



**Nursery School Meals Project (2) for Hampshire County Council Trading
Standards Service**

**Re-evaluation of Nursery School Meals One Year On
January 2011**

Nutritional Interpretation and Findings

Sally-Ann Denton BSc (Hons) RD Paediatric Dietitian

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Introduction

Diet and Health

Good nutrition in the early years is vital to promote healthy growth and development and to improve concentration and learning (1, 2, 3, 4). Positive early experiences of food are important to help develop healthy eating habits and to prevent the development of obesity, cardiovascular disease, diabetes and some cancers later in life (5, 6, 7).

The nutritional requirements of pre-school children differ quite considerably from those of older children and adults. Young children have higher requirements for energy and nutrients per kg body weight than adults and older children. They need to eat energy and nutrient dense foods to meet these requirements. Because young children have stomachs approximately a third the size of an adult stomach it is important that they are not given too many high fibre low fat foods. From the age of 2 there should be a gradual transition to lower fat, higher fibre meals so that by the age of five children are eating low fat, high fibre diets as recommended for older children and adults. Introducing children to healthy foods, controlling portion size and limiting snacking on foods high in fat and sugar in the early years can prevent them becoming overweight or obese. (Healthy weight healthy lives 2008). For good health and optimal growth, it is important to get the balance right between energy consumed from food and drinks and energy expenditure. Children who are regularly active are able to achieve a better energy balance than children who are less physically active (5).

The National Child Measurement Programme results for December 2009-2010, published in December 2010, showed that almost a quarter (23.1%) of children in England are either overweight or obese when they start school. (DH 2010) It is therefore important that children in early years settings are provided with nutritionally appropriate food and drink which is varied, healthy and balanced (8).

The Caroline Walker Trust

The Caroline Walker Trust (CWT) was established in 1988 to improve health through good food choices. The CWT has published nutritional guidelines for children under 5 years of age in child care (9). These apply to all childcare settings including childminders and nursery schools.

Hampshire Trading Standards Nursery School Meals Project

This project was a follow-on project conducted by Hampshire Trading Standards Service. Following participation in the national LACORS study of Nursery School Meal Provision in 2009, Hampshire Trading Standards invited the 10 nurseries which originally participated in the study to have their meals re-analysed in order for a comparison to be made to the original analysis and to see if any improvements had been made to the menus in light of the CWT guidelines and previous suggestions made by the dietitians analysing the nutritional data. The national LACORS study used a template made by a project undertaken by East Sussex Trading Standards Department in 2007. The methodology and format of the original nutritional report for Hampshire Trading Standards and the follow on report were therefore based on that compiled by Sarah Almond registered dietitian for the original East Sussex project (10).

Methodology

10 nurseries across Hampshire participated in the original project and were invited to participate in the follow up study. 7 agreed to participate in the follow-up study.

Sampling

Each nursery was asked to supply an average sized serving of all food and drinks given to a representative 3 year old throughout the day, for 1 week. The meals and snacks were collected either during the week or at the end of the week by a member of the Trading Standards Service. Food from each nursery was sent to Hampshire Scientific Services to determine the nutritional content. The samples were analysed for energy, protein, carbohydrate, sugars, sucrose, fat, saturated fat, salt, calcium, iron, zinc, and fibre. The results were interpreted by a paediatric dietitian. Each nursery was also asked to supply a copy of the menu for the week analysed.

Questionnaire

At the same time a short questionnaire (as previously designed by East Sussex Trading Standards department), was sent out to each of the participating Nurseries. The aim of the questionnaire was to obtain additional information regarding meal provision and nutrition, in relation to the CWT guidelines.

Interpretation of results

Data from the nutritional analysis and the questionnaire was used to investigate how each nursery compared to the CWT nutrient based standards and also to see if any improvements had been made following the original study. Further areas for improvement were identified where appropriate. A report was produced for Hampshire Trading Standards Service with individual reports for each nursery.

Follow up

Each nursery will receive a copy of their individual report and the results and the general results will also be made available on the Hampshire County Council website. Visits will be made to the nurseries to discuss the findings where appropriate.

The Guidelines

Nutrient based standards

The CWT nutrient based standards for food prepared for 1-4 year olds provide figures for the recommended energy and nutrient content of an average day's food and drink for an average child based on the recommended average nutrient content of meals and snacks provided over a one week period. This comprises:

- Mid morning snack
- Lunch
- Mid afternoon snack
- Tea

Breakfast is not included as it is presumed that this is given at home in most circumstances.

The CWT guidelines are derived from average Dietary Reference Values (11) (DRV's) for boys and girls and additional recommendations for salt intakes (12). The guidelines are based on 70% of a

child's DRV requirement for energy and most nutrients, and no more than 70% of the maximum recommended amount of non milk extrinsic sugars (NMES) and sodium/salt. The remaining 30% is expected to be achieved at home. The recommendations apply to children who attend all forms of childcare including playgroups, nursery units and reception classes.

