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Every Baby Matters

Guidelines for good nutrition in Bradford and Airedale Nutrition and 1-5 year olds

INTRODUCTION

Children up to the age of 5 years are undergoing a period of rapid growth in the muscles, body tissues and the development of the brain. Their food and nutritional needs differ markedly from those of babies, older children and adults and as well as growth and development are affected by increasing activity levels and a relatively small stomach capacity. This means that a large range of vital nutrients have to be included within the smaller volumes of food they consume. An appropriate diet and approach to food issues are important factors in preventing many health and development problems in young children and in their future including obesity, faltering growth and stunting, iron deficiency, specific nutrient deficiencies, dental caries and developmental delay. It is vital to help parents and carers make the most of this important opportunity to influence their child's future health and potential.

The guidelines below follow on from the previous guidelines in this series on infant feeding and weaning and give current, evidence based and practical information about:

- **Rising to the toddler challenge: Eating well for the family**
- **Healthy Start Vitamins and Vouchers**
- **Nutritional requirements for key nutrients for children aged 1-5 years**
  - Energy
  - Protein
  - Fat
  - Iron
  - Calcium
  - Vitamin A
  - Vitamin D
  - Fibre
  - Salt
- **Mealtimes and Tips for Establishing a Good Mealtime Routine**
- **Drinks**
- **Specific needs of vegetarian and vegan children**
- **Common nutritional problems observed in the under 5's**
  - Food Refusal and Faddy Eating
  - Iron Deficiency Anaemia
  - Constipation
  - Overweight and Obesity
  - Vitamin D Deficiency
  - Food Allergy and Intolerance
- **Diet, behaviour and learning**
  - Food Additives
- **Food safety considerations in the under 5's**
- **Some Key Sources and Resources**
- **Appendix 1: What is a portion: A guide for children aged 1 to 5 years**

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RISING TO THE TODDLER CHALLENGE: Eating well for the family

Establishing a regular meal pattern made up of 3 small balanced and varied meals including 2-3 nutritious snacks is recommended as the optimum way of ensuring a young child is able to meet their nutritional requirements. Foods offered should be nutrient dense, meet (but not exceed) energy requirements and be varied and appealing. This can be a challenge for parents and carers, particularly during the toddler years when young children are developing and learning to express their independence.

Parents and carers should be encouraged and supported to establish a regular eating pattern providing and eating a variety of foods from the 5 food groups so that young children become familiar with learning to making healthy food choices from an early age. Children learn by watching the behaviour of those around them so parents, carers and others are important role models. Healthy family food for everyone will help young children develop good eating habits for the future.

Detailed and practical advice about the 5 food groups and how to eat a healthy diet can be found in the Live Well section of the NHS Choices website **www.nhs.uk/livewell** and **www.nhs.uk/livewell/goodfood/pages/healthyeating.aspx**

Providing food for a growing family (especially when time or money is short) can require new skills and ideas for parents. As well as information on healthy eating and support in learning how to manage children's behaviour around food, support with developing practical skills such as cooking, planning meals and snacks, shopping and budgeting for food, storing food safely may be helpful.

Healthy Start Vitamins and Vouchers

Even on a healthy balanced diet infants and children under 5 years may not get enough of these vitamins, especially vitamin D. Advice should be provided on the Healthy Start Scheme vitamin drops for children which are available free or at low cost. Parents can get more information from their Health Visitor. Children up to five are advised to have 5 drops every day of the Healthy Start Vitamins for Children. For further information about the vitamins and the Healthy Start Scheme, which also includes vouchers to help with the cost of fruit, vegetables and milk for young children see **www.healthystart.nhs.uk**.

ENERGY AND ENERGY BALANCE

Children need energy for growth, development and activity. The energy needs of each child are different and intake should be tailored to each child to ensure optimal growth and development whilst avoiding overweight and obesity.

Energy requirements of young children are obviously less than those of adults but they do double (approximately) between the ages of 1 and 5 years.

Getting energy balance right involves offering the right balance of foods in the right quantities (or portion sizes) as well as appropriate physical activity.

Average Energy Requirements (calories/kcals) of children aged 1 to 5

Age (years)	Male (kcal)	Female (kcal)
1	765	717
2	1004	932
3	1171	1076
4	1386	1291
5	1482	1362

* SACN Dietary Reference Values for Energy, 2011.

Energy is provided by carbohydrates (starchy food and sugars), protein and fat in the diet. A healthy energy balance is most likely to be achieved by offering 3 balanced meals a day each containing some starchy carbohydrate food and 2-3 nutritious snacks. Portion sizes should be adjusted to the age and needs of the child. Practical information about food portion sizes for 1-5 year olds is given in Appendix 1.

The body stores energy to use on occasions when current dietary intake does not meet immediate energy needs. If energy intake exceeds the amount used body fat stores will continue to increase and this will lead to overweight and obesity. If energy intake is below a child's energy requirements, all the body's energy stores will be used up and then growth and development will falter and there will be many other health problems such as increased susceptibility to infection.

