

Maternal and Child Nutrition Guidelines



Including
Pre-Conception and Pregnancy
Early Years (Babies and Children 0-4 Year Olds)

Section 1

Introduction

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Scope

The aim of this document is to provide evidence-based and clear guidelines for all health professionals and childcare staff to ensure that parents-to-be, parents and carers receive consistent and accurate nutritional advice and information. They have been developed by a multi-professional group and reflect current best practice. This will help to promote good nutrition for parents, infants and pre-school children, which in turn will benefit general health, growth and development of the under fives in South Gloucestershire.

They are a comprehensive resource covering:

- **Preconception and pregnancy**
- **Infant feeding (from birth to 12 months)**
- **Feeding toddlers and preschool children (1-4 year olds)**

The evidence base for good nutrition in early years is strong for both short term health e.g. prevention of constipation and anaemia, and long term prevention of chronic disease. It is essential that good dietary habits are established at an early age and that parents have the skills and knowledge to make appropriate choices, and they are able to access affordable, safe, nutritious food.

These guidelines are intended for healthy infants. Some common issues are covered such as iron deficiency, reflux and fussy eating behaviour, but these guidelines may not be appropriate for those with severe feeding problems or complex needs who may need more specialised interventions.

These guidelines are intended for use as a reference document by all health professionals and childcare staff working with parents-to-be, parents, infants and preschool children.

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Health data for South Gloucestershire

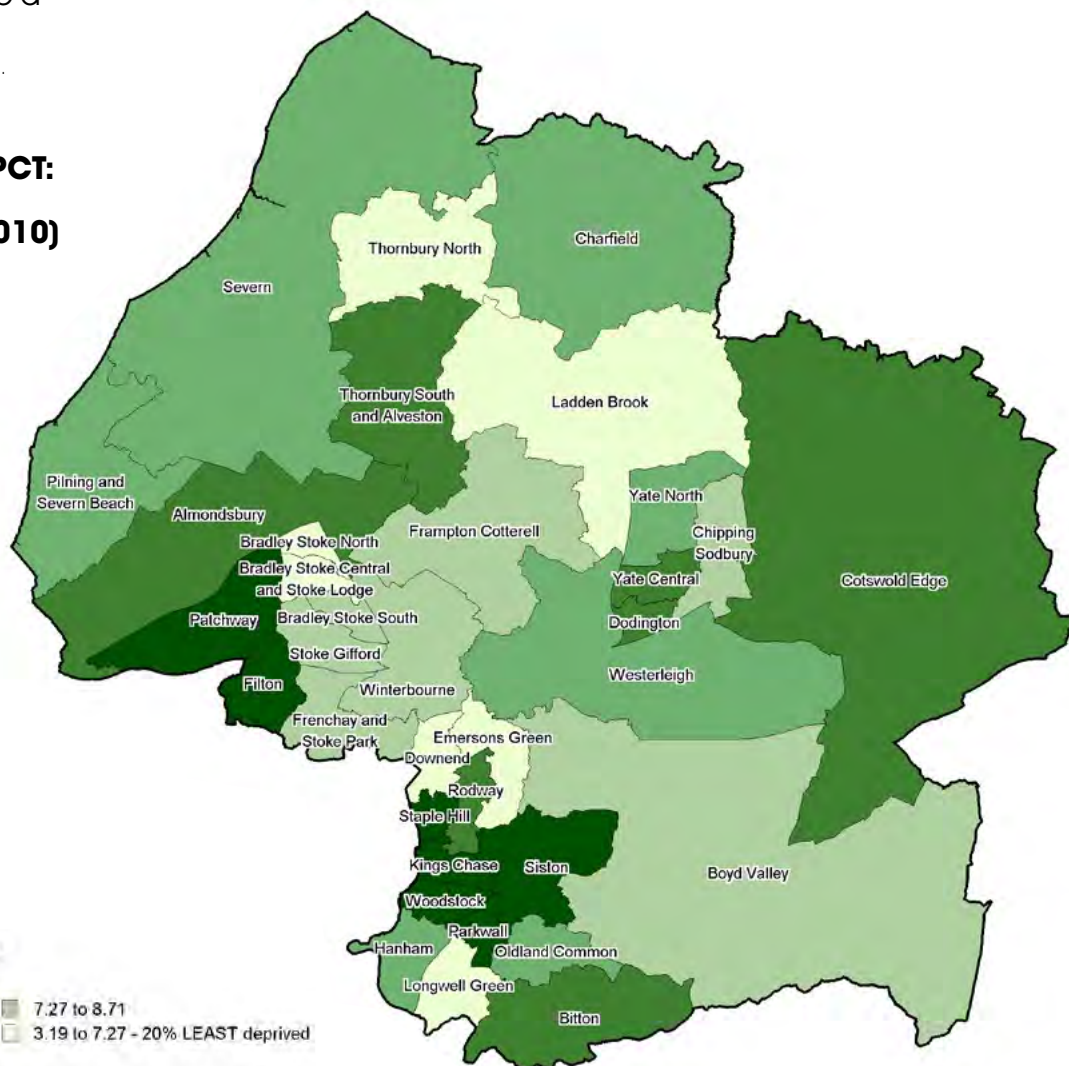
Deprivation

South Gloucestershire lies to the north and east of Bristol. With a total population 259,000 it is mainly rural, and generally quite affluent. It has no major city, but areas of dense urban population around the Bristol fringe. Some of these areas are relatively deprived and in October 2006, South Gloucestershire Council's Cabinet agreed the identification of five priority neighbourhoods based on clusters of areas that are more in need of additional support. These areas are Cadbury Heath, Filton, Kingswood, Patchway and Staple Hill. In July 2009 the council also agreed that West Yate and Dodington should become a Priority Neighbourhood.

The least deprived areas are Thornbury North, Bradley Stoke, Downend, Emersons Green, and Longwell Green.

The map below shows the pattern of deprivation in South Gloucestershire using population – weighted average scores by ward.

South Gloucestershire PCT: Index of multiple deprivation by ward (2010)

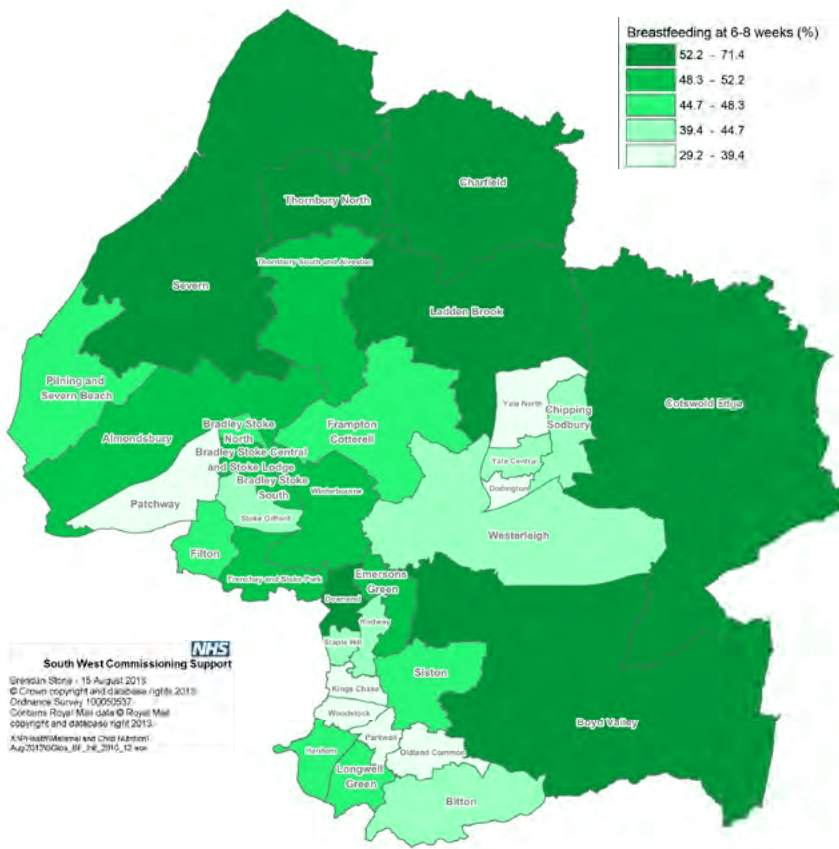


Index of Multiple Deprivation 2010 (quintiles based on PCT scores)

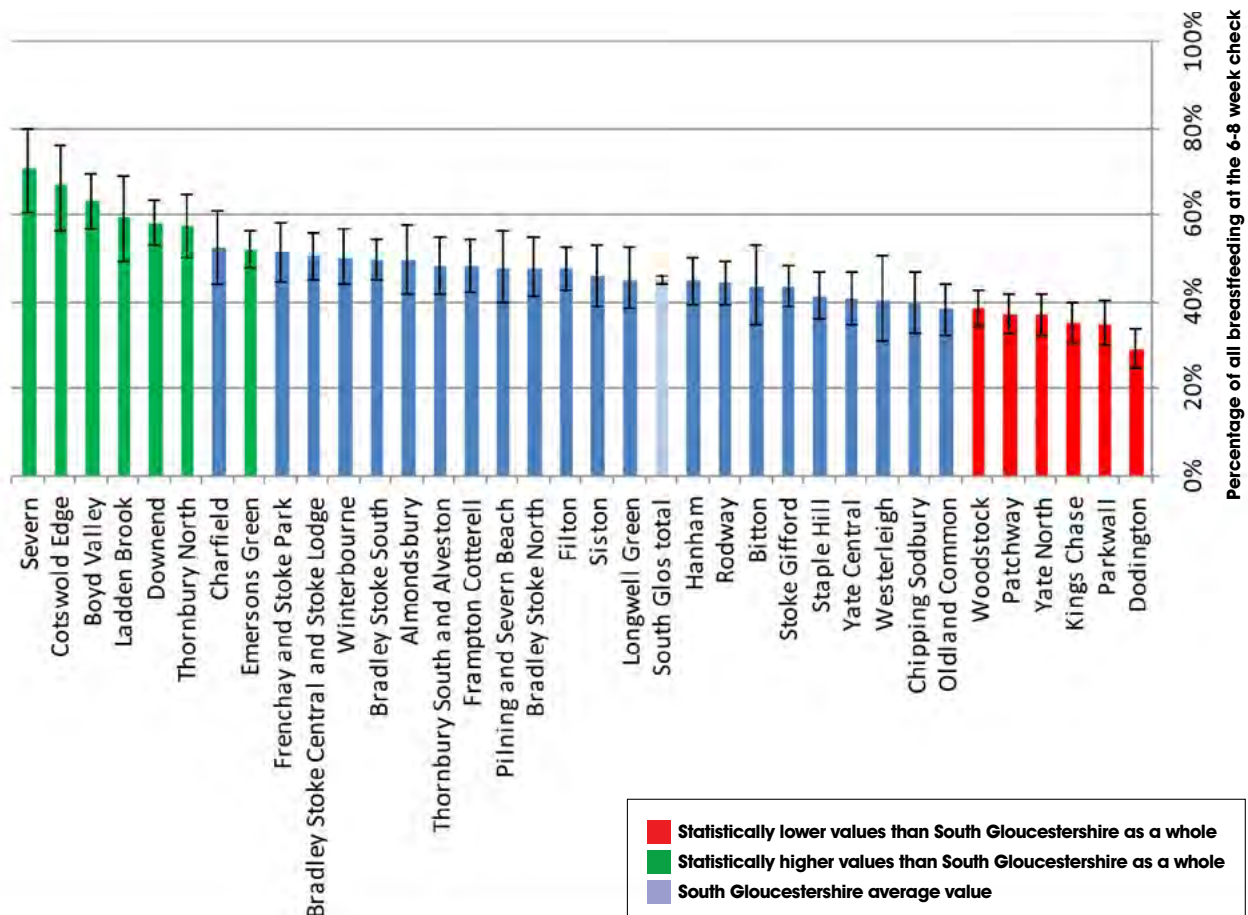
12.96 to 22.61 - 20% MOST deprived	7.27 to 8.71
10.12 to 12.96	3.19 to 7.27 - 20% LEAST deprived
8.71 to 10.12	

Source: Department for Communities and Local Government, Indices of Deprivation 2010

Prevalence of breastfeeding at 6-8 weeks by ward of residence, South Gloucestershire, 2010-2012 pooled



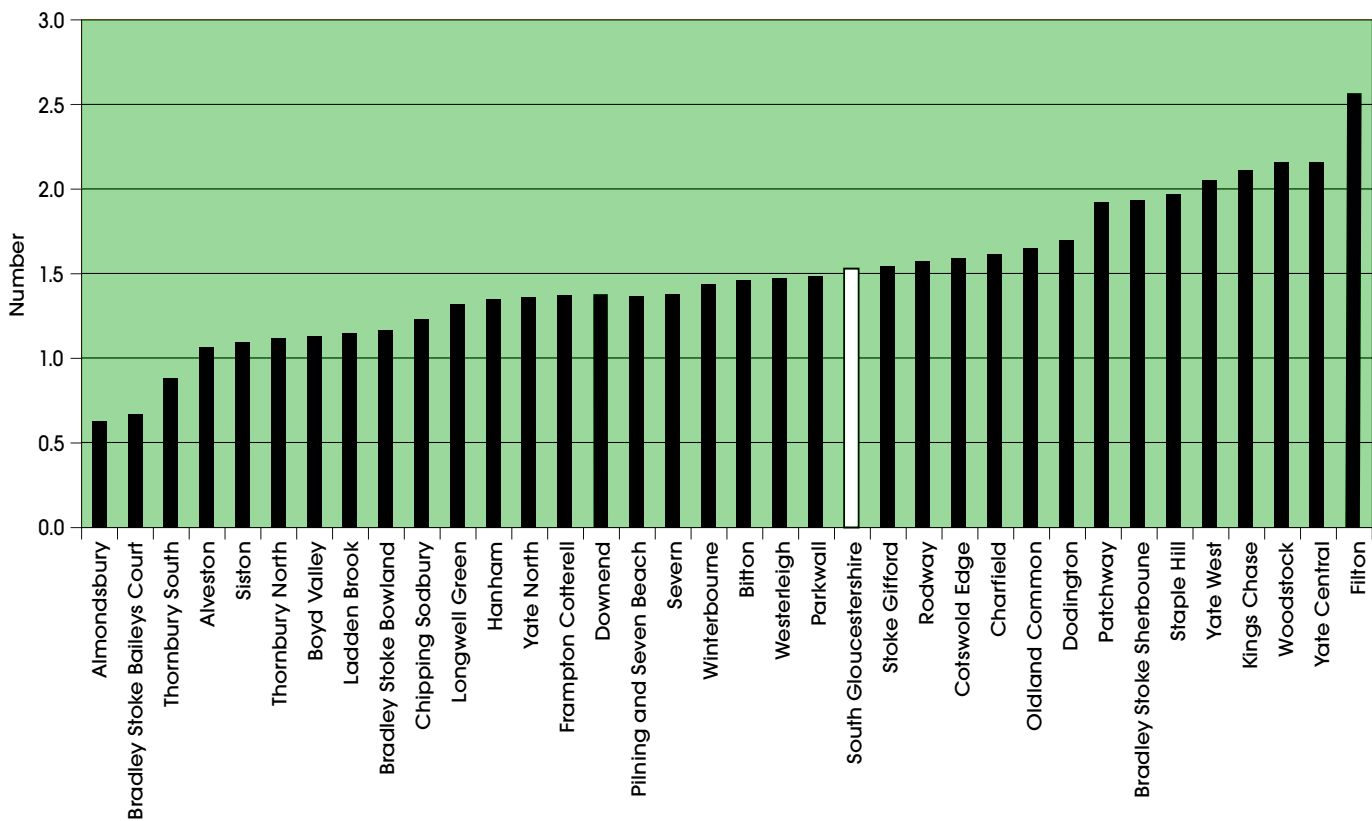
South Gloucestershire breastfeeding at 6-8 weeks by ward, 2010-2012



Dental health

The main oral disease of children is dental caries (tooth decay) which is influenced by diet and oral hygiene. The graph below shows the average number of decayed, missing or filled teeth in reception aged children in South Gloucestershire by ward of residence. Health inequalities exist across South Gloucestershire, with dental caries being most prevalent in the most deprived areas. In 2005/06 the average number of decayed, missing or filled teeth per child was 0.66 in Almondsbury and 2.55 in Filton.

Average number of decayed, missing or filled teeth in 4/5 year old children, by ward of residence, 2005/6



Obesity

Although there has been a sharp increase in the rate of childhood obesity over the last 20 years, recent data supports the emerging evidence that the rate of increase in child obesity has, at the very least, slowed amongst the under 11's (See Figure 1). However, prevalence has remained stubbornly high for both reception and Year 6 Children.

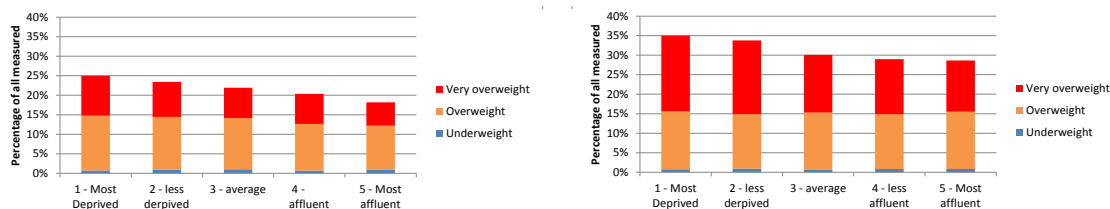
Figure 1. Trend in Overweight and Obesity by year group, South Gloucestershire, 2008/9 - 2011/12



Data from the National Child Measurement Programme (NCMP) for 2011/12 shows that 19 per cent of reception age children and 29.2% of Year 6 Children were overweight or obese. These figures are lower than the national average of 22.6% and 33.9% respectively.

Local analysis of child obesity data by deprivation quintile continues to show a clear socio-economic gradient where prevalence of obesity is higher amongst our more deprived communities (See figure 2).

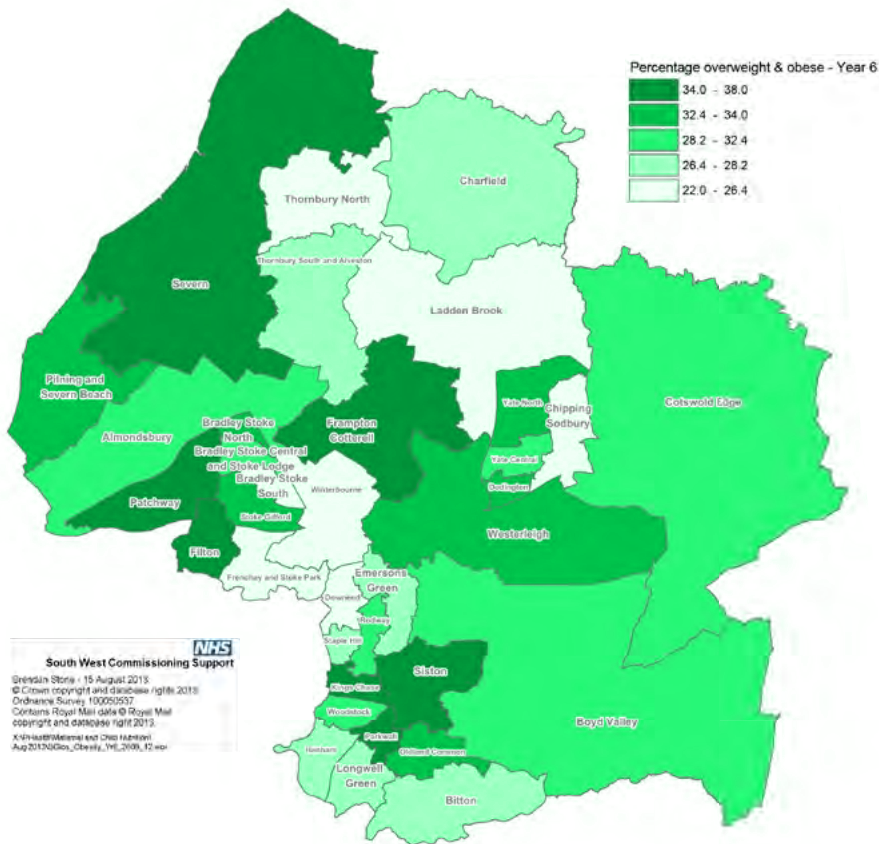
Figure 2. NCMP resident analysis: weight status by local deprivation quintile 2008/09 - 2011/12 pooled



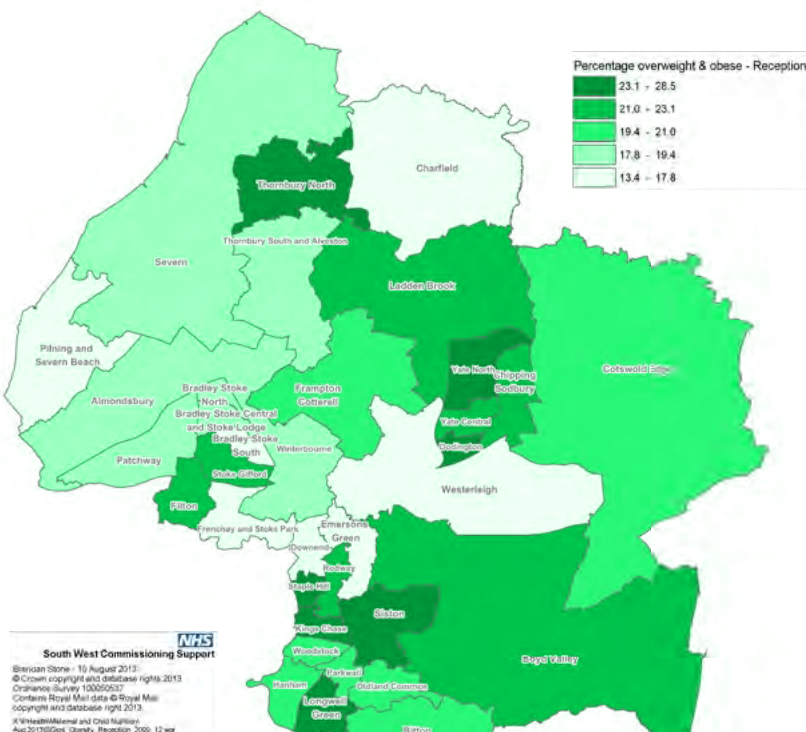
The rise in childhood obesity over the last two decades has been mirrored by a steady increase in the number of women of child bearing age being overweight or obese. Data for South Gloucestershire indicates that approximately 21.9% of mothers are obese at the time of giving birth. This is a public health concern as research shows that maternal obesity is associated with a variety of adverse outcomes for both mother and offspring.

The maps show the geographical variation of the prevalence of overweight and obese children in reception and year 6 classes of South Gloucestershire schools in the year 2008/9. This data is based on the ward of residence for children attending South Gloucestershire schools.