Dietary Reference Values (DRV's)

The DRV's were published in 1991 by the Department of Health (11) and are benchmark intakes of energy and nutrients that a group of people in a certain age range (and sometimes gender) need for good health.

Energy

Energy is the amount of calories (Kcal) the food will provide when eaten. Energy comes from fat, carbohydrate and protein (and in adults from alcohol). 70% of this for a 1-4year old child is 903Kcal / day. Young children need diets which are relatively high in energy as they need energy for growth and development as well as for everyday activities.

Fat

Fat provides the most concentrated form of energy in the diet. Fat also provides vitamins A, D and E. Some fat is essential for growth and functioning of the body's systems. Young children need 'essential fatty acids' for healthy development. The optimal amount of fat required is calculated as about 35% of food energy, which equates to 35g / day.

Fats can be divided into *saturated fats* derived mainly from animal sources and *unsaturated fats (including omega – 3 fats)* from plants and fish.

Children under 5 should not be given low fat foods designed for adults (with the exception of semi-skimmed milk after the age of 2 years if children are eating and growing well).

Saturated fats

No guidelines are available for the requirement for saturated fat for young children.

Recommendations for children and adults age 5 and over state that saturates should make up no more than 11% of food energy; however it is known that for children under 5 their intake is usually around 16% due to their necessary milk consumption. Thus 16% has been used as a maximum requirement figure which equates to approximately 15g / day.

Carbohydrate

Carbohydrate describes both starch and sugar in foods. Carbohydrate should provide about 50% of the total energy per day (120.4g / day). Most of this should come from starch, intrinsic sugars (sugars found naturally as part of the cell structure of unprocessed foods such as fruit and vegetables), and sugars found in milk (milk sugars). Foods such as confectionary, chocolate and soft drinks are not necessary in the diet. They provide energy but few other nutrients and can contribute to dental caries. Children do not need sugar for energy but can get all the energy they need from other carbohydrate foods.

Non -Milk Extrinsic Sugars (NMES)

NMES includes table sugar (sucrose) added to drinks such as tea and coffee, cereals , cakes biscuits and the sugar in soft drinks, confectionery and fruit juice including honey , glucose, maltose and fructose. The maximum level of NMES should not be higher than 11% of food energy (equating to 26.6g / day), as these cause tooth decay and provide few nutrients. Although the analysis provided data for the quantity of sucrose and total sugars per portion, the data for glucose, maltose and fructose was as a percentage of the sample and this data could not be used to calculate the percentage energy provided by NMES. However, as sucrose is one source of NMES, comments have

been provided, where appropriate to the individual nurseries regarding the sucrose content of the food.

Protein

Protein is needed for growth, maintenance and repair of body tissues. Good sources include meat, poultry, fish, dairy foods, eggs, soya and pulses. The CWT recommends 70% of the DRV should be provided (equating to 11g / day). Most children in Britain eat in excess of their requirement, so although 11g / day is the guideline for this project, it was expected that the levels eaten would be considerably higher.

Iron

Iron is needed for the function of several body systems including the pigment haemoglobin which carries oxygen in red blood cells. Iron is found in meat, fish, poultry, dried fruits and pulses including lentils and chick peas. A diet poor in iron can cause iron deficiency anaemia. Iron deficiency anaemia can lead to lethargy, vulnerability to infection and may affect immediate and long-term intellectual development and behaviour. The CWT therefore recommends that 80% of the DRV for Iron should be provided in day-care (5.5mg /day).

Zinc

Zinc is needed by every organ of the body and the immune system. Young children in Britain have been shown to have poor intakes. The CWT guideline therefore sets 80% of the DRV (4.3mg /day) as the standard. Zinc can be found in meat, eggs, milk, cheese, wholegrain cereals, pulses and nuts.

Calcium

70% of the DRV for Calcium equates to 260mg /day. Calcium is necessary for many body systems and for building strong bones. Dairy foods are the best source of calcium.

Salt

The main source of salt is from that added to manufactured foods, used in cooking or at the table. High salt intakes can lead to elevated blood pressure in later life. Children who regularly eat foods such as salami, ham, tinned baked beans and spaghetti in sauce and salty savoury snacks are likely to be consuming too much salt.

The salt guidelines from the Scientific Advisory Committee on Nutrition (SACN) are used (12). SACN have set targets for the maximum level allowed in the diet at 2.3g /day; thus 70% of this equates to 1.6g /day. Salt should not be added to the food of under 5's.

Fibre

No guidelines are available for the requirement for fibre for children. Therefore it has been estimated based on the adult recommendation of 18g / day. Proportionately 1-4 year olds require no more than 8.1g / day. Fibre is found in fruits and vegetables, oats, wholegrain cereals and pulses. Caution should be exercised to ensure young children are not given excessive fibre intakes as this can interfere with absorption of some minerals and cause diarrhoea.

Portion size

The data for each nutrient from each nursery was formatted to equal an average portion size, in instances when the portion provided by the nursery appeared unusually large or small. This enabled each nursery's meals to be directly compared with the CWT guidelines, against each other and to enable comparisons with the original Hampshire Trading Standards project to be made.