Physical activity and energy balance

Daily physical activity is a vital part of achieving energy balance, preventing obesity and promoting healthy development. It is recommended that young children are physically active every day for at least 180 minutes (3 hours) and more information is available from

www.nhs.uk/Livewell/fitness/Pages/physical-activity-guidelines-for-children.aspx

Children under 5 should not be inactive for long periods, except when they're asleep. Watching TV, or being strapped into a buggy or car seat for long periods are not good for a child's health and development. There's growing evidence that such behaviour can increase their risk of poor health.

CARBOHYDRATE – STARCHY FOODS AND SUGARS

Starchy carbohydrate food (eg bread, potatoes, rice, fortified breakfast cereals, cassava, chapatti, pasta, crackers) should be given at each meal and at least one snack during the day for children aged 1 to 5 years. They are a good source of calories, provide B vitamins essential for growth and some fibre. A variety of different starchy foods should be used in the diet.

Sugars (known as **N**on **M**ilk **E**xtrinsic **S**ugars - NMES) include table sugar, soft drinks, fruit juices, confectionary, chocolate, cakes and biscuits. These foods should be restricted in amount and frequency. They are a major cause of dental caries and a concentrated source of energy often providing few other nutrients ('empty calories'). Excessive consumption is linked with overweight and obesity in children and adults. Diets containing a high amount of NMES based foods are often high in energy but low in other essential nutrients. Sugars (excluding those naturally found in whole fruit and milk) should provide less than 10% of total energy in the diet. For young children this will be approximately 33g per day (DH, 2009).

Examples of amounts of NMES sugar in some typical portions of food

Food	Sugar content (g) (rounded to nearest gram)
Sugar -1 teaspoon	4
Can of coke (330ml)	35
Flavoured milk drink (200ml)	19
2 finger Kit-Kat	10
Ribena carton (200ml)	21
Sugar puffs (30g portion)	11
Strawberry jam (1tbsp)	9
Milk chocolate buttons (35g)	21
Dolly Mixtures (25g portion)	20
Lucozade drink (380ml	52

PROTEIN

Adequate protein intake is essential for growth, development and repair of body tissues in children. Foods naturally rich in protein include meat, fish, chicken, eggs, beans, pulses and nuts. At least 2 servings of a variety of protein rich foods should be provided per day. Vegetarian or vegan children will need up to 4 servings per day.

Average portion sizes of protein for 1-5 year olds;

- ½ - 3 tablespoons of chopped meat/chicken/fish
- ½ - 1 egg
- ½ - 2 fish fingers
- ½ - 3 tablespoons of beans/pulses/lentils

These foods are often the major contributor of iron in a child's diet and children under the age of 5 years have a high requirement for iron in relation to their body size. When these foods are offered, a food or drink rich in vitamin C should also be included at the same meal. Vitamin C enhances the absorption of iron in the gut. Food and drinks rich in vitamin C include potatoes, tomatoes, citrus fruits, dilute pure orange juice (50% juice:50% water), kiwi fruit, most summer berries, peppers, and vitamin C fortified drinks e.g. Ribena and C Vit .

FAT

Fat is an essential contributor to overall energy intake in the under 5's as it can provide a lot of calories in a small amount, without making the diet of a small child bulky.

The healthiest options are olive, rapeseed and groundnut oils or fat spreads made from these. They are also a good source of vitamin A, D and E and can provide a good balance of omega 3 and 6 essential fatty acids. Fats high in saturated fats such as butter, lard, dripping and some hard vegetable fats should be limited in use and used only occasionally.

Foods high in fat which otherwise contain very little nutrients other than calories, such as pastries, cakes, biscuits, crisps, fast, fried or processed foods should be limited in a child's diet. **Low fat, low calorie or 'diet' alternatives** are not usually suitable for a rapidly growing child as they may not provide enough energy. Full fat milk (which is only about 4% fat) is recommended as the main milk for children up to 5 years as the fat provides vital energy and fat soluble vitamins. However if a younger child is consistently eating a balanced diet and growing well (or is found to be overweight or obese) semi -skimmed milk can be given as the main milk from 2 years and skimmed milk from 5 years.

Tips for healthier cooking:

Instead of frying or roasting using a lot of fat try

- *steaming*
- *poaching*
- *dry roasting*
- *stir frying – using a small amount of oil only*
- *braising*
- *microwaving*
- *baking*
- *grilling*

Limit fried foods and pastry

Avoid adding a lot of extra fat, oil, butter, ghee or cream to foods

Trim excess fat from meat and remove skin and fat from chicken before cooking

IRON

Iron is an essential component of haemoglobin, found in red blood cells and requirements are high in the under 5's. This is reflective of the rapid growth and development seen in this age group.

Reference Nutrient Intakes (RNI) for iron are;

Age (years)	RNI(mg)
1-3	6.9
4-6	6.1

DH, 1991.

Iron is found in red meat, oily fish, eggs, nuts, beans and pulses, fortified breakfast cereals, dried fruit and dark green leafy vegetables.