South Gloucestershire: Prevalence of obese and overweight children in Year 6, by ward of residence, 2009/10 to 2011/12 school years pooled



South Gloucestershire: Prevalence of obese and overweight children in reception, by ward of residence, 2009/10 to 2011/12 school years pooled



Availability

These guidelines will be downloaded from:
www.southglos.gov.uk/mumfoodchild

A printed copy will be available in all locations where health care professionals and childcare staff who are working with prospective parents, infants and preschool children are based.

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Review of guidelines

The guidelines will be reviewed during 2015 by the Health and Wellbeing Division, Department for Children Adults and Health, South Gloucestershire Council.

Enquiries regarding the document:

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Acknowledgements

These guidelines are based on the NHS Bristol Maternal and Child Nutrition Guidelines, and have been adapted for use in South Gloucestershire by South Gloucestershire Council, in partnership with:

Early Years Team

South Gloucestershire Council

Lisa Bryant / Elizabeth Lockett
(Specialist Health Improvement Practitioners)

South Gloucestershire Sure Start Children's Centres

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North Bristol NHS Trust

Midwifery Services

University Hospital Bristol NHS Trust
North Bristol NHS Trust

Infant Mental Health Service

CAMHS South Gloucestershire

This 2nd edition has been overseen by
Dr Helen Crawley
(Dietitian and Public Health Nutritionist, First Steps Nutrition)

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Section 2

Preconception and Pregnancy



The importance of ensuring that mothers and their babies are well-nourished is widely recognised. The nutritional status of a woman before conception and during pregnancy influences the growth and development of her baby and forms the foundations for her child's later health (Gluckman et al. 2005).

The mother's own health, both in the short and long term, also depends on how well nourished she is before, during and after pregnancy (DH 2004a).

Poor nutrition during pregnancy has been linked to an increased risk of having a baby with a low birth weight. Babies who are born at low birth rate (defined as <2.5 kg) are at greater risk of perinatal mortality and some illnesses and conditions in childhood and later life, such as hearing and visual impairment, neuro-developmental delay and behavioural disorders (Hack et al. 1995).

Several studies of school age children who had a very low birth weight have shown a greater number developed problems with language and social skills, behaviour and attention, cognitive ability and academic achievement (Dahl et al. 2006).

This section covers:

- **Preconception advice for men and women**
 - **Healthy eating in pregnancy**
 - **Nutrition related problems in pregnancy**
 - **Food safety during pregnancy**
 - **Prenatal advice on breastfeeding**
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The eatwell plate

Use the eatwell plate to help you get the balance right. It shows how much of what you eat should come from each food group.



www.nhs.uk/livewell/goodfood/pages/eatwell-plate.aspx

Preconception advice for women

A good diet before pregnancy, and maternal body weight in a normal range, provide the optimum conditions for a healthy pregnancy.

All women planning a pregnancy, or who maybe become pregnant, should be encouraged to consider links between their own health and the health of their future children.

Up to 50% of pregnancies are likely to be unplanned (NICE PHG 11 2008) so ideally all adolescent girls and women of reproductive age should be encouraged and advised to eat a nutritionally adequate diet to optimise their nutritional status for any future planned or unplanned pregnancies.

If planning a pregnancy start to take folic acid supplements straight away (page 6). These can be Healthy Start supplements for mums and can then be taken throughout pregnancy.

Each day aim for

Bread, rice, potatoes, pasta and other starchy foods – base meals on these foods and use wholegrain varieties as often as possible.

Fruit and vegetables – aim for at least five portions per day.

Milk and dairy foods – aim for two or three portions per day of milk, cheese or yoghurt using low-fat varieties whenever you can.

Meat, fish, eggs, beans, and nuts – aim for two portions of these each day. Two servings of fish per week are recommended of which one should be oily fish.

Foods and drinks high in fat and/or sugar – limit these to small quantities and do not eat in place of the other food groups.

Fluid intake – 6-8 drinks per day (1.2 - 1.5 litres) will provide adequate fluid to prevent dehydration. This includes all drinks: water, tea, coffee, milk, soup and fruit juices. More drinks may be needed in hot weather and after physical activity. (see caffeine recommendations on page 17)

www.nhs.uk/livewell/goodfood/pages/water-drinks.asp

Preconception advice for men

Fertility problems affect about 15% of couples and between 40-50% are due to male infertility. The aetiology of male infertility remains largely unknown as it is difficult to identify the role of single factors and various studies have shown conflicting data.

Lifestyle factors such as smoking, alcohol, diet and socioeconomic factors may affect sperm motility, fertility or pregnancy outcomes (Thomas and Bishop 2007).

Gastro-intestinal complaints and low intake of fruit and vegetables have been associated with low sperm counts (Wong et al. 2003). Zinc, selenium and vitamin C may be particularly important in sperm production (Sinclair 2000).

The most prudent advice for men is to:

- Consume a balanced and varied diet based on the five food groups (see eatwell plate) ensuring adequate fruit and vegetable intake
- Limit themselves to an alcohol intake of less than 28 units per week
- Aim for a healthy body weight - very underweight men should gain weight and obese men should lose weight (Thomas and Bishop 2007)



Alcohol

A follow-up study of couples planning their first pregnancy found an association between women's alcohol intake and decreased fertility even among women who had five or fewer drinks a week.

Women experiencing difficulties in conceiving should be advised of the possible advantages of avoiding alcohol completely (Jensen, 1998).

The Department of Health now advise avoiding alcohol altogether in pregnancy but if women choose to drink alcohol it should be limited to one to two units once or twice per week.

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www.nhs.uk/livewell/alcohol/pages/alcoholhome.aspx
.....

Effect of mother's weight on conception

<http://guidance.nice.org.uk/PH27>

Women with a Body Mass Index (BMI) of 20-25 have been shown to become pregnant more readily than those with a BMI higher than 25 or lower than 20 (Zaadstra et al. 1993).

Underweight

Conception can occur in women well below average or ideal weight. However, women who have a low BMI (BMI <20) are less likely to conceive (Zaadstra et al. 1993).

Overweight and obesity

Overweight and obesity can affect ovulation and also the response to fertility treatment. A prospective study (Clark et al, 1998) showed that when overweight women who were not ovulating followed a weight loss and physical activity programme, the outcome for most women was natural ovulation, conception and successful pregnancy.

Being overweight does not prevent all women from conceiving, however the extra weight combined with the weight of the baby can lead to problems during the course of the pregnancy (Zaadstra et al. 1993).

Women with a BMI over 30 are more likely to have a bigger baby, increased risk of complications in pregnancy such as high blood pressure, gestational diabetes, infections and greater risk of pre-term and difficult deliveries.



The National Institute for Health and Care Excellence (NICE)

The National Institute for Health and Care Excellence recommends that women with a BMI over 30 should be informed of the increased risk to themselves and their babies during pregnancy and child birth. They should be encouraged to lose weight before becoming pregnant. It is preferable for weight to be reduced well in advance (at least three to four months) of conception to lessen the likelihood of nutritional inadequacy.

This guidance provides specific advice on dietary interventions for weight management before, during and after pregnancy (NICE PHG 27 2010). The guidance makes recommendations for women with a Body Mass Index (BMI) of 30 or more planning a pregnancy. It recommends:

- Health professionals should use any appropriate opportunities to provide women with a BMI of 30 or more with information about the health benefits of losing weight before becoming pregnant (for themselves and the baby they may conceive)
- Health professionals should advise, encourage and help women with a BMI of 30 or more to reduce weight before pregnancy
- Health professionals should offer a weight-loss support programme involving diet and physical activity before or after pregnancy.
Local programmes available:
 - Slimming on referral
 - Specialist adult weight management service
- Health professionals should offer specific dietary advice in preparation for pregnancy, including the need to take folic acid supplements before pregnancy and during the first 12 weeks of pregnancy as well as a daily vitamin D supplement in pregnancy
- Weight loss during pregnancy should not be encouraged

Women with diabetes

Women with diabetes and a BMI above 27 should be encouraged to lose weight prior to conception.

The higher dose of folic acid supplement should be recommended to women with diabetes (see page 6).

Diabetic women with poor glycaemic control should be advised to avoid pregnancy due to an increased risk of congenital malformations, macrosomia, miscarriage, stillbirth and perinatal mortality. (NICE clinical guidance 63)



Healthy eating for pregnancy

A healthy diet is very important in pregnancy in order for the baby to develop and grow, and to keep the mother fit and well. If the mother's diet during pregnancy is nutrient-deficient, there is a risk of inadequate nutrition for the growing baby. Poor rates of foetal and infant growth have been linked to higher rates of premature death among adults and higher rates of cardiovascular disease and other conditions such as diabetes and high blood pressure (Barker 1990).

The nutritional requirements of pregnant women can generally be met by eating a healthy balanced diet based on the five food groups in the eatwell plate (see page 2).

Pregnant women also require the following nutrients:

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Folic acid

Research has shown a link between low folic acid/folate intakes in some women and the development of neural tube defects in the foetus (Medical Research Council 1991).

To reduce the risk of neural tube defects, supplementation with folic acid prior to conception and during the first 12 weeks of pregnancy is recommended for all women, in the following amounts:

5mg per day if:

- You or your partner have a neural tube defect e.g. Spina bifida
- You have had a previous pregnancy affected by a neural tube defect
- You or your partner have a family history of neural tube defects e.g. Spina bifida
- You have diabetes

In addition, you should consult your GP for advice if you're taking anti-epileptic medication, as you may also need to take a higher dose of folic acid.

This high dose folic acid preparation is available on prescription only.

400µg per day for all other women

These supplements are available over the counter and on prescription.

Pregnant women entitled to Healthy Start benefits (either because they are under 18 years of age or because they are on low incomes) are entitled to free Healthy Start vitamins which contain folic acid, vitamin D and vitamin C, see:

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www.healthystart.nhs.uk
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Dietary folates

Folate is the form of folic acid found in food. The folate content of food decreases with long storage times and heat, therefore cooking may cause a considerable reduction in the folate available.

The current average intake from diet is about 200mg per day. Women hoping to become pregnant should increase their dietary intake of folate, in addition to the folic acid supplement, by:

- Eating more folate-rich foods such as green leafy vegetables (Brussels sprouts, spinach and broccoli), potatoes, pulses (peas, beans and lentils) and oranges
- Avoid over-cooking folate rich foods
- Choosing breads and breakfast cereals fortified with folic acid
- Liver is a rich source of folate but is not recommended during pregnancy because it has very high levels of retinol (vitamin A) (Ruston D et al.)

Vitamin D

Vitamin D is necessary for bone development and calcium absorption.

Dietary sources of vitamin D are limited and include:

- Meat
- Oily fish
- Egg yolks
- Most fat spreads have vitamin D added and you can check this on the label

The 2003 'National Diet and Nutrition Survey of British Adults' found that about a quarter of British women aged 19–24 and a sixth of those aged 25–34 are deficient in vitamin D (Ruston et al. 2004).

For most adults in the UK the main source of vitamin D is that made in the skin when it is exposed to the UVB rays in sunlight when outdoors. At UK latitudes, sunlight of the appropriate wavelength is only available between April to September. Lack of vitamin D may adversely affect bone mineralisation of the growing baby and the accumulation of vitamin D stores for the early months of life. Therefore maternal skin exposure alone may not always be enough to achieve the optimal vitamin D status needed for pregnancy.

The following groups are particularly at risk of low vitamin D status:

- Those with black or dark skin as the pigmentation provides an additional barrier for sunlight activation
- Those who have limited skin exposure to sunlight such as those who remain covered when outside or are housebound
- Obese women (those with a BMI > 30)
- Babies and young children under 5 years

The effects of vitamin D deficiency are:

- Higher risk of seizures and breathing problems in infants born to mothers deficient in vitamin D
- Rickets and growth delay in older infants and toddlers born to mothers deficient in vitamin D
- Musculoskeletal pain and weakness in women with vitamin D deficiency which eventually may result in osteomalacia ('soft bones')

NICE recommends:

- All women should be informed at the booking appointment about the importance for their own and their baby's health of maintaining adequate vitamin D stores during pregnancy and whilst breastfeeding
- All pregnant and breastfeeding women should be advised to take 10µg vitamin D daily in a dietary supplement

HEALTHY START

South Gloucestershire

currently has four clinic bases which distribute the Healthy Start Vitamins to eligible women within the region. These are Patchway, Cadbury Heath, Downend and Thornbury

The vitamin tablets contain:

- 400µg Folic Acid
- 10µg Vitamin D
- 70mg Vitamin C



Vitamin A

Pregnant women should not take supplements containing vitamin A as high doses of retinol, the animal form of vitamin A, are associated with teratogenesis (malformations in the unborn child) (DH, 1990).

However, women are recommended to have an additional 100µg of vitamin A per day from the plant form of vitamin A (beta carotene) during pregnancy. This can be achieved by eating a healthy diet with plenty of vegetables and fruit.

To avoid high doses of retinol, pregnant women should avoid:

- Vitamin supplements containing retinol
- Cod liver oil supplements
- Liver and liver products such as liver pâté

Iron

Women with good iron status prior to conception and who eat a healthy balanced diet may not need extra iron during pregnancy. This is because the rising demands of iron by the growing baby are met by:

- Diminished losses from the mother because menstrual bleeding ceases during pregnancy
- Increased iron absorption during pregnancy - the level of absorption increases progressively as pregnancy advances. This increase in absorption is more pronounced in women who are anaemic

The foetus accumulates most of its iron during the last trimester laying down stores for the first 6 months of life.

Iron supplementation may have side effects such as constipation or nausea but some women will be advised to take supplemental iron if their iron status is low during pregnancy.

Eating a balanced diet including iron rich foods should be encouraged.

Iron rich foods to encourage are:

- Lean red meat
- Turkey and chicken
- Mackerel, pilchards and sardines
- Pulses (peas, beans and lentils)
- Iron fortified breakfast cereals
- Dark green vegetables
- Dried fruit e.g. apricots, prunes, raisins

Note: Liver is high in iron but is not recommended during pregnancy because of its high retinol content.

Iron absorption from foods

The iron in red meat and oily fish is absorbed better than iron from plant foods. Women following a vegetarian or vegan diet and those who eat little meat can increase their iron absorption from cereal and vegetable sources by:

- Having a good food or drink source containing vitamin C with a meal may help iron in the food to be absorbed
- Avoiding drinking tea at mealtimes as the tannins present in tea bind with the iron, reducing its absorption



Calcium

Despite high requirements for calcium for the growing baby, additional calcium is not needed as the mother's calcium absorption increases in pregnancy. Adequate calcium will be provided by 2-3 servings daily of any of the following:

Calcium - rich foods

Milk	1 glass - 200mls
Cheese	25g or 1oz
Yoghurt	1 pot of 120 -150g
Tofu	50g or 2½oz
Calcium enriched soya milk	1 glass - 200mls

Pregnant adolescents have higher calcium needs as they will not have achieved their peak bone mass, and they may still be growing. They should be encouraged to eat at least 3 servings of these calcium rich foods each day.

Women who do not eat dairy products or calcium-enriched soya products should be referred to a registered dietitian for advice on achieving an adequate calcium intake during pregnancy.

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Alcohol

Alcohol intoxication should be avoided at any stage of pregnancy and especially in the early weeks where it is associated with teratogenesis (malformations in the foetus) and may cause miscarriage. Pregnant women are advised to avoid alcohol (NICE CG 62 2008), but women who do choose to drink should consume no more than 1 or 2 units (1 unit = 1 small 125ml glass of wine) of alcohol once or twice a week.

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Energy

Additional energy is needed during pregnancy to support the growth of the unborn child and to enable fat to be deposited in the mother's body for later use during lactation. However, efficiencies in managing energy needs and reductions in physical activity compensate for these increased needs. The Department of Health recommends an extra 200 calories per day from food for the final three months of pregnancy only (NICE Guidance PH27, 2010).

Women with a low BMI at the start of pregnancy (BMI < 20) need to increase their food intake to provide more energy and nutrients for both themselves and their developing baby and women who have previously had an eating disorder are strongly encouraged to seek advice on eating well in pregnancy.

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Appropriate weight gain during pregnancy

There are currently no formal, evidence based guidelines from the UK on what constitutes an appropriate weight gain during pregnancy.

The American Institute of Medicine (IOM) recommends (IOM 2009).

Pre-pregnancy BMI	BMI+ (kg/m ²)	Total Weight Gain (lbs)	Rates of Weight Gain* 2nd and 3rd Trimester (Mean range in lbs/week)
Underweight	<18.5	28 - 40	1 (1 - 1.3)
Normal weight	18.5 - 24.9	25 - 35	1 (0.8 - 1)
Overweight	25.0 - 29.9	15 - 25	0.6 (0.5 - 0.7)
Obese (includes all classes)	≥30.0	11 - 20	0.5 (0.4 - 0.6)

www.iom.edu/reports/2009/weight-gain-during-pregnancy-reexamining-the-guidelines.aspx

Women who gain weight within the IOM ranges are more likely to have better maternal and infant outcomes than those who gain more or less weight (Viswanathan et al. 2008).

Gaining too little weight during pregnancy can result in infants being born with a low birth weight, which is associated with health problems for the child.

Excess weight gain during pregnancy can increase the risk of gestational diabetes, pre-eclampsia and difficulties during delivery. It is also associated with postpartum weight retention in the short, intermediate, and long term (Viswanathan et al. 2008).



Overweight and obesity

Around 15-20% of pregnant women are obese (NHS Choices 2013). Maternal obesity is related to health inequalities, particularly socioeconomic deprivation, inequalities within ethnic groups and poor access to maternity services (Heslehurst et al. 2007). This is why it is important to support women who are overweight or obese to lose weight before they become pregnant.

NICE recommends that overweight and obese pregnant women are not encouraged to lose weight during pregnancy as this may compromise their nutrient intake and that of the growing baby (NICE PHG 27 2010).

Many pregnant women ask health professionals for advice on what constitutes appropriate weight gain during pregnancy. However, there are no evidence-based UK guidelines on recommended weight-gain in pregnancy.

NICE recommends (PHG 27,2010):

- Eating habits and physical activity are discussed at the first visit to a health professional
- Explain the benefits of healthy eating and physical activity to the woman
- Promote the Healthy Start scheme to those who are eligible
- Dispel any myths about what and how much to eat in pregnancy for example 'eat for two'
- Encourage moderate physical activity such as swimming and walking
- Women who have a BMI of 30 or more at the time of their booking appointment should be offered a referral to a dietician or appropriately trained health professional for assessment and personalised advice on healthy eating



Women at increased nutritional risk during pregnancy

Women with pre-existing medical conditions

Such conditions include:

- Diabetes
- Food allergy
- Malabsorption syndromes

These women should be referred to a dietitian prior to pregnancy and have their nutritional status monitored closely throughout the pregnancy.

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Diabetes

Diabetes in pregnancy is associated with health risks to both the woman and the developing baby. Miscarriage, pre-eclampsia and preterm labour are more common in women with diabetes. Health risks to the infant include

- Macrosomia (weighing more than 4.5kg at birth)
- Premature birth
- Neonatal hypoglycaemia
- Perinatal death
- Placental abruption
- Risk of diabetes later in life

2 - 5 per 100 women giving birth in England have diabetes. Most of these have gestational diabetes, and some have type 1 or type 2 diabetes.

The risk factors for gestational diabetes are:

- **BMI > 30**
- **Previous macrosomic baby (4.5kg (10lbs) or above)**
- **Previous gestational diabetes**
- **Family history of diabetes (first-degree relative with diabetes)**
- **Family origin with a high prevalence of diabetes:**
 - South Asian
 - Black Caribbean
 - Middle Eastern

Women with any one of these risk factors should be offered testing for gestational diabetes (NICE CG63 2008). In most cases gestational diabetes can be controlled by changes in diet and physical activity.

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Obese pregnant women who are physically active during pregnancy reduce their risk of gestational diabetes by 50% (Dye 1997)

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Adolescents

Adolescent girls may have increased nutritional requirements because they need to complete their own growth as well as providing for the foetus (Stevens - Simon & McAnamey, 1988). The shorter the length of time between the onset of menarche and pregnancy, the greater the nutritional risk.

Pregnant teenage girls under the age of 18 years are eligible to join the Healthy Start scheme regardless of their financial circumstances.

See 'Eating well in pregnancy: a practical guide for teenagers' at:

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www.firststepsnutrition.org/
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www.healthystart.nhs.uk
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Vegetarian and vegan women

Many vegetarian and vegan women's diets are significantly better than those of non-vegetarian women; however some, in particular adolescents, may decide to avoid meat and other animal foods without taking care that the important nutrients they are missing are obtained from other sources.

Most vegetarians can obtain enough nutrients from foods as they will still eat animal foods such as milk, dairy products and eggs. For those on more restrictive diets, particular attention should be paid to achieving adequate dietary sources of protein, iron, omega 3 fats, calcium, iodine, vitamin B2 and vitamin B12.

Pregnant women who follow a vegan diet should take care to ensure that they consume sufficient:

- Vitamin B12 from good sources such as fortified yeast extracts, fortified soya milk, fortified textured soya protein and fortified cereals. If these are not included in the diet a vitamin B12 supplement may be needed
- Calcium from fortified soya milk or good non-dairy sources of calcium such as almonds, sesame seeds, green leafy vegetables, oranges or dried fruit. Those who do not should speak to their midwife or GP about calcium supplements.
- Iodine good sources are yoghurt, cows milk, eggs and strawberries. It is suggested that vegan mothers take iodine supplements

Healthy Start vitamins are suitable for vegetarians but not for vegans.
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Black and minority ethnic groups

Gestational diabetes is more prevalent amongst women of Asian, Black Caribbean and Middle Eastern ethnic origin. Pregnant women from these groups should all be screened for diabetes. Women who have recently arrived from developing countries may have parasitic infections, or have a poor nutritional status if they have been subjected to shortage of food.
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Women who have previously had a low birth weight baby

It is important to ascertain whether or not the cause of the reduced birth weight following a previous pregnancy had a nutritional component, such as poor gestational weight gain and /or a poor nutritional intake. Short intervals between births predispose to lower birth weights because women may not have had time to replenish their nutrient stores between pregnancies (Allen 2005).

Women who are homeless, living in bed and breakfast accommodation, or on low incomes

These women may have the combined difficulty of living on state benefits and living with limited cooking facilities. A survey (Dallison and Labstein 1995) demonstrated that there is great difficulty in providing an adequate diet for pregnancy while living entirely on state benefits.

Women who have alcohol or drug problems are less likely to eat a balanced diet and should be offered a referral to a local alcohol and drug support service.

Women who are restricting their food intake for weight loss or self diagnosed food allergies

Women should not diet in pregnancy and should be encouraged to follow a healthy balanced diet and seek support for weight loss once the baby is born. Women who restrict some foods or food groups because of perceived allergy or intolerance may need input to ensure they eat adequately in pregnancy (NICE CG 11 2008).