The average weight of food eaten for 1-4 year olds ranges from 445g to 650g / day (range due to age) thus the average portion size used for a day's worth of nursery meals equals 547g / day (10) (table 1). One Nursery (H) did not provide an evening meal so the analysis was adjusted to reflect an average portion size excluding an evening meal.

Table 1 Nutrient based standards

Expected Weight(g)	547
Energy (kcal)	903
Fat (g)	35
Saturates	15
Total CHO(g)	120
NME Sugars (g)	26.6
Fibre(g)	8.1
Protein(g)	11
Fe (mg)	5.5
Ca (mg)	260
Zinc(mg)	4.3
Salt(g)	1.6

Other standards

As well as the nutrient based standards listed above, there are a second set of recommendations which are made based on the frequency of food groups offered (Table 2).

Starchy Food

Starchy foods such as bread, pasta, rice, potato, couscous and other cereals should be offered at each meal plus as snacks.

Fruit and Vegetables

Overall 5 portions of fruit and vegetables should be offered per day. They are particularly important for good health because of the vitamins and antioxidants they provide. The best way to offer these is 1-2 portions of fruit as pudding or as a snack and 2-3 portions of vegetables either served as part of a meal or as part of a snack.

Meat, Fish and Alternatives

These should be offered at each main meal, thus in the nursery setting this should be at both lunch and tea.

Oily Fish

Oily fish provide omega 3 fats in the diet. These are important for brain development in young children and also good for a healthy heart in adults. Children are recommended to have 1 portion of oily fish per week; however they should not have in excess of this as these fish can contain high levels of mercury which is considered to be toxic.

Table 2 Other standards

Food Group	Frequency to be offered
Starchy Food	At each meal plus snack
Fruit	1-2 /day
Vegetables	2-3/day
Dairy	2-3/day
Meat, fish & alternatives	At each meal
Oily fish	Once per week

The Nurseries

Nursery A

The nutritional interpretation is based on food available over the full 5 day week.

Portion size

- The weight of the sample ranged from 405-708g, with the mean portion size equating to 540g/day. The expected average weight of food for 1-4 year olds is 547g. Therefore the amount of food provided was as expected.

Nutrient and food based standards

Expected		Actual	✓ or x
Weight(g)	547	540	✓
Energy (kcal)	903	623	x
Fat (g)	35	20	x
Saturates	15	9.8	x
Total CHO(g)	120	87.3	x
Sugars (g)	N/A	36.3	N/A
Fibre(g)	8.1	6.8	✓
Protein(g)	11	23.2	✓
Fe (mg)	5.5	3.2	x
Ca (mg)	260	386	✓
Zinc(mg)	4.3	2.1	x
Salt(g)	1.6	1.1	✓
Sucrose	N/A	7.3	N/A
Starchy Food	At each meal plus snack	At each meal but ? not at snack	x
Fruit	1-2 /day	2-3/day	✓
Vegetables	2-3/day	2 /day	✓
Dairy	2-3/day	2-3/day	✓
Meat, fish & alternatives	At each meal	At each meal 3/5 days	x
Oily fish	Once per week	Once per week	✓

Positive Comments

- The nursery provides a varied and interesting menu, allowing children to experience foods of different tastes and textures. It includes pulses as well as meat and fish. The tea time menu is extremely varied and does not rely on sandwiches alone. This is excellent as it allows children to experience a wide range of foods.
- A daily vegetarian option is available. The menu for this is varied and interesting and is aligned to the main menu.

- The nursery caters for children with allergies or on special diets but no menu was available to comment on.
- Children are offered appropriate portion sizes, with the mean portion size reflecting the expected average amount for 1-4 year olds. This is an improvement compared to the previous analysis when the average portion size was larger than expected.
- The meals are well balanced and include foods from the 4 main food groups.
- Meat, fish and alternative sources of protein were provided at both lunch and tea on 3 of the 5 days analysed. This is an improvement compared to the previous analysis. If these foods were provided at both meals on the remaining 2 days then the standard would be met.
- Oily fish is included once per week which is beneficial in terms of energy, essential fatty acids and vitamins A and D. This is an improvement compared to the last analysis.
- The average fibre content of the menus is 6.8g, reflecting the incorporation of fruit, vegetables, pulses and some wholegrain products into the menus. This indicates a reasonable level of fibre without being in excess.
- The average iron content of the food has increased from 2.0mg to 3.2mg reflecting the provision of meat, fish and alternatives at both meals on the majority of days. However the target of 5.5mg has still not been achieved.
- The majority of the meals are made from scratch which is reflected by the average salt content meeting the SACN maximum recommended intake of 1.6g. This is hard to achieve and should be commended.
- Protein and calcium are provided in adequate amounts.
- The nursery is part of a national chain and has a training programme in place for cooks regarding children's nutrition which is also to be rolled out to nursery managers. Nationally a nutritionist is used to devise the menus. The chain has worked in partnership with various agencies to encourage healthy eating amongst young children and is a partner in the national Change4life Campaign.

