Gateshead

And

South Tyneside

Infant Feeding

Guidelines

January 2007

Contents

APPENDICES

This information was correct at the time of going to press (Feb 07). Professionals should ensure they keep themselves updated with new guidance.

These guidelines will be reviewed annually and updated when necessary.

1 Introduction

Good nutrition is vital for the growth and development of babies and young children. Eating habits are established early in life and, if these habits are not conducive to health, they become increasingly difficult to change as the child grows older. Early results from the Infant Feeding Survey 2005 demonstrate an increase in breastfeeding initiation rates across England and Wales. The incidence of mothers initiating breastfeeding has been as follows:

1990: 64%

1995: 68%

2000: 71%

2005: 77%.

(www.ic.nhs.uk/pubs/breastfeed2005; www.dh.gov.uk)

The incidence of breastfeeding in South Tyneside is significantly below the national average, with just 46% of mothers in this area initiating breastfeeding in 2005.

In Gateshead, for the same time period, 32% of babies are breastfed within one hour of birth and 40% are being breastfed at discharge from hospital.

Factors relating to the mother, the infant and the environment have been found to be associated with the initiation of breastfeeding (1). Demographic factors such as maternal age and level of education are consistently associated with infant feeding practices, with older and/or more highly educated women being more likely to initiate breastfeeding. Psychosocial factors, including whether fathers support breastfeeding have also been found to affect uptake.

There are many benefits of breastfeeding that have health and ultimately financial implications. Health benefits associated with breastfeeding include protection against gastroenteritis, respiratory infections and diabetes mellitus for the infant (2), and pre-menopausal breast, ovarian and endometrial cancers for the mother (3).

In addition to identifying health risks associated with low breastfeeding rates there are also health problems relating to poor weaning practice.

This is the second update of the Infant Feeding Guidelines, which were first produced for South Tyneside in 1995 and introduced in Gateshead in 2003.

The guidelines are intended for health professional and community workers across Gateshead and South Tyneside.

2 Aim and Objectives

Aim

To improve the nutritional health of children under one year in South Tyneside and Gateshead.

Objectives

1. To provide clear and consistent guidelines on infant feeding.
2. To promote an increase in the prevalence and duration of breastfeeding.
3. To clarify issues which cause confusion about infant feeding.
4. To dispel the many myths which surround infant feeding.
5. To ensure all staff are aware of UNICEF Baby Friendly 10 steps and 7-point Plan. (Appendix 1)

3 Pre-Conceptual Nutrition

Diet is an important consideration for both men and women. The majority of women in the UK probably have an adequate intake of nutrients and are therefore capable of a normal pregnancy outcome.

3.1 Women at Risk from Poor Nutrition

There are a significant number of women who are particularly at risk from poor nutrition and would benefit from sound preconceptual advice. **(4)**

a) Previous low birth weight baby
b) Underweight prior to pregnancy
c) Obese prior to pregnancy
d) Smokers
e) Teenage pregnancies
f) Close birth spacing
g) Excessive alcohol intake
h) Drug users

Initially, attention should be focused on preconceptual risk assessment to identify and offer dietary guidance to women most likely to be poorly nourished. Nutrition counselling should be part of family planning, post partum and gynaecological care. The ultimate aim must be to ensure excellent nutrition throughout the childbearing years.

3.2 Folic Acid and Prevention of Neural Tube Defects

There is now convincing evidence that women with a high intake of folic acid before conception and for the first 12 weeks of pregnancy are less likely to have a child with Neural Tube Defects (NTD).

The Department of Health (2000) (5) re-issued their guidance recommending that women of childbearing age who are contemplating pregnancy should consume 600 micrograms of folic acid per day to reduce their risk of having a pregnancy affected with NTD. The average intake of folic acid in the UK is about 200 micrograms a day. With careful choice of foods (lightly cooked or raw vegetables, fortified breakfast cereals and fortified bread) it is possible to achieve 600 micrograms, but it is recommended that women take a daily supplement. Folic acid 400microgram tablets are available on prescription but are cheaper to buy over the counter if a woman is not entitled to free prescriptions. Women who have previously had a baby with a NTD are considered to be at high risk, as are epileptic women taking some anti-convulsants. These women should be prescribed 5mg of folic acid daily.

4 Diet In Pregnancy

Pregnant women should be advised on the principles of healthy eating and encouraged to eat to appetite and avoid excesses. In this way an adequate intake of nutrients can normally be achieved without supplements, although certain groups may be more at risk, e.g. adolescents, those with low income, immigrants, vegans, underweight women.

It is important to caution pregnant women **against**:

a) Smoking
b) Drinking Alcohol
c) Eating foods that may cause listeriosis ie. soft cheeses, pate
d) Eating vitamin A rich foods (i.e. liver, liver products and pate) or taking a vitamin A supplement

In addition, women from atopic families should be advised to avoid nuts in their own diet during pregnancy and lactation.

4.1 Diet in Lactation

For most lactating women increased quantities of a varied diet should provide their nutritional requirements. Strict weight reducing diets should be discouraged. An adequate fluid intake is essential to establish and maintain lactation. Fluid intake should be increased according to thirst. (It is not necessary to encourage breastfeeding women to drink large quantities of liquid). Excessive intake of alcohol should be avoided, but an occasional social drink is not believed to be harmful. The vast majority of mothers need not exclude any food from their diet. However, high intakes of coffee and other caffeine containing drinks may promote sleeplessness in some babies.

Smoking should also be avoided as it can alter milk composition and reduce supply (See Appendix 2).

4.2 Medicines in Pregnancy and During Breastfeeding

Medicines can pass across the placenta and into breast milk. It is therefore advisable to avoid medicines where possible. If medicines are required, advice should be obtained from obstetric staff, pharmacists, or the breastfeeding co-ordinator.

5 Breastfeeding

Breast milk is the ideal food for babies. It has nutritional and anti-infective qualities that cannot be reproduced in infant formula. Breast milk is also easier to digest and absorb. Breast milk provides complete nutrition for the first 6 months of life and babies do not need supplementary foods unless medically indicated.

In May 2003, the Department of Health updated their recommendations on the optimum duration for exclusive breastfeeding, in accordance with the World Health Organisation recommendations. They state: “breastfeeding is the best form of nutrition for infants. Exclusive breastfeeding is recommended for the first six months (26 weeks) of an infant’s life as it provides all the nutrients a baby needs.”(6)
There needs to be greater social acceptance of breastfeeding and a more positive attitude towards it. All mothers and families should be educated about breastfeeding and encouraged to consider breastfeeding their babies. Mothers

should be referred to breastfeeding support networks, including support groups e.g. Breast Friends (South Tyneside) and Bosom Buddies (Gateshead). Support must also be available from health professionals.

The following groups have been identified as those least likely to initiate breastfeeding. Extra support and encouragement, including links with the Teenage Pregnancy service in South Tyneside and the Young Woman's Outreach project in Gateshead, must be offered to these groups:

a) Teenage mothers
b) Mothers from lower socio-economic groups
c) Unsupported mothers
d) Mothers who experienced problems breastfeeding previous babies.
e) Mothers separated from their babies, e.g. babies in SCBU

4.3 **Composition of Colostrum and Breast Milk**

Colostrum is present in the breasts at birth, ready for the baby's first feed. Colostrum contains high quantities of vitamins and minerals, including immunoglobulins, anti-infective proteins (especially IgA) and white blood cells, which protect the newborn baby from harmful bacteria. It is also richer in Vitamin K and growth factors than breast milk, making it the optimum food for premature or ill babies. Colostrum also has a mild purgative effect, which helps clear meconium from the baby's gut. Clearing the meconium also clears bilirubin from the gut, reducing the risk of jaundice developing.