Women who currently have, or have a recent history of, an eating disorder such as anorexia nervosa or bulimia nervosa may have low body stores of some nutrients. They should be referred to a dietitian for advice and support.



Nutrition related problems in pregnancy

Nausea and vomiting

Nausea and/or vomiting are common occurrences in the first trimester, (1 -13 weeks of pregnancy). Nausea is thought to be caused by the changing hormones in pregnancy and can be triggered by certain foods or smells. It can also be caused by hunger. Women with excess vomiting should be referred to their GP if there is any risk of dehydration.

Tips for overcoming nausea and vomiting can be found at:

.....
www.nhs.uk/conditions/pregnancy-and-baby/pages/morning-sickness-nausea.aspx
.....

- Small, frequent meals, every two hours or so throughout the day, that include fruit and starchy foods e.g. bread, toast, plain biscuits and cereals
 - Snacks which involve little preparation and/or cooking may be preferable
-



Cravings and taste changes

Unless cravings and aversions are excessive and prevent a pregnant woman from eating a nutritious diet, these are not usually harmful.

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Heartburn / Oesophageal reflux

This is generally more common during the last three months (12 weeks) of pregnancy when pressure from the baby in the uterus can cause acid to be pushed back up from the stomach. It is also more common in multiple pregnancies.

Tips for helping relieve symptoms of heartburn/oesophageal reflux:

- Smaller, more frequent meals may help
- Sitting up straight when eating to relieve the pressure
- If heartburn occurs at night, sleeping propped up by extra pillows may also help
- Avoid foods that are found to cause problems
- See GP for advice and possible medication if the problem worsens

Constipation

This is common at all stages of pregnancy and can be relieved by increasing the fibre and fluid content of the diet.

How to avoid constipation:

- Eat foods that are high in fibre such as:
 - Wholegrain, starchy foods like pasta, rice and cereals
 - Fruit and vegetables
 - Pulses such as beans and lentils
- Drink plenty of water
- Gentle exercise to keep muscles toned

Food safety during pregnancy

General food hygiene guidelines

- Keep kitchen clean, particularly work surfaces
- Wash hands before preparing food
- Wash fruit, vegetables and salad before use
- Keep fridge temperature below 5°C, freezer below -18°C
- Store raw meat covered at the bottom of the fridge separate from cooked foods
- Defrost frozen meat thoroughly before cooking
- Cook foods thoroughly and according to manufacturers' instructions
- Cool leftover food quickly and use within 24 hours - do not reheat more than once
- Never eat foods after the "use-by" dates on the packaging
- Keep pets out of the kitchen and away from work surfaces

Extra care should be taken:

- When buying unwrapped foods, e.g. cooked meats and prepared salads. If scrupulous food handling guidelines have not been followed, these foods can easily become contaminated
- Cook-chill foods (ready cooked foods sold and chilled) should not be eaten cold, but heated right through and the leftovers discarded. Make sure ready prepared meals are heated until piping hot right through



Salmonella infection is a common cause of food poisoning and is particularly associated with chicken and raw eggs. To avoid salmonella:

- Poultry should be thoroughly defrosted in the fridge and cooked until piping hot right through
- Eggs should be cooked so both white and egg are solid

To avoid **Toxoplasmosis**, which is an infection caused by a parasite found in raw meat, cat faeces and soil that can seriously affect the unborn baby, women should:

- Wear rubber gloves when emptying cat litter trays
- Wash hands after handling cats
- Wear gloves whilst gardening
- Wash vegetables and salad thoroughly to remove any soil or dirt
- Wash hands after handling raw meat
- Thoroughly cook meat
- Not help with lambing or milking ewes that have recently given birth



Foods to limit during pregnancy

Oily fish can be eaten twice per week because they are a good source of omega 3 fats for both the mother and the growing baby. No more than two servings per week are recommended because some of these fish contain dioxins and PCBs (polychlorinated biphenyls) that might affect the nervous system of the baby. Oily fish includes fresh tuna, salmon, trout, mackerel, herring, sardines and pilchards.



Tuna should also be limited to a maximum of 4 medium sized cans of tuna a week (with a drained weight of about 140g per can) or 2 fresh tuna steaks (weighing about 140g when cooked or 170g raw). Very high intakes of tuna fish should be avoided as this could provide amounts of mercury that could damage the baby's developing nervous system.

Caffeine should be limited to 200mg a day because high levels of caffeine can cause miscarriage or lead to low birth weight with an increased risk of health problems later in life.

The caffeine content of drinks and chocolate is

1 shot of espresso coffee	140mg
1 mug of filter coffee	140mg
1 mug of instant coffee	100mg
1 cup of filter coffee	100mg
1 mug of tea	75mg
1 cup of tea	50mg
1 can of cola	up to 40mg
1 can of 'energy' drink	up to 80mg
1 bar of plain chocolate	up to 50mg
1 bar of milk chocolate	up to 25mg

It is important to check labels as certain cold and flu remedies also contain caffeine, talk to a midwife or pharmacist before taking these.



Foods to limit or avoid during pregnancy

Food	Health Advice	Reason to Avoid or Limit
Raw eggs and raw egg products: Home-made mayonnaise Mousse and some desserts	Avoid foods made with raw eggs. Boil eggs until whites and yolks are hard.	Increased risk of food poisoning from Salmonella bacteria
Unpasteurised milk and products	Use pasteurised milk and dairy products only. Or thoroughly boil unpasteurised milk before using it.	Increased risk of: – Listeriosis – Toxoplasmosis – Campylobacter
Soft mould-ripened cheeses: Brie, Camembert, soft goat's cheese and blue-veined cheeses	Avoid completely.	Increased risk of Listeriosis
Pâté: All types of pâté, including vegetable pâtés	Avoid completely.	Increased risk of Listeriosis. High levels of vitamin A should be avoided. (see page 8)
Raw or undercooked meat: Particularly poultry and minced meat, salami and Parma ham (prosciutto)	Cook all meat and poultry thoroughly so there's no trace of pink meat or blood.	Increased risk of Listeriosis. High levels of vitamin A should be avoided. (see page 8)
Liver and liver products	Avoid liver and liver products during pregnancy.	These foods have a high retinol content and this can be dangerous to the foetus if large amounts are consumed
Undercooked ready meals and other ready prepared dishes: Ready-made salads, quiches, microwave meals, cold meat pies/ pasties	Cook thoroughly before eating, or make your own from fresh.	Increased risk of Listeriosis
Unwashed fruit and vegetables	Wash thoroughly, making sure there are no traces of soil left before using.	Increased risk of: – Listeriosis – Toxoplasmosis
Untreated water	Avoid completely.	Increased risk of Campylobacter
Some fish and shellfish: Some types of oily fish such as tuna (fresh or canned), salmon, mackerel, sardines and trout Some types of non-oily fish – dogfish (rock salmon), sea bass, sea bream, turbot, halibut and crab Raw shellfish Shark, marlin and swordfish	Limit oily fish to two portions per week. Have no more than two fresh tuna steaks in a week (about 140g cooked or 170g raw each) or four medium sized cans of tuna a week (about 140g when drained). Avoid eating raw fish that has not been previously frozen or smoked. Avoid raw shellfish as it can cause food poisoning. Avoid shark, marlin and swordfish.	High levels of pollutants can be found in oily fish and in shark, marlin and swordfish. These can affect the development of a baby's nervous system.
Certain food additives: Artificial colours E102, E104, E110, E122, E124, E129, or which contain the preservative sodium benzoate (E211).	Avoid these additives.	These additives have been linked to increased hyperactivity among some children and many people now choose to avoid these. To find out if a food or drink contains any of these additives, check the ingredients list on the packet or label. For more information on how to avoid these additives, go to www.actiononadditives.org
Vitamin A supplements: • Any supplements containing vitamin A • High-dose multivitamin supplements • Fish liver oil supplements.	Avoid completely.	High intakes can cause miscarriage or foetal abnormalities.
Kava kava: This is wrongly suggested as an aid for anxiety and sleep. Calabash chalk This is not a conventional food, but is eaten by some pregnant women, traditionally those from the Nigerian and wider West African community, as a remedy for morning sickness. Blue or black Cohosh Wrongly suggested as inducing labour.	Avoid all these completely.	These herbs are prohibited in the EU but people can access them through the internet. They are considered harmful if consumed. The Food Standards Agency has advised people, especially pregnant and breastfeeding women, not to eat Calabash chalk, because samples tested have revealed high levels of lead. Cohosh can be toxic and cause blood to thin, as well as being potentially damaging to the liver.
Certain herbal preparations	The following should be avoided as they may not be safe: aloe, angelica, apricot kernel, asafoetida, buckthorn, burdock, calendula, coltsfoot, cottonroot, devil's claw, echinacea, eucalyptus, evening primrose, fenugreek, feverfew, foxglove, gentian, germander, ginkgo bilbao, ginseng, hawthorne, hops, horseradish, horsetail, juniper, mandrake, meadowsweet, milk thistle, mistletoe, myrrh, nettle, passionflower, pennyroyal, red clover, senna, St Johns wort, valerian www.firststepsnutrition.org/

Prenatal advice on breastfeeding

NICE recommends that pregnant women should be offered opportunities to attend participant-led antenatal classes, including breastfeeding workshops. Before or at 34 weeks gestation they should receive breastfeeding information, including technique and good management practices, as detailed in the **UNICEF UK Baby Friendly Initiative**

.....
www.unicef.org.uk/babyfriendly
(NICE CG62 2008)
.....

Pregnant women in South Gloucestershire are offered one to one discussion on breastfeeding in antenatal clinics before 34 weeks gestation.
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Further Information is available from:

Bliss

www.bliss.org.uk

British Dietetic Association

Food Fact Sheet: Pregnancy

www.bda.uk.com/foodfacts/pregnancy.pdf

First Steps Nutrition

www.firststepsnutrition.org

Healthy Start

www.healthystart.nhs.uk

Health Promotion Resource and Information Service

Bristol.resourcesorg.co.uk

NHS Choices

www.nhs.uk/conditions/pregnancy-and-baby/pages/pregnancy-and-baby-care.aspx#close

Tommy's The Baby Charity

www.tommys.org/

Section 3

Infant Feeding

From Birth to 12 Months



Breastfeeding is recognised internationally as the optimal way to feed infants from birth and exclusive breastfeeding is recommended until 6 months of age. Infant formula is the only alternative to breast milk during the first year of life.

The UNICEF UK commissioned report 'Preventing Disease and Saving Resources (2012) found that if 45% of women in the UK exclusively breastfeed for 4 months and if 75% of babies in neonatal units were breastfed at discharge, every year there would be an estimated:

- **3285** fewer gastrointestinal related hospital admissions
- **10,637** fewer GP consultations
- **5916** fewer respiratory tract infection related hospital admissions
- **21,045** fewer acute otitis media related GP consultations
- **361** fewer cases of neonatal necrotising enterocolitis (NEC)

The Department of Health (2011) recommends that babies should be introduced to solid foods when they are developmentally ready, and this is usually around 6 months. Breastfeeding mothers should be supported to continue to breastfeed as they introduce complementary foods, or if they formula feed they should continue with this milk throughout the first year.

Healthcare professionals and childcare staff should ensure that parents and carers have access to reliable advice and information to be able to make an informed choice about how to feed their infants. When a mother has decided how to feed her infant, she should be supported in that choice and given advice on safe feeding.

This section covers:

- **Breastfeeding**
- **Formula feeding**
- **Introduction of complementary foods**
- **Common feeding challenges**
- **The emotional and psychological aspects of feeding**

Benefits of breast milk for infants and their mothers

Breast milk is a unique fluid which has a complex biology and contains more than 200 known constituents. There are extensive health benefits for mothers and babies in the short and the long term (see table below). Maximum health benefits are afforded by exclusive breastfeeding to 6 months, then continuing breastfeeding alongside solid foods for the first year and beyond is the mother wishes.

'Exclusive breastfeeding from birth is possible except for a few medical conditions, and unrestricted exclusive breastfeeding results in ample milk production' (WHO 2003).

Advantages of breastfeeding to the infant	Reference
Optimal nutrition, growth and development. Reduced incidence of gastrointestinal, urinary tract and respiratory infections	Ip et al. 2007 Horta et al. 2007 Howie et al. 1990 Marild et al. 2004
Helps to prevent and reduce the severity of allergic conditions e.g. asthma and eczema	Kull et al. 2002, Sears et al. 2002
Reduced risk of otitis media (ear infections) until the age of 5 to 7 years	Duncan et al. 1993, Aniansson et al. 1994
Reduced incidence of both insulin and non-insulin dependent diabetes	Aberblom et al. 1999 Sadauskaitė-Kuehne et al. 2004
Prevents necrotising enterocolitis (NEC) in pre-term infants	Lucas and Cole 1990
Contains growth factors, which enhance the infant's gut development and maturation	Sheard and Walker 1988
Reduced risk of constipation	Lawrence 1994
Reduced incidence of some childhood cancers (e.g. leukaemia and lymphomas)	Davis 1998 Shu et al. 1999
Reduced risk of Sudden Infant Death Syndrome	Ford 1993 Horne et al. 2004
Some evidence that babies who are not breastfed are more likely to become obese in later childhood	Li et al. 2003 Michels et al. 2007
Less likely to visit the doctor in the first two years of life	Ball and Wright 1999
Benefits for the mother	
Encourages emotional bonding between the mother and the infant due to the release of endorphins which give a feeling of well being	Lawrence 1994
Delay in return to menstruation which allows maternal iron stores to be replenished following pregnancy and childbirth	Unicef 1998
Reduces risk of breast and ovarian cancer	World Cancer Research Fund 2007
Lower incidence of osteoporosis and hip fractures over the age of 65 for women who have breast fed	Cummings and Klineberg 1993
Helps mothers return to their pre-pregnant weight	Dewey et al. 1993

Supporting mothers to breastfeed

The midwifery service within South Gloucestershire is UNICEF UK Baby Friendly accredited. South Gloucestershire successfully achieved Baby Friendly accreditation in February 2014. Baby Friendly standards ensure that mothers have care and support based on best practice standards. Staff in NHS establishments and Children's Centres in South Gloucestershire promote breastfeeding as the usual way to feed a baby. Information about the UNICEF UK Baby Friendly Initiative can be accessed on:

.....
www.unicef.org.uk/babyfriendly
.....

All staff working with pregnant women and new mothers across South Gloucestershire are trained to give breastfeeding information and support appropriate to their role. The training of new and existing staff focuses on maintaining and improving clinical skills and knowledge and is informed by audit. This ensures that standards of support and information received by mothers in South Gloucestershire remains high and continues to improve.

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Antenatal discussion

In compliance with the South Gloucestershire Breastfeeding Care Pathway, all pregnant women in South Gloucestershire have the opportunity to discuss breastfeeding with their midwifery and/or health visiting team. This discussion ensures that pregnant women are aware of the many health benefits of breastfeeding for both mothers and babies, and that information is provided about the factors that help breastfeeding to be successful. The mother is given a leaflet 'Off to the Best Start' at this point which supports this information.

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Initiating breastfeeding

Skin contact

All mothers are encouraged to have unhurried skin contact with their babies as soon as possible after birth. In preparation for this, all pregnant women are informed of the physiological and emotional benefits of skin to skin contact:

- Calms mother and baby
- Keeps the baby warm
- Stabilises the baby's breathing and heart rate
- Facilitates the rapid release of hormones that help the new mother to bond with her baby
- Helps towards breastfeeding being more successful

The first breastfeed

The first breastfeed often occurs during the first period of skin to skin contact after delivery. Mother and baby are alert to each other and sometimes babies are able to self attach to the breast. Midwives support mothers with positioning and attachment at this first breastfeed.

Keys to successful breastfeeding

Successful attachment, the process by which the baby scoops up enough breast tissue into its mouth, is the key to successful breastfeeding.

- Mothers and babies need to learn effective attachment at the breast as it ensures a good milk supply and a comfortable feed
- At the end of a feed mothers can check that their nipple is round (rather than pinched or creased), as this is a sign of good attachment
- Pregnant women and new mothers receive help and support. This is taught using visual aids such as a doll and/or a knitted breast, leaflets and verbal description not by the health care professional putting the baby to the breast for the mother

Emotional and psychological aspects of feeding

- Infant feeding always carries with it a strong emotional element for both the infant and the parent carer. Feeding times provide a wealth of opportunities for the baby to experience both physical and emotional sensations. It is important to encourage parents and carers to think about how the feeding experience might feel for the baby. Is it a comforting, safe experience; or perhaps more distant and mechanical?
- Eye contact is central to a baby's developing emotional self. Breast and formula feeding provide moments when intimate eye contact, accompanied by other soothing experiences, (gentle touch, being held and melodic voice) can happen. Babies can process and make sense of their world through these opportunities for contact, and parents and carers can be supported by practitioners to engage with their infants in ways that promote their emotional well being (see Appendix 3)



Baby-led feeding

- All mothers are encouraged to follow baby led feeding, which means allowing the baby to feed when s/he wishes, rather than feeding to a schedule
- Baby-led feeding ensures that the breasts receive lots of messages to make milk, as the frequent removal of milk encourages further milk production. Baby-led feeding also helps mothers and babies to learn the skills of breastfeeding together
- A baby that is fed as frequently as he/she desires is calm and relaxed whilst feeding
- Frequent feeding means that there is more opportunity for both mother and baby to develop the skills of positioning and attachment
- There may be instances where mothers are advised by health professionals to wake their babies in order to feed them. This is for clinical reasons and will be a short term intervention

Feeding cues

Health professionals support mothers with baby-led feeding by helping them to recognise early feeding cues. These can sometimes be subtle and occur before crying. Early feeding cues include:

- Rooting
- Hand-to-mouth movements
- Sucking on fingers or fist
- Wriggling
- Restlessness

If these are ignored or misinterpreted, the baby may go back to sleep or become very distressed. In this way the baby misses the opportunity to stimulate the breast to make lots of milk.

Sometimes mothers may wish to feed the baby before s/he is giving feeding cues. This may be because of over-full breasts or because of time management issues, such as needing to attend to other children. Feeding the baby sooner than the baby is asking for a feed is never a problem, as long as the mother **usually** follows baby-led feeding.

Frequency of feeds

- In the first 8 weeks of life, all breastfeeding mothers are encouraged to feed their babies a minimum of 8 times preferably between 10 and 12 times in 24 hours, including at night
- This ensures that effective feeding and a good milk supply is established
- Many new mothers are surprised at how often a new baby wants to feed. A young baby naturally feeds around 8-12 times, or even more, in 24 hours
- Health professionals need to reassure parents that frequent feeds are normal and help in developing a good milk supply

Ending the feed

An important aspect of baby-led feeding is to ensure that the baby is allowed to feed for as long as s/he wants to. It is important that the baby is allowed to make the small fluttery sucks at the end of the feed, as at this point the baby is receiving the higher fat part of the feed which sustains the baby until the next feed and helps with good weight gain. If feeds are halted by the mother too early, babies can miss out on the higher fat content at the end of the feed. At all feeds, the mother is encouraged to allow the baby to feed at the first breast until s/he spontaneously detaches; the mother then offers her second breast if the baby is awake and hungry. Some babies will feed and then use the breast for non-nutritional sucking, and therefore not spontaneously detach. Health professionals will be able to support mothers to identify these babies and manage the situation effectively.



Breastfeeding patterns as the baby grows

Cluster feeds

Cluster feeding occurs when babies wish to feed frequently, and it can be difficult for the mother to tell when one feed ends and another begins. Cluster feeding is very common during the evening in the first few weeks of life. Health professionals should reassure parents that this is normal neonatal behaviour and not indicative of insufficient milk supply. Extra family support can be invaluable in helping the mother cope during this time.

Growth spurts

Over the first few months many babies have periods of a day or two where they seem to want lots of feeds. This may be to increase milk supply and meet the baby's developmental needs. Mothers are encouraged to continue with baby-led feeding as this very frequent feeding usually settles within a short period.

Very frequent long feeds

If every feed lasts for an hour or more and/or the baby never spontaneously comes off the breast, then attachment is not effective. In this situation the mother needs skilled help from a health professional or qualified breastfeeding counsellor to improve attachment at the breast and boost milk supply.

Night feeds

Night feeds are important in establishing a good milk supply as prolactin levels are higher at night. Many mothers find night feeds tiring and need support to cope with this. Midwifery and health visiting staff discuss night feeds with the mother and suggest ways of minimising disruption, for instance by having the baby in the same room, feeding lying down and safe bed sharing.



Keeping mothers and babies close

In order to facilitate baby led feeding, all pregnant women and new mothers are encouraged to keep their babies close to them night and day. Keeping the baby close helps mothers:

- To recognise feeding cues
- Form a close relationship with their baby
- Reduces the risk of sudden infant death syndrome (SIDS)

All mothers are advised to share the same bedroom with their baby for the first 6 months of life.

The safest place for your baby to sleep for at least the first 6 months is in a cot by the side of your bed

Mothers are given information by health professionals about the risks and benefits of bed-sharing – an information leaflet is given and discussed with new mothers in the postnatal period.

.....
www.unicef.org.uk/BabyFriendly/
.....

Teats, dummies and nipple shields

Pregnant women and new mothers are informed that teats, dummies and nipple shields can interfere with the baby's ability to learn to breastfeed effectively so should be avoided during the establishment phase; ideally until the baby is breastfeeding well and thriving.

If the mother wishes to use a dummy, she should be advised that it should be used with caution as it may mask feeding cues and therefore reduce the frequency of feeds, leading to a reduction in milk supply. There is no evidence on which to either recommend or discourage dummies for use in the prevention of SIDS.

Nipple shields are associated with reduced milk transfer and hence reduced milk supply; therefore nipple shields should not be recommended.

.....
www.unicef.org.uk/babyfriendly/
.....

Supplementary formula feeds

Pregnant women and new mothers are informed of the importance of exclusive breastfeeding as this ensures mothers and babies gain all the benefits of breastfeeding.

(See advantages of breastfeeding to the infant on page 22).

Pregnant women and new mothers are advised that giving supplementary formula feeds to a breast fed baby can interfere with the establishment and maintenance of a good milk supply.

Supplements of formula milk within the first six months increases the incidence of eczema, asthma and juvenile onset diabetes (Ip et al. 2007; Horta et al. 2007).

No food or drink other than breast milk should be given to a breast fed baby unless it is medically indicated or the mother requests this when fully informed.

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Peer support for breastfeeding mothers

Breastfeeding counsellors

Breastfeeding counsellors are mothers who have themselves breast fed and have undergone training to enable them to support other mothers.

Organisations who train breastfeeding counsellors include the National Childbirth Trust, La Leche League and the Association of Breastfeeding Mothers.

All these organisations have a network of local counsellors who offer mother-to-mother support. Contact numbers for counsellors and of national help lines can be found on each organisation's website.

National website addresses for breastfeeding counselling organisations are:

.....
www.laleche.org.uk
www.abm.me.uk
www.nct.org.uk
www.firststepsnutrition.org
.....