Areas for Improvement

- Whilst there have been a number of positive improvements to the menu and portions provided, there are still some CWT standards which have not been achieved. The energy, fat and carbohydrate content are still on the low side. This could be improved by providing starchy foods such as breadsticks and dips, crackers, pitta bread, crumpets, cheese scones or toast spread with margarine /hummus/lentil pate /cheese cubes for snacks. As fruit is currently provided 2-3 times per day, reducing the fruit to 2 portions daily and providing the foods aforementioned will help increase the energy, fat and carbohydrate content. Providing

full fat yoghurt, custard or rice pudding alongside the fruit or biscuits offered at tea –time would increase the energy and fat content

- The iron content has improved compared to the previous analysis but still falls short of the target of 5.5mg per day. The zinc content remains the same as last time. Ensuring that meat, fish, eggs, poultry or pulses are provided at both meals will help improve both the iron and zinc content.
- In the questionnaire completed the nursery states that milk, water and fresh fruit juices are freely available. From a dental health perspective it would be better if fruit juices were restricted to meal times.

Summary

- A varied and interesting menu is on offer. Most meals are prepared from scratch and the low salt content of the food reflects this. There have been a number of positive changes to the menu and portions provided since the last analysis. However there are still some improvements to be made to increase the energy, fat, carbohydrate, iron and zinc content of the meals and snacks to ensure the nursery complies with the CWT guidelines.

Nursery B

The nutritional interpretation is based on food available over the full 5 day week.

Portion size

- The weight of the sample ranged from 694 - 927g, with the mean portion size equating to 786 g /day. The expected average weight of food for 1-4 year olds is 547g. Therefore the amount of food provided was larger than average.
- For the purpose of nutritional comparison against the CWT guidelines and other nurseries, the nutritional values in the food provided have been adjusted to the average child's portion size of 547g.

Expected		Actual	Adjusted to expected portion size	✓ or x
Weight(g)	547	786	547	x
Energy (kcal)	903	928	646	x
Fat (g)	35	27.9	19.5	x
Saturates	15	15.1	10.5	x
Total CHO(g)	120	130.2	90.6	x
Sugars (g)	N/A	52.1	36.3	N/A
Fibre(g)	8.1	13.2	9.2	x
Protein(g)	11	38.5	26.8	✓
Fe (mg)	5.5	4.4	3.0	x
Ca (mg)	260	463.8	323	✓
Zinc(mg)	4.3	3.7	2.6	x
Salt(g)	1.6	2.6	1.8	x
Sucrose (g)	N/A	15.8	11.0	N/A
Starchy Food	At each meal plus snack	At meals no info provided re snacks		x
Fruit	1-2 /day	1-2/day		✓
Vegetables	2-3/day	1-3/day		✓
Dairy	2-3/day	2-3/day		✓
Meat, fish & alternatives	At each meal	3/5 days at each meal		x
Oily fish	Once per week	never		x

Positive Comments

- The nursery has a catering policy and aims to promote healthy food and provide a positive shared dining experience for its customers.
- Meat, fish and alternative sources of protein were provided at both meals on 3 of the 5 days analysed which is an improvement compared to the previous analysis.

- Fruit is provided once or twice a day and vegetables are provided 2-3 times per day
- Although the portion size was larger than average it was slightly smaller compared to the previous sampling and slightly closer to the average expected portion.
- The nursery caters for a variety of special diets including vegetarian although no menus were provided so these cannot be commented on.
- The average salt content of the adjusted portion size is 1.8g and only just exceeds the maximum recommended value of 1.6g. Using less stock and pre-prepared mixes would reduce the salt content of the food.
- Protein and calcium are provided in adequate amounts.
- Milk and water are the only drinks provided which is good for dental hygiene.
- Although the iron and zinc content are below the recommended level, both iron and zinc have improved very slightly compared to the previous analysis.

Areas for Improvement

- The portion sizes are large but the energy, fat and carbohydrate content are lower than recommended when the portion is formatted to equal an average expected portion size. In this respect there has been little change compared to the previous analysis. Young children need adequate quantities of carbohydrate and fat in order to grow and develop properly.
- The fibre content exceeds the maximum recommended. The portion sizes of fruit and vegetables may be too large, increasing the fibre intake. Young children need some fibre but it should not be provided in excess as it can fill them up and prevent them from consuming essential nutrients in adequate quantities. Providing appropriate portion sizes of fruit and vegetables would help this.
- The nursery provides snacks but these are not able to be commented on in detail as no menu or details of the snacks were provided. The questionnaire returned by the nursery states that dried fruit is offered at snack times.
- Oily fish is not provided at all. It should be included once per week as it is a good source of beneficial omega 3 fatty acids and vitamin D.
- The iron and zinc content of the food is below the recommended level in both the adjusted portion and the actual portion size. Including red meat twice a week and always including a source of meat, fish, poultry, pulses or eggs at each meal would help improve both iron and zinc levels.