Transitional milk is produced from about day 3 after delivery. Transitional milk remains in the breasts for approximately 14 days, during which the levels of mature milk rise and levels of colostrum reduce. Mature milk is present from 14 days onwards until breastfeeding stops. Transitional and mature milk contain the same vitamins, minerals, and immunoglobulins as colostrum but a higher

fat content. Breast milk also contains water in the foremilk, therefore breast fed babies do not require additional fluids, even in hot climates. Milk produced at the beginning of a feed is more watery (traditionally called foremilk), to satisfy thirst. As the feed progresses, the baby will obtain more fat (traditionally called hindmilk). Mothers should encourage their baby to remain on the breast to ensure he obtains the hind milk and completes a feed. It is important to inform mothers about alternating breasts at each feed, offering the second breast at a feed if the baby is still hungry.

5.2 Breastfeeding Workshops/Antenatal Breastfeeding Education

All antenatal education or discussions about breastfeeding must include:

a) Simple explanation of anatomy and physiology of lactation
b) Attachment and Positioning
c) Benefits of breastfeeding for mother and baby
d) Potential problems and how to overcome them
e) Where to obtain further support and information, e.g. support groups, Breast Friends, Bosom Buddies.

5.3 Breastfeeding Following Delivery

All mothers should be offered skin-to-skin contact within 30 minutes of delivery (not just baby delivered onto mother's abdomen – baby should be dried first). The first breastfeed should be offered within an hour of birth, ideally, while mother and baby are still on delivery suite. Evidence shows skin-to-skin has a positive effect on the success of breastfeeding (7, 8). Support should be available to ensure correct attachment and positioning and promote successful breastfeeding.

5.3 Administration of Vitamin K

It is currently recommended that babies of breast-feeding women require additional vitamin K supplementation. Local hospitals have differing policies and should be consulted for further details.

Further information for mothers and professionals can be obtained from the MIDIRS Informed choice leaflet "Vitamin K: The Debate and the Evidence" (professionals) and "Vitamin K for Your Baby" (mothers) available online from www.infochoice.org. Guidance can also be obtained from the NICE Postnatal Care Guidelines, available online www.nice.org.uk .

5.4 Postnatal Period:

a) Mothers and babies must not be separated unless medically indicated during their stay on the postnatal ward.

b) If a mother requests supplementary feeds of formula for her baby, the midwife must fully inform her of the potential effects to a breast-fed baby. These include destroying the breast milk lining in the gut, affecting the baby's sucking mechanism and inhibiting milk supply. The discussion and the mother's decision must be documented in the baby's records.
In certain circumstances supplementary feeds may be given to babies where it is medically indicated.

c) Breastfeeding should be on demand, encouraging frequent feeds to stimulate lactation. The physiology of lactation must be explained; ensuring mothers understand supply and demand in breastfeeding.

d) Mothers should be encouraged to have a well-balanced diet to meet the needs of her and her baby. An adequate fluid intake is essential to establish and maintain lactation.

e) If a mother complains of sore or cracked nipples, positioning and attachment must be observed and corrected if necessary. Appropriate treatment can be given but it is essential the mother be taught how to recognise poor attachment and positioning and correct it.

f) Mothers should be taught how to hand express and maintain lactation, even when they are separated from their babies.

g) All mothers should have a feed observed and help offered with the second feed at 6 hours after delivery.

5.6 Breastfeeding and Neonatal Jaundice

Breastfeeding should continue but feeds may need to be more frequent, depending on baby's current feeding pattern. Jaundice is not an indication to stop breastfeeding.

6 Maintenance of Breastfeeding

Evidence shows good support has a positive effect on the duration of breastfeeding (9). Mothers should be referred to breastfeeding support groups and peer support counsellors before they are discharged from hospital or following a home birth.

6.1 Correct Positioning and Attachment

Effective attachment and positioning is vital for successful breastfeeding. Poor positioning and/or attachment increases the risk of breastfeeding problems for mother and baby, including cracked nipples and poor weight gain in the infant. All midwives and health visitors must be able to check correct attachment and positioning.

6.2 Duration of Feeds

Although the duration of feeds is variable with each baby, unrestricted feeds on demand should be encouraged. This will stimulate lactation, increase the milk supply, and ensure the baby's well being.

6.3 Growth

Recording regular measurements of weight for the first year of life best monitors an infant's growth. Breast-fed babies' growth should be marked on a breastfeeding percentile chart, recognising how breastfed babies growth can be slower than formula fed infants. Although this is normal, it can appear to be a problem if the growth is monitored on a formula-fed chart. If an infant's weight curve falls across two centile lines, serious consideration should be given to investigating weight faltering. Health Visitors should discuss the child further with the parents and GP or community paediatrician.

Growth spurts do occur at intervals, e.g. 10-14 days, 6 weeks and 3 months. At these times, babies may want to breastfeed more frequently. Babies should continue to be fed on one breast, offering the second breast if baby is still hungry. Growth spurts are normal and these babies do not need breast milk supplements of formula or water.

6.4 Special Circumstances

When the infant cannot be breastfed for medical reasons, mothers should be encouraged to express and store their breast milk until baby is well enough to start breastfeeding. These mothers should express 6 to 8 times in 24 hours, including at least once overnight.

Expressed breast milk can be stored in the back part of the refrigerator for 3 days (not in the door), an ice compartment at the top of a refrigerator (with a door on) for 1 month and a main freezer for 6 months. The date and time the milk is expressed must be clearly marked on the bag storing the

breast milk. Frozen breast milk should be thawed slowly in a refrigerator and used within 24 hours. **Never** defrost frozen breast milk in a microwave.

Mothers of pre-term babies should be encouraged to express and offer their baby colostrum, regardless of their intended feeding method. Colostrum is beneficial in preventing necrotising enterocolitis (NEC) and aiding development of major organs and blood vessels (10).

6.5 Weight Faltering

Weight faltering is defined as a failure to achieve the normal potential for growth. (This used to be known as failure to thrive.) If a baby is failing to gain weight or is losing weight, attachment and positioning at the breast must be observed. If the baby is going 3 hours or longer between breast feeds, mothers should be encouraged to wake their baby 2 hourly to feed and feed at least once overnight. If the baby still fails to gain weight, medical advice should be sought. If a mother is supplementing her baby, formula should not replace a breastfeed. Mothers should be advised to supplement with small quantities of formula after a breastfeed if medically indicated. Weight should continue to be monitored on a breast fed baby growth chart. Once the baby's weight increases, supplementation should be discontinued and exclusive breastfeeding encouraged.

Weight loss or poor weight gain is not an indication to stop breastfeeding.

6.6 Allergies

Where there is a strong family history of allergies, including eczema and asthma, mothers should be encouraged to breastfeed. There is evidence to suggest breast milk protects against allergies, reducing the risk of the infant developing them (11).

6.7 Breastfeeding and Returning to Work

It is possible for mothers to continue breastfeeding once they return to work, by offering the infant a breastfeed at other times, e.g. mornings and evenings. Breast milk can be expressed and given by the infant's carer while the mother is at work. (See 6.4 for information on storing expressed breast milk.)

If a mother wishes to stop breastfeeding so she can return to work, it is advisable to start encouraging the baby to take a bottle or cup a few weeks earlier. Breastfeeding should be reduced and stopped gradually as formula feeds are increased.

6.8 Contraception

Breastfeeding should not be relied upon as an effective method of contraception, as it is possible for a lactating mother to become pregnant. The combined pill is not recommended for mothers who are breastfeeding as it can reduce the milk supply. The progesterone only pill will be offered to lactating mothers wishing to take the contraceptive pill but should preferably not be taken until the baby is 6 weeks old.

7. Potential Breastfeeding Problems

Most breastfeeding problems can be resolved by ensuring correct positioning and attachment of baby at the breast. It is vital this is observed before other causes are explored.