National Breastfeeding Helpline:

0300 100 0212
.....

Breastfeeding support groups

Many mothers report that they stopped breastfeeding earlier than they intended (Bolling et al. 2007). Breastfeeding support groups are available across South Gloucestershire to help and encourage mothers to continue to breastfeed. Groups are run by either NHS staff, Children's centres, breastfeeding counsellors or peer supporters. A list of local groups can be found at:

.....
www.realbabymilk.org/
.....

South Gloucestershire peer support breastfeeding service

Breastfeeding peer supporters in South Gloucestershire are volunteer local mothers who have breastfed and undertaken a short training to help and support other mothers.

If you wish to put a mother in contact with a peer supporter, please contact her midwife / health visitor.

.....
www.realbabymilk.org/
.....

Children's centres

All children's centre staff have undertaken breastfeeding training, including an awareness of the Breastfeeding Welcome policy. Signs are displayed directing mothers to where they can access support required. Several Children's centres host breastfeeding support groups and provide refreshments.



Breastfeeding out and about

Concerns about breastfeeding in front of other people can mean that some mothers do not breastfeed outside the home. This serves to reduce the number of breastfeeds and can lead to early cessation of breastfeeding. All new mothers need the opportunity to discuss feeding outside the home. Solutions that other mothers have found helpful in these situations are using a scarf or shawl to maintain privacy and visiting local places which are breastfeeding friendly.

The Equality Act 2010 has specifically clarified that it is unlawful for a business to discriminate against a woman because she is breastfeeding a child

A **South Gloucestershire Breastfeeding Welcome** scheme has been set up to ensure that mothers have places where they can breastfeed their babies when out and about. When part of the scheme, premises display a poster or a sticker to welcome mothers.



Ongoing support for breastfeeding in the postnatal period

Throughout the early postnatal period health professionals continue to support a mother to develop the skills and confidence to manage her own breastfeeding. Mothers are given information on how to recognise that their baby is getting enough breast milk to help to build confidence in their ability to breastfeed their baby.

Signs that breastfeeding is going well

- The baby appears content and satisfied after most feeds
- The baby attaches to the breast without fuss at most feeds
- The baby is healthy
- The baby is gaining weight satisfactorily
- The mother feels confident and her nipples are not sore
- The baby has at least 6 wet nappies a day (after 6 days old)
- The baby is passing loose yellow stools at least twice a day

Normal stools for breastfeeding infants

Mothers are often concerned about their baby's pattern of passing stools and ask for reassurance from health professionals.

- From the first couple of days to a month, the baby should pass a minimum of 2, pound coin sized, soft yellow stools in 24 hours
- Later on it is normal for the bowel movement frequency to change and some babies may only have a dirty nappy once a week. If the baby is otherwise well, infrequent stools are not significant after one month
- Exclusively breast fed babies very rarely become constipated, however it is common in exclusively bottle fed babies and can occur when an otherwise breastfed baby is given a supplementary bottle

Expressing breast milk

All mothers are taught to express their breast milk by hand. This ensures that women are able to manage some common breastfeeding challenges, for example, a full breast or a blocked duct, for themselves. This will be taught in the early postnatal period and revisited by the health visiting team at the primary visit. The pictures and information in 'Off to the Best Start' can be used as a teaching aid to support effective delivery of this information.

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www.unicef.org.uk/babyfriendly/
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Storing expressed breast milk

All mothers are given information about the storage of expressed breast milk, found in 'Off to the Best Start' (DH 2011).

- Expressed breast milk should be collected and stored in sterilized equipment. When expressing breast milk by hand it may be easier to collect the breast milk in a large sterilized measuring jug or bowl. If using a pump then expressed breast milk can be stored in the sterilized collecting bottle or bags
 - Expressed milk can be stored for up to 5 days in the main part of a fridge (i.e. not in the door), at 4°C or lower
 - Expressed milk can be stored for up to 2 weeks in the freezer compartment of a fridge, and up to 6 months in a domestic freezer, at minus 18°C or lower
 - If expressed breast milk is stored for less than 5 days, the fridge preserves its properties more effectively than freezing
 - Breast milk should be given as fresh as possible. After 5 days in a fridge, milk will have begun to change in flavour and composition
 - Frozen expressed breast milk should be defrosted in the fridge and should not be re-frozen once thawed
-

Storage of breast milk in hospital

The very intensive use of fridges in a hospital setting means that the temperature of the fridges cannot be guaranteed to remain below 4 degrees. Therefore Bristol hospitals recommend that breast milk is stored for only 48 hours in a hospital fridge.

Warming breast milk feeds

Breast milk should be warmed by standing the feed in a jug of hot water for a few minutes.

Microwaving feeds is NOT recommended practice and should be discouraged as the milk will continue to heat after removal from the microwave.



Advice for overcoming breastfeeding challenges

If there are problems with breastfeeding, the mother and infant should be referred for breastfeeding help to a professional or breastfeeding supporter who has undertaken a specialist training in breastfeeding management. This could be a midwife, health visitor or breastfeeding counsellor.

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Avoiding mastitis

Mothers should be encouraged to be breast aware and to check their breasts regularly for lumps that may indicate a blocked duct. If the mother finds a blocked duct she should be encouraged to make sure the baby is feeding effectively on that side, making adjustments in positioning and attachment as necessary to achieve this, and use hand expression and gentle massage to unblock the duct.

A mother who complains of any of the following may be suffering from mastitis:

- A red area on part of the breast
- A lumpy breast which feels hot to touch
- The whole breast aching and becoming red
- Flu-like symptoms, such as aching, increased temperature, shivering, becoming tearful and tired
- Sudden onset of any of the above

If mastitis is suspected, the mother should contact her midwife or health visitor as soon as possible for information and support. If mastitis does not quickly resolve using self-help measures, or if symptoms worsen quickly, then the woman may need to be prescribed antibiotic therapy by her GP.

It is very important that the mother with mastitis continues breastfeeding, as sudden cessation of breastfeeding will lead to worsening mastitis and possibly breast abscess. Further guidance for treatment is available from the breastfeeding network:

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www.breastfeedingnetwork.org.uk

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Returning to work

Many mothers continue to breastfeed successfully on returning to work by:

- Continuing baby-led feeding before and after work
- Expressing milk so that her infant can be fed by cup or bottle while she is away
- Finding childcare close to her work and arranging to breastfeed during breaks in her work day
- Asking her employer for flexible hours around breastfeeding
- Requesting part-time work or job sharing

It is not essential that all babies learn to take milk from a bottle when their mother returns to work, as many babies move straight from breastfeeding to a cup or a beaker at around 5-6 months of age. Using an open cup, or a free flowing cup without a valve, helps the baby to learn to sip and is better for the baby's teeth.

If a mother is returning to work earlier than 5-6 months, or for any other reason wants to help her baby learn to accept a bottle, the following tips have been helpful to many mothers:

- The baby is more likely to take a bottle from someone else other than the mother
- It is best to try giving a bottle when the mother is not present
- Something that smells of the mother nearby may help

Planning for returning to work can be an emotional time for new mothers. It can be helpful to meet other mothers at breastfeeding support groups who have experience of returning to work and the emotional adjustment involved.

If a mother informs her employer in writing that she wishes to breastfeed, support can be put in place to allow her to express and store breast milk while at work. The Workplace Regulations and Approved Code of Practice require employers to provide suitable facilities for pregnant and breastfeeding mothers to rest.

Information on the rights of mothers returning to work is available in the Department of Health leaflet 'Breastfeeding At Study Or Work'.

Information for employees and employers is available to download from:

.....
www.unicef.org.uk/BabyFriendly/
.....



Breastfeeding in special circumstances

Premature babies

Mothers of infants born early may need extra support to initiate and maintain lactation. The babies will then learn to feed from the breast when they are ready.

Mothers in this situation are encouraged to start expressing early (usually before they leave delivery suite) and frequently (at least 8 times in 24 hours, or 10-12 times in 24 hours if the baby has been born very prematurely). Mothers are given support to do this effectively to ensure that their milk supply is maximised. When the baby is ready to breast feed they will be given full support to learn this skill.

More information on breastfeeding premature infants is available from:

.....
www.bliss.org.uk
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Breastfeeding twins and multiples

In the same way that mothers make enough milk for one infant, they can make enough for two or more babies. All the principles that underpin successful breastfeeding with one baby also apply in this situation.

Individual circumstances will need to be taken into account, but most mothers will start by feeding each baby separately until they are confident with positioning and attachment. Once that has been achieved, feeding twins together will shorten overall feeding times and may be preferred by the mother for at least some of the feeds.

More information on breastfeeding twins & multiples is available from:

.....
www.tamba.org.uk
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Medication during lactation

Although there are few medicinal drugs that are unsafe to use during lactation, breastfeeding mothers should not take drugs unnecessarily and should take advice from their doctor or pharmacist.

Information can be obtained from:

NICE recommend that all health professionals and pharmacists consult the Drugs Lactation Database (Lactmed) or the Drugs in Lactation Advisory service (UKDILAS).

The 'Drugs in Breast Milk' national helpline can be accessed by both parents and health care professionals on:

.....
0844 412 4665
.....

The Breastfeeding Network has excellent evidence based information sheets on common drugs / medications and breastfeeding.

These can be accessed via:

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www.breastfeedingnetwork.org.uk
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Breastfeeding and HIV

In the United Kingdom, it is currently recommended that women known to be HIV Antibody Positive (or those at high risk who have not been serologically tested), should be advised not to breastfeed but to use infant formula for feeding their baby as the HIV virus can be passed to the infant via breast milk (CMO Report 2004).

In developing countries where there are not the facilities to make up infant formula safely, HIV positive mothers are encouraged to breastfeed exclusively to reduce the risk of death through gastroenteritis due to bacterial contamination of infant formula.

Specific advice will be required in circumstances where a mother is likely to be travelling back to her country of origin. If this is a country in which formula feeding would not be safe or culturally acceptable, advice will be given by the specialist HIV teams providing the woman's medical and obstetric care.

Once an HIV positive mother has made a choice between breastfeeding and formula feeding her infant, she should be advised not to mix feed by offering both breast milk and infant formula. Mixed feeding carries the highest risk of HIV transmission to the infant.
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The eatwell plate

Use the eatwell plate to help you get the balance right. It shows how much of what you eat should come from each food group.



www.nhs.uk/livewell/goodfood/pages/eatwell-plate.aspx

Mother's diet during breastfeeding

Eating a healthy balanced diet based on the five food groups will usually ensure nutritional requirements are met except for vitamin D.

The nutritional quality of breast milk is not significantly affected by the mother's diet unless she is undernourished. However mothers on very restrictive diets may require some supplementation. It is currently recommended that women who exclusively breastfeed require about 300kcal extra per day (Butte et al. 2005).

Pregnancy and breastfeeding are times when families are often well motivated to adapt their lifestyles, therefore providing an opportunity to give information on healthy eating to the whole family.

Eating well for breastfeeding mothers:

.....
www.firststepsnutrition.org

.....
NICE Public Health Guidance II (2008)

Vitamin D supplementation recommendations

All pregnant women are encouraged to take vitamin D supplements in pregnancy (see page 7).
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The Department of Health recommends breastfeeding mothers should also take a 10µg vitamin D supplement per day

(2nd February 2012 "Vitamin D advice on supplements for at risk groups" letter from the Chief Medical Officer)

The Healthy Start vitamins for women should be recommended as they include 0.4mg folic acid which will help to build up the mother's stores of folic acid for any future pregnancies.

Breast fed infants should begin vitamin D supplements from 6 months. Health professionals may recommend starting the supplements at 1 month in babies who are nutritionally at risk (for example, their mothers may not have taken Vitamin D in pregnancy or may be from an at risk group).

Information on the availability of Healthy Start vitamins should be given to families.

Foods to limit while breastfeeding

Oily fish can be eaten twice per week and they are a good source of omega 3 fats. Some of these fish contain dioxins and PCBs (polychlorinated biphenyls) which can be toxic in high amounts (SACN 2004).

Oily fish includes salmon, trout, mackerel, sardines, pilchards, herring, kippers, eel, whitebait and fresh tuna. These fish count as oily fish when they are canned, fresh or frozen with the exception of tuna, which loses its oil content as part of the canning process. Breastfeeding mothers and women planning a pregnancy should not eat more than 4 medium sized cans of tuna a week (with a drained weight of about 140g per can) or 2 fresh tuna steaks (weighing about 140g when cooked or 170g raw).

Shark, marlin and swordfish should be limited to one serving per week due to their mercury content (SACN 2004).

Alcohol is absorbed directly into the blood stream and passes into breast milk. The highest level of alcohol in milk will occur between 30-90 minutes after ingesting alcohol. Breastfeeding mothers who choose to drink alcohol should not ingest alcohol for about 2 hours before breastfeeding and should keep alcohol intake to a minimum. Regular or binge drinking should be avoided.



Caffeine in tea and coffee does not need to be avoided but some mothers find large amounts unsettle their baby.



Food intolerance

It is very rare that a food that the mother eats can affect the baby causing an allergic response. Common triggers are dairy products, eggs and nuts. If a mother needs to exclude a whole food group e.g. milk and dairy products, then she should be referred to a dietitian for advice to make sure her diet remains adequate in all nutrients.

In December 2008 the Food Standards Agency advised that there is insufficient evidence to advise any breastfeeding mother to avoid eating peanuts and peanut products unless she is herself allergic to peanuts.



Formula feeding

Breastfeeding should always be promoted as the first choice for feeding an infant. It is important however, that if the family choose to use infant formula to feed their infant they are shown/advised how to do this safely and correctly during the post-natal period. They should also be given the Department of Health leaflet called 'Guide to bottle feeding'. They should be shown how to make up a feed and sterilise equipment, even if they think they already know, as some of the advice may have changed from the last time they did this.

Consideration of the infant's individual needs and feeding on demand are important. Newborn infants need to feed frequently on demand. The volume should be gradually increased until introduction of complementary foods when frequency and number of feeds decrease. It is essential that an infant is never left unattended whilst feeding and they should always be held whilst bottle feeding. From six months of age a feeding cup should be introduced and encouraged. The use of bottles should be discouraged from the age of one year. Complementary foods should never be added to a bottle feed.

Infant formula in the UK comes as dried powder to be mixed with water or as a sterile 'ready to feed' liquid which is more expensive. They are usually given in a bottle with a teat or in a cup - both should be sterilised prior to being filled with the formula milk due to the risk of bacterial contamination in feeding infant formula.

Choosing a formula

The standard formulas are made from skimmed cows milk with added fats and nutrients to make the composition nutritionally adequate for infants. The composition of formula milks suitable for use in the first 6 months of life must comply with country specific regulations based on strict criteria set by the European Union. These are published for each UK country

www.legislation.gov.uk

These regulations allow standard formulas to be based on only cows milk protein or soya protein. Goats milk is currently not allowed as a source of protein in the UK, but will be from March 2014.

www.firststepsnutrition.org/



Infant formulas - suitable from birth

It is recommended that formula with a greater proportion of whey protein is used as this is closer to the protein composition of breast milk.

Whey dominant infant formula is often labelled with a '1' and is promoted for new born babies. The ratio of proteins in the formula approximates to the ratio of whey to casein found in human milk (60:40).

There is no evidence that changing from whey-based formula milk to any other type of formula is necessary or beneficial. First milk is nutritionally complete for formula fed babies throughout the first year of life.

Casein dominant infant formulae is often labelled with a '2' and promoted as suitable for hungrier babies. Although the proportions of the macronutrients (fat, carbohydrate, protein etc) are the same as in whey-dominant formula, more of the protein present is in the form of casein (20:80).

The higher casein content causes large relatively indigestible curds to form in the stomach and is intended to make the baby feel full for longer. However, there is no evidence that babies settle better or sleep longer if given this milk.

Overall there is insufficient evidence to support changing from whey to casein dominant formulae (DH 2012).



Differences between Infant Formula brands

The differences between infant formula brands are minimal as all infant formula must comply with the same EU compositional regulations. Healthcare professionals cannot promote one formula brand over another. Some of the components added to formula include:

- **Long chain polyunsaturated fatty acids (LCPs)** are added to all infant formula except for organic formulae. The two LCP's that have been identified through research to be vital for optimum brain and eye development are Docosahexaenoic acid (DHA) and Arachidonic acid (AA) which are naturally found in breast milk
- **Nucleotides** may play a role in the development of the immune system and the gastrointestinal system through enhancing a healthy gut flora
- **Prebiotics** are types of fibre that remain undigested in the gut and they promote the growth of bacteria (e.g. bifidobacteria) in the gut flora that have a positive effect on digestion and absorption. They are present in breast milk and those that are added to infant formula are usually galacto-oligosaccharides and fructooligosaccharides
- **Alpha lactalbumin protein** is the main type of whey protein in breast milk. Cows milk whey proteins are mainly beta lactalbumin

For nutritional components in breast milk and infant formula milks (see Appendix 1).

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Soya based infant formulae may be chosen by parents as an alternative to a cows milk formula but they are not recommended for infants under 6 months for the following reasons:

- Phytoestrogens found in soya have been linked with changes in the reproductive organs of experimental animals
- Glucose is the carbohydrates source in soya formula and therefore there is a high risk of dental caries
- For infants with cow's milk allergy or intolerance there is a risk of cross reactivity with soya formula

ESPGHAN recommends that extensively hydrolysed formulas should be used if there is a clinical reason for not using standard formulas (AGOSTONI et al. 2006).

In 2004 the Chief Medical Officer advised that:

'Soya-based formulae 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'

After six months the risk associated with using soya formula is likely to be reduced, as the dose of phytoestrogens per kg of body weight will be lower once the infant is taking solids. However, parents and carers using these milks are advised to avoid prolonged contact with their baby's teeth and to clean their baby's teeth after the last feed at night.

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Follow-on formulas are marketed for infants over 6 months of age and are higher in protein, iron and vitamin D than infant formula. There is no need for infants to be given follow on formula and these milks cannot be purchased with Healthy Start vouchers.

Between 6-12 months, adequate complementary foods along with a standard infant formula will provide adequate nutrition.

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Cows milk should not be introduced as the main milk drink before 12 months of age. Breast milk is encouraged throughout the first year, but cows milk is lower in iron than formula milks and infants who are given cows milk as their main milk drink before 12 months of age are at higher risk of iron deficiency anaemia. Cows milk can be used in the preparation of foods such as milk puddings and white sauces.

There are also a range of specialised infant formulas for infants with certain medical conditions and they should only be used on the advice of a doctor or dietitian.

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Sterilisation of feeding equipment

Careful sterilisation of feeding equipment is essential to prevent bacterial contamination of infant formula which can cause gastroenteritis. Gastroenteritis is more common in formula fed infants than breast fed infants.

- All equipment used for bottle feeding infants needs to be sterilised because it is difficult to clean thoroughly and any remaining traces of milk can cause bacterial contamination
- Bottles containing plastic liners are for single use only and should not be reused. The cap and teat should be sterilised

Before sterilisation all bottles and teats should be thoroughly washed and rinsed. The practice of rubbing teats with salt to remove traces of feed is not recommended. Even after rinsing some of the salt may remain leading to the risk of hypernatraemia.



There are three acceptable Methods of sterilising equipment

1. Cold water sterilising

Follow the manufacturer's instructions.

The sterilising solution should be changed every 24 hours.

The feeding equipment should be left in the sterilising solution for at least 30 minutes.

Ensure there is no air trapped in the bottles or teats when putting them in the sterilising solution.

All parts of the equipment should be kept immersed in the solution with a floating cover.

2. Steam sterilising / microwave steriliser

Follow the manufacturer's instructions.

Ensure that the openings of the bottles and teats are facing down in the steriliser.

Once the steam steriliser has been opened, any equipment not used straight away should be re-sterilised before use.

3. Boiling water

Equipment is sterilised by boiling in water for 10 minutes. Equipment must remain completely immersed in the boiling water.

Unsuitable sterilising methods:

- Microwave ovens without a special steamer, as they do not sterilise feeding equipment
- Dishwashers as they cannot be guaranteed to reach high enough temperatures for an adequate time period to ensure sterilisation

Liquid ready to feed formulae

- Is sterile until opened
 - It is found in cartons or plastic bottles
 - Once opened it can be stored in a refrigerator kept at 5°C or below for up to 24 hours or 48 hours depending on the packaging. Parents and carers should read the storage information carefully
 - All feeding equipment must be sterilised as described above
-

Making up powdered formula

Powdered infant formula is not sterile.

The NHS guidelines on safe preparation, storage and handling of powdered infant formula are available:

www.nhs.uk/conditions/pregnancy-and-baby/pages/making-up-infant-formula.aspx

The NCT also has a factsheet for parents – Using Infant Formula: Your Questions Answered – available at:

www.nct.org.uk

The Baby Feeding Law Group (BFLG) produce a DVD – Infant Milk Explained – showing how milk can be made up safely, see:

www.babyfeedinglawgroup.org.uk

It is important that all powdered formula are made up with water at a temperature of at least 70°C. If manufacturer instructions suggest infant milks are made up at temperatures lower than 70°C then ask a health professional for advice.

www.unicef.org.uk/BabyFriendly/

A close-up photograph of a baby's face, showing their eyes, nose, and mouth. The baby has light skin and dark eyes, looking slightly to the right. They are wearing a blue and white striped shirt. The background is blurred with soft colors.

Suitable water for making up powdered feeds

- Water for feeds, whether freshly drawn tap water or suitable bottled water, should be boiled, but only once, and allowed to cool, covered, for up to 30 minutes
 - Bottled waters other than those labelled 'Natural Mineral Water' are expected to conform to essentially the same standards as the public water supply and are therefore suitable for preparing formula feeds for infants: the sodium content should be less than 200mg/l
 - Water filters should not be used for infants until more research is available on the risks of the potential ingestion of silver (found in the cartridges) and on the levels of sodium (found in the resin)
 - Water softeners should be avoided for infant feeds because this may increase the sodium content of the water
 - Bottled water labelled as mineral water should not be used to make up formula feeds due to potentially high levels of carbon dioxide, sodium, nitrate, fluoride and sulphate
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Preparing formula feeds abroad

Parents should always be advised to take at least one unopened can of powder with them to allow some time in which to establish a supply abroad.

As in the UK, tap water and bottled water should be boiled for making up a formula feed using powdered formula. The label on the bottled water should be checked to make sure that the sodium level is less than 200mg/l. Bottled water should be still and unflavoured.

Storing prepared infant formula

Storing prepared infant formula is no longer recommended and feeds should be made up fresh each time.

Warming refrigerated feeds

Refrigerated feeds of expressed breast milk (it is not considered safe to store formula milk – see above) should be warmed by standing the feed in a jug of hot water for a few minutes.