Food rich in iron	Iron content (mg)
3 tablespoons breakfast cereal	1.2
2 tablespoons Dhal	1.5
2 tablespoons broccoli	0.6
1-2 tablespoon lamb	1.0
1 medium egg	1.1
2 tablespoons oily fish	1.6
2 tablespoons of spinach	1.0

Iron is absorbed more efficiently in the presence of vitamin C rich foods and drinks. **Vitamin C** rich foods such as citrus fruits, diluted pure orange juice, kiwi fruit, berries, potatoes, peppers, tomatoes, mangoes, beansprouts and vitamin C fortified drinks should be offered at the same time as iron rich foods at mealtimes.

CALCIUM

Calcium is needed for building strong and healthy teeth, bones, an efficient nervous system and for muscle action.

The Reference Nutrient Intakes for calcium are;

Age (years)	RNI(mg)
1-3	350
4-6	450

Dietary sources of calcium for children under 5 years include milk, cheese, yoghurt, fromage frais, custard, milk based puddings (semolina, rice pudding and tapioca), breakfast cereals fortified with added calcium, tinned fish where the bones are eaten (sardines, pilchards, salmon), calcium enriched soya milk and desserts and foods made with white or cheese sauces. **Vegetarian and vegan sources** include tofu, nuts and nut butters, seeds, figs, beans, lentils and pulses, okra, oranges and spinach.

Offering 3 small servings per day as part of a balanced diet will help to meet the nutritional needs of most children under 5 years. A serving is about 120ml of milk (either as a drink or in food), 120g pot of yoghurt and a small matchbox serving of cheese. It should be noted that as a child grows, serving size will increase according to appetite providing more protein and calcium relative to requirements.

Calcium content of commonly eaten foods

Food rich in calcium	Calcium content (mg)
180mls milk	240
40g cheddar cheese	200
150g yoghurt	225
120g custard	120
2 slices white bread	65
Average serving of pizza	350
3 tablespoons of spinach curry	140
50g tofu	250
1 medium sized orange	75
2 figs	85

Lower fat dairy products (eg milk, yogurt) have the same amount (or more) calcium in them as full fat versions.

VITAMIN A

Vitamin A plays a vital role in maintaining a healthy immune system, fighting infection and for good vision in dim light.

The Reference Nutrient Intake (RNI)for Vitamin A is;

Age (years)	RNI (ug)
1-3	400
4-6	400

DH, 1991.

Good food sources of vitamin A include cheese, eggs, oily fish, fortified breakfast cereals and margarines and yellow or orange based fruits and vegetables (carrots, peppers, papaya, tomatoes and apricots).

Healthy Start Children's Vitamin drops contain 233 ug vitamin A (as well as vitamin D and C) and should be given to all children from soon after birth and up to 5 years.

VITAMIN D

Vitamin D is a hormone needed to keep teeth and bones healthy and deficiency of vitamin D can lead to Rickets in children. Young children are especially vulnerable to vitamin D deficiency because of their rapid growth and limited exposure to sunlight. Young children need between 7-8.5 ug (280-340IU) of vitamin D each day.

Children aged from 1 to 5 years who are at risk of vitamin D deficiency need at least 7.5 ug (300IU) a day.

In babies and young children, signs and symptoms of vitamin D deficiency are;

- lethargy and irritability
- poor growth
- delayed teething
- soft skull bones, swollen joints or bowed legs
- muscle spasms and seizures

Vitamin D is mainly derived from the action of the sunlight on the skin (about 90%) and a small amount obtained via the diet (about 10%). Because it is so difficult to get sufficient Vitamin D from the diet and sunlight a supplement is recommended. Healthy Start Vitamin Drops contain 7.5ug (300iu) Vitamin D as well as vitamins A and C and should be given from soon after birth until five years. Sufficient and safe skin exposure to sunlight and the inclusion of foods rich in Vitamin D in the diet daily are also important in preventing deficiency

(There is more detailed information later in the Section on Common Nutritional Problems in Young Children)

Good Food Sources of Vitamin D

- Oily fish – sardines, pilchards, salmon, fresh tuna, mackerel, herring, trout, whitebait, herrings, ilisha, pangas, tengra and ba-eem
- Breakfast cereals fortified with vitamin D – check the label
- Margarines (fortified with Vitamin D)
- Egg yolks
- Liver
- Evaporated and some powdered milks
- Some yoghurts – check the label
- Mushrooms

FIBRE

Dietary fibre helps to keep the digestive system healthy and prevent constipation as well as other health problems. It is found in fruit and vegetables, beans and pulses, breads and cereals –especially wholegrain varieties. Including appropriate amounts of fruit and vegetables every day (see Appendix 1) as well as breads and cereals will help to provide fibre. Very high fibre diets (ie one consisting of mainly vegetables, beans, pulses and wholegrain cereals) can be too bulky for young rapidly growing children (with small appetites and stomachs) who, unlike adults, may not be able to eat enough of this type of diet to obtain enough energy for optimal growth.

Bran should not be given to the under 5's as it can cause bloating, wind, loss of appetite and can reduce the absorption of essential minerals such as calcium, iron and zinc.