7.1 Breastfeeding and HIV

HIV transmission is increased by 5-20% during breastfeeding, when the mother is not given antiretroviral drugs during pregnancy and delivery. It is recommended that infected mothers avoid breastfeeding to reduce the risk of further transmission to their infant.

HIV infected mothers who choose to breastfeed should be advised to exclusively breastfeed for a few months before gradually introducing alternative milk (the risk of transmission increases with the duration of breastfeeding) e.g. formula or donor breast milk. Health professionals should not recommend mixed feeding because this increases the risk of transmission (12). Research into breastfeeding and HIV continues and findings could result in current recommendations changing.

7.2 Nipple Shields

These have been shown to reduce the milk supply, as baby is not sucking on the glands, therefore preventing the oxytocin releasing the breast milk. Mothers must be fully informed about the risks of using a nipple shield and advised to avoid them. Nipple shields should not be available for use in the maternity unit. If a mother chooses to use a nipple shield, she should be encouraged to restrict its use to a short-term period.

7.3 Persistent Pain

This is not normal and positioning and attachment must be observed and corrected if necessary. Mothers should be encouraged to distinguish between a pain and a sensation, as

some new mothers find breastfeeding uncomfortable as they adapt to the new sensation of the baby sucking at the breast. Persistent pain should always be investigated and treated as necessary.

7.4 Milk Engorgement

Milk engorgement is normal around day 3 when transitional milk comes into the breasts. This lasts approximately 24 hours, during which time the baby can feed frequently. Milk engorgement after this time is usually due to poor feeding technique, including problems with positioning and attachment and infrequent breastfeeds.

Positioning and attachment must be observed and corrected as necessary. If a baby is sleeping for long periods between feeds, mothers should be encouraged to wake them and offer a breastfeed.

If the infant will not feed or the mother is finding it too painful to feed, she should be encouraged to express some breast milk. Hand expressing should be encouraged, as this will be more comfortable for the mother. Mothers should never be advised to stop feeding.

7.5 Mastitis

a) Non-infective mastitis.

This occurs when the milk is not effectively removed from the breasts for reasons including poor feeding, poor attachment and positioning and a bra that does not fit well. When milk is not removed effectively, it causes pressure in the breast, forcing milk into the surrounding tissue. Mothers may experience “flu-like” symptoms but no medical treatment is required.

b) Infective mastitis.

This can occur for the same reasons as above but results in the breast becoming infected. The mother will experience flu-

like symptoms and the infected breast is often very painful. Antibiotic treatment is required as untreated, infective mastitis can lead to abscess formation.

Treatment:

a) Continue breastfeeding – if breastfeeding is stopped suddenly the pressure will increase and the mastitis will not improve. The infant should still be encouraged to feed from the affected breast, even if the mother is taking antibiotics.

b) Identify the cause of the problem and treat it, e.g. correct attachment and positioning.

c) Advise mother to rest (this may include time off work if necessary).

d) Weight faltering is defined as a failure to achieve the normal potential for growth. Appropriate antibiotic therapy for infective mastitis.

7.6 Thrush (Candida)

Thrush can be a reason for persistent pain during a breastfeed and is often described as a burning feeling and/or a sore, itchy breast. This pain can worsen during the feed, even when positioning and attachment are correct.

The skin around the nipple and areola can appear red and shiny, potentially losing some of its pigmentation, although thrush can be present even if the nipple looks normal.

Treatment

Miconazole cream 2% or other topical antifungal should be prescribed.

Infants should be reviewed and treated appropriately if the mother has thrush.

8 Formula Feeding

8.1 Infant Formulas

If a mother chooses not to breastfeed or to stop breastfeeding, accurate information must be given on choosing, preparing and storing formula feeds. All advice must adhere to UNICEF baby friendly status guidelines (Appendix 1) and the DH recommendations. (6)

There are two main types of infant formula:

Whey based: these milks have a whey: casein ratio that is similar to breast milk. These milks are suitable from birth.
Casein based: these have a whey: casein ration similar to cow's milk and should not be encouraged for young infants.
Changing to a casein-based formula is still common practice to satisfy a "hungry baby". As there is no evidence to support this, it should be discouraged. Parents should be informed that whey based formula is suitable for infants up to one year of age and the volume and frequency of feeds should be altered, instead of changing formula. Despite this, changing to a casein-based formula is preferable to early weaning.

Examples of infant formulas available:

Manufacturer	Whey-based	Casein-based
Milupa	Aptamil First	Aptamil Extra Milumil
Cow & Gate	Premium	Plus
SMA	Gold	White
Farleys	First Milk	Second Milk

All newborn infants not being breastfed should be given a whey-based formula since this most closely resembles the nutritional constitution of breast milk. The whey-based formulas should be the only formula available in the maternity Unit. Mothers should be encouraged to use these formulas until the infant is (preferably) one year of age.

8.2 Frequency of Feeds

As with breastfed babies, formula fed babies should feed on demand, including at least one feed overnight in a young baby.

8.3 Volume of Feeds

In general, an infant's fluid, energy and protein requirement will be met by an intake of 150ml/kg body weight/24 hours (2.5 fl oz/lb)

8.4 Preparation of Feeds

Formula must be prepared correctly, adding the correct amount of formula powder to the volume of water using the scoop supplied. Adding extra formula should be discouraged as this can lead to hypernatraemia. Diluting feeds with additional water should also be discouraged, as this can lead to serious illnesses e.g. hyponatraemia and diarrhoea, and weight faltering.

Formula companies offer guidelines on the average amount an infant will require for their age, but it is important to remember that individual needs may vary.

Instructions on sterilising and preparing formula feeds should be given antenatally and reinforced postnatally by all health professionals. It may be necessary to reiterate to parents that infants cry for many reasons, not simply hunger.

NB: formula feeds made with powder must be prepared at each feed, not made up and stored in the fridge. The Department of Health bottle-feeding leaflet must be given to all mothers who formula feed to reiterate this advice. This leaflet is available from the postnatal ward, the website www.doh.org, **or local PCT resource department.**

8.5 Equipment

All feeding equipment should be sterilised until the infant is one year of age. Parents should be encouraged to find out how their sterilizer works before their baby is born.
From the age of 6 months, infants should be introduced to drinking from an appropriate free-flow, valve-free cup and from the age of one year feeding from a bottle should be discouraged.

9 Hazards of Bottle Feeding

9.1 Contamination

Bottle fed infants may develop gastroenteritis from contaminated formula feeds. Health professionals involved in teaching parents to prepare formula feeds should emphasise the importance of using proper sterilisation techniques when sterilising equipment and utensils. The importance of hand washing and washing surfaces must also be discussed. Parents should also be warned against giving the baby a previously unfinished feed when it has been left for more than one hour. Bacteria thrive in the milk left standing at room temperature and this may be a significant source of infection. As with expressed breast milk, the remaining milk should be disposed of when the baby has finished with the feed.

9.2 Microwave Ovens

An infant's feed should never be warmed in a microwave oven. Fluid can become very hot at the centre of the feed

while remaining cool on the outside and may scald the baby. If bottles of feed have been stored in a refrigerator (against recommended advice) they can be held under a hot running tap or placed in a jug of hot (not boiling) water to warm them.

9.3 "Follow On" Feeds

"Follow on" milks e.g. Wyeth Progress, Farley's Junior Milk and Cow & Gate Step-Up should not be fed to infants under 6 months of age. These milks are of limited value to infants receiving a healthy, balanced weaning diet.

9.4 Ready to Feed Preparations

Adequate hygiene procedures must be followed when opening and transferring the fluid from the carton to a bottle. See 9.1 for disposing of any remaining milk when the feed is completed.

10 Weaning

Weaning is a gradual process of introducing solid foods that starts when the infant is no longer satisfied by breastfeeding or bottle-feeding alone and ends when the baby no longer requires breast or formula milk.