Microwaving formula feeds is NOT recommended practice and should be discouraged for the following reasons:

- Ongoing cooking – the milk/food will continue to heat after removal from the microwave
- 'Hot Spots' – hot fluid in the centre of the bottle may be undetected and scald the infant



Feeding milk formula to infants

As with breast fed infants, infants who are bottle fed, particularly newborns, should be allowed to regulate their own intake of formula feeds and parents should be advised:

- On cues that show the infant is hungry
- To allow their infant to stop feeding when he/she has had enough rather than encouraging him/her to finish each bottle
- Skin to skin contact is still encouraged whilst feeding from a bottle
- To cuddle their infant when feeding from a bottle to ensure the same closeness found with breastfeeding
- Young infants have small tummies so will feed more frequently
- A baby usually pauses from time to time whilst feeding from a bottle, and may need to be sat up to be winded during the process

Key points for feeding from a bottle:

- The teat should never be forced into the baby's mouth, the baby should open its own mouth
- The bottle should be tilted so there is always milk in the teat
- **A baby should never be left alone with a bottle for example prop feeding; they should always be held whilst bottle-feeding**
- When the infant has had enough of a feed, any left over formula should be thrown away
- Foods (e.g. sugar, cereal) should never be added to a bottle of milk
- At around 5-6 months a cup can be gradually introduced so that bottles can be discontinued by around the age of 12 months



Formula amounts to offer

Fluid Requirements:

Age	ml/kg body weight/24 hours
Pre-term	150-200
0-6 months	150
7-12 months	120

(Adapted from, Nutritional Requirements for Children in Health and Disease. Great Ormond Street Hospital for Children NHS Trust. 2000)

Newborns generally take very small volumes of formula at each feed. The volume of feeds demanded will gradually increase until the introduction of complementary foods when the frequency and number of feeds should be decreased.

Average feeding amounts and frequency for formula fed babies are:

Approximate age	Approximate single feed volume		Number of feeds day
	mls	ozs	
1-2 weeks	50-70	2-3	7-8
2-6 weeks	75-110	3-4	6-7
2 months	110-180	4-6	5-6
3-5 months	170-220	6-7	5
6 months	220-240	7-8	4

Extra fluid

In exceptionally hot weather infants may become thirsty in between their usual feeds. They can be offered drinks of cooled, boiled water. Flavoured or sweetened waters should not be offered.

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Introducing a cup

At around 5-6 months of age a feeding cup can be introduced and encouraged for milk feeds or drinks of water and if a mother decides to change to formula from this age or older she could use a cup rather than a bottle. Breastfeeding during this time should be encouraged.

Bottles of milk should be phased out from around the age of one year as it is better for the babies development, for their oral health and for their speech if they manage food and drink in their mouth without 'sucking' from a bottle.

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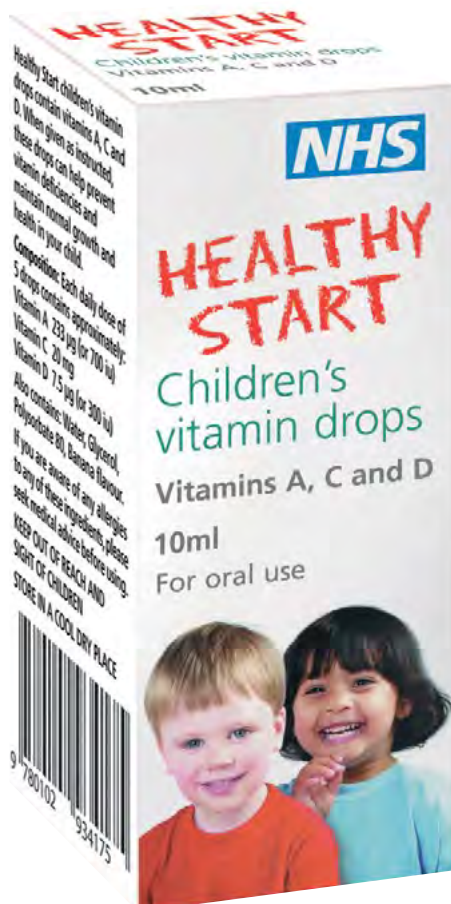
Vitamin supplementation

It is recommended that all breastfed babies receive infant vitamin drops (vitamins A, C and D) from 6 months of age. Where a mother may be at risk of low vitamin D status the baby should be given vitamin drops from one month.

All formula fed infants require vitamin drops once they are drinking less than 500mls formula per day (DH COMA 1994).

Families should be advised where to access the Healthy Start Children's vitamin drops (page 7). Those families who are entitled to receive Healthy Start vouchers are entitled to these vitamin drops free.

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www.healthystart.nhs.uk
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Introduction of complementary food

The introduction of complementary foods, is the process that begins the transition from breast or infant formula feeding to eating a balanced family diet. The following recommendations about the introduction of complementary foods are supported by the Department of Health:

- Breastfeeding (and/or breast milk substitutes, if used) should continue as the main milk drink throughout the first year of life. Breastfeeding can continue beyond if the mother wishes
- Complementary foods should be introduced to infants, whether breast fed or given infant formula milk from about 6 months of age
- Many families introduce complementary foods before 6 months of age but it is important to encourage parents to wait until at least 4 months of age if they choose not to follow current guidance. There are some specific additional recommendations on foods to avoid if complementary feeding is introduced before 6 months

The purpose of introducing of complementary solid foods alongside an infant's milk feeds is to:

- Provide extra energy (calories) and nutrients when breast milk or infant formula no longer supplies them in sufficient amounts to sustain normal growth and optimal health and development
- Give infants the opportunity to learn to like new tastes and textures, based on healthy family foods, at a time when they are receptive to them

Mothers should be encouraged to continue breastfeeding as they introduce complementary foods (Agostoni et al. 2008).
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When to introduce complementary foods

At about 6 months infants are ready to move onto a mixed diet – whether they have been breast or infant formula fed. At this age a baby's digestive system and kidneys are still developing and adding other foods to the diet too soon may increase the risk of infections and allergies.

In practice the developmental signs that an infant is ready to accept complementary foods are:

- Stay in a sitting position and hold their head steady
- Co-ordinate their eyes, hand and mouth so that they can look at the food, pick it up and put it in their mouth all by themselves
- Swallow food. Babies who are not ready will push their food back out, so they get more round their face than they do in their mouths! (Wait for the tongue thrust to go!)

For more information see the DH leaflet 'Introducing solid foods' (2011).

At about six months babies are able to sit up well and they can chew, and use the tongue to move the food from the front to the back of the mouth and swallow. They are curious about other tastes and textures and develop their eye and hand co-ordination at this stage.

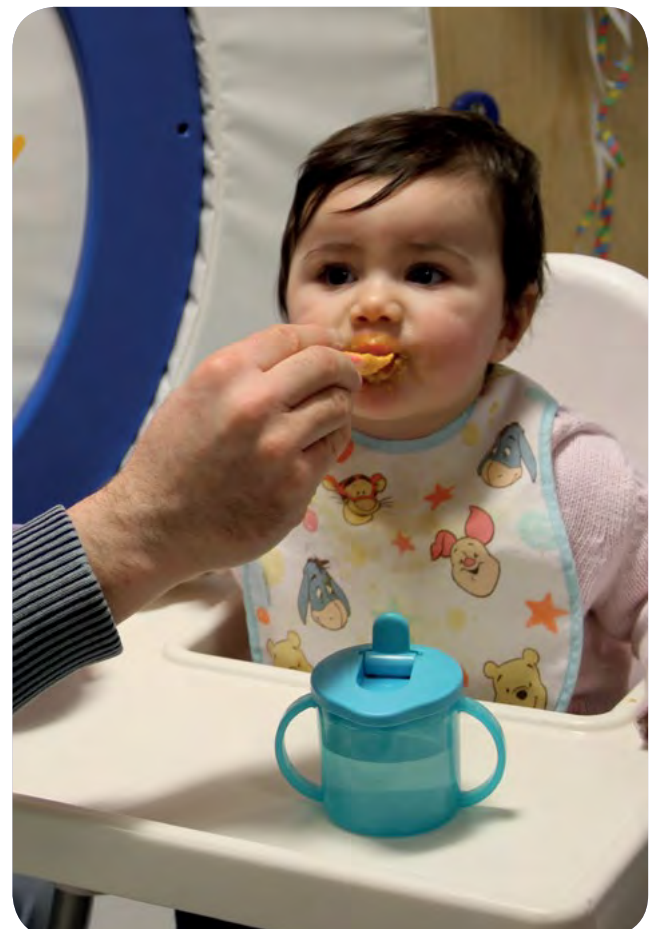
Introducing complementary foods should not be delayed beyond six months of age as this increases the risk of nutrient and energy deficiencies. Iron deficiency, anaemia and rickets is more common in infants weaned after 6 months.

The emotional and psychological aspects of complementary feeding

Adding complementary foods to the diet of an infant has a central importance in a baby's emotional development and marks an important progression in the parent and child relationship.

Some parents and carers may feel anxious about introducing complementary foods and health professionals should be sensitive to this anxiety. The parent has to be able to use new and different parts of her/his personality in order to nurture this developmental change for the baby. Sometimes thoughts and feelings of giving up and letting go of the familiar and moving on to something completely new, can bring out strong and ambivalent feelings in both the baby and parent as their relationship changes. Weaning and feeding can often reveal more deep rooted and difficult aspects of their wider relationship.

As a practitioner, listening, acknowledging and supporting parental anxieties around weaning can be very beneficial (see Appendix 3).



Progressing through complementary feeding

Infants will only learn to accept and enjoy new tastes and textures if they are given the opportunity to try them as new complementary foods are introduced. Some infants are kept on pureed foods for too long and those who are not offered lumps and finger foods by 9 months are more likely to be fussy eaters at the age of 3 years compared to those that were given appropriate complementary foods (Northstone 2001).

The type and texture of foods to be introduced at each stage:

Age guide	Skills to learn	New food textures to introduce
Around 6 months	<ul style="list-style-type: none"> Taking food from a spoon Moving food from the front of the mouth to the back for swallowing Managing thicker purees and mashed food 	<ul style="list-style-type: none"> Smooth purees Mashed foods
6-9 months	<ul style="list-style-type: none"> Moving lumps around the mouth Chewing lumps Self-feeding using hands and fingers Sipping from a cup 	<ul style="list-style-type: none"> Mashed food with soft lumps Soft finger foods Breast milk, formula milk or water in a beaker or a cup
10-12 months	<ul style="list-style-type: none"> Chewing minced and chopped food Self-feeding attempts with a spoon 	<ul style="list-style-type: none"> A greater variety of finger food textures Minced and chopped family foods



Introducing complementary foods stage 1:

Complementary foods may be introduced at any time during the day that is convenient for the carer and infant. The infant should be wide awake and not too hungry so first new tastes could be offered either between feeds or mid way through a feed.

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Texture of foods

Begin with a smooth puree or mashed food for the first few tastes. Foods can be offered from a shallow teaspoon or plastic spoon. Parents can then make thicker purees or mashed food as the baby becomes used to taking food from a spoon.

Some infants may begin with soft finger foods but should not be restricted to finger foods only as that would be unlikely to provide adequate amounts of energy (calories) and nutrients.

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Foods to offer

Any foods can be introduced as the first complementary food, but most parents begin with cereal, potato, root vegetables or fruit, often mixed with a little of their infant's usual milk. They can be pureed (using a sieve, hand blender or liquidizer), mashed or offered as a finger food.

Freshly prepared foods may be prepared in large quantities and frozen in small amounts such as ice cube trays or small containers for convenience.

Herbs and mild spices can be used to flavour food but salt and sugar should not be added.

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Adding complementary foods stage 2: 6 - 9 months

- Move on to mashed food with soft lumps and soft finger foods
- Meat may still need to be pureed at first but can be mashed if it is very soft
- Infants who begin complementary foods at or near 6 months of age should be moved onto mashed food as quickly as possible to ensure nutritional adequacy and to learn to cope with new textures.
- Offer finger foods

Examples of finger food

Soft fruit pieces

e.g. mango, melon, banana, soft ripe pear, peach, papaya and kiwi

Cooked vegetable sticks

e.g. carrot sticks, green beans, courgette sticks, potato and sweet potato

Cooked vegetable pieces

e.g. cauliflower and broccoli florets

Cooked pasta pieces

Fingers of toast

Cheese cubes

Soft roasted vegetable sticks.

e.g. potato, sweet potato, parsnip, pepper, carrot, courgette

- Infants can chew soft lumps with their hard gums
 - Their teeth, for those that have them at this age, are mainly used for biting
 - Hard and crunchy foods should be avoided as infants at this age can bite off lumps but not yet chew them properly, which could lead to choking
-

Foods to offer

A range of foods from the following four food groups should be offered over the day. Suitable foods from each group are:

- Cereal based foods including bread, rice, couscous, pasta, porridge or starchy root vegetables such as potato or yam
- Fruits and vegetables
- Milk products such as yoghurt, cheese, custard and milk puddings
- Meat, fish, well-cooked eggs, pulses (peas, beans and lentils)

By the age of 6 months, an infant's iron stores that were laid down during pregnancy are no longer adequate to meet the infant's requirements. It is therefore important to encourage iron rich foods such as red meat, fish, eggs, peas, beans and lentils and other suitable meat alternatives as well as iron fortified breakfast cereals and green vegetables. To increase absorption of iron from plant based foods, food rich in vitamin C should be given at the same meal.

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Drinks with meals

- A free flowing beaker should be introduced for drinks around 6 months of age
 - Water should be the only drink other than milk to be offered at meal times from 6 months and should be offered and available at all times
 - Continue to offer breast milk or formula milk
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More variety of complementary foods stage 3: 10 - 12 months

- Aim for 3 meals per day
- Infants should take part in as many family meals as possible
- Encourage a wide variety of tastes and textures
- Offer a snack between meals at mid-morning and mid-afternoon - for example fingers of fruit, vegetables or toast
- Continue to offer breast milk or formula milk
- Babies eat different amounts on different days therefore allow them to eat according to their appetite
- Harder finger foods such as raw ripe fruit and vegetable sticks and family foods such as sandwiches are also suitable

The typical number of servings to be included from each food group per day is:

Potatoes and cereal based foods	3-4 servings
Fruits and vegetables	3-4 servings
Milk puddings, yogurt, cheese	1-2 servings
Meat, fish, eggs, pulses, ground nuts other meat alternatives	1-2 servings



Learning to like foods

Some infants will respond with surprise to a new taste. Parents should be reassured that infants will learn to like new tastes if they are offered them on a regular basis. Parents who do not offer foods that their infant has refused the first or second time may narrow the range of foods the infant will accept.

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Gagging and coughing

Gagging is a normal reflex present at birth. It is a protective reflex preventing objects from obstructing the airway. Initially the gag may be stimulated by touching the mid-section of the tongue. When infants are learning to manage new textures they may gag or cough up food that needs more chewing. This is part of the learning process and parents should be advised not to panic; the infant might just need more experience to cope easily with that texture. If an infant gags or coughs frequently, families may need further assessment from a Speech and Language Therapist.

Infants must never be left unattended with foods as they can choke.

Children should be seated in a supported chair with their legs at right angle to their body and in a calm atmosphere when eating. When parents or carers are feeding children they should be facing them. Cutting food into short lengths rather than small pieces will also reduce the risk of choking and are easier for infants to manage if they are self-feeding.

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Parents' cooking skills

Commercial baby foods, such as cans, jars and dried food may be convenient in some circumstances but their exclusive use should be discouraged as learning to like family foods is a key aim of introducing complementary foods. The use of pureed foods in pouches should be particularly discouraged as these can be sweet and damage teeth if regularly consumed sucked from a pouch.

Health professionals and Early Years staff need to encourage and support any parents who would like to improve their cooking skills.

Portion sizes

Research shows that the quantity of food eaten is influenced by the amount of food presented on the plate, and that an increase in portion size is linked to the recent rise in obesity. Presentation of appropriate portions will discourage children from eating more than they need and will help reduce the common parental anxiety that their children are not eating enough.

Potential action:

- Make information available regarding portion sizes. Information on appropriate portion sizes in the first year of life can be found in the report 'Eating well - Birth to five' (First Steps Nutrition)
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www.firststepsnutrition.org

- Advise parents and carers to avoid adult size plates for younger children as this encourages inappropriately large portions
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Suitable drinking cups

Drinks can be offered from a cup from around 5-6 months.

- Either in a free flowing lidded cup or an open cup
 - Avoid lidded cups with valves as these are often difficult for infants to get liquids out
 - Bottle drinking should be phased out around an infant's first birthday. This is to help prevent tooth decay known as 'bottle caries' in the toddler years
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Milk feeds

Breast milk or formula milk continue to be an important part of an infant's nutritional intake, however, these feeds should naturally decrease as the quantity of solid food increases.

Formula intake should be about 500-600ml per day between 6 months to 1 year (DH 1994).



Learning about food through play

- Infants should be able to see and to explore their food at mealtimes - sitting them in a highchair will enable them to do this
 - Finger foods should be offered at each meal
 - Infants should be allowed to touch and play with soft or liquid foods in their bowl or plate
 - Feeding infants can be messy, however this is an important part of the learning process
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Developing self feeding skills

Self feeding should be encouraged from the beginning by offering finger foods and allowing infants to have their own spoon even when they are being fed by a parent or carer.

Infants who are allowed to become involved in learning to self feed will feel more engaged in the feeding process and will be less likely to want to end the meal because they have become bored.

Some infants need help with feeding as they may not be able to feed themselves adequate quantities of food fast enough to satisfy their hunger.

Understanding when an infant has had enough

Infants can regulate their calorie needs if allowed to.

Parents and carers should be aware of the following signals that their infant is telling them s/he has had enough:

- Keeps his mouth shut when food is offered
- Turns his head away from the food being offered
- Puts his hand in front of his mouth
- Pushes away a spoon, bowl or plate containing food
- Holds food in his mouth and refuses to swallow it

Parents should be dissuaded from encouraging infants to eat more than they want and force feeding should never occur.

Learning about myself through mealtimes

All the above will help to provide a nurturing environment crucial for a baby's developing sense of autonomy and emotional development. Sensitive and 'tuned in' parenting will also help an infant to distinguish their bodily sensations (I'm hungry, I'm full) from their emotional feelings (I'm angry, I'm frustrated). If the adult has in the past, or is currently experiencing an eating disorder themselves, then they may find this difficult to do, and may benefit from extra support from those around them.



Food safety

- **Hand washing** should always be the first step in preparing food or drinks
- **Bottles and teats** for formula milks should always be sterilised
- **Plates, bowls, drinking cups and cutlery** do not need to be sterilised but should be scrupulously cleaned
- **Freshly cooked food** can be stored for up to 24 hours in the fridge
- **Food for infants should be heated until piping hot right through and then cooled before feeding.** Food should not be reheated more than once
- **Frozen food** should be thawed in the fridge. Thawed frozen food should not be refrozen
- **Eggs, meat, fish and shellfish** should all be well cooked right through
- **Shark, sword fish and marlin** should not be given because of their high mercury content
- **Honey** should not be given until the age of 1 year as very occasionally it may contain spores of *Clostridium botulinum*. After 1 year of age the gut is mature enough to prevent the botulinum bacteria from multiplying
- **Unpasteurised soft cheeses** should not be given until after 1 year as they may cause food poisoning
- **Liver**, if offered, should be limited to one small serving per week because of the high levels of vitamin A



Foods to limit

Sugar

Sugar should not be added to milk or manufactured baby foods. In home made puddings and cooked fruit a small amount may be added if necessary to reduce the tart flavour of sharp fruits.

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Salt and salty foods

Breast milk, formula milks and most foods naturally contain some sodium which infants need to grow. The Food Standards Agency recommend that infants should have no more than 1g of salt (equivalent to 400mg sodium) per day.

To avoid excess sodium:

- Salt should not be added to food for infants either during cooking or at the table
 - Don't give infants foods designed for older children and adults that have salt added such as sauces, ready meals or soups
 - Salty snack foods such as crisps should not be given to infants.
 - If giving gravy to infants offer a version made without added salt.
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Nuts

For infants of atopic families where the potential risk of nut allergy is increased, current advice is that foods containing peanuts (groundnuts) and peanut butter should be avoided until the child is 6 months of age.

Whole nuts should not be given as they could cause choking or lung inflammation if inhaled.

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Vegetarian and Vegan diets in infancy

Infants can successfully be introduced to a vegetarian diet as long as a good source of iron rich food is offered at each meal for example:

- Iron fortified breakfast cereal, oats or egg at breakfast
- Eggs/pulses/finely ground nuts along with green vegetables at lunch and dinner

Infants on a vegan diet may need support from a health professional, but advice can be found in the report:-

'Eating well for Vegetarian and Vegan under 5s' (First Steps Nutrition)

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www.firststepsnutrition.org

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Vitamin supplements

The Department of Health recommend that all infants begin a supplement containing vitamins A, C and D:

- Breast fed infants should begin from 6 months if their mother was well nourished during pregnancy. If there is any doubt about a mother's vitamin status during pregnancy then breast fed infants should begin this supplement at one month of age
- Formula fed infants should begin taking a supplement once they are drinking less than 500mls formula per day

All families of infants should be advised how to access the Healthy Start Children's vitamin drops.



Common feeding challenges in infants

Unsettled infants / Colic

Many young infants have a period during the day when they are unsettled and cry with discomfort but appear not to be hungry. This is often referred to as colic. It occurs commonly in the late afternoon and evening.

Causes of colic are unknown, but it is thought to be due to swallowing large amounts of air during feeding which then becomes trapped in the digestive tract and causes bloating and severe abdominal pain. Comforting and soothing the baby with a massage or a warm bath sometimes helps.

Healthcare professionals should:

- Ask about the infant's feeding routine and bowel movements
- Observe a feed
- If indicated correct positioning and attachment in breast fed infants
- Check that formula feeds are being made up correctly
- If bottle fed consider the size flow of the teat
- Check that infants are being winded correctly during and after the feed

Colic preparations are available in retail pharmacies but there is no scientific evidence base to support their use.

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Possetting and Gastro-oesophageal reflux

Possetting is seen in most young infants. It occurs when the stomach contents regurgitate back up into the mouth without any harmful effects. Infants with mild possetting will gain weight and thrive normally.

More severe reflux/regurgitation, resulting in distress to the infant is called gastro-oesophageal reflux disease (GORD). In this case the stomach contents come up into the oesophagus but not always into the mouth. This causes discomfort or pain to the infant but the carer will not necessarily be aware that it is happening.



GORD usually resolves with time but may continue throughout infancy and beyond in some children. Management by the primary health care team (GPs and Health Visitors) is usually sufficient and should include reassurance to the parent.

- In breastfed babies better positioning and attachment may help improve GORD. Observe a feed to check the feeding technique. If necessary refer to a breastfeeding adviser
- If the infant is breastfed encourage the mother to continue
- Check that formula fed infants are not being overfed with large volumes or over concentrated feeds
- For a formula fed infant consider use of a thickened feed. This is when a thickener is added to the normal formula just before feeding
- A medical practitioner may sometimes prescribe anti-reflux medications such as Gaviscon. This should only be under medical guidance.