SALT

The main source of salt (also known as sodium chloride or referred to as sodium on nutrition labels) is from table salt, processed foods and takeaways. High salt intakes are linked with high blood pressure and kidney problems. It may also lead to excessive fluid intake which can aggravate bedwetting. Encouraging parents/carers to limit their child's intake of salty foods may help children to not acquire a lasting taste for salty foods.

The Department of Health (DH) recommends salt (or sodium) should be limited in children under 5 years:

Age (years)	Salt (g)	Sodium(g)
1-3	2	0.8
4-6	3	1.2

Strategies which can be used to limit intake of salt in a child's diet include:

- salt not to be added to food at the table
- limit the amount of salt, gravies, stock cubes, boullion, flavoured salts, readymade sauces and other salty condiments used in cooking
- limit the amount and frequency of processed foods offered to children such as tinned soups, cured meats, processed foods, ready made meals and snacks, frozen meals, crisps and other salty snacks.
- Using herbs, spices or other foods to flavour food such as fresh/dried herbs, chilli, lemon juice, garlic or fennel.

Salty snack foods like crisps, processed /convenience foods manufactured specifically for children and some breakfast cereals can also be high in fat, saturated fat and calories and should only be offered occasionally.

MEALTIMES

Toddlers and young children have small stomachs but high nutrient needs. It is important to establish a regular meal pattern made up of 3 balanced meals and 2-3 nutritious snacks to ensure optimal growth and development is achieved. Establishing a routine can be reassuring for a child and also helps to develop, social, motor and behavioural skills associated with eating.

More information on portion sizes, balanced meals and snacks and for practical guidance on understanding a young child's nutritional needs can be obtained from the Infant and Toddler Forum:
https://www.infantandtoddlerforum.org/little-peoples-plates

Guideline amounts on what is a portion for children aged from 1 to 5 years can be viewed in **Appendix 1**

Tips for establishing a good mealtime routine

- at least one parent/carer should eat with young children to encourage positive role modelling
- ensure mealtimes are happy and pleasant experiences
- children should be sitting comfortably and using utensils appropriate to age and motor skills
- 2 courses should be offered at each main meal – a balanced savoury course followed by a nutritious pudding
- offer small portions to begin with - more can be offered if needed
- allow children to decide when they have eaten enough and do not push them to clear their plate
- encourage self feeding as much as possible
- never leave young children unsupervised at mealtimes
- accept mess as part of the normal feeding and development process.
- Sweets and puddings should not be used a bribe or treat
- Praise toddlers when they eat well

DRINKS

Children should be offered 6-8 beakers or glasses of fluid per day, where a portion of fluid for young children would measure between 100-150mls. They will need more in hot weather, fever or after extra physical activity as young children can dehydrate very quickly. **Water and milk** are the recommended main drinks for children.

Pure fruit juices contain large amounts of fructose (a naturally occurring fruit sugar) and are acidic. If offered, pure fruit juice should be diluted well (50% water and 50% juice) and only be given at mealtimes.

Fizzy drinks and squashes contain large amounts of added sugar and contribute to tooth decay and overweight and obesity. These drinks are considered unnecessary in a child's diet as they provide "empty calories" and very little, or if at all any other nutrients. Caffeine containing fizzy drinks (eg cola, energy drinks) can cause sleep problems and bedwetting.

No added sugar/low calorie drinks can contain natural sugars and acids and can still contribute to tooth decay. These include baby juices, natural fruit juices and sugar free squashes and should be limited in a young child's diet.

Tea, coffee, fruit teas and high energy drinks are not recommended for young children because they contain compounds called tannin and polyphenols. These bind with iron in the diet and reduce the availability of iron to the body. They also contain caffeine, a mild stimulant which can aggravate bedwetting and sleep problems. These drinks are unsuitable in a child's diet.

Soya drinks are often labelled as soya milks. Particular care should be paid to ensure these drinks are nutritionally adequate and that they are fortified with vitamins and minerals, especially calcium. Soya drinks can be high in sugar content and attention should be paid to safeguard dental health. If children are given soya drinks they should be given in a cup because of the sugar content.

Rice/Oats/Coconut milk are not recommended for children under 5 years as they are nutritionally poor in value, can be high in sugar and can contain high levels of arsenic.

Flavoured milk drinks

Many of these drinks can contain a significant amount of NMES which can contribute to tooth decay.

VEGETARIAN AND VEGAN DIET

Children are different from adults because they are growing and therefore have high nutritional requirements, especially during periods of rapid growth. The main nutrient at risk for 1-5 year olds that do not eat meat or meat products is iron. Iron from vegetarian and vegan foods is less well absorbed than from meat and oily fish. Omega 3 oils (important for normal brain and eye development) may also be low in diets that also exclude oily fish.

Points to consider when providing meals to vegetarian and vegan children;

- Offer 3-4 servings of protein foods daily
- Include a food or drink rich in vitamin C at each mealtime
- Ensure a variety of different starchy foods are offered at each mealtime
- Offer fortified breakfast cereals (those with added iron and vitamin D)
- Regularly include plant based sources of omega 3 rich foods (rapeseed, olive or grapeseed oil and fat spreads and walnuts if oily fish is excluded from the diet)

Vegan diets are not advised for growing children as they are bulky, can be low in energy and may not provide adequate amounts of vitamins and minerals needed for achieving optimal growth.