Summary

- Some improvements have been made to the menus compared to the previous analysis but there are still a number of improvements to be made in order to ensure the menus comply with the CWT standards. Small changes could be made to the menu to increase the nutrients which fall below the CWT recommendations and to reduce the salt content.

Nursery C

The nutritional interpretation is based on food available over the full 5 day week.

Portion size

- The weight of the sample ranged from 441-504g, with the mean portion size equating to 458g/day. The expected average weight of food for 1-4 year olds is 547g. Therefore the amount of food provided was close to but slightly lower than expected.
- For the purpose of nutritional comparison against the CWT guidelines and other nurseries, the nutritional values in the food provided have been adjusted to the average child's portion size of 547g.

Nutrient and food based standards

Expected		Actual	Adjusted to expected portion size	v or x
Weight(g)	547	458	547	x
Energy (kcal)	903	634	755	x
Fat (g)	35	26.3	31.3	v
Saturates	15	13.8	16.4	v
Total CHO(g)	120	60.3	71.8	x
Sugars (g)	N/A	31.9	38.0	N/A
Fibre(g)	8.1	4.8	5.8	x
Protein(g)	11	25.0	29.8	v
Fe (mg)	5.5	2.7	3.2	x
Ca (mg)	260	404	481	v
Zinc(mg)	4.3	2.6	3.1	x
Salt(g)	1.6	1.3	1.6	v
Sucrose	N/A	6.3	7.5	N/A
Starchy Food	At each meal plus snack	At each meal plus snack		v
Fruit	1-2 /day	3/day		v
Vegetables	2-3/day	3/day		v
Dairy	2-3/day	2-3 /day		v
Meat, fish & alternatives	At each meal	At each meal		v
Oily fish	Once per week	3x per week		v

Positive Comments

- The nursery has a food policy and the catering staff receive nutrition training. The weekly menu is displayed in advance and the recipes are available for the parents to see. The nursery has made changes to improve the menus following the previous analysis. This is

reflected by the improvement in the nutrient content of the menus. The menu is varied and interesting with a variety of different meals and snacks being offered. Two meals and two snacks are now offered daily, compared to two meals and one snack when the previous analysis was undertaken.

- Children on special diets are catered for but no menus were available to comment on.
- The portion size is close to but slightly smaller than the average expected portion size, indicating that the portion sizes are not too large. If the portion size was increased slightly it would bring it nearer to the average expected amount.
- There is an ethos that meal times will be happy social occasions and children are allowed dessert if they have refused their main course, thus allowing them an opportunity to receive important nutrients.
- Milk and water are the only drinks provided (apart from at breakfast where fruit juice is offered) which will help with dental hygiene.
- The salt target has been achieved (as it was for the original analysis) which is commendable. This reflects the fact that the meals are mostly homemade from scratch, and do not have salt added to them.
- The calcium, protein and fat targets have been achieved. The maximum saturated fat target has only been exceeded by 1.4 g so is very close.
- Although the zinc target of 4.3mg has not been achieved the amount provided is close to the target and with a few minor adjustments to the menu will be achievable. Both the iron and zinc content are higher compared to the sample previously analysed, reflecting changes to the menu.
- The fibre content is not far off the target.
- The energy and fat content are higher than in the sample analysed in the previous survey, indicating that the nursery have made some adjustments to the menu and recipes which is a positive improvement.
- Meat, fish and alternative sources of non-dairy protein are available at each meal. This is an improvement compared to the previous analysis and is reflected in the slightly higher iron and zinc content of the meals.
- Oily fish is provided at least once per week and other fish is also on the menu.

Areas for Improvement

- The portion size appears to have fallen slightly compared to the previous analysis. It should be increased slightly to reflect the expected average amount.

- Oily fish are on the menu 3 times in the week analysed. Oily fish provide omega 3 fats which are important for brain development in young children and also good for a healthy heart in adults. Children are recommended to have 1 portion of oily fish per week; however they should not have in excess of this as these fish can contain high levels of mercury which is considered to be toxic. Therefore it would be better to limit oily fish to one portion per week and to vary the day that it is offered to allow children attending part time to have the opportunity to eat it.
- Despite the nursery making positive improvements to the menus since the last analysis, the overall energy and carbohydrate content of the food provided is still below the recommended amount. Providing a carbohydrate source at both snacks will increase the energy and carbohydrate content.
- On the questionnaire, the nursery states that low fat fromage frais is used. This should be changed to full fat fromage frais to improve the energy profile of the meals and snacks where it is used.
- The fibre content is slightly on the low side and could be increased slightly. Using a mixture of oats and flour for crumble toppings, a mixture of wholemeal and white flour for pastry, cakes and sponges will help achieve this. Using soaked dried apricots in the apricot upside down pudding in place of tinned apricots would also help increase the fibre content.
- Including red meat at least twice a week will increase the iron and zinc content. Red meat could be offered more often in place of oily fish to help achieve this.