If the problems persist, despite having taken the above measures, or if the infant has faltering growth it is recommended that the Health Visitor or GP should make a referral to the Paediatrician.

Gastroenteritis and diarrhoea

Acute gastroenteritis is an infectious disease of the alimentary tract, producing damage to the mucosa, either structural or functional and of variable extent and severity. The main aim in managing gastroenteritis in infants is the correction of dehydration and maintenance of hydration and electrolyte balance. Infants of less than 6 months are particularly vulnerable to gastroenteritis and dehydration and may require hospital admission.

Gastroenteritis is uncommon in infants who are exclusively breast fed. In the rare event, it is important that breastfeeding is continued, as discontinuation of breastfeeding is a major risk factor for the development of dehydration. Severe cases may require the addition of oral rehydration fluids.

Infant formula feeds **may** be stopped for a short time (6–24 hours) **but only under the guidance of a medical practitioner** and an oral rehydration solution (e.g. Dioralyte or Rehydrat) given to replace lost fluids (i.e. after vomiting or diarrhoea) to meet the infant's fluid requirement. Formula feeds should then be re-commenced at full strength and not diluted. If infants have started solids, it may also be necessary to discontinue these for a similarly short period of time.

Diarrhoea or loose stools can occur in infants who are unwell for example when they are teething. Continued diarrhoea (>7days) after acute gastroenteritis may be associated with a temporary intolerance to lactose in some infants. Breastfeeding should continue but formula fed infants could be changed to a lactose free formula if advised to do so. The lactose free formula should be used for short duration only (only 2 weeks) and then the infant should be reassessed by the GP or Health Visitor

Advice on excluding foods containing milk and lactose will be needed for infants who are already being moving onto complementary foods.

This should only be undertaken under the supervision of a medical practitioner and following the advice from a dietitian.



Constipation

Constipation is defined as difficulty, delay or pain when opening bowels. In the first 3-4 months infants should pass frequent, loose, bright yellow stools, at least 2-3 times in 24hrs. From 3-4 months, stools will become less frequent. It is not unusual for an infant to go several days without a bowel movement and providing the infant is well and happy this is of no significant concern. After the introduction of solid food, stools may change in frequency and colour.

Constipation is rare in breast fed infants but if it occurs it may indicate inadequate milk intake due to poor attachment and/or positioning. A breastfeed should be observed by someone experienced in breastfeeding management to check positioning and attachment and to ensure the infant is able to access breast milk efficiently. Additional fluids other than breast milk are not recommended.

Constipation is a more frequent problem in formula fed infants. Infants changing from breastfeeding to formula feeding often develop constipation. One cause may be the calcium salts in the formula which can harden stools in some infants. Other causes may be:

- Over concentration of the infant formula
- Inadequate fluid intake, including under feeding
- Cows milk protein intolerance (however this is rare)

Management of constipation In formula fed infants

- Fluid intake: ask parents to keep a feed diary for 2-3 days. Check the volume of feed given /kg actual body weight/24 hours against recommended quantity tables (see page 47). If it is inadequate then feeds should be increased to the recommended requirement
- Check that the infant formula is being made up according to the manufacturer's instructions and not being over concentrated or under concentrated
- Casein dominant milks can be more constipating than whey dominant milks so a change from casein dominant to whey dominant formula may help
- Additional drinks of cooled boiled water should be offered to formula fed babies in hot weather
- Encourage the following complementary foods:

Fruit and vegetables, including peas, beans and pulses

Cereals including wholegrain varieties such as porridge, Weetabix and Shreddies

Milk or water with meals

Bran should not be given to infants as it may cause abdominal discomfort, bloating and diarrhoea

Over the counter treatments for constipation such as syrup of figs and milk of magnesia are dangerous to infants and should not be used. If conservative management with diet fails to resolve constipation, then the infant should be referred for further medical opinion (see Appendix 7).

Food hypersensitivity (food allergy and food intolerance)

About 2-5% of infants are sensitive to certain foods but many more parents suspect that a food is causing problems for their infant (Venter 2008).

The foods that most commonly cause problems are milk, eggs, soya, fish, wheat and peanuts. Many infants grow out of it by 12 months so it is important that the condition is monitored carefully to ensure special diets are not continued for longer than necessary.

Symptoms

Symptoms of immediate onset allergy may occur up to 2 hours after food ingestion and include skin manifestations (urticaria, itching, rash), vomiting, angioedema and anaphylaxis. Delayed onset reactions are harder to diagnose and may not manifest until hours or days after the ingestion of the offending food. Possible symptoms include eczema, chronic diarrhoea, colic / abdominal pain and faltering growth.

Diagnosis

The gold standard test is the placebo-controlled double blind challenge. In clinical practice, however, open challenges are usually performed. Food challenges are an integral part of diagnosis in order to:

- Detect a specific food which causes symptoms - a positive result confirms the need to exclude that food from the diet
- Prove that a specific food is not responsible - an absence of symptoms confirms that a restricted diet is not needed

Once diagnosed a food causing symptoms should be excluded, however this should only be carried out under the supervision of a medical practitioner.

Advice from a registered dietitian is needed to ensure the infant's milk and food intake continues to provide all the necessary nutrients for optimising growth and development.

Cows milk protein allergy

Cows milk protein allergy is an allergic reaction to the protein in cows milk. It can be serious and life threatening and these babies should be referred to a paediatrician. For breastfeeding mothers it is an allergy that requires maternal diet changes. Excluding dairy foods may necessitate supplements to ensure adequate nutrition. Mothers should be referred to a registered dietitian for advice.

Formula fed infants can usually be changed to an appropriate specialised feed available on prescription. Soya formula is not recommended for infants with cow's milk allergy or intolerance as there is a risk of cross reactivity with soya formula.

Monitoring growth

The new World Health Organisation (WHO) 0-4 years growth charts were introduced in England for all new births from May 2009. The charts, which have been developed for the Department of Health by the Royal College of Paediatrics and Child Health, are based on the growth of breast fed infants and will replace growth charts that were based on the growth of predominantly formula-fed babies.

When to weigh

- Babies should be weighed in the first week as part of the assessment of feeding and thereafter as needed
- Some degree of weight loss is common in the first week – **a weight loss of 10% or more needs careful assessment**
- Recovery of birth weight by 2 weeks indicates that feeding is effective and that the child is well
- Once feeding is established, babies should be weighed at around 8, 12 and 16 weeks and 1 year at the time of routine immunisations
- If there is concern weigh more often, however weights measured too close together can be misleading

When to measure length or height

Length and weight should be measured whenever there are worries about a child's weight, growth or general health, so that appropriate growth charts can be used to assess relative weight to height

What is a normal rate of weight gain and growth?

- Babies do not all grow at the same rate, so a baby's weight often does not follow a particular centile line especially in the first year. Weight is most likely to track within one centile space.
- In infancy acute illness can lead to sudden weight loss and a weight centile fall, but on recovery the child's weight usually returns to its normal centile within 2 to 3 weeks. However a sustained drop or increase through two or more weight centile spaces is unusual (fewer than 2% of infants) and should be carefully assessed by the primary care team, including measuring length/height

Training and education from the Royal College of Paediatrics and Child Health – educational materials can be downloaded from the website

www.growthcharts.rcpch.ac.uk *

* They include PowerPoint slides, video clips, notes for tutors and growth chart plotting exercises.



Faltering growth

The term “faltering growth” is applied to infants and young children who do not achieve normal or expected rates of growth. This could include:

- Falling across centiles
- Height and weight centiles markedly discrepant

Indications of faltering growth are:

- Poor and erratic weight gain or no weight gain
- Apathetic or weak crying infant
- Poor muscle tone and skin turgor
- Concentrated urine, a few times/day
- Infrequent, scanty stools

The management of faltering growth is quite different for breast and formula fed infants.

Management of faltering growth in breast fed infants

For the management please refer to the NBT guidelines or contact the Specialist Infant Feeding Midwife at Southmead hospital

Management of faltering growth in formula fed infants

Take a diet history and/or ask parents to keep a feed and food diary.

- Check frequency and volume of feeds taken
- Check that an appropriate formula is being used and that it is being made up correctly with good hygienic practices
- Check the size of the teat on the bottle is suitable
- Check the infant is not constipated
- If complementary foods are being offered check suitability

If there are no obvious dietary causes of faltering growth or the above measures do not result in improvement in weight gain, the infant should be referred to a paediatrician. (See Appendix 6).



Feeding pre-term infants

Infants born pre-term (less than 37 weeks gestation) or with a low birth weight (LBW), below 2.5kg, have special nutritional needs, which vary according to the infant's maturity and any subsequent complications.

A comprehensive review of the nutritional requirements of pre-term and LBW infants has been published (Tsang et al. 2005).

Formulas for pre-term infants

For pre-term infants requiring formula, a low birth weight version should be used if birth weight is less than 2.0kg. These formulae have a higher nutrient density than standard infant formulae

A nutrient enhanced discharge formula may be used once the infant weighs 2-2.5kg. This is available on prescription when the infant is discharged from hospital. This formula can be continued until 6 months, corrected age as advised by the dietitian or paediatrician.

Breastfeeding pre-term infants

Breastfeeding or giving the mother's own expressed breast milk (EBM) is particularly encouraged because of the growth factors within it and because it reduces the risk of necrotising enterocolitis (NEC). For this reason, all mothers are encouraged to express breast milk until their infant is old enough or well enough to feed directly from the breast. Low birthweight infants may benefit from infant breast milk fortifiers to enhance growth and bone mineral density.

Vitamin supplementation for pre-term infants

Pre-term infants may require additional vitamin and iron supplements, as directed by the paediatrician or dietitian.



Introducing complementary foods to pre-term Infants

The time to begin introducing complementary foods to a pre-term infant may be a clinical decision made by the paediatrician. Pre-term babies have high nutritional needs that are unlikely to be satisfied from milk alone for the 4-6 months after their estimated date of delivery (EDD). Current recommendations are that introducing complementary foods to a pre-term infant should begin at an earlier post conception age than for term infants. It is usually between five and eight months old, the age from the pre-term infant's birth date and not from their corrected age date (King & Aloysius 2009, King 2009). As the infant's gut is being used for milk feeds from an earlier age, it matures earlier and will have adapted to cope with solid foods. The addition of complementary foods should then progress as for term babies, introducing new textures to give infants the opportunity to learn to manage them in their mouth. Pre-term babies are more likely to have feeding problems than term babies, so may need additional support from a Health Visitor.



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Growth monitoring of pre-term infants

Please refer to page 65 for guidance on growth monitoring. Key new features of the new UK-WHO growth charts:

- For preterm infants born from 32 to 36 weeks gestation, plot all measurements in the preterm section
- For infants born before 32 weeks use the separate low birth weight charts



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Further Information is available from:

Bliss

www.bliss.org.uk

British Dietetic Association

Complementary Feeding Fact Sheet

www.bda.uk.com

Department of Health

Off to Best Start Leaflet
Bottle Feeding Leaflet

www.dh.gov.uk

First Steps Nutrition Trust

www.firststepsnutrition.org

Eat Well

Eating well for a healthy pregnancy

www.nhs.uk

Food Standards Agency website

www.food.gov.uk

Healthy Start

www.healthystart.nhs.uk

Health Promotion Resource
and Information Service

Bristol.resourcesorg.co.uk

Royal College of Paediatric
and Child Health

UK – WHO Pre-term Growth Charts

www.rcpch.ac.uk/growthcharts

Start4life

<http://www.nhs.uk/start4life/Pages/healthy-pregnancy-baby-advice.aspx>

Twins and Multiple Birth Association

www.tamba.org.uk

UNICEF UK Baby Friendly Initiative

www.unicef.org.uk/babyfriendly

Section 4

Feeding Toddlers and Preschool Children

1-4 Year Olds

Toddlers and preschool children between 1 and up to their 5th birthday have high nutrient requirements relative to their size, as they are still undergoing rapid growth and development and usually very active. Good nutrition is important for children of this age:

- To ensure that they are getting a balanced varied diet that meets their nutrient requirements
- Dietary habits adopted in the early years may promote healthy eating into later childhood and adult life
- To help them continue to develop self feeding skills
- Eating together helps children develop social skills
- Developing good eating habits may prevent childhood obesity

This section covers:

- **Nutritional requirements of 1-4 year olds**
 - **Food safety**
 - **Dental health**
 - **Common feeding challenges**
-



Nutritional requirements of 1-4yr olds

Toddlers and pre-school children have high nutrient requirements relative to their size as they are still undergoing rapid growth and development and are usually very physically active.

Children 1-4 years Energy guidance

	Boys		Girls		Average 1-4 years
	1-2 years	3-4 years	1-2 years	3-4 years	
Energy (MJ)	3.7	5.35	3.45	4.95	4.36
(kcal)	883	1277	824	1182	1041
Fat g (about 35% energy)	34.3	49.7	32.0	46.0	40.5
Sat fat g (about 11% energy)	10.8	15.6	10.1	14.5	12.7
CHO g (about 50% energy)	117.7	170.3	109.9	157.6	138.8
NMES g (11% energy)	25.9	37.5	24.2	34.7	30.5
Protein g	14.5	17.1	14.5	17.1	15.8
Vitamin A ug	400	450	400	450	425
Thiamin mg	0.5	0.6	0.5	0.6	0.6
Riboflavin mg	0.6	0.7	0.6	0.7	0.7
Folate ug	70	85	70	85	80
Vitamin C mg	30	30	30	30	30
Vitamin D ug	7	7	7	7	7
Iron mg	6.9	6.5	6.9	6.5	6.7
Calcium mg	350	400	350	400	375
Zinc mg	5	5.8	5	5.8	5.4
Iodine ug	70	85	70	85	80
Sodium mg	800	1000	800	1000	900
Salt g	2	2.5	2	2.5	2.3

SACN (2011) / Nutrient requirements DH (1991) Salt requirements SACN (2003)

www.sacn.gov.uk/pdfs/sacn_dietary_reference_values_for_energy.pdf

A healthy balanced diet for 1-4yr olds is based on the 4 food groups as each group provides different key nutrients.

To achieve the nutritional requirements children should be encouraged to enjoy different foods. To achieve this they should be provided with foods from each of the four food groups every day:

- Bread, rice, potatoes, pasta and other starchy foods
- Fruit and vegetables
- Milk and dairy foods
- Meat, fish, eggs, beans and other non-dairy sources of protein

By combining the food groups each day the correct balance of nutrients will be provided. A supplement containing vitamins A, C and D is still recommended for all children aged 1-4 years as a nutritional safety net and to ensure sufficient vitamin D intake which may not be provided by food intake and sun exposure alone (see page 76).

Food groups	Food included	Main nutrients	Recommended servings
Bread, rice, potatoes, pasta and other starchy foods	Bread, chapatti, breakfast cereals, rice, couscous, pasta, millet, potatoes, yam, and foods made with flour such as pizza bases, buns, pancakes	Carbohydrate B Vitamins Fibre Iron Zinc Calcium	Serve at each meal and some snacks
Fruit and vegetables	Fresh, frozen, tinned and dried fruits and vegetables	Vitamin C Beta-Carotene which is a form of Vitamin A Fibre Zinc	Serve at each meal and some snacks
Milk and dairy	Cows milk, goats milk, yoghurts, cheese, calcium enriched unsweetened soy milks and desserts	Calcium Phosphorus Protein Iodine Riboflavin (B2)	3 servings each day
Meat, fish, eggs, beans and other non-dairy sources of protein	Meat, fish, eggs, ground nuts, pulses. (e.g. lentils, dhal, chick peas, hummus, kidney beans), textured vegetable protein, quorn and tofu.	Iron Protein Zinc Magnesium B Vitamins Vitamin A Omega 3 & Omega 6 fats Omega 3 long chain fatty acids: EPA and DHA from oily fish	2 servings a day

The wider the variety of foods eaten within each food group the better the balance of nutrients provided.



Bread, rice, potatoes, pasta and other starchy foods

- This group provides a good source of energy, carbohydrates, fibre and B vitamins
 - Starchy foods should make up about a third of the diet
 - Wholegrain varieties of bread and cereals such as rice and pasta provide fibre and can be gradually introduced into the diets of children from the age of 2 years
 - Aim for a variety of wholegrain and white breads and cereals across meals and snacks each week
 - Too much fibre in younger children can be very filling and can also bind with certain minerals thereby reducing their absorption
-

Fruit and vegetables

- Fruit and vegetables are important sources of many nutrients including vitamin A and C, zinc, iron and fibre
 - Ensure a variety of fruits and vegetables are offered at every meal and with snacks
 - Fruit and vegetables can be fresh, frozen or tinned. If using tinned vegetables check that they do not have added salt and only use fruit tinned in natural juice
 - Dried fruit and fruit juice (100% unsweetened diluted 1 part juice to 1 part water) can be included but only at meal times as they contain sugars that damage teeth
-

Milk and dairy foods

- Foods from this group are a good source of energy, calcium and vitamin A
 - Full fat cows milk should be given until a child is at least 2 years old and semi-skimmed milk can be introduced from this age. Skimmed milk is not suitable as the main drink for children under 5 years of age as it does not provide enough energy and contains very little vitamin A
 - Drinks of milk should be offered in cups, feeding bottles should be discouraged
 - Milk or dairy foods should be provided at 2-3 meals and snacks each day
 - Children should have three servings per day of these foods. A serving for 1-5 year olds is:
 - Cup of milk (120ml/3-4 oz)
 - Cheese in a sandwich or sauce, or on pasta or pizza
 - A small pot yoghurt (about 120g)
-

Portion size

There has been a general increase in portion size over time which has contributed to babies and young children gaining excessive weight. Information regarding suitable portion sizes for 1-4 year olds can be sourced from

www.firststepsnutrition.org

Meat, fish, eggs, beans and other non-dairy sources of protein

- Foods from this group provide protein, iron and zinc
- This food group is the richest source of iron
- If children do not eat meat it is important they receive two or three portions per day of an alternative source of protein, for example, beans chickpeas, eggs, ground nuts, tofu, textured vegetable protein, quorn, lentils and dhal. Processed meat alternatives should not be offered more than once per week
- Oily fish provide long chain omega 3 fatty acids, vitamin D and A however, should not be served more than twice a week as oily fish can contain dioxins and polychlorinated biphenyls
- Shark, swordfish and marlin should be avoided because of their mercury content
- Ground and chopped nuts and nut butters can be offered but whole nuts should not be given as they can cause choking or severe lung inflammation if inhaled



Foods and drinks high in fat and/or sugar

- These energy dense foods should be limited to small amounts
- Puddings that are made with cereals, milk and fruit can be included in a healthy balanced diet for young children but these should only be served with meals and not as snacks
- Fats and oils are needed in cooking and can be used as spreads on bread
- Use fruit and fruit purée to sweeten dishes

Salt and sodium

The Food Standards Agency recommends that salt and sodium should be limited to less than:

- **2g of salt (0.8g sodium) per day for 1-3 year olds**
- **3g of salt (1.2g sodium) per day for 4-6 year olds**

Note: Salt and sodium are not the same. If a food label only provides an amount for sodium, to convert to salt, multiply the amount of sodium by 2.5, for example 0.4g sodium = 1g salt.

This is hard to estimate as many foods naturally contain some sodium. But in practice it means:

- Salt should not be added to food at the table
- Herbs and spices rather than extra salt can be used to flavour food
- If using tinned foods choose ones without added salt, limit the amount of processed foods offered as these usually have a higher salt content than home cooked foods
- Limit salty snack foods such as crisps and corn snacks, for as well as being high in salt, they are low in key nutrients

Vegetarian and vegan diets

Vegetarianism can be divided into three main groups:

- Lacto-ovo vegetarian - red meat, offal, poultry and fish are excluded but milk and eggs are consumed
- Lacto-vegetarian - red meat, offal, poultry, fish and eggs are excluded but milk is consumed
- Vegans - all animal products and products resulting from animal husbandry including eggs, honey and animal milk are excluded

Vegetarian diets

The main nutrients that might be in lower supply for 1-4 year olds that do not eat meat or fish are iron and zinc. Iron from non-animal foods is less well absorbed than from meat and fish but both iron and zinc should be present in sufficient quantities if a good mixed diet is eaten, containing a range of cereal foods, fruits and vegetables, eggs, pulses, nuts and seeds.

Nutritional requirements for growth and development can be achieved by:

- Offering 3 servings per day of vegetarian protein sources such as eggs, nuts and pulses
- A food high in vitamin C should be offered at each meal as this may increase the iron uptake from the plant based foods
- Choosing breakfast cereals with added iron
- Increasing Omega 3 fats from plant sources for those excluding fish by using:
 - Rapeseed oil for cooking
 - Walnut, soya or olive oil for dressings
 - Chopped walnuts in place of other chopped nuts

Vegan diets

Care needs to be taken when considering giving young children a vegan diet as it may not provide all the energy and nutrients required in adequate amounts. This is because young children may not be able to eat enough vegan food, which can be bulky and high in fibre, to obtain all the energy (calories) and nutrients they need for growth and development.

A child on a vegan diet should be referred to a Dietitian for assessment to ensure that the foods consumed by the child contain all the essential nutrients.

Unsweetened calcium enriched soya milk, and yoghurt can be used as substitutes for dairy foods. However, an extra supplement may be needed for the key 'at risk' nutrients which are iron, zinc, iodine, calcium and vitamin B12.

Vegan mothers who are breastfeeding should also have their diets assessed as they may need a supplement of calcium, iodine, vitamins D and B12. For further information:

www.firststepsnutrition.org

Diets more restricted than a vegan diet e.g. Zen Macrobiotic, Fruitarian and raw food diets, **are not recommended** for young children as they cannot provide all the energy and nutrients for growth and development.



Vitamin supplements

The Department of Health recommend that all young children aged 1-4 years are given a vitamin supplement containing vitamins A, C & D as they have high requirements for these vitamins and some children may be unable to access enough of these vitamins from the diet alone.

The Healthy Start Scheme replaced the Welfare Food Scheme in November 2006. Children whose families are receiving the Healthy Start food vouchers can use them to purchase cows milk, fresh and frozen plain fruit and vegetables and will also receive a voucher for free vitamin drops containing A, C and D.

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www.healthystart.nhs.uk
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HEALTHY START



Drinks

Drinks should be offered in open cups or if using a lidded cup it should be a free-flowing one. Children should be offered 6-8 drinks (of 100-120mls) per day to provide adequate fluid. They may need more drinks in very hot weather or after extra physical activity as young children can dehydrate quite quickly.

Water and milk are the safest drinks to offer between meals as they do not cause tooth erosion or increase the risk of dental decay. Up to 3 drinks per day can be milk but this should not be exceeded

Pure fruit juices do provide nutrients from fruit but they contain large amounts of the fruit sugar, fructose, and they are acidic. Both this sugar and acid can cause dental decay. To lower the acid and sugar content fruit juices should be given diluted (1 part juice to 1 part water) and only be given at meal times to lessen the risk of dental decay.