Even when an infant seems satisfied, solids should be introduced at six months of age to promote optimal growth.

10.1 When to Start

The Department of Health guidelines (6) state that milk alone (whether breast or formula), is all a baby needs until six months of age. Therefore, health professionals should be advising parents not to introduce solid foods until around the middle of the infant's first year. It is unsafe to introduce solid foods before four months.

Currently, many parents still choose to start the weaning process before six months, and some still before four months. Health professionals should be aware of this and ensure parents make an informed decision. Parents who choose to introduce solid food before six months must be advised to avoid gluten-containing foods (see below).

Preterm infants should be introduced to solid food at the same time as other babies. There is no evidence to suggest that weaning should be delayed until 6 months post-due date.

Solids should be introduced at 6 months for the following reasons:

a) The infant's stores of iron, zinc, vitamins C and D may be low
b) The infant would need to consume too large a volume of milk (about 900 ml/day) to supply its nutritional needs and the lactating mother may not be able to produce this quantity.
c) The change in feeding behaviour from sucking to chewing must be encouraged.

10.2 How to Start

One or two teaspoons of semi-solid food should be offered at first. The use of plastic weaning spoons and suitable feeding bowls are recommended. All equipment should be sterilised for infants aged less than six months. The quantity of food offered should gradually be increased.

Infants should be supervised during mealtimes.
The food should always be given from a spoon and never added to the milk in the bottle. There are 3 important reasons why this practice should be followed:

a) The infant must learn to take solids from a spoon
b) The addition of solids to the milk formula produces an over concentrated feed which may result in hyperosmolar states e.g. hypernatraemia
c) The 'thickened' feed may block the teat on the bottle.

10.3 Preparation

Family foods may be cooked in bulk, without added salt or sugar and frozen in individual portions. These should be allowed to defrost thoroughly, then be reheated to boiling and allowed to cool before feeding.

Commercial baby foods should be transferred into a bowl before feeding. Only the quantities of food required should be heated and the remainder should be stored according to manufacturer's instructions.

Some manufacturers continue to use the phrase "suitable from 4 months" on jars or packets of baby food. Parents must be advised that this is misleading information and goes against current advice.

10.4 Which foods to give

10.4.1 First stage (6 months)

The first solids should be:

UNSWEETENED: no sucrose, dextrose or glucose to prevent encouraging a 'sweet tooth' which could lead to obesity and tooth decay.

UNSALTED: do not use stock cubes, instant gravy or any processed foods

GLUTEN FREE: no wheat, rye, oats or barley. Susceptible infants may develop coeliac disease if given gluten before 6 months.

EGG FREE: Egg protein should be avoided before 6 months because some infants may be sensitive to it. It may also interfere with iron absorption.

Suitable first weaning foods include:

'Baby rice' – mixed with water or infant's milk (breast or formula) – see manufacturers instructions

Pureed, cooked vegetables – unsalted e.g. carrot, sweet potato, parsnip

Pureed, cooked or very soft fruit – unsweetened e.g. apples, pears

Rusks should not be used as a first weaning food because they often contain gluten and sugar. Even 'low sugar' rusks have a high sugar content.

Cow's milk may be used from 6 months in the preparation of puddings, sauces or added to cereal, but must not be given as a main drink until one year.

10.4.2 Second stage up to 9 months

When weaning starts at 6 months, there needs to be a faster progression through the stages than if it starts earlier. The first stage should last only 2-3 weeks, then the baby should start to have mashed foods with soft lumps and finger foods

a) A wider variety of solids should be introduced gradually. Mashed, minced, finely chopped and grated foods should be given to encourage chewing.

b) Iron containing foods e.g. red meats and iron fortified cereals should be included in the diet as the infant's iron stores are becoming depleted. Egg may now be given, however, this must be well cooked until solid in accordance with DH recommendations.

c) Finger foods should be given to encourage chewing and help teething. Suggestions are given below. These foods should be sugar free, especially if given

in-between meals. Softer foods should be given initially until the infant can cope with harder lumps.

- Ripe, peeled soft fruit e.g. banana, pear, peach, melon, avocado
- Peeled soft apples [cut into strips]
- Cooked soft vegetables e.g. slices of carrot, courgette, parsnip, sweet potato, cauliflower, broccoli [cut lengthways along stem], slices of red/yellow/orange peppers
- Fingers of buttered bread/toast, breadsticks, strips of pitta bread

d) Infants should be encouraged to feed themselves and should be given their own spoon to hold. They should never be left alone when eating, as they may choke or inhale small hard pieces of food.

e) Fish may also be given from six months e.g. cooked, flaked white fish in a white sauce. All bones must be removed and tinned fish in brine must be avoided because of the high salt content.

f) Cow's milk must still be avoided as a drink but can be used to mix with cereal from 6 months.

g) Infants should be encouraged to drink from a feeding cup.

10.4.3 9-12 months

At this age infants should be eating a variety of foods and offered three meals a day plus breast milk or 500ml of formula milk. These infants should be encouraged to drink from a feeding cup. By the age of one year the infant should be eating normal family foods and ideally should not be using a bottle.

10.4.3 Comparison of home prepared with commercial baby foods

The majority of infant's foods should come from family meals. In general, home prepared weaning foods have many advantages over commercial baby foods. Health professionals should take the opportunity at antenatal and baby clinics to advise on the adaptation of family food for weaning. Advice on the use of appropriate commercial foods should also be given e.g. more use of savoury meals and fruit purees rather than puddings.

10.4.5 Processed foods

The majority of processed foods e.g. sausage rolls, meat pies and ready meals are extremely high in salt and often contain many additives. These types of foods are completely unsuitable for babies under one year old and after this should only be given very occasionally.

11 Milks

11.1 Cow's milk

a) Full fat cow's milk can be gradually introduced in foods from the age of 6 months, e.g. to mix with suitable cereal.

b) All cow's milks given to infants should be pasteurised or sterilized and should not be diluted.

c) Breast milk or infant formula should be continued as a drink until one year of age.

d) From the age of one year full fat cow's milk can gradually be introduced into the diet as a drink in a suitable cup. A maximum of 500ml a day should be provided. If a child eats other dairy foods e.g. yogurts and cheese then less milk will be required as a drink. A breastfeeding baby will also require less cow's milk.

e) From 2 years of age semi-skimmed milk can be given to children taking a wide variety of healthy foods. If a child is underweight the use of this milk should be delayed.

f) Skimmed milk must not be given to children under the age of 5 years. This is because it is too low in energy and vitamins A and D.

11.2 Soya Milks

Soya milks available from health food shops and supermarkets are not suitable for children under 5 years as they are nutritionally inadequate.

Modified soya formulas for infants are available in supermarkets and on prescription. They are not suitable for general use.

In 2004, the Chief Medical Officer issued a statement on the use of soya formulas, which contained the following information:

"The CMO is reiterating advice that soya-based infant formulas should not be used as the first choice for the management of infants with proven cow's milk sensitivity, lactose intolerance, galactokinase deficiency and galactosaemia. Soya-based formulas should only be used in exceptional circumstances to ensure adequate nutrition. For example, they may be given to infants of vegan parents who are not breast-feeding or infants who find alternatives unacceptable."

For further information on appropriate use of soya-based formulas see appendix 3. Referral to a State Registered Dietitian should be made for infants on a milk free diet.

Soya infant formulas contain glucose syrup rather than lactose. This may make them more likely to cause tooth decay. From the age of 6 months it is recommended that soya

formula is given from a cup instead of a bottle, and given at mealtimes only, to help prevent caries.

11.3 Goat's milk/Ewe's milk

a) These milks are totally unsuitable for infants under one year of age because they have a very high protein and salt content. They are also deficient in vitamins A, D, C, B12, folate and iron and are not pasteurised.

b) Children who are allergic to cow's milk may also be sensitive to goat/ewe's milk.

c) Modified goat's milk infant formula while still available is not recommended.