Summary

The nursery has made a number of improvements since the last analysis to bring the menus more in line with the CWT recommendations. Two meals and two snacks are now provided which are interesting and varied. There have been improvements to the nutritional content of the food but a few changes are still needed to increase the energy, carbohydrate, zinc, iron and fibre content. The salt content remains consistently low and the fat target has been achieved.

Nursery D

The nutritional interpretation is based on food available over the full 5 day week.

Portion size

- The weight of the sample ranged from 840-1020g, with the mean portion size equating to 911g/day. The expected average weight of food for 1-4 year olds is 547g. Therefore the amount of food provided was larger than average.
- For the purpose of nutritional comparison against the CWT guidelines and other nurseries, the nutritional values in the food provided have been adjusted to the average child's portion size of 547g.

Nutrient and food based standards

Expected		Actual	Adjusted to expected portion size	v or x
Weight(g)	547	911	547	x
Energy (kcal)	903	1041	625	x
Fat (g)	35	36.7	22.0	x
Saturates	15	14.1	8.5	x
Total CHO(g)	120	130.8	78.5	x
Sugars (g)	N/A	48.9	29.3	N/A
Fibre(g)	8.1	10.1	6.6	v
Protein(g)	11	46.3	27.8	v
Fe (mg)	5.5	5.7	3.4	x
Ca (mg)	260	832	499	v
Zinc(mg)	4.3	5.1	3.1	x
Salt(g)	1.6	2.2	1.3	v
Sucrose	N/A	4.9	2.9	N/A
Starchy Food	At each meal plus snack	At each meal plus snack		v
Fruit	1-2 /day	2-3/day		v
Vegetables	2-3/day	3/day		v
Dairy	2-3/day	3-4/day		v
Meat, fish & alternatives	At each meal	At each meal		v
Oily fish	Once per week	3x per week		v

Positive Comments

- The nursery has a 4 week menu cycle which alternates between winter and summer, offering a cooked meal at lunchtime and a snack evening meal, with a great choice of vegetables. The menu is displayed for parents to see.

- The nursery caters for vegetarian children and those with food allergies. Children are encouraged to try all foods.
- Milk and water are the only drinks provided which will help with dental hygiene.
- There is an ethos that meal times will be happy, social occasions and the staff eat with the children, providing a positive example of eating behaviour.
- The SACN salt target has been achieved which is commendable, as this is difficult to achieve, reflecting that the majority of food is prepared from scratch.
- The nursery has made some positive improvements to the menu following the last analysis. Two meals plus snacks are provided whereas at the time of the original analysis no afternoon snack was provided.
- Oily fish is provided at least once per week, whereas at the time of the original analysis oily fish featured only once on the 4 week summer menu.
- The calcium, protein and fibre content of the food are appropriate.

Areas for Improvement

- When the actual portion size of the food offered is looked at many of the nutrient targets are met. However, as the average portion size is larger than the average expected for this age, children not eating the full amount of food offered will not be achieving their recommended intakes. The children are not always eating all the food offered, which probably reflects the large portion sizes. Care needs to be taken to offer appropriately sized meals which are energy and nutrient rich to ensure that children are receiving adequate amounts of energy, fat, vitamins and minerals in a quantity appropriate to their age.
- Oily fish are on the menu 3 times in the week analysed. Oily fish provide omega 3 fats which are important for brain development in young children and also good for a healthy heart in adults. Children are recommended to have 1 portion of oily fish per week; however they should not have in excess of this as these fish can contain high levels of mercury which is considered to be toxic. Therefore it would be better to limit oily fish to one portion per week and to vary the day that it is offered to allow children attending part time to have the opportunity to eat it.

Summary

The nursery has made a number of improvements since the last analysis to bring the menus more in line with the CWT recommendations. Two meals and two snacks are now provided which are interesting and varied. There have been improvements to the nutritional content of the food but a few changes are still needed to ensure the portion sizes offered are not too large and that the iron and zinc targets are met.

Nursery E

The nutritional interpretation is based on food available over the full 5 day week.

Portion size

- The weight of the sample ranged from 555- 636g, with the mean portion size equating to 601 g/day excluding the weight of an evening meal. As this excluded an evening meal the expected weight of the portion was 397g/day. Therefore the amount of food provided was larger than average.
- For the purpose of nutritional comparison against the CWT guidelines and other nurseries, the nutritional values in the food provided have been adjusted to the average child's portion size of 397g.