Avoid all soft drinks such as squashes, fizzy drinks, energy drinks, and flavoured waters regardless of whether they say 'sugar free', 'no added sugar' or 'reduced sugar'. These can contribute to tooth damage and provide little nutritional value.

Avoid tea, coffee, cola or any other drinks with added caffeine they are not recommended for young children as caffeine is a stimulant. Tea and coffee contain tannins and can interfere with iron.



Mealtime routines

With their small stomachs but high energy and nutrient needs, toddlers should be offered meals and 2-3 nutritious snacks per day. Advise parents to establish a daily routine with meals and snacks at regular times, evenly spaced throughout the day, around any daytime sleeps.

- Mealtimes should be a happy social occasion
- Where possible parents and or carers should eat with children
- Children should be sitting comfortably and utensils should be appropriate to the child's age
- If the family sit at a table to eat, the chair and table should be at the right height for children to eat
- Allow plenty of time for the meal, but ensure it is not prolonged beyond about 30 minutes
- Food (especially sweets) should not be used as bribes or treats and food should never be withheld as punishment
- Encourage self-feeding as much as possible. Toddlers up to about 3 may still need help to eat
- Accept mess as a normal part of the feeding process



Food Safety

Choking

Children under 36 months are more at risk from choking than older children, however, children above this age can also be at risk. As children get older, they put less non-edible items into their mouths but food risks are present at any age.

To minimise the risk:

- Advise parents that children should not run around or play whilst eating, and that all mealtimes are supervised. Young children should be seated and in a calm atmosphere when eating
- Advise that foods are cut up into small lengths rather than round pieces grapes and cherry tomatoes should be cut into quarters



Specific foods and ingredients

The Food Standards Agency currently advise that the following colours and preservatives should be avoided as they may affect children's behaviour:

Colours:

Tartrazine	E102
Ponceau 4R	E124
Sunset yellow	E110
Carmoisine	E122
Quinoline yellow	E104
Allura red	E129

Preservative:

Sodium benzoate	E211
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The foods that present themselves time and time again in choking incidents are:

- Sweets
- Popcorn
- Grapes and cherries
- Hard fruit
- Hard vegetables – especially peas, celery, carrots
- Hot dogs / sausages
- Burgers
- Chunks of cheese
- Meatballs
- Peanuts and large nuts and seeds (crunchy peanut butter also can cause a risk)

Dental Health

Dental caries are common in under-fives and are mainly due to poor dental health care in the home. The National Diet and Nutrition Survey (Hinds and Gregory 1995) found that 30% of 3½ - 4 ½ year olds had some evidence of dental decay. Oral health in South Gloucestershire is now better than the national average for 5 year olds, however, marked inequalities are still apparent in the distribution of children with decayed, filled or absent teeth. (See the risk factors below).

- Whose teeth brushing began at a later age
- Whose teeth were brushed less frequently than twice a day
- Who always brushed their own teeth compared to those who had an adult helping them
- Who used a bottle, dinky feeder or dummy
- Who more frequently ate sugar and confectionery and drank carbonated drinks
- Who had a drink containing non-milk sugars in bed before going to sleep or in the night

Sugar and acid in food and drinks cause dental decay. Limiting the quantity and frequent consumption of these products can reduce the risk of decay. Erosion is the wearing away of the tooth enamel, it is caused by acid produced by bacteria in plaque. Sweet or acidic food and drink, for example sweetened drinks, squashes, fruit juices or sweet foods given up to an hour before bedtime or during the night are very harmful to teeth.

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To reduce the risk of dental decay

- Limit the consumption of food and drink containing sugar and/or acid to meal times
- Water and milk are the only safe drinks to give between meals and should be given in an open or lidded beaker
- Saliva has a protective effect on teeth but saliva production reduces during sleep. Hence sweet or acidic drinks given at bedtime are very harmful. Most harmful are sweet and acidic drinks given in a feeding bottle.

A child should never be left alone sucking on a bottle

- If any confectionery or chocolate is included it should only be offered at the end of a meal and not be given between meals

Medicines

Children who require frequent and multiple medications are particularly at risk of dental decay and associated dental treatment. Effective prevention of dental disease should therefore be a priority. Sugar free medicines should be used where possible.

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Brushing teeth

Brushing teeth reduces the plaque coating on teeth that contains the bacteria that converts sugar into acid. Brushing should start either at the introduction of solid foods around six months or sooner, as the first tooth appears to break through. Cleaning teeth last thing at night and at one other time in the day should be encouraged and supervised by an adult until the child is at least 7 years old.

Children under the age of 3 years

- It is recommended to use adult toothpaste from the start
- Use a toothpaste containing no less than 1000ppm fluoride
- Apply a smear of paste (a thin film covering no less than three-quarters of the brush)
- Once brushing is completed wipe away the froth with a cloth until spitting can be encouraged
- Do not rinse
- Never allow toothpaste to be eaten or licked from the tube
- For maximum control of caries a toothpaste containing 1,350–1,500ppm fluoride can be used, but the advice above must be followed

Children over the age of 3 years

- Use a toothpaste containing no less than 1000ppm fluoride
- Apply a pea-size amount to the brush (a blob covering 3 tufts of filaments)
- Once brushing is completed spit out excess froth and paste
- Do not rinse
- Never allow toothpaste to be eaten or licked from the tube
- For maximum control of caries a toothpaste containing 1,350–1,500ppm fluoride can be used, but the advice above must be followed

Registering with a dentist

Please be aware that since April 2006 you are only actually registered with a dentist while you are undergoing a course of treatment. All patients who require dental treatment and do not have a regular dentist (in a current course of treatment) should contact NHS 111 or NHS Choices for the South Gloucestershire area.

NHS 111 and Choices have information on practices that are accepting new NHS Patients.

All infants and young children should be registered with a dentist and have regular checkups

To find a dentist in South Gloucestershire contact:

- **NHS 111 – dial 111**
- **www.nhs.uk**



Iron deficiency anaemia

Iron deficiency anaemia is a common nutritional problem of early childhood (Gregory 1995). It is not unique to any population although its incidence tends to be higher in populations where prolonged milk feeding may be culturally normal.

Children 1-4 years old are at high risk of iron deficiency anaemia if they:

- Were given cows milk as their main milk drink before 12 months of age
- Consume excessive amounts of cows milk - frequently from a bottle (an excess is more than 600mls or 1 pint per day after 1 year of age)
- Eat an unbalanced diet with excess low nutrient foods too little good dietary sources of iron such as meat, fortified cereals and vegetables

Symptoms of iron deficiency include:

- Poor appetite
- Lethargy
- Poor weight gain
- Developmental delay
- Frequent infections

Iron deficiency is diagnosed from a blood test.

The WHO definition of iron deficiency anaemia is a haemoglobin of $<11.0\text{g/dl}$

Preventing iron deficiency

Good dietary sources of iron should be included and introduced into the diet during the early stages of introducing complementary foods. Food containing haem iron that is easily absorbed are red meat and oily fish. They are the richest source of iron.

A food high in vitamin C should be offered at each meal, this will increase the iron uptake from the plant based foods. Alternatively a drink rich in vitamin C such as diluted pure fruit juice (1 part juice to 1 part water) could be provided with meals.

Dairy products such as milk, cheese and yoghurt limited to 3 servings per day.

Tea should be avoided as it contains tannin, which decreases the absorption of iron from food.

In some circumstances it may be necessary for a medical practitioner to prescribe an iron supplement.



Obesity

Obesity in 1-4 year olds is becoming increasingly prevalent. The National Child Measurement Programme in South Gloucestershire for 2009/10 revealed that of 4-5 year olds measured:

- 14.2% were overweight
- 8.7% were obese

In most cases the cause of the obesity will be multi-factorial and a single solution will not suit every family.

Causes of obesity in under fives

The genes, ethnic group and environment of a child all contribute to their risk of obesity. However for most under fives poor eating patterns and low activity levels are the main reasons for being overweight. If the food energy (calories) eaten are in excess of the energy expended for physical activity, growth and development, then the excess energy is stored as body fat (adipose tissue).

Medical causes are very rare and include:

- Endocrine disorders often signalled by short stature such as hypothyroidism, Cushing's syndrome, growth hormone deficiency and leptin deficiency
 - Chromosomal disorders Such as Prader-Willi syndrome
-

Risk factors for developing obesity (Reilly et al. 2005)

- Parental obesity of one or both parents
 - High birth weight and/or rapid weight gain in the first year
 - Sedentary behaviour:
 - more than eight hours
 - watching TV per week at 3 years
 - Less than ten hours sleep per day at three years
-



Preventing and treating obesity in under fives in South Gloucestershire

South Gloucestershire Council and partners are currently reviewing South Gloucestershire's Healthy Weight strategy. The strategy will outline interventions to prevent and tackle overweight and obesity that are based on the best available evidence in line with the NICE clinical guidance (2006), 'Obesity: The prevention, identification, assessment and management of overweight and obesity in adults and children'.

The strategy will propose that a childhood healthy weight pathway is developed to ensure a single all-encompassing pathway reflecting the provision of services that are based on patient need and evidence based practice (See Appendix 5).

Health professionals and early years settings

could offer a range of interactive parental education sessions to prevent obesity such as:

- Interactive cooking activities
- Videos and group discussions on practical issues such as healthy eating, meal planning and shopping for food and drink
- Encourage active play by:
 - Giving ideas for family activities involving physical activity
 - Promoting local facilities for active play
 - Overcoming any safety concerns that limit physical activity of young children
 - Encouraging more walking instead of using the car or pushchair

Obese under fives do not need to lose weight but the family lifestyle will need to change so that weight gain slows down. Professionals need an empathic and non-judgemental approach to empowering families and carers to make lifestyle changes. This may involve support for parents by enhancing their parenting skills.

The Government's **Change4Life** campaign aims to get families eating well, moving more and hence living longer. **Start4life** is a sub-brand for the campaign aimed at families with children under 2 years. Information on the campaigns can be found:

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www.nhs.uk/change4life

<http://www.nhs.uk/start4life/Pages/healthy-pregnancy-baby-advice.aspx>
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Healthy family lifestyles are the key to success

Encourage physical activity

Toddlers should have opportunities and be encouraged to take part in active play every day to promote development of co-ordination.

Most under fives do not need encouragement to play and will enjoy active play. However many 3-5 year old children may be moderately or vigorously active for only 20 to 25 minutes per day (BHF 2004).

Opportunities for free active play are available at certain play spaces for children. For more information see:

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www.goplacestoplay.org.uk
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Encourage healthy eating

Encourage a balanced diet including foods from all the food groups:

- Bread, rice, potatoes, pasta and other starchy foods
- Fruit and vegetables
- Milk and dairy foods
- Meat, fish, eggs, beans and other non-dairy sources of protein

Changing eating habits is often difficult but particular support is needed for families who:

- Have limited knowledge of healthy eating
 - Do not have the cooking skills necessary to prepare simple home-cooked food and instead rely on convenience foods which are usually energy dense and high in fat, sugar and salt
 - Do not have set mealtimes and consequently frequent snacking forms part of their eating pattern
-

Limit sedentary behaviour

Many toddlers spend a lot of time watching a TV/DVD/video. The American Academy of Paediatrics recommends no more than two hours per day of sedentary behaviour such as TV viewing. Parents may need help exploring activities that can be substituted for watching TV or DVDs.

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Encourage 12 hours sleep in children under five

Under fives normally sleep about 12 hours in each day and this is important for growth.

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Fussy eating and food neophobia

Both fussy eating and food neophobia (fear of new foods) are considered normal development stages in young children. Evidence shows that fussy eating affects about 10-20% of children under five. Severe selective eating is rare and generally has its roots in early feeding difficulties or significant health problems. Neophobia typically emerges in the latter half of the second year of life in children and is thought to be an innate predisposition (Cooke et al. 2007).

Causes of fussy eating

Giving frequent drinks of milk or juice: Many young children prefer drinking to eating and readily fill themselves up with drinks (Houlihan and Rolls 1995, Smith and Lifshitz 1994). Useful advice is that drinks should be limited to water in between meals. Cups should replace any bottles still being given as this will help to reduce fluid intake.

Frequent snacking: Some children end up eating most of their food between meals and the snack food often tends to be high in fat, sugar and salt. There is often little or no incentive for the toddler to eat an appropriate meal if they are allowed to fill up on confectionary, biscuits and crisps. Less frequent snacking and more appropriate snacks such as fruit should be suggested.

Snacks being given when a meal is refused: Children may prefer snack foods and refuse meals in order to be given snacks instead.

Coercing children to eat more and/or extending mealtimes when the child has indicated they have had enough to eat.

The situation can sometimes be exacerbated by parents becoming very anxious at mealtimes.



Emotional and psychological aspects of toddlers eating behaviour

During toddlerhood, the success of a feeding relationship depends on the toddler's still developing ability to regulate her/himself and a receptive parent or carer. The style of this interpersonal relationship during feeding will be influenced by the individual characteristics of both the infant and the caregiver, which will reflect the quality and style of other parts of their relationship.

Feeding difficulties in toddlerhood may suggest conflict within the parent-infant relationship. Is the parent overly intrusive towards the infant? Or are they unavailable and withdrawn? The caregivers own relationship with food is important to know – what does a nurturing, feeding, giving relationship feel like to the parent?

Although the parent or carer may present the toddler as having a feeding problem, it is important to remember that the real difficulty may lie elsewhere within the relationship. Food and mealtimes may be one way for the toddler to show their distress.

If support and advice as per these guidelines has not helped to resolve the problem, then please discuss with the Primary Infant Mental Health Specialist at CAMHS, (Child and Adolescent Mental Health Service) (see Appendix 3).



Simple strategies for management of fussy eating and neophobia

Although, fussy eating and neophobia are thought by some to be behaviourally distinct, they can both be helped using similar techniques. A consistent approach is essential and all those involved in the care of the child, including relatives and child carers need to co-operate with any measures agreed.

- Offer small well-spaced meals and snacks
- Parents and/or carers should eat with children where possible
- Regular and repeated opportunities to taste new foods results in children in accepting foods, 10-15 tastings may be required
- Do not allow mealtimes to be too long 20-30 minutes is about right
- Give lots of praise, even if the smallest quantity of food is eaten
- Remove uneaten food without comment at the end of a meal
- Do not discuss eating and food with others in front of the child
- Do not coax or force a child to eat
- Do not use food as a reward
- Keep calm
- Preschool children's eating habits can improve once they begin eating with other children on starting nursery or school



Feeding clinic

There is a Feeding Disorders Clinic, at Patchway Clinic. This monthly out-patient clinic is run by Doctor Schulte who is based at Westgate House.

Tel: 0117 323 5355

Referrals are taken for children who have:

- Feeding difficulties associated with physical disabilities
- Chronic food refusal with or without faltering growth
- Chronic severe behaviour problems associated with feeding
- Faltering Growth associated with organic factors where feeding has become aversive

Children can be referred by a Paediatrician, GP, Health Visitor, Speech and Language Therapist or Dietitian however they should be under the care of a Paediatrician or having been seen by a Paediatrician (see Appendix 4).

See Tiny Tastes resources at:

www.weightconcern.org.uk/node/302

Faltering growth

This is assessed by plotting weights and heights on growth charts.

In 2002 the Children's Society defined faltering growth as:

Faltering growth	
Weight faltering	Weight falling through centile spaces, low weight for height or no catch-up from a low birth weight
Growth faltering	Crossing down through length/height centile(s) as well as weight. A low height centile or a height less than expected from parental heights

Causes of faltering growth are:

- Malnutrition through poor eating
- Diseases involving malabsorption or decreased appetite
- Hormonal syndromes e.g. Hypothyroidism, Turner syndrome, Growth hormone insufficiency
- Physical or emotional neglect

Most faltering growth in 1-4 year olds is due to poor eating. Only 5% is due to disease or hormonal disorders. It is estimated that a further 5% is due to neglect and will need the support of those involved in child protection.

When to refer

Referral to a Paediatrician should be made if weight or height is noted, for the first time, to be below the 0.4th centile.

A referral should be considered if:

- Weight or height is below the 2nd centile
- Weight or height falls through 2 centile spaces

Dietary treatment for growth faltering will involve increasing calorie intake and this is best achieved by increasing the calorie content of foods and meals that are eaten. This will require appropriate medical and dietetic support (see Appendix 6).



Gastroenteritis and toddler diarrhoea

Toddler diarrhoea may occur in children who are otherwise healthy and growing well. The condition is thought to be due to a degree of immaturity of gut function and often improves spontaneously at around three to four years of age. Frequent loose stools containing recognisable food matter (peas, carrots, sweetcorn) may be passed up to eight times a day.

A dietary cause can be the consumption of large quantities of some squashes and fruit juices because they contain large quantities of non-absorbable monosaccharides and oligosaccharides.

Dietary advice should be a healthy balanced diet with a limit on squash and fruit juice intake. Continued diarrhoea (>7 days) after acute gastroenteritis may be associated with a temporary intolerance to lactose (Davidson et al. 1984). This might require the exclusion of dairy products and other lactose containing foods for a few weeks. Lactose free milks such as Lactofree or a calcium fortified soya milk can be used as a direct substitute for cows milk.

Constipation

Constipation in children is often a complex problem. It can be associated with formula feeding (see page 63) or begin at the time of introducing complementary foods and again at around two years of age in relation to potty training. It can be a distressing problem for the child and the family.

Symptoms include infrequent defecation, pain and distress and refusal to defecate. Causes include insufficient intake of dietary fibre and fluid, emotional disturbances, possible childhood infection or a change in routine (Burnett and Wilkins, 2002) (see Appendix 7).

Dietary changes to suggest

- Encourage foods with a higher fibre content e.g. wholegrain breakfast cereals, wholemeal bread, fruit, vegetables, beans, pulses and lentils
- Offer 6-8 drinks per day of about 120mls /4ozs each. More may be required in hot weather and after physical activity
- In some circumstances it may be necessary for a medical practitioner to prescribe medication

Unprocessed bran should not be given to young children as it can cause bloating and interferes with the absorption of micro nutrients such as iron, calcium and zinc.



Food hypersensitivity: food allergy and food intolerance

This affects 2-4% of children 1-3 years old and most grow out of it by about 3 years of age (Zuberier et al. 2004, Venter et al. 2008). Food hypersensitivity is the umbrella term for food allergy and food intolerance which are different (Johannsson 2004).

Food allergy

The term food allergy is used when the immune system is triggered and treatment is to exclude the food causing the problem. However this should only be undertaken under the guidance of a medical practitioner and dietitian. It is important to monitor the condition so that foods are not excluded for longer than is necessary.

Food intolerance (or non-allergic food hypersensitivity)

The symptoms usually appear a few hours or even days after eating the food and they are rarely life-threatening. Virtually any food can cause an intolerance, although in practice this does not occur. Foods which commonly cause intolerance include milk, chocolate, citrus fruits, fruits and vegetables, foods containing monosodium glutamate, cheese, especially if matured, fermented foods such as blue cheese, sauerkraut, fermented soya products, yeast extracts, fish, especially if pickled, and microbial contaminated foods.



Diagnosis

There is no simple diagnostic test for food allergy or food intolerance. The gold standard test is the placebo-controlled double blind challenge. In clinical practice, however, open challenges are usually performed. This involves offering a food, thought to be the cause of symptoms to the child and monitoring the response to that food. Food challenges are an integral part of diagnosis in order to:

- Detect a specific food which causes symptoms. A positive result confirms the need to exclude that food from the diet
- Confirm that a specific food is not responsible. An absence of symptoms confirms that a restricted diet is not needed

Many food challenges can be carried out at home with prior medical agreement. However there are some children who require a hospital setting where immediate medical treatment is available. Nut challenges should never be tried at home. All children with food intolerance should be under the care of a Paediatrician and GP.

Additional investigations that may be helpful include RASTs (Radio-Allergosorbent Tests), skin prick tests, patch tests, endoscopy and biopsy. There is no clinical or scientific evidence to support the use of various other tests including hair analysis, kinesiology and bioresonance in the diagnosis of food intolerance.

Cultural diets

Families from different cultural and religious backgrounds may follow the dietary habits of their own country; these practices will vary not only according to religion but also region.

The following practical points may act as a guide when supporting these families:

- Find out about the families usual dietary intake and meal pattern
- Find out about any dietary restrictions they may follow
- Work within the decision making structure of the family
- Where any dietary changes are necessary make sure the advice given is practical
- Check that understanding has taken place

There may be periods of fasting though very young children should not fast. However the meals eaten at home may be different during fasting periods, such as a main meal late at night or breakfast early.

The food customs may involve what foods are eaten, how the foods are prepared, what combinations of foods are used or when particular foods are eaten. A guide to some of the differences in food choice commonly observed by those from different religious and cultural groups is shown in Appendix 2.



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Zuberbier T, Edenharter G, Woem M, Ehlers I, Reimann S, Hankte T. (2004) Prevalence of adverse reactions to food in Germany – a population study. *Allergy* 59(3):338-45

Further Information is available from:

British Dietetic Association

Weaning Fact Sheet

www.bda.uk.com

Comic Company

Resources on healthy eating and oral health

www.comiccompany.co.uk

Change4life

www.nhs.uk/change4life

Department of Health

Birth to Five Book

Delivering Better Oral Health:

An evidence-based toolkit for prevention.