A child whose parents insist on a vegan diet should be referred to a Registered Dietitian for assessment as they may not be meeting their needs for energy, protein, iron, vitamin D, zinc and vitamin B12. A calcium enriched and vitamin fortified soya milk can be used from 1 year as a cow's milk substitute.

COMMON NUTRITIONAL PROBLEMS IN YOUNG CHILDREN

Food Refusal, Faddy Eating, or Fussy Eating

Food refusal and faddy eating are part of normal development of a young child. Sometime during their second year toddlers usually become more fussy about what they will eat but most faddy eating improves with time.

Toddlers may:

- Eat less than expected
- Refuse to taste new foods
- Refuse to eat foods they have previously eaten well

Some toddlers are more wary of new foods and refusal of foods is more common in toddlers who were not offered a variety of tastes and textures during weaning. Fussy Eaters will take much longer to learn to like and eat new foods during infancy but over time, with patience and consistent exposure almost all toddlers will outgrow this phase.

From around 3 years some children may start to refuse foods for other reasons such as

- Associating food with an object that is disgusting to them eg noodles may resemble worms
- Foods look slightly different to the food they are familiar with eg if a piece of apple has a mark on the skin, a yogurt is a different colour or in a different container
- A biscuit is broken not whole
- A liked food may be touching or even on the same plate as a disliked food

This is part of normal development behaviour in young children. Occasionally, poor eating can be due to other factors;

- **Poor oral-motor development** which may or may not be associated with other development delay or cerebral palsy. A team approach involving a dietitian and speech and language therapist would be ideal in helping to resolve this issue.
- **Constipation, anaemia or other medical conditions** need to be treated before trying to change eating behaviour
- **Extreme sensory sensitivity.** When there is nothing medically wrong with the child who is an extremely faddy eater, it may be because the child has an extreme anxiety about trying new foods or has an extreme reaction to the different senses, touch, taste and smell. These children also usually dislike getting their hands and face dirty.

Quite often children grow out of this and start to improve at around five years. It is especially important that these children are not forced to eat foods that they dislike as it may lead to vomiting.

A very small number of children do not grow out of this phase and continue to restrict the foods they eat throughout childhood. Referral to a Registered Dietitian may be necessary to assess food intake is sufficient to aid normal growth and development.

Parents and Carers should have realistic expectations of the child's food intake based upon appetite, portion size, rate of growth, body size and activity.

Managing Food Refusal and Faddy Eating behaviour

When concern is raised about a child's eating pattern, food choices, or eating behaviour their growth and dietary intake should be assessed. Growth should be assessed by a suitably qualified practitioner by measuring weight and height accurately and plotting on growth charts. Parents can be asked to record a 3-7 day food diary to enable assessment of food and drink frequency and food group content. If the child is growing normally then reassure the parents that the child is eating adequately and any advice provided on food choices and achieving a balanced diet should be based upon the principles of the Eatwell Plate. Appropriate guidance and support can give parents/carers the confidence to manage poor eating and food refusal.

Helpful strategies for parents/carers

- A consistent approach for all those involved is essential
- Not to pressure, bribe, or force feed a child
- Sweets or puddings should not be used as a bribe or treat
- Offer a regular meal pattern of 3 meals and 2-3 planned snacks each day
- Give praise even if a small quantity of food is eaten
- Take away any uneaten food without comment at the end of the meal
- Limit mealtimes to 30 minutes and snack times to 20 minutes.
- Keep calm and be patient

There are a small but significant number of children whose faddy eating may result in underweight or faltered growth. Where parents or carers concerned about this should be encouraged to consult their Health visitor/GP in the first instance. There is practical information on the NHS choices website on managing underweight in children aged 2-5 years **www.nhs.uk/Livewell/Goodfood/Pages/Underweightyoungchild.aspx** .

Faltering growth may need involvement of a paediatrician /dietitian. Specialist multi-disciplinary teams can help with specific strategies addressing factors affecting food related behaviour.

Overweight and Obesity

Obesity in 1-5 year olds is increasingly prevalent with 1 out of 5 young child being either overweight or obese. Most children become obese because of their lifestyle. Eating patterns, activity levels, ethnicity, genetics and environment all play a part. If the food energy (calories) eaten is in excess of the energy used for physical activity and growth then the excess energy is stored as body fat. Overweight and Obesity should be measured on a Body Mass Index (BMI) chart for children.

Management of overweight and obesity should be based upon a whole family approach using the Eatwell Plate healthy eating principles and establishing adequate activity levels.

The current United Kingdom physical activity recommendations for Early Years are;

- Children of preschool age who are capable of walking should be physically active daily for at least 180mins (3 hours), spread throughout the day
- All under 5's should minimise the amount of time spent being sedentary for extended periods (except time spent sleeping)

Obese under-fives do not need to lose weight but the family lifestyle will need to change so that weight gain slows down or stops for some time so that the BMI decreases as the child grows taller.