Nutrient and food based standards

Expected		Actual	Adjusted to expected portion size	✓ or ✗
Weight(g)	397	601	397	✗
Energy (kcal)	645	633	418	✗
Fat (g)	25	26.4	17.4	✗
Saturates	7.4	11.9	7.9	✓
Total CHO(g)	86	70.5	46.5	✗
Sugars (g)	19	33.3	22.0	N/A
Fibre(g)	5.9	9.4	6.2	✓
Protein(g)	7.9	28.5	18.8	✓
Fe (mg)	3.8	3.3	2.2	✗
Ca (mg)	190	476	314	✓
Zinc(mg)	2.9	3.3	2.2	✓
Salt(g)	1.1	1.5	1.0	✓
Sucrose(g)		7.6	5.0	N/A
Starchy Food	At each meal plus snack	At meal and both snacks		✓
Fruit	1-2 /day	1-2/day		✓
Vegetables	2-3/day	1-3/day		✓
Dairy	2-3/day	2-3/day		✓
Meat, fish & alternatives	At each meal	At meal and some snacks		✓
Oily fish	Once per week	Once per week		✓

Positive Comments

- The nursery has a food and drink policy and aims to promote healthy food and provide a positive shared dining experience for its customers. Training on healthy eating for the under 5's is provided for the cook and nursery nurses.
- The menus for the meals and snacks are displayed for parents' information.
- The Nursery caters for special diets. A vegetarian alternative is available if required. However details of this were not provided and therefore cannot be commented on.
- Milk and water are the only drinks provided which will help with dental hygiene.
- The SACN salt target was met which is commendable as this is difficult to achieve.
- Appropriate quantities of fruit and vegetables are provided.
- The protein, calcium and zinc targets have been met and the quantity of saturated fat provided is appropriate.
- The added sucrose content is low which is good in terms of dental health.
- The nursery has made some improvements to the nutrient profile of the food provided since the last analysis. The iron, zinc and fibre content of the food have improved and oily fish is provided once per week whereas at the time of the previous analysis it was only provided once per month.
- The amount of food provided, although still larger than would be expected is slightly smaller than provided at the time of the previous analysis.

Areas for improvement

- The amount of food provided is larger than the average amount expected for a full day including two meals and snacks. In order for the children to achieve their requirements, they need to eat larger than average portions. Small changes could be made to the recipes and menus to reduce the portion sizes and increase the nutrient content, making them more appropriate for young children.
- The morning snack comprises toast or bread with fruit. From the menus it was not possible to deduce whether butter, margarine or another spread was offered with the bread/toast. A full fat spread or other topping should be provided.
- The nursery should consider providing a tea-time meal for those children attending full day care. This would ensure that the food provided complies with the CWT guidelines.
- The morning snack could be improved by incorporating a wider variety of foods such as cheese and crackers, fruit or cheese scones or crumpets with full fat spread, pitta bread or

bread sticks with dips such as hummus or tzatziki. This would enhance the nutritional adequacy of the snacks.

Summary

- The nursery has made a number of improvements to the menus since the last analysis and the nutritional profile has improved as a result. The salt target has once more been met .It is recommended that the nursery reviews its portion sizes and looks to bring them closer to the average expected amount, whilst not compromising the energy, fat or mineral content. Ideally, children in full day-care should be provided with two meals and two snacks. The nursery should consider providing a tea-time meal for those children attending full day care.

Nursery F

The nutritional interpretation is based on food available over the full 5 day week.

Portion size

- The weight of the sample ranged from 743 – 1030 g, with the mean portion size equating to 855g/day. The expected average weight of food for 1-4 year olds is 547g. Therefore the amount of food provided was larger than average.
- For the purpose of nutritional comparison against the CWT guidelines and other nurseries, the nutritional values in the food provided have been adjusted to the average child's portion size of 547g.

Nutrient and food based standards

Expected		Actual	Adjusted to expected portion size	✓ or ✗
Weight(g)	547	855	547	✗
Energy (kcal)	903	887	568	✗
Fat (g)	35	35.5	22.7	✗
Saturates	15	14.3	9.2	✗
Total CHO(g)	120	100.6	64.4	✗
Sugars (g)	26.6	51.5	33.0	N/A
Fibre(g)	8.1	7.3	4.7	✗
Protein(g)	11	41.5	26.6	✓
Fe (mg)	5.5	4.1	2.6	✗
Ca (mg)	260	687	440	✓
Zinc(mg)	4.3	4.0	2.6	✗
Salt(g)	1.6	2.1	1.3	✓
Sucrose		12.6	8.1	N/A
Starchy Food	At each meal plus snack	At each meal plus snack		✓
Fruit	1-2 /day	1-3/day		✓
Vegetables	2-3/day	2-3/day		✓
Dairy	2-3/day	3-4/day		✓
Meat, fish & alternatives	At each meal	4/5 days		✓
Oily fish	Once per week	Once per week		✓

Positive Comments

- The nursery has a 4 weekly cycle menu which is varied and interesting and is changed quarterly. The menu is available for parents to see. The majority of the meals are made from scratch using fresh ingredients, which is reflected by the low salt content. The SACN salt target was achieved this time which is commendable.

- The nursery uses the CWT and Food Standards Agency guidance to help plan the menu. Since the previous analysis the nursery has adopted some of the recipes found on the CWT website.
- The nursery has a food and drink policy which was only in draft form at the time of the previous analysis.
- The nursery provides nutrition training for the cook and nursery staff.
- The nursery has an ethos that meal times are a sociable time and staff act as positive role models. Staff eat with the children and eat the same food as the children in family style dining.
- Children with allergies or special dietary needs including vegetarians are catered for and the recipes are coded accordingly.
- Milk and water are the only drinks provided which will help with dental hygiene.
- Since the previous analysis there have been several positive improvements to the menus and nutritional content of the food provided. The protein, calcium and salt targets have been achieved. Oily fish is now provided once per week either at lunch or tea and a starchy food is provided at both meals and at the morning snack.

