led Feeding
- Use of artificial teats, dummies and nipple shields
- Community support for breastfeeding
- Facilities for breastfeeding mothers

The Promotion of Breastmilk Substitutes  
 Antenatal information on formula feeding  
 Monitoring of breastfeeding rates  
 Supporting documents and policies  
 References

## APPENDIX 7

### THE ROTHERHAM MULTI AGENCY BREASTFEEDING STRATEGY

The Rotherham Breastfeeding Strategy Group was formed in January 2006. The strategy document has short, medium and long term aims over a 10 year period. Its purpose is to promote and support breastfeeding as the healthiest way for a women to feed her baby, recognising the important contribution of breastfeeding to public health policies and goals. It aims to increase rates of breastfeeding initiation in Rotherham and to improve support for women who choose to breastfeed, enabling them to continue for as long as they wish to.

The strategy will be sent out with the completed Breastfeeding Policy later in 2007. It will also be available on the Intranet.

[www.rotherhampct.nhs.uk](http://www.rotherhampct.nhs.uk)

The strategy covers

- Partnership working
- The Breastfeeding Policy
- Department of Health Targets
- Targeting areas of greatest need
- Department of Health Key Recommendations for Breastfeeding
  - Education and training for all Healthcare Staff
  - Development of the Health Care Assistant Role
  - Antenatal interactive workshops
  - Breastfeeding Support Centres
  - Peer Support Programmes
  - Reaching Ethnic Minority and Vulnerable mothers
  - Teenage Mothers
  - Schemes involving significant family and friends
  - Media promotion
- Baby Friendly Standards and Accreditation
- Working with schools
- Return to work Policy
- Communication between Health Professionals