Parents should be encouraged and supported to

- Limit the amount of fatty and sugary foods and sugary drinks the child has.
- Avoid giving 'diet' foods. Semi skimmed milk can be given after 2 years.
- Children should be allowed to stop eating when they have indicated they have had enough, they should not be pressured to finish all the food on their plate.

For more information see
www.nhs.uk/Livewell/childhealth1-5/Pages/Overweight2to5.aspx

Iron Deficiency Anaemia

Iron Deficiency Anaemia is the most commonly reported nutritional problem during early childhood. When children are anaemic the blood is unable to supply all the oxygen the body needs. The incidence tends to be higher in inner city or deprived areas, South Asian (especially Pakistani) populations and toddlers with feeding problems. Iron Deficiency Anaemia is often associated with faddy or fussy eating behaviour.

Signs and symptoms of iron deficiency include pallor, tiredness, (lethargy) poor appetite, poor weight gain, frequent infections and developmental delay.

Tips to Prevent Iron Deficiency Anaemia

- Advise parents on introducing a wide range of foods, including iron rich foods and iron fortified breakfast cereals.
- Discourage use of a bottle after the age of one year as this often encourages children to fill up on cow's milk instead of eating sufficient solid food.
- Drinks of tea should not be given at all and especially at mealtimes because this reduces the absorption of iron from foods.
- Vitamin C in fruit juice helps the body to absorb iron from food but should be well diluted.
- Offer Vitamin C rich foods at mealtimes to assist iron absorption.

If children do not eat meat encourage to include oily fish, fortified cereals, lentils, dhal, other beans and pulses along with dark green leafy vegetables. It is particularly important to include Vitamin C rich foods at each meal.

Vitamin D Deficiency

In Bradford, children are especially at risk of developing vitamin D deficiency due to a large ethnic population, deprivation, food poverty and lifestyle factors which limit exposure to sunlight.

Children who may be at increased risk of developing vitamin D deficiency include those who;

- are from Black and Minority Ethnic groups who have darker skins
- are faddy eaters or those with poor eating habits
- have poor or restrictive diets (vegans or vegetarians)
- cover their skin or those who are strict sunscreen users
- are weaned late
- are exclusively breastfed babies
- continue on breastmilk after 1 year
- are formula fed on less than 500mls of infant formula a day
- have metabolic, kidney or liver disease
- spend a lot of time indoors
- are born preterm (<37 weeks gestation)
- are close in age with their siblings
- are going through a period of rapid growth

Less commonly, children with chronic conditions or those who are taking medication which interferes with vitamin D metabolism, may also be at increased risk of developing vitamin D deficiency.

In Bradford, all infants from birth to six months receive free Healthy Start Children's vitamin drops. After six months, those infants assessed to remain at risk of vitamin D deficiency will continue to receive free vitamins till they are 2 years old. Families who are eligible for the Healthy Start Scheme will receive free vitamins for their child from 6 months to four years and uptake of the Healthy Start Scheme should be actively encouraged. Children who do not qualify for the Healthy Start Scheme and who are considered at low risk of Vitamin D deficiency will be able to purchase Healthy Start Children's vitamin drops for a small cost from community health centres.

The amount of sunlight needed to make sufficient amounts of vitamin D can vary. In the UK, children should be encouraged to play in the sun without sunscreen for a total of 15-20 minutes between the times of 11am-3pm most days during the summer months (April to September). Children's skin can burn easily so care should be taken to prevent reddening and burning. Children with darker skin may need more time in the sun to make enough vitamin D compared to children with fair skin.

NHS Bradford and Airedale, in partnership with Bradford Teaching Hospitals NHS Foundation Trust and Airedale NHS Foundation Trust have developed a care pathway on how to detect and manage vitamin D deficiency in young children.

Poor Oral Health

The principal cause of tooth decay is the frequent intake of foods or drinks containing sugars and Non Milk Extrinsic sugars (NMES) are the prime contributors. There is a concern that there are high levels of consumption of NMES amongst pre-school children.

Tooth decay is most often caused by frequent intake of foods or drinks containing sugars and sticky foods that leave a residue around the teeth.

Erosion of tooth enamel is another dental problem in children caused by frequent consumption of acidic drinks such as fizzy drinks and squashes. Pure fruit juices can also erode teeth and should be diluted well and limited to mealtimes..

Building Brighter Smiles

The PCT has implemented evidence-based preventive programmes and commissioned appropriate NHS primary dental services to meet local oral health needs of children under five.

Programmes have been commissioned that specifically address the poor oral health of young children and come under the 'Building Brighter Smiles' name. Three programmes that are particularly aimed at this age group are the Health

Visitor led Brushing for Life fluoride toothpaste distribution programme. The 'First Steps to Healthy Teeth' dental award is based in early years settings and has an emphasis on healthier eating – a diet that is good for oral health will also benefit general health. It was developed with Bradford District Care Trust Salaried Dental Service, Bradford EYCP and Bradford Nutrition and Dietetic Service.