11.4 Low Birthweight/Preterm Formulas

a) Ideally all preterm infants should be fed breast milk.

b) Preterm formulas are intended only for preterm or low birthweight infants and should only be used on medical recommendation. They provide more energy, protein and minerals per unit volume than whey-based formulas. They are not suitable for weight faltering infants.

11.5 High Energy Formula – e.g. SMA High Energy, Nutricia Infatrini

This type of formula should only be given on advice of a Doctor or Dietitian. It is suitable for infants with increased requirements.

11.6 Protein Hydrolysate Formulas

These should only be used with the advice of a Doctor or Dietitian and are available on prescription.
See section 23 for more information.

11.7 Other milks

Oat/rice milks are deficient in protein and vitamins and their use as a main drink should be discouraged in children under 5 years.

A number of formula milks are available which are marketed as suitable for relieving mild reflux. These are not recommended without medical advice.

12 Colic (13,14,15)

Colic is a common problem during the first months of life. The estimated prevalence is 5-20% of infants. Episodes start in the first few weeks of life and end at the age of 4-5 months. Symptoms are varied and often include recurrent violent and inconsolable fits of crying (typically in late afternoon and evening) and screaming in an otherwise healthy baby. Knees are drawn up to the abdomen. Despite extensive research, the causes remain unclear.
The aims of treatment should be to relieve the baby's symptoms and reduce parental anxiety and stress.

Suggested therapies:

a) Reassurance of the mother that it will pass and that crying is not harmful to a baby.

b) Checking the techniques used in feeding to avoid gas intake e.g. correct attachment to the nipple, correct

aperture size of teat, correct angle at which baby is held during feeding/winding.

c) Check also that baby is completing the feed from the first breast before being transferred to the second and is feeding to satiety before feed is terminated. If transferred too soon, a full volume feed will be taken which will contain a higher proportion of foremilk and less hindmilk consequently lowering the amount of fat in the feed. The fat in the breastmilk serves to delay gastric emptying and if not present will mean a high volume feed is presented rapidly to the infant's jejunum and ileum which may contain more lactose than can be handled by the lactase available. If lactose enters the colon, there may be increased fermentation with resulting colic, flatus and loose acid stools.

d) Checking the composition of the feed eg dilution of formulas according to manufacturers' instructions.

e) Use infant massage technique (ask Health Visitor)

f) There are NO truly effective drug treatments available that will completely eliminate infantile colic. Antispasmodics used in the past proved dangerous to the very young (causing apnoea) and their use is no longer indicated

g) Gripe water, and herbal drinks which contain sugar are not recommended.

h) Lactase or hypoallergenic milk formula should only be recommended following medical advice.

If crying continues for more than several hours, or baby vomits or is feverish, medical advice should be sought as it is important to eliminate painful/infected ear or twisted bowel.

13 Iron Deficiency Anaemia

Iron deficiency is the single most common nutritional disorder, worldwide (16). Once widespread, is now more common in children of Asian origin and is especially prevalent in areas of socio-economic deprivation (17). It is most likely to occur in children between the ages 6-24 months who consume few solids and whose diets are dominated by cow's milk, which has little iron.

Iron deficiency may compromise cognitive and social development as well as delay body balance co-ordination and motor skills (12).

Prevention

Appropriate dietary advice at weaning is very important in preventing iron deficiency anaemia. This should include:

a) The promotion of breastfeeding for at least 6 months.

b) In bottle-fed infants, the use of infant formulas until one year of age.

c) The avoidance of excessive cow's milk consumption in children over one year of age.

d) The use of iron fortified cereals, minced meat dishes and bread.

e) The promotion of vitamin C rich foods and drinks (i.e. fruit and vegetables). When given at mealtimes these enhance iron absorption.

f) The limitation of sweets, biscuits and crisps.

g) The avoidance of tea, which inhibits iron absorption.

The continued use of iron enhanced formula or a follow on milk as a main drink after the first year should be considered if there are concerns about the adequacy of iron in the diet.

Treatment with an iron preparation is justified only in the presence of a demonstrable iron-deficiency state. Before starting treatment, it is important to exclude any serious underlying cause of the anaemia (e.g. gastro-intestinal bleeding). The possibility of thalassaemia should be considered in children of Mediterranean or Indian subcontinent descent.

Prophylaxis with an iron preparation may be appropriate in the management of low birth-weight infants such as preterm neonates.

14 Constipation

a) Constipation may be defined as difficulty in passing hard stools or the passing of stools less frequently than 'normal' for that individual. Bottle-fed infants are much more likely to suffer from constipation than those who are breastfed.

b) The stools of breastfed babies may vary considerably in texture, colour and frequency. In the child who is thriving this variation should cause no alarm. Sometimes a breastfed baby will not pass any stools for several days, this should not cause concern.

c) Any cause of dehydration may produce constipation in babies e.g. over concentrated bottle feeds, excess sweating caused by fever, excessive clothing or exposure to high temperatures.

d) The older child who is eating a low fibre diet, may also suffer constipation.

e) Some children will have an organic problem. If there has been a delay in the passage of meconium, this may indicate Hirschprung's Disease. Other warning signs include vomiting, abdominal distension and poor growth. If any concerns seek medical opinion (18).

14.1 Treatment of Constipation

a) Check that bottle feeds are made up correctly according to the manufacturer's instructions.

b) Give cooled boiled water or possibly with addition of squeezed orange or well diluted unsweetened pure fruit juice (see section on fluids) between feeds. **The addition of sugar, glucose or honey to water/feed is not recommended.**

c) Give fruit/vegetable purees to infants over 6 months.

d) Give the following high fibre foods to infants over 6 months – weetabix, wholemeal bread, fresh fruit and vegetables. **NB Pure bran must not be used.**

e) If the child does not respond to this treatment medical advice should be sought. Many children do require treatment with laxatives (18).

15 Diarrhoea

Diarrhoea may be defined as the very frequent passage of loose, watery stools, which is different to the child's normal bowel movements.

Research Based Recommendations

a) Do not stop feeding in either breast or formula fed infants. Withdrawal of milk feeding during diarrhoeal illness is associated with 5 times higher risk of dehydration compared to continued feeding (19).

b) Do not stop feeding in infants less than 6 months of age. Rapid refeeding of milk formula does not lead to a higher recurrence of diarrhoea than in those where formula is gradually re-introduced. (20).

c) Lactose and cow's milk protein intolerance are usually brief in duration (21,22). If it is suspected, a milk free diet should be prescribed by a medical practioner and tried for 6 weeks. At weaning dietary advice should be given by a Dietitian.

d) There is no evidence to suggest the routine substitution of a lactose free or soy based formula (23). If symptoms of vomiting and diarrhoea and/or eczema persist, further medical advice should be sought. These infants should be referred to a paediatrician for further investigation.

e) Evidence from the developed and developing world clearly recommends continuation of both milk and solid feeds during acute diarrhoeal illness (24).

In summary, infants and older children should be offered their usual diet and extra fluids. An assessment of clinical status and dehydration needs to be made in children with diarrhoea. Appropriate advice as above can be given. Oral rehydration may

be necessary. Further advice regarding rehydration should be given according to guidelines. (25, 26)

16 Vitamins

16.1 Recommendations for infants and children

The UK health departments recommend a daily dose of vitamins A, C and D for:

- breastfed infants from 6 months (or from 1 month if there is any doubt about the mother's vitamin status during pregnancy)
- formula-fed infants who are over 6 months and taking less than 500 ml infant formula per day
- children under 5 years of age

This recommendation is particularly important for children who are picky or fussy eaters, those of Asian, African, Afro-Caribbean or middle eastern origin and those living in northern areas of the UK .

Breastfed infants under 6 months do not require vitamin supplements, provided that the mother has an adequate vitamin status during pregnancy and lactation.