Areas for Improvement

- The nursery provides a morning snack, but not an afternoon snack. This means that children are missing out on the opportunity to eat nutrient rich foods and to refuel. This is particularly important for those children attending full day-care. An afternoon snack should be provided to ensure the food provided meets the CWT guidelines. This would lead to an improvement in the nutritional profile of the analysis; particularly in respect to the energy, fat, carbohydrate, fibre and iron content, if appropriate nutrient rich foods are offered as an afternoon snack.
- The portion sizes have increased slightly compared to the previous analysis and the nursery report that some children do not eat all of the food, particularly potatoes, rice and pasta; suggesting that the portion sizes should be reduced, adjusting the menus slightly to alter the balance of nutrients, increasing those which fall short of the CWT targets.
- The iron and zinc content of the food is on the low side but could be increased with a few small adjustments to the menu such as ensuring lamb and beef are provided at least twice a week, and including an afternoon snack. Milk jellies with fruit would be an alternative to fruit juice based jellies and would provide a source of zinc.

Summary

- Since the previous analysis there have been several positive improvements to the menus and nutritional content of the food provided. The protein, calcium and salt targets have been achieved. Oily fish is now provided once per week either at lunch or tea and a starchy food is provided at both meals and at the morning snack. The nursery has a food and drink policy. The nursery should consider providing an afternoon snack.

Nursery G

The nutritional interpretation is based on food available over the full 5 day week.

Portion size

- The weight of the sample ranged from 692-1010g, with the mean portion size equating to 780g/day. The expected average weight of food for 1-4 year olds is 547g. Therefore the amount of food provided was larger than expected.
- For the purpose of nutritional comparison against the CWT guidelines and other nurseries, the nutritional values in the food provided have been adjusted to the average child's portion size of 547g.

Nutrient and food based standards

Expected		Actual	Adjusted to expected portion size	✓ or x
Weight(g)	547	780	547	x
Energy (kcal)	903	748	524	x
Fat (g)	35	28.2	19.7	x
Saturates	15	11.0	7.7	x
Total CHO(g)	120	87.5	61.3	x
Sugars (g)	26.6	44.6	31.2	N/A
Fibre(g)	8.1	10.6	7.4	✓
Protein(g)	11	35.9	25.2	✓
Fe (mg)	5.5	3.14	2.2	x
Ca (mg)	260	547	383	✓
Zinc(mg)	4.3	3.9	2.7	x
Salt(g)	1.6	2.0	1.4	✓
Sucrose		6.4	4.5	N/A
Starchy Food	At each meal plus snack	At each meal plus snack		✓
Fruit	1-2 /day	2-3/day		✓
Vegetables	2-3/day	2-3/day		✓
Dairy	2-3/day	3-4/day		✓
Meat, fish & alternatives	At each meal	At each meal 4/5 days		✓
Oily fish	Once per week	Once per week		✓

Positive Comments

- The nursery has a 5 week menu cycle and special diets and allergies are catered for.
- The nursery is in the process of writing their nutrition policy.
- Although the portion size is still large, it is smaller than in the previous analysis.

- The salt target has again been achieved which is excellent.
- The sucrose content is low, which is good in terms of dental health.
- Since the previous analysis the nursery has improved in terms of the number of nutrient and food standards being met. The protein, calcium, fibre and salt targets have been met. The nursery now provides meat, fish and alternatives at both meals on four out of the five days sampled and vegetables are provided 2-3 times per day.
- The desserts at lunch time cannot be commented on as no details were provided on the menu.

Areas for Improvement

- The energy, fat and carbohydrate content are low. Energy and fat are required for growing children to provide energy. Fat also supplies essential vitamins A and E. To improve the fat and carbohydrate levels it would be beneficial to reduce the proportion of fruits in the meals and snacks and increase the quantity of other foods. Where fruit only is provided for some desserts, the quantity of fruit could be reduced and custard, fromage frais, rice pudding or yoghurt could be added. Fruit sponge or crumble and custard would also be a more nutritious option.
- The iron and zinc content of the food remains low. A few adjustments to the recipes could be made to improve this.
- The portion size has been reduced since the last analysis but is still bigger than expected. The nursery reports that the children are not eating all the food offered which reflects this. The portion sizes should be reduced and the recipes adapted to ensure the food is more nutritionally appropriate for children of this age group.

Summary

Since the previous analysis there have been several positive improvements to the menus and nutritional content of the food provided. The protein, calcium, fibre and salt targets have been achieved. The portion size, although reduced compared to the previous analysis should be reduced to a size where the majority of the children are eating all the food offered and the recipes should be adapted to increase the energy, fat, carbohydrate, iron and zinc content.

Summary of Results

Table 3 summarises how the food provided by the nurseries compared