Key messages to promote good oral health are:

- The frequency and amount of sugary food and drinks consumed should be reduced to no more than 4 intakes of sugar per day including mealtimes.
- Avoid giving sweets and biscuits as treats
- All drinks should be taken from a cup, not a bottle. Only plain milk or water between meals.
- No sugar should be consumed within one hour of bedtime.
- Teeth should be brushed twice daily with fluoride toothpaste as soon as the first teeth erupt at night and one other time.
- Use a smear of fluoride toothpaste of at least 1000 ppmF for children aged 0 – 3 years and a pea-sized amount of 1350 – 1500ppmF toothpaste for all children aged 3 – 6 years.
- Young children should be supervised until at least 7 years old as they are unable to brush properly themselves.
- Spit out excess toothpaste but do not rinse.
- Avoid brushing teeth for one hour after consuming acidic drinks.
- Regular checkups by a dentist as advised.
- Sugar free medicines should be recommended

Constipation

Constipation is a common problem seen in young children and the causative reasons can be complex. Symptoms include infrequent opening of bowels, hard and painful to pass stools or refusal to go to the toilet to empty bowels.

The management of constipation can require laxatives, a higher fibre diet and behaviour modification. Dietary advice to prevent or to treat constipation in young children should include;

- **adequate fibre intake** – Include higher fibre foods in the diet and aim for at least 5 portions of fruit and vegetables daily
- **adequate fluid intake** – some children are poor drinkers and should eb encouraged to have 6-8 cups of fluid daily. Some children may need more due to increased activity, fever or during warmer weather
- **adequate physical activity** – sedentary behaviour should be discouraged and children encouraged to be active for at least 180 minutes(3 hours) daily.

Food Allergy and Intolerance

Food allergy and intolerance are types of food sensitivity. If a child has a food allergy their immune system mistakes a food as unsafe and this causes a serious and possibly life-threatening reaction. A food intolerance also causes a reaction but it does not involve the immune system and generally is not life-threatening. It may make them feel ill or affect their long-term health.

Some parents suspect that their children are sensitive to foods but only 2-5% actually has allergy or intolerance and most have grown out of this by the time they are 1 year old. If parents do suspect their child has a food sensitivity they should seek advice from their GP or Health Visitor. Health Professionals should refer to NICE Clinical Guideline Food Allergy in Children and Young People (CG116) for information on the diagnosis and assessment of allergy in primary and community care settings.

Children who continue to be breastfed after 12 months of age and their breastfeeding mothers should of course avoid any foods they are allergic to themselves or where an allergy to that food has been diagnosed in the breastfed child. If whole food groups (eg dairy) or many foods are excluded from the diet, care needs to be taken to ensure that key nutrients are replaced. Dietetic advice should be sought. Specialist infant formula milks are available on prescription for children with allergies or intolerance. Dietitians can advise further about specialist formula milks

DIET, BEHAVIOUR AND LEARNING

Evidence suggests that enjoying regular meals, enough fluids and a healthy balanced diet as described above helps a child to have the best chance at optimal mental and behavioural performance. Sufficient sleep and physical activity are also important. Hunger, thirst and tiredness in small children will often lead to behaviour problems. A poor or erratic diet will affect a child's development, concentration and behaviour–particular issues to be aware of include iron deficiency anaemia, faltering growth, dental caries and associated pain, dehydration and high intakes of sugary food and drinks or caffeine.

For more detailed information see the British Dietetic Association Fact Sheet on Children-Diet, Behaviour and Learning at
www.bda.uk.com/foodfacts/index.html

Food Additives

Research suggests that eating or drinking some artificial food colours and the preservative sodium benzoate could be linked to increased hyperactivity in some children. It is important to remember that hyperactivity is also linked to other factors so avoiding certain additives may not be the total solution.

If children show signs of hyperactivity or if parents have concerns then avoid giving food or drinks containing the following artificial colours:

- tartrazine (E102)
- ponceau 4R (E124)
- sunset yellow (E110)
- carmoisine (E122)
- quinoline yellow (E104)
- allura red (E129)

These colours are more commonly used in processed or convenience foods, often which provide “empty calories” and are poor in overall nutrient quality such as in confectionary, cakes, ice cream and soft drinks which are brightly coloured.

FOOD HYGIENE AND SAFETY

Children under 5 years are vulnerable to food poisoning and can become very ill very quickly so it is important to store, prepare and cook food safely for them.

Tips to remember when preparing foods for young children:

- Wash all fruits and vegetables before eating.
- Take care to follow storage and cooking instructions on food labels.
- Keep packed lunches chilled or in a cool bag
- When re-heating food, make sure that it is piping hot throughout and check the temperature of the food before feeding the child to avoid burning.
- Don't give food after its 'use by date'
- If providing eggs or shellfish, ensure they are well cooked.
- Avoid shark, swordfish and marlin due to their high mercury content.
- Teach children to wash their hands before eating and after going to the toilet.