September 2007

www.dh.gov.uk

First Steps Nutrition Trust

Eating well birth to five

Eating well for vegetarians and vegan under 5s

What is a child sized portion

Healthy and sustainable diets in the early years

Other ones are pregnancy/breastfeeding related and should go in that section:

Eating well for a healthy pregnancy: A practical guide to support teenagers

Eating well for a healthy pregnancy: A practical guide

Eating well for breastfeeding mothers

www.firststepsnutrition.org/

Harlow Printing

Growth charts and BMI Charts

www.healthforallchildren.com

Healthy Start

www.healthystart.nhs.uk

Health Promotion Resource and Information Service

Bristol.resourcesorg.co.uk

Professional Association for Childcare and Early Years

www.pacey.org.uk

National Daycare Nurseries Association

www.ndna.org.uk

NHS Choices

www.nhs.uk/conditions/pregnancy-and-baby/pages/services-support-for-parents.aspx

Pre-school Learning alliance

www.pre-school.org.uk

Children's Food Trust

www.schoolfoodtrust.org.uk/research/advisory-panel-on-food-and-nutrition-in-early-years

Start4life

www.nhs.uk/start4life

Section 5

Appendices & Index

Appendix 1

Components in breast milk and infant formula milks

Components		Role in breast milk	Infant formulas - suitable from birth
Protein	Whey & Casein	Main proteins in breast milk. The ratio of whey to casein is 40:60	Present in whey dominant formula in the ratio 60:40 Present in casein dominant formula in ratio 20:80
	Alpha-lactalbumin	Main component of whey protein	Added to some infant formulas
	Beta lactalbumin	Very small proportion of the whey protein	Main component of whey protein in other formula milks
	Lactoferrin	Help babies to absorb nutrients in breast milk. Lactoferrin is an iron binding protein. It binds the iron rendering it unavailable to pathogenic gut bacteria. Bacterial growth is thereby inhibited reducing the risk of gastro-intestinal infections	Not present
	Immunoglobulins (anti-infective proteins)	Remain relatively constant throughout lactation regardless of the amount of breast milk provided by the mother. This happens because the concentration increases as total volume reduces	Not present
	Taurine	An amino acid essential for the myelination of the central nervous system and brain. In newborns, bile acids are almost exclusively conjugated with taurine, which helps excretion	Present

Components		Role in breast milk	Infant formulas - suitable from birth
Fats	Total fat	Provides about 50% of the energy content of breast milk	Present at same level
	Long Chain Polyunsaturated fatty acids: DHA & AA (Docosahexanoic acid & Aricadonic Acid)	Long chain polyunsaturated fatty acids that are important in brain and retina development and in myelinization of the nervous system	Present in all except organic formulas
Carbohydrate	Lactose	The sugar in breastmilk and is about 7% by weight. Is digested to the monosaccharides galactose and glucose	Present at same level
Growth factors		These are especially high in the breast milk of mothers who give birth prematurely, e.g. epidermal growth factor is a polypeptide, which stimulates the proliferation of epidermal and epithelial tissues in the gut lining	Not present
Interferon		Anti-viral factor present in breast milk	Not present
Nucleotides		Essential precursors for DNA and RNA and are important for the function of cell membranes and the normal development of the brain. They may act as co-factors for the growth of Lactobacillus bifidus bacterium which reduce the presence of pathogens, such as Escherichia Coli, in the faecal flora	Present in some
Lysozyme		Has a role in the antibacterial activity of breastmilk and is also responsible for the development of intestinal flora	Not present
Iron		Because of Lactoferrin babies up to 6 months can get all the iron they need from breast milk	Added in higher amounts as there is only about 10% absorption from infant formula. The excess iron remaining in the gut encourages bacterial growth
Living white blood cells		Are the body's defence against infection. These are made in response to any infection that the mother is exposed to	Not present
Vitamin D		Naturally low as the main source of vitamin D is from skin synthesis when outside. It is recommended breastfeeding mothers take a supplement (see page 36)	Added in higher amounts as a supplement
Carnitine		Essential for the catabolism of long-chain fatty acids. It enables fatty acids and ketone bodies to be oxidised to provide alternative fuels to glucose. This helps prevent neonatal hypoglycaemia	Present
Prebiotics		Types of fibre that remain undigested in the gut and they promote the growth of bacteria (e.g. bifidobacteria) in the gut flora that have a positive effect on digestion and absorption	Galacto-oligosaccharides and fructosaccharides are added to some formulas

Appendix 2

Food-related customs

	Jewish	Sikh	Muslim	Hindu	Buddhist	Rastafarian
Eggs	No bloodspots	Yes	Yes	It varies	It varies	It varies
Milk/ Yoghurt	Not with meat	Yes	Yes	Yes	Yes	It varies
Cheese	Not with meat	Yes	It varies	Yes	Yes	It varies
Chicken	Kosher	It varies	Halal	It varies	No	It varies
Lamb/ Mutton	Kosher	It varies	Halal	It varies	No	It varies
Beef	Kosher	No	Halal	No	No	It varies
Pork	No	Rarely	No	Rarely	No	No
Fish	With scales, fins and back bone	It varies	It varies	With fins and scales	It varies	Yes
Shellfish	No	It varies	It varies	It varies	No	No
Butter/ Ghee	Kosher	Yes	Yes	Yes	No	It varies
Lard	No	No	No	No	No	No
Cereal Foods	Yes	Yes	Yes	Yes	Yes	Yes
Nuts/ Pulses	Yes	Yes	Yes	Yes	Yes	Yes
Fruit/ Vegetables	Yes	Yes	Yes	Yes	Yes	Yes
Fasting	Yes	Yes	Yes	Yes	Yes	Yes

Strict Hindus and Sikhs will not eat eggs, meat, fish and some fats.

Some Rastafarians are vegan.

Jains have restrictions on some vegetable foods – check with individual.

Fasting is unlikely to apply to young children

Appendix 3

The infant mental health perspective

The feeding relationship between parent/carer and infant provides an opportunity to observe and think about closeness and distance between these two people.

How the baby is held during times of feeding can reveal difficulties within the relationship. Is the baby held outwards or at an uncomfortable angle whilst feeding? Indeed, is feeding used as a time for cuddles and closeness at all? Keeping the baby distant at times of feeding may be a way for the parent to manage their own difficult feelings. It may be that intimacy is too hard and the parent has to 'shield' themselves from the demands of the baby, or the parent may have suffered a loss and wants to protect the baby from loss also and not get too close. The parent may feel devoid of any good feelings within themselves and feel they have little or no resources to give within the feeding relationship.

Eating and feeding always operates within an interpersonal relationship.

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Baby psychic development

Melanie Klein, a psychoanalyst working in the 1930s, developed an interest in the physical and emotional world of babies. Klein wrote extensively about the weaning process. She saw weaning as a process of mourning – an experience of loss and of moving onto something new. Klein used the feeding situation to understand the young infant's emotional life.

Klein proposed that newborn babies initially have a fleeting and fragile sense of self. They have difficulty distinguishing between their bodily sensations and how this makes them feel. When a baby's needs are met (both physically and emotionally) through a containing, sensitive and nurturing relationship, then a good sense of self can start to be established. These early connections are forged through the first feeding relationship.

.....

Complementary feeding

Complementary feeding typically happens at a time when a baby is developing more of a sense of him/her self and of others. Crucially, the baby starts to see and experience their mother as a separate person – who comes and goes.

If the baby has developed a good 'internal world' of their mother, this helps with this developmental adjustment. However, new found anxieties will be evoked and the infant will develop strategies to cope with this. These defences can become 'sticking points' within the infant's emotional development, and the early feeding relationship and how complementary feeding was navigated can give us a good insight into this.

Complementary feeding reflects a process of separation, and this in turn depends upon seeing the baby for who she/he is (individualization). The role of the father (or third person) can be very helpful and important here – offering a 'third space'. This helps to support, mediate and lead both mother and infant through the experience of complementary feeding.

Relationships, in a sense, can become more triangular rather than linear - broadening out from the union of the primary relationship with the mother. The baby has to experience a sense of exclusion which is inherent within the Oedipus Complex (Freud). However, if the father feels marginalised – or if there is an idealized mother-baby duo, then weaning can be difficult. Exclusive relationships can inhibit developmental growth.

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Useful considerations

Although not meant to be a checklist, the following can be helpful when observing infants and their carers (feeding or non-feeding). Think about these aspects of interactional behaviour:

- Facial and verbal expression – do they match one another and do they reflect what is happening and how each other might be feeling? Can eye contact be made and sustained?
- Positioning and bodily contact – does this seem comfortable and relaxed, or rigid and awkward?
- Affection – how is this expressed?
- Turn taking opportunities – does it feel like a shared experience?
- Choice and control within the activity – who leads? How much negotiation is there?
- Does the parent/carer appear: sensitive, or controlling, or unresponsive in their attitude?
- Does the baby/infant appear: co-operative, or difficult, or compulsive (compelled to act in a certain way to ensure a safe adult interaction), or passive?

If you are concerned about the quality of the relationship between parent/carer and infant, then please discuss with the Infant Mental Health Service at CAMHS (Child and Adolescent Mental Health Service), and refer to the Primary Infant Mental Health referral guidelines for the Under 4's.

In extreme cases you may need to consider whether there are safeguarding issues

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Appendix 3

Infant Mental Health Reading

Some helpful reading around the issue of eating/feeding and IMH:

Daws, D. 1997: 'The perils of intimacy: Closeness and distance in feeding and weaning' Journal of Child Psychotherapy Vol 23, No 2

Daws, D. 1993: 'Feeding problems and relationships difficulties: Therapeutic work with parents and infants' Journal of Child Psychotherapy Vol 19, No 2

Skuse, D & Wolke, D. 1992: 'The nature and consequence of feeding problems in infancy', in Feeding problems and eating disorders in children and adolescents, P. Cooper & A. Stein (Eds) Reading, MA, Harwood Academic.

General useful reading on importance of relationships:

Briggs, S. 1997, Growth and risk in infancy London, Jessica Kingsley

Stern, D. 1977, The first relationship: Infant and mother. Reprinted: Harvard University Press

Stern, D. 1985, The interpersonal world of the infant. New York, Reprinted Karnac Books.

Gerhardt, S 2004: Why Love Matters. How affection shapes a baby's brain. Hove, Brunner-Routledge.

Helpful introduction to IMH theory:

Salzberger-Wittenberg, I. 1970, Psycho-analytic insight and relationships: A Kleinian approach. London, Routledge & Kegan Paul

Journals:

The Infant Mental Health Journal

Zero To three.

Appendix 4

Health visitor check list for observing meals

OBSERVATION	NOTES
Are there set mealtimes?	Aim for three a day
Are there set snack times?	Aim for two to three a day (2-3 yrs), one to two (3-5 yrs). Milk and fruit juice drinks count as a snack.
Where does the child sit?	Is it comfortable and appropriate for age?
Is it with others who are also eating?	Provides opportunities for learning through copying and social interaction
Are there cues given for mealtimes?	e.g. wash hands, help to get out plates, involved in preparation
Are they hungry?	Appetite is reduced by: too many drinks, tiredness, anxiousness, unwell, sore gums, constipation, anaemia
Are there any distractions?	Television, toys and games make it hard to concentrate on eating
Is the amount offered appropriate for age and size?	See dietary checklist
Is it easy to eat?	Is it cut to the right size, can the cutlery be held easily, or is the child encouraged to use fingers
Is the child allowed to feed themselves?	Check any help given on loading food on spoons or taking food to mouths is helpful not forceful
Is there any coaxing, bribing or pleading?	To avoid this as it causes anxiety which reduces appetite
Is desert always offered regardless of how much savoury has been eaten?	Toddlers can lose their appetite for one taste, yet still have room for another. Dessert should not be a reward for finishing the first course, but seen as another opportunity for additional nutrition e.g. calcium in yoghurt or custard, vitamins and fibre in fruit. However extra dessert is not necessary!
Does the parent listen to the child's cues about when to stop? Its important that children are allowed to feel that they are full and be allowed?	Its important that children are allowed to feel that they are full and be allowed to stop. Younger children need prompting by parents – is your tummy full of this now?
How long does the whole meal last?	Ideally no longer than 20 minutes

Appendix 5

Tackling obesity through the healthy child programme: a framework for action

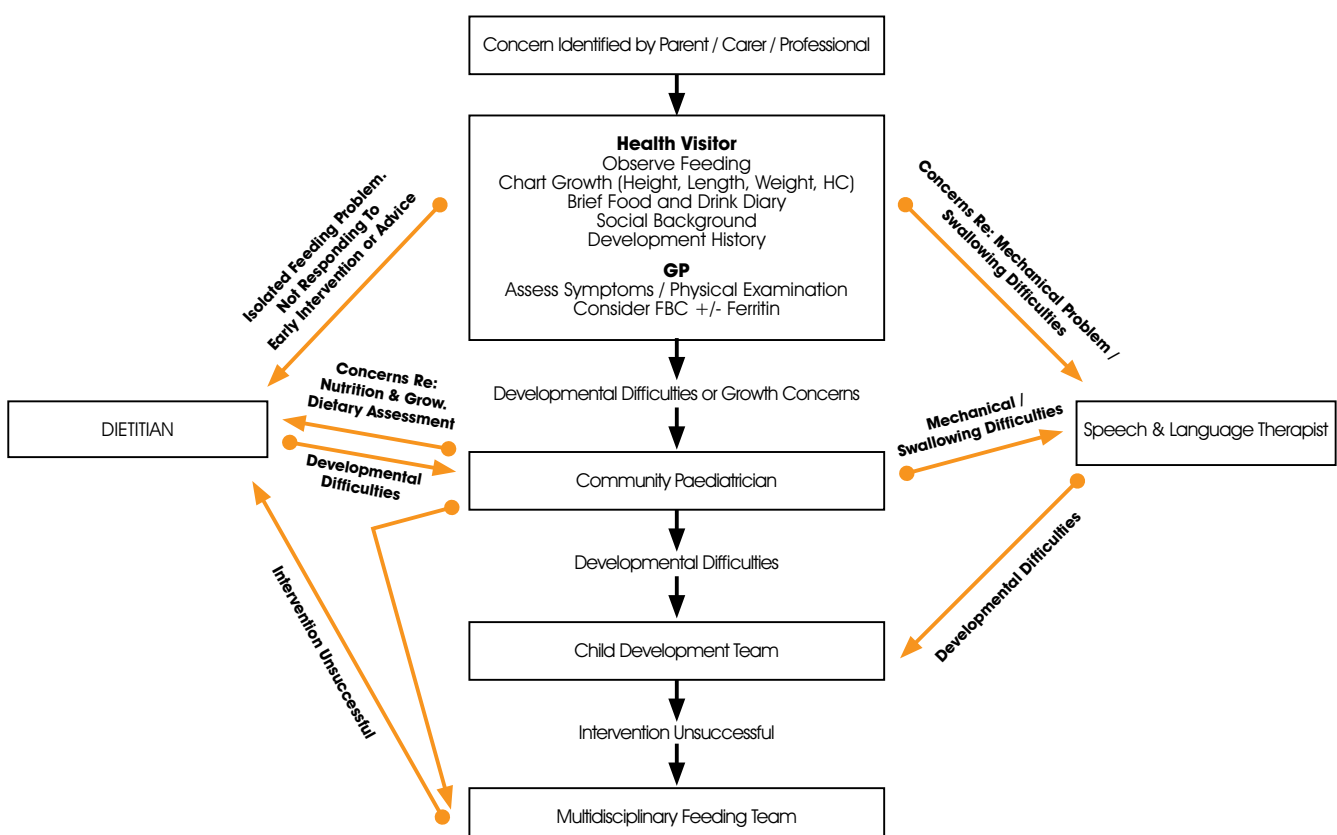
Summary of the Evidence base underpinning the themes.

Themes for action	Epidemiological or experimental evidence	Practical evidence from interventions
PARENTING		
1. Encourage parents and carers to model a healthy lifestyle	An association between parents' lifestyle and their children's has been demonstrated	An RCT of PATCH, an intervention directed at parents of obese children showed parental lifestyle change was a key component for successful obesity management
2. Help parents enhance their parenting skills and develop an authoritative approach towards their children's lifestyles	An association between parenting styles and children's obesity has been demonstrated	Two RCTs that focus on promoting authoritative parenting (PATCH and Triple P) were effective in both lifestyle change and reduction of obesity
3. Encourage parents and carers to take a whole family approach		The Cochrane systematic review for treatment of obese children concluded that interventions taking a family approach were more effective than those primarily targeting the obese child
EATING & FEEDING BEHAVIOUR		
4. Encourage responsive feeding	The association between the development of obesity in childhood and authoritarian, indulgent or neglectful feeding styles in infancy has been demonstrated	A small RCT of an intervention with a focus on responsive feeding shows some promising results. Others are being developed
5. Encourage positive family mealtimes	The association between family meals and healthy weight, diet, success at reducing weight and long term healthy eating habits is reported	Family meals are a component of some effective RCTs e.g. Triple P and PATCH
6. Find alternatives to food for comfort and to encourage good behaviour	There is good experimental evidence that using food for rewards changes children's attitudes to food	
NUTRITION		
7. Encourage exclusive breast feeding for 6 months	Meta-analysis shows an association between breastfeeding and healthy weight through to adolescence and beyond. There is a 'dose response' with protection from obesity increasing with duration and exclusive breastfeeding.	There are no breastfeeding interventions that specifically focus on obesity as an outcome
8. Introduce solid foods at 6 months	Meta-analysis shows an association between breastfeeding and healthy weight through to adolescence and beyond. There is a 'dose response' with protection from obesity increasing with duration and exclusive breastfeeding.	No interventions have specifically focused on timing of weaning as a means to prevent obesity. A few interventions under development (e.g. EMPOWER) include it as a component
9. Ensure portion sizes are appropriate	Epidemiological evidence from older children and adults that portion sizes have increased over time in parallel to the rise in obesity	
10. Increase acceptance of healthy foods – including fruits and vegetables	Educational and social marketing tactics have been shown to positively influence food preferences	A small RCT has shown it is possible to influence young children's food preferences (but did not attempt to measure effect on obesity)
11. Reduce availability and accessibility of energy dense foods in the home	Consumption of energy dense foods by primary schoolers has increased since the 1970s. Those who eat more energy dense diets are more likely to develop obesity	One RCT (PATCH) focused on foods in the home and found more successful weight reduction when healthy changes in the larder were made
12. Reduce consumption of sweet drinks and increase the consumption of water	There is an association between excess consumption of sweet drinks and childhood obesity, adult obesity, diabetes, heart disease and osteoporosis	School based RCTs have been effective at reducing sweet drink consumption. Some have had an effect on weight too

Themes for action	Epidemiological or experimental evidence	Practical evidence from interventions
PLAY, INACTIVITY AND SLEEP		
13. Encourage active play	Young children differ in the form that physical activity takes. Play brings many benefits to physical, mental and social development. Epidemiological evidence shows that children are more active outdoors	Most interventions have focused on curriculum development in day care with some impact on obesity. No preschool interventions have had a specific focus on outdoor play
14. Create safer play-space at home	An association between parenting styles and children's obesity has been demonstrated	No interventions have focused specifically on play space at home
15. Reduce sedentary behaviour and screen time	The evidence is currently under review by an expert panel. Numerous studies show an association between TV viewing and obesity although it is unclear whether this is due to sedentary aspects of behaviour or other factors.	TV focused interventions in school and clinical trials have been effective in reducing obesity. In preschool children watching time was reduced without a demonstrable effect on obesity.
16. Ensure children get a good night's sleep	There is a strong association between duration of sleep in early childhood and obesity.	No research has been carried out
PRACTITIONERS' EFFECTIVENESS		
17. Recognise babies and toddlers at particular risk of obesity	Longitudinal studies of high quality show an association between obesity in childhood and genetic, familial, gestational and environmental factors.	An intervention is under development in the UK to see if home visiting can reduce the risk of obesity for at risk babies.
18. Provide training on how to help parents make lifestyle changes	Qualitative research indicates that traditional approaches are unhelpful and that professionals lack confidence and self efficacy	An RCT of motivational interviewing and evaluation of HENRY indicate that these two approaches are promising
19. Encourage practitioners to model healthy lifestyles themselves	Surveys show that professionals' self efficacy is influenced by their weight status.	A small RCT in the USA showed clients awareness of staff engaging in healthy behaviour.

Appendix 6

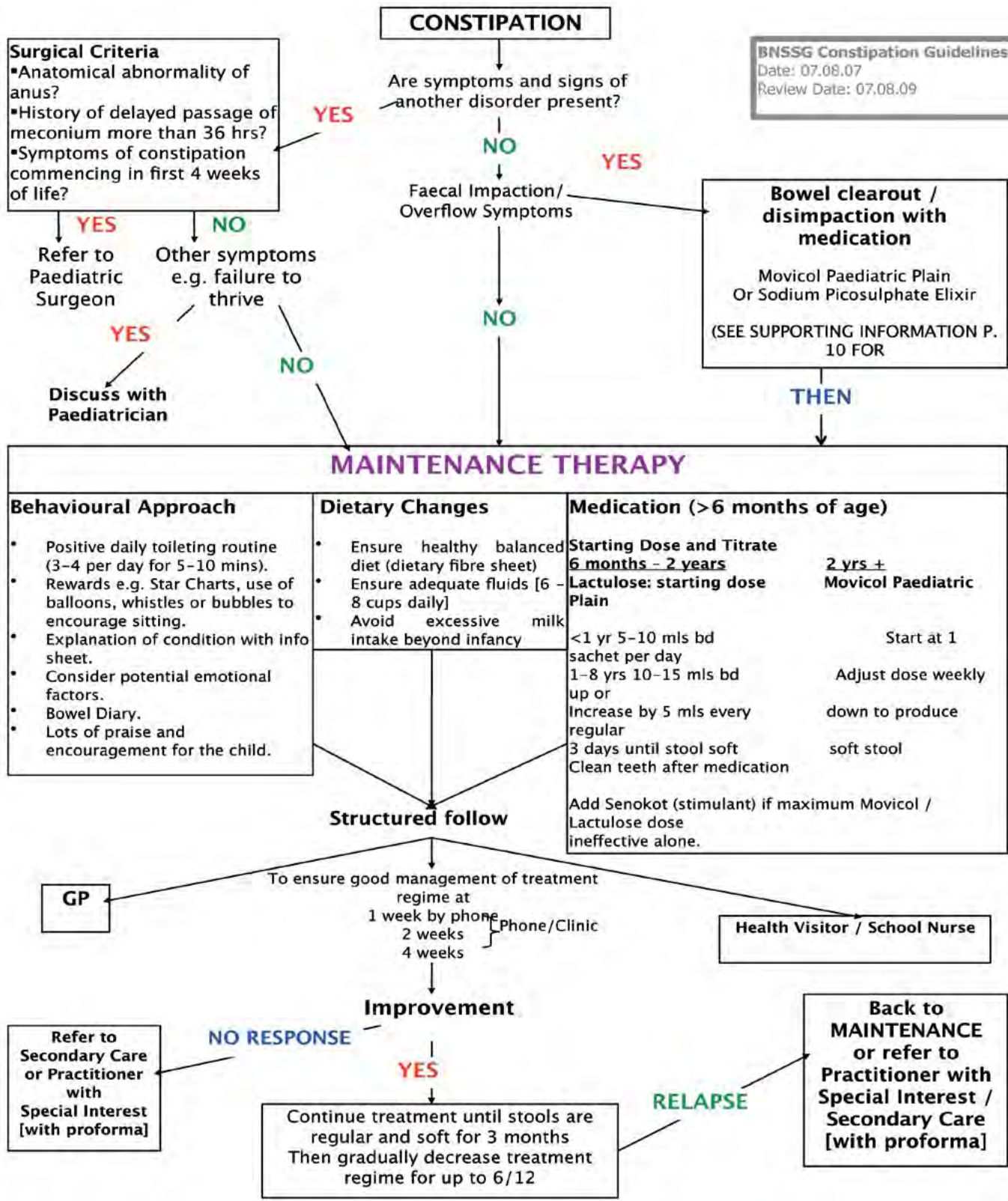
Feeding difficulties in pre-school children (care pathways)



Appendix 7

Constipation guidelines and treatment flowchart for primary care GP's, health visitors and school nurses

BSSSG Constipation Guidelines
 Date: 07.08.07
 Review Date: 07.08.09



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