16.2 Recommendations for women

UK health departments recommend:

- 10 micrograms of vitamin D each day for pregnant and breastfeeding women..
- 400 micrograms of folic acid for women who may become pregnant and up until the 12th week of pregnancy.

16.3 Healthy Start children's vitamin drops

Under Healthy Start, children can get free vitamin supplements from when they are six months old until their fourth birthday.

Healthy Start Children's vitamin drops are now available.

The daily dose of five drops contains:

- 233 micrograms of vitamin A
- 20 milligrams of vitamin C
- 7.5 micrograms of vitamin D_3.

They are suitable for vegetarians and free from milk, egg, gluten, soya and peanut residues. They are also prescribable.

They come in 10 ml bottles, each of which contains just over 56 daily doses. Beneficiaries are entitled to 1 bottle every 8 weeks. PCTs in England and Wales can sell them for £1.70 per bottle.

16.4 Healthy Start women's vitamin tablets

This product is expected to be available from March 2007

Further information is available from the Healthy Start website (www.healthystart.nhs.uk)

17 Fluids

0-3 months

a) Breastfed infants, fed on demand, normally receive enough fluid from breast milk and do not require additional water. Bottle fed infants should be fed infant formula under normal conditions and additional cooled boiled water can be given if necessary.

b) Sugar in any form (sucrose, glucose, fructose or dextrose) should never be added to feeds/fluids.

c) No other drinks should be given, unless under direction from a medical practitioner.

3-6 months

a) Breastfed infants, fed on demand, normally receive enough fluid from breast milk and do not require additional water. Bottle fed infants should be fed infant formula under normal conditions and additional cooled boiled water can be given if necessary.

b) If a baby refuses water, but needs additional fluid, then a completely sugar-free baby drink may be given according to manufacturer's instructions, or well-diluted unsweetened fruit juice (1:10 dilution).
A valve-free/free-flow feeding/trainer cup should be used for anything other than milk and water.

c) Sugar in any form (sucrose, glucose, fructose or dextrose) should never be added to feeds/fluids.

6 months onwards

a) Breast milk or 500-600 ml formula should continue to be given.

b) Cooled, boiled water with nothing added, should continue to be given when required.

c) Infants may be given well-diluted unsweetened fruit juices **at mealtimes**. These should always be given from a valve-free/free flow feeding/trainer cup, never a bottle. **Use of bottles should be discouraged from 12 months.**

d) Commercially available flavoured drinks containing sugar (dextrose, glucose, sucrose or fructose) should be avoided because they are too sweet and expensive.

e) 'Sugar-free' low calorie drinks should also be avoided as they contain intense sweeteners (e.g. aspartame, acesulfame K, saccharin), which are not currently recommended for young children.

f) Tea and coffee are not advised as a drink for infants and young children.

18 Use of Dummies

There is very little known problem with early use of a dummy as a soother if required. However, prolonged use throughout the day should be discouraged. The use of a flattened/orthodontic type is preferable. Most toddlers can give up the use of a dummy relatively easily. This is far preferable to sucking a finger or thumb, which may continue for many years.

There has been some suggestion that dummy use may protect babies against cot death. However the UNICEF UK Baby Friendly Initiative Statement on dummy use, cot death (SIDS) and breastfeeding, www.babyfriendly.org.uk, whilst welcoming any research that may help to reduce the risk of sudden infant death syndrome (SIDS), concluded that current evidence is inconclusive.

Benefits of dummy use as a soother need to be balanced with known risks so that informed decisions about using a dummy

can be made. Potential risks of prolonged dummy use include:

- interference with good establishment of breastfeeding in the early weeks (Baby Friendly Step 9)
- increased risk of otitis media infection
- increased dental malocclusion
- risk of accidents such as obstruction of the airway

If a dummy is used, the following guidelines should be followed:

a) Strict standards of hygiene should be maintained, between use the dummy must be sterilised.

b) The use of a flattened/orthodontic type is preferable

c) Never dip a dummy in any food or drink.

d) It is preferable that a baby should not sleep with a dummy in his/her mouth. Most babies reject the dummy once asleep. Do not replace in the mouth unless the baby wakes and needs further comforting.

19 Fluoride

Evidence concerning the effectiveness of the use of fluoride in reducing tooth decay is strong. It is now believed that the topical effect of fluoride is more important than the systemic effect.

Water fluoridation is the most effective way of preventing decay in children and should be implemented when requested by local Primary Care Trusts and/or the Strategic Health Authority.

19.1 Topical

The presence of fluoride on the surfaces of teeth after eruption is beneficial in reducing susceptibility to decay. The most suitable topical fluoride product for young children is toothpaste, and evidence supports supervised brushing from the age at which teeth first erupt to gain maximum protection. Children who use a fluoride toothpaste and drink fluoridated water have even less decay.

The concentration of fluoride in toothpaste is measured in parts per million (ppm). Fluoride toothpastes are currently available in three concentration ranges: low fluoride pastes containing < 600ppm, those containing about 1000ppm and pastes containing about 1500ppm.

Low fluoride formulations were introduced to meet the concern of excessive fluoride ingestion by young children. There is a very slight risk that young children (up to 6 years of age) who swallow large quantities of toothpaste may be at risk of enamel fluorosis (mild mottling of the enamel surface associated with the ingestion of excessive fluoride during the period of enamel formation).

Low fluoride toothpastes reduce the risk of excessive ingestion of fluoride, but are less effective than toothpastes containing 1000ppm or more. Their use should only be

recommended for children who are at low risk of tooth decay, living in a fluoridated area or receiving fluoride supplements. Indicators of low risk of decay include little evidence of past decay and good oral hygiene. Where the risk of decay outweighs the risk of fluorosis, then toothpastes containing 1000ppm should be recommended.

Advice to patients re tooth brushing

The advice given in Gateshead and South Tyneside will differ, due to the optimal fluoridation of the Gateshead water supply.

Gateshead

a) All children up to the age of 6 years should use a low fluoride "junior" toothpaste containing 250 – 600ppm fluoride.

b) Parents/Guardians should always supervise tooth brushing.

c) The amount of toothpaste should be limited to a smear for children up to the age of two, and a small pea-sized blob for children aged two years and over.

d) Children should be encouraged to spit out after brushing, but not to rinse.

e) Toothpaste should be kept out of reach of toddlers.

South Tyneside

Children in South Tyneside do not currently benefit from water fluoridation and epidemiological surveys (BASCD) indicate significant inequalities in dental health. Therefore the following advice should be given:-

a) All children up to the age of 6 years should use a toothpaste containing 1000ppm.

b) Parents/Guardians should always supervise tooth brushing.

c) The amount of toothpaste should be limited to a smear for children up to the age of two, and a small pea-sized blob for children aged two years and over.

d) Children should be encouraged to spit out after brushing, but not to rinse.

e) Toothpaste should be kept out of reach of toddlers.

Toothpastes containing 1500ppm are recommended for children from 7 years in both districts.

19.2 Systemic

In areas where the water is not optimally fluoridated, dietary fluoride supplements can be recommended for individual children who are at high risk of decay and for whom decay or its treatment may pose an additional health risk.

The water supply in Gateshead is optimally fluoridated and therefore systemic fluoride supplements should not be recommended.

The water supply in South Tyneside is not currently fluoridated and therefore systemic fluoride supplements can be recommended for *individual* children who are at risk of decay and for whom decay or its treatment may pose an additional health risk.

The dosage schedule for South Tyneside (current fluoride level falls around 0.3ppm)

20 Paediatric Medicines

Sugar-containing medicines can cause dental caries. Children often take medicines between meals, at bedtime and through the night, greatly increasing their frequency of consumption of sugar and therefore their likelihood of developing caries.

Medicines should never be added to milk feeds.