Further information on how to maintain good standards of food safety and hygiene for young children can be viewed at the NHS Choices /Livewell website:

http://www.nhs.uk/conditions/pregnancy-and-baby/pages/food-safety-hygiene.aspx

Some Key Sources and Resources

Bradford Nutrition and Dietetics Services

Menu Planning Toolkit for Early Years in Bradford District (2nd edition 2012)

Model Food and Nutrition Food policy and checklist for Early Years (due 2013)

(Contact the Public health dietetic team 01274 78 3124 for more information)

Caroline Walker Trust 2006, Eating Well for Under 5's in Childcare 2006 Second Edition CWT **www.cwt.org.uk/pdfs/Under5s.pdf**

Children's Food Trust (2012) Voluntary Food and Drink guidelines for Early Years Settings in England
www.schoolfoodtrust.org.uk/resources/eat-better-start-better-resources/guidelines

Department of Health, 1991 Dietary Reference Values for Food Energy and Nutrients for the United Kingdom, London

Department of Health 2009 Delivering Better Oral Health: An evidence-based toolkit for prevention 2nd Edition

Department of Health (July 2011) UK Physical Activity Guidelines for Early Years
www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_127931

Healthy Start website (including sections and resources for parents and health workers) **www.healthystart.nhs.uk**

Infant and Toddler Forum:
www.infantandtoddlerforum.org/little-peoples-plates

Lawson, M.S. Thomas, M. Hardiman, A. (1998) Iron status of Asian children aged 2 years living in England. Archives Diseases in Childhood, 78 (5), p. 420-426.

McCance and Widdowson's The Composition of Foods, Sixth Edition, 2002. Food Standards Agency.

Ministry of Agriculture, Fisheries and Food 1990, Food Portion Sizes, Second Edition, London HMSO

NHS Choices Live Well Website
www.nhs.uk/LiveWell/Pages/Livewellhub.aspx
This contains a wealth of reliable and practical information about food and health and feeding children. The sections on Food and Health and Healthy Eating contain general information and the Babies and Toddlers pages contain additional information for under fives. Links are given to some useful pages in the text above but there is much more on the website.

NHS Health Scotland (July 2012) Oral Health and Nutrition Guidance for Professionals

Pathway for pre-pubertal children at risk of or with Vitamin D deficiency/ depletion in primary care 2012

NHS Bradford and Airedale, in Partnership with Bradford Teaching Hospitals NHS Foundation Trust and Airedale NHS Foundation Trust

Scientific Advisory Committee on Nutrition (SACN) 2007

Update on Vitamin D Position Statement

www.sacn.gov.uk/pdfs/sacn_position_vitamin_d_2007_05_07.pdf

Scientific Advisory Committee on Nutrition (SACN), Dietary Reference Values for Energy, 2011, London TSO
www.sacn.gov.uk/reports_position_statements/reports/sacn_dietary_reference_values_for_energy.html

Thomas, B. Bishop, J. eds. (2007) Manual of Dietetic Practice. Fourth edition. Blackwell Publishing and the British Dietetic Association

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Date: January 2013

Review due: March 2015

Appendix 1; WHAT IS A PORTION?

A GUIDE FOR YOUNG CHILDREN AGED 1 – 5 YEARS OLD

Number of portions a day	1 year	2-3 years	3-5 years
Bread, rice, potato, pasta, chapatti **(4-6)**	½ -1 medium slice bread 1 tbsp mashed potato or rice(30g) 1 tbsp porridge or ½ weetabix ¼ small chapatti	1 medium slice bread 1 -2 tablespoon mashed potato (30-60g); 6 smallish chips 1-1½ tbsp cereal or 1 weetabix ½ small chapatti	3-5 years1-2 medium slices bread 2-3 tablespoon mashed potato (60-80g); 8-10 chips 2-3 tbsp cereal or 1-1½ weetabix 1 small chapatti
Meat, fish, egg and alternatives **(2-4)**	½-1tbsp finely chopped meat or fish 1/2 – 1 hard cooked egg ½ -1 tbsp baked beans ½ fish finger ½-1 tbsp lentils	1 ½ tbsp chopped meat or fish 1 egg 1 ½ tbsp baked beans 1 fish finger 1 sausage	2-3 tbsp chopped meat or fish 2-3 tbsp baked beans 1-2 fish fingers 1-2 sausages 2-3 tbsp lentils
Fruits and Vegetables **(5)**	½- 1 small piece fruit e.g. apple, pear, etc. 1 tbsp soft or mashed e.g. carrot, courgette 75ml fruit juice*	1 small piece e.g. apple, banana 1 slice melon 4 strawberries/blackberries 1-2 tbsp vegetables or small chopped salad 150ml fruit juice* 1½ tbsp lentils	1 small piece e.g. apple, pear 1 slice melon 6 grapes 2-3 tbsp vegetables or small salad 150ml fruit juice*
Milk and Dairy **(2-4)**	3 dice-size pieces of cheese 2 tbsp yoghurt 100ml full fat milk	4 dice-size pieces cheese 2-3 tbsp yoghurt or custard 120ml full fat or semi skimmed milk	1 small matchbox size cheese 4 tbsp yoghurt or custard 120ml full fat or semi skimmed milk
Foods high in fat and/or sugar **(1-2)**	½ soft biscuit 3 tbsp jelly ½ small slice cake	1 biscuit 4 tbsp jelly 1 small slice cake	1 biscuit 5 tbsp jelly 1 small slice cake

*Fruit juice only counts for one portion irrespective of how much is taken