20.1 Prescribed Medicines

Many prescription medicines regularly required by children are now available in sugar-free form, including antibiotics, anticonvulsants, analgesics, respiratory medicines and vitamins and minerals, including iron. The British National Formulary (BNF) now identifies to the prescriber those liquid medicines that are sugar free.

It is essential that a sugar-free medicine is prescribed whenever possible, especially if chronic administration is required.

20.2 Over the Counter (OTC) Medicines

Some popular OTC medicines continue to have a high sugar content, but many sugar-free alternatives are available for purchase for many indications, for example fever and pain relief including teething pain, coughs, decongestants, and multivitamins. **Parents should always be advised to request sugar –free alternatives.**

21 Vegetarian/Vegan Diets

There are various categories of vegetarians, who exclude different foods through choice. Lacto-ovo vegetarians do not eat meat but have milk and eggs, ovo-vegetarians will eat eggs but no milk or meat, and lacto-vegetarians will take milk but no eggs or meat. Vegans exclude all meat and animal derived products e.g. milk, eggs, honey. Some people will say they eat a vegetarian diet but on further questioning may eat fish, or not exclude animal derivatives e.g. gelatine.

21.1 Infant Feeding for Vegetarians/Vegans

Breastfeeding should be recommended. Vegan mothers should be strongly encouraged to breastfeed for at least one year. If this is not possible an appropriate formula should be chosen, as cow's milk formula may not be acceptable.

The inclusion of omega 3 fatty acids from fish oils makes many formula milks unsuitable for vegetarian diets if the fatty acids are derived from fish oils.

Soya based formulas are not recommended before 6 months of age (see section 11.2 for further information).

As previously mentioned, oat and rice milks are not suitable for infant feeding.

21.1.1 Vitamins and Minerals for Vegetarians

Vitamin supplements should be given from 6 months and continued until at least 2 years and preferably 5 years of age. If there is concern about the vitamin intake of the mother and infant these supplements may be started at one month.

21.1.2 Weaning for Vegetarians and Vegans

Weaning should begin at 6 months of age as for all other babies.

If not breastfeeding, give approximately 500ml of modified soya formula or modified cow's milk formula daily until one year of age. When mixing foods with milk, e.g. cereals, expressed breast milk can be used instead of formula.

Baby rice, pureed fruit and vegetables are suitable first weaning foods. It is important to include foods to replace meat and fish in the diet to ensure protein and vitamin and mineral requirements are met. These include pulses (beans and lentils), fortified breakfast cereals, green leafy vegetables and dried fruits e.g. apricots, prunes and raisins. Meat replacement products e.g. quorn or soya mince can be used from around 7-8 months, however these can be high in salt so parents should be encouraged to check food labels.

Nuts can be introduced from 12 months in children and families where there is no history of atopy, either ground or as a nut spread (see section 24 for further information on nuts).

Pulses and cereal grains are very important in the vegan diet, pulses should be soaked well and cereals and pulses must be properly cooked to make them more digestible. Nuts should be ground or alternatively nut spread may be used (see section 25 for when to introduce nuts into the diet).

22 Ethnic groups

Some religious and ethnic minority groups are at an increased risk of nutritional problems. Hindus and Sikhs generally exclude beef, pork and eggs. Muslims exclude pork and all types of carnivorous animals and Jews exclude pork, rabbit, shellfish and eels. Jewish people prepare and consume milk and meat products separately. Some groups tend to eat very hot or highly spiced foods which are not easily digested by infants.

Similarly to vegetarians and vegans, the ethnic minority groups should be encouraged to breastfeed their babies or if this not possible, to use any of the formulas recommended for vegetarians.

Weaning should start at the normal time and not later than 6 months to prevent growth failure or anaemia. It is important to build on the traditions and customs of ethnic groups.

Many savoury baby products contain meat which has not been killed by the halal method and these products are unacceptable to Muslims. Rice with the addition of family food items should be encouraged rather than a dependence on manufactured puddings and desserts.
Vitamin supplements should be given until the age of 5 years. Some ethnic minority groups tend to have a greater incidence of rickets, therefore an adequate intake of vitamin D and calcium is even more important. Infant formula should be given until one year of age, since it is fortified with vitamins and minerals.

22.1 Monitoring Growth in Ethnic Groups

The ethnic background of the child should be taken into consideration when using height and weight centile charts for children from minority groups. Standard charts for children in the UK do not take the different stature of some ethnic groups into consideration. Deviation from centile lines can be an indication of weight faltering (refer to section 8.5).

23 Allergy and Food Intolerance

Where there is a strong family history of allergy or food intolerance e.g. eczema, rhinitis or gastrointestinal disturbance, exclusive breastfeeding is recommended for at least the first 6 months of life. The family should be referred to a dietitian for weaning advice.

The most common allergens are: fresh cow's milk, egg, wheat, and citrus fruits. These should not be introduced into the diet until after 12 months of age. Vitamin supplements should be given from the age of 6 months to 2 years and preferably to 5 years, particularly in those at risk of nutritional deficiency.

If infant formula is required, a protein hydrolysate formula may be presribed if there is a strong risk of cow's milk intolerance. It is not recommended that soya formula is routinely prescribed as some babies may be sensitive to soya (see section 11.2). Protein hydrolysate formulas e.g.

Pregestimil (Mead Johnson), Nutramigen (Mead Johnson), Pepdite 0-2 (SHS), Prejomin (Milupa), Neocate (SHS) or Pepti Junior (Cow & Gate) are prescribable and are least likely to cause sensitisation.

Ordinary soya milks are inadequate in energy, vitamins and minerals for infant feeding and should not be recommended.

Weaning foods most suitable for potentially allergic infants are milk free baby rice (mixed with expressed breast milk or appropriate formula), pureed fruit and pureed vegetables. As weaning progresses one new food should be introduced weekly, this food should be given daily for that week to assess if it has caused any side effects.

The range of foods given should be gradually increased until the child is having a varied diet by the age of approximately one year.

In the case of an infant with a suspected food allergy/intolerance it is important that a firm diagnosis is made. Families often attempt self-diagnosis and treatment of food allergic disease. The dietary treatments undertaken may be unnecessary and indeed potentially harmful. Withdrawal and reintroduction of the suspected food or foods should be shown to promote the disappearance and re-appearance of symptoms.

If an allergic reaction has been severe, reintroduction of the foods, often called ‘challenge’, should be carried out under medical supervision. Withdrawal of the food causing the problems may increase the sensitivity of the individual to that food, therefore, in the case of a child with acute anaphylactic type reactions, challenge may be deferred for several years or indeed may not be carried out at all.

If a child requires an exclusion diet it is vital that the parents are given detailed dietary advice by a dietitian in order to ensure adequate nutrition.

24 Food Additives

These are substances added to foods to improve their appearance, texture or prolong their shelf-life. Total removal of food additives is neither practical nor achievable and indeed some food additives improve the nutritional value of a food item. The consumption of excess additives is not recommended. The use of family foods and unprocessed foods should be encouraged as often as possible. Confectionery, sweets and soft drinks, which contain a lot of additives, should be limited.

A small number of children have been found to be intolerant to certain food additives. If food additive intolerance is suspected it is essential that the diet of the child does not become nutritionally inadequate due to over zealous and often unnecessary dietary restriction imposed by parents or advisors. Such children should receive dietary advice from a dietitian.

25 Nuts

The consumption of nuts, crisps or other hard particles should be discouraged in infants and young children. These may be inhaled rather than swallowed and cause suffocation. Children under the age of 5 years should not be given whole nuts to eat. Many processed foods contain nuts. The introduction of peanuts and nuts to the diet of infants from allergic families should be delayed until about the age of 3 years or at an age advised by their doctor. For infants from non-atopic families, nuts of a suitable texture (e.g. smooth nut butter or ground nuts mixed into foods) can be introduced from around one year.

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Appendix 1

UNICEF Baby Friendly 10 steps and 7-point Plan.

UNICEF UK Baby Friendly Initiative
The 10 Steps to Successful Breastfeeding (hospital)

1. Have a written policy that is routinely communicated to all healthcare staff.
2. Train all healthcare staff in skills necessary to implement the 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 maintain lactation, even if they are separated from their infants.
6. Give newborn infants no food or drink other than breast milk, unless medically indicated.
7. Practise rooming-in – allow 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 hospital.

UNICEF UK Baby Friendly Initiative
The Seven Point Plan (Community)

1. Have a written breastfeeding policy that is routinely communicated to all healthcare staff.

2. Train all healthcare 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.

Appendix 2

Breastfeeding and Smoking Jane Walsh, Drug Information Pharmacist for Community Services, North Thames (West) Region.

Nicotine is excreted into breast milk with milk concentrations exceeding those of serum, the breast milk plasma ration has been found to average 2.9.

There is rapid transfer of nicotine from maternal serum to milk, this can be detected within minutes of a mother smoking a cigarette.

A linear correlation between the concentration of nicotine in serum and in milk has been found. A linear correlation between the concentration of cotinine, the main metabolite of nicotine, in serum and in milk has also been found. The concentrations of cotinine in milk have been found to be lower than the corresponding serum concentrations, the milk/serum concentration ratio averaging 0.78.

The nicotine levels in milk decline between cigarettes smoked the half-life being 90 minutes but cotinine levels remain fairly constant.

Exposure of an infant to nicotine and cotinine via breastmilk depends on a mother's daily cigarette consumption, the time of smoking prior to breastfeeding, the time interval between breastfeeding and the previous cigarette, and the mother's

smoking habits. It has been shown that the manner of smoking is a more important determinant of nicotine intake than the number of cigarettes smoked, factors including butt length, depth of inhalation, intervals between puffs and nicotine content of cigarettes.

Studies have shown that breastfed infants of mothers who smoke have measurable amounts of nicotine and cotinine in their serum and urine. The presence of nicotine and cotinine in infants exposed to passive smoking has also been shown, but at concentrations lower than those from smoking mothers.

In a group of women studied, more smokers than non-smokers stopped breastfeeding early because of "too little milk". The same study showed that smoking and breastfeeding combined increased the incidence of infant colic by 50%. Substances, other than nicotine, present in tobacco, are probably excreted into breast milk.

The nicotine content of breast milk has been suggested as causing over excitability, apnoeic attacks and vomiting in infants. Passive smoking has been associated with chronic middle ear effusion and lower respiratory tract illness. Nicotine (smoking) is listed as a drug of abuse and contraindicated during breastfeeding by the American Academy of Paediatrics Committee on Medicines. The authors of several studies cite their results as further reason to strongly encourage women who smoke to reduce or stop smoking during pregnancy and lactation.

Appendix 3

Paediatric Group Position Statement on the use of Soya Protein for Infants

In September 2003 COT (Committee on Toxicity of Chemicals in Food, Consumer Products and the Environment) published a report on phytoestrogens and health, which included a response from SACN (Scientific Advisory Committee on Nutrition) on the use of soya infant formulas. COT's recommendation was as follows:

"The Working Group notes the advice by the Department of Health based on the 1996 COT advice. This stated that breast and cows' milk formulae are the preferred sources of nutrition for infants. However, women who have been advised by their doctor or other health professionals to feed their baby soy based infant formulae should continue to do so. In the light of new data presented in this report, which was unavailable in 1996, the Working Group recommends that the current advice be amended to state that soy-based infant formulae be fed to infants only when indicated clinically. The Working Group notes that similar advice has been issued in other countries (e.g. New Zealand, Australia)."

In January 2004, the Chief Medical Officer (CMO) issued his response to this report:

The CMO is reiterating advice that soya-based infant formulas should not be used as the first choice for the management of infants with proven cow's milk sensitivity, lactose intolerance, galactokinase deficiency and galactosaemia.

He concludes by saying that:

"Soya-based formulas should only be used in exceptional circumstances to ensure adequate nutrition. For example, they may be given to infants of vegan parents who are not breast-feeding or infants who find alternatives unacceptable."

New Evidence

Since the COT report of 1996, two new studies have raised concern over the possible long-term effects of using soya formula in infancy. These relate to a significant increase in prolonged (0.37 days) and painful menstruation in adult women fed soya formula as infants (Strom et al 2001); changes in the number of Leydig cells in the testes and suppression of the testosterone rise in neonatal marmosets partially fed soya formula (Sharpe et al 2002).
The Paediatric Group believes that these studies do give rise for concern, but that more extensive studies (and particularly more long-term studies) are needed to clarify the safety of soya-based infant formulas.

Clinical need
As a precautionary measure, the Paediatric Group recommends that use of a soya-based infant formula, as first line treatment should be discouraged for the following reasons:

1. An infant receiving soya-based infant formula as a sole source of nutrition between the ages of 4-6 months will consume approximately 4mg isoflavones per kg body weight/day. This is during a developmental stage when permanent changes due to phytoestrogens are most likely to occur.

2. Some infants with atopy or cow's milk allergy/intolerance will become sensitised to soya protein. Although estimates of cross-reactivity have varied quite substantially over recent years (Zeiger et al, 1999; Hill et al 1984), as with all allergenic foods risk of sensitisation with soya protein is likely to be greatest in the first six months of life. Consequently, use of soya in allergic infants or in infants at high risk of developing allergy is not recommended before six months of age (Host et al 1999). This recommendation would clearly extend to soya products such as puddings as well as soya-based infant formulas.

3. Recent concerns of an increased risk of peanut allergy in infants fed soya-based infant formula give further support to delaying exposure to soya (Lack et al 2003).

However, the group acknowledged that there **is** a clinical need for feeding soya-based infant formula in the following groups as any potential risk as outlined above is outweighed by the risk of withholding the formula.

- **Infants with cow's milk allergy/intolerance who refuse extensively hydrolysed/elemental formulas** – despite perseverance, some infants will refuse to take extensively hydrolysed/elemental formulas, although this is relatively rare in infants under 6 months, especially as palatability of these formulas has improved in recent years.

- **Vegan mothers -** these mothers should be strongly encouraged to breastfeed, but if they are unable to breastfeed or choose not to do so, soya formula would be the appropriate choice.

- **Galactosaemia** – some units consider the lactose content of lowlactose formulas too high for the treatment of galactosaemia and the use of extensively hydrolysed formulas not appropriate for this condition. Clearly, for these infants any potential risk of phytoestrogen intake is far outweighed by the risk posed by inappropriate treatment of their galactosaemia.

Any changes to availability of soya-based infant formulas (e.g. Prescription only, ACBS) **must** reflect the clinical need of the above groups.

After six months - the risk after the age of 6 months is likely to be reduced as the dose of phytoestrogens per kg body weight is likely to be lower once the infant is taking solids. Also, the infant's potentially vulnerable organ systems are likely to have matured by this age, so further reducing the risk of long-term damage.

In Summary:

- Breastfeeding should be strongly encouraged as providing the safest, most nutritionally-adequate form of feeding for most infants.

- Dietitians should discourage the use of soya protein in children with atopy or cows' milk allergy – particularly in the first 6 months of life - to avoid sensitisation to soya protein and exposure to phytoestrogens while organ systems remain at their most vulnerable. This would include soya infant formula and soya products such as desserts etc.

- When a soya-based infant formula is used, parents should be informed of current findings relating to phytoestrogens and health and on the clinical need for soya formula. Any parent choosing to refuse soya for their infant should be supported in their decision.

- More research into the long-term effects of phytoestrogen exposure in infants is needed and into whether any adverse effects are dose related.

- . This position statement will be updated as further evidence becomes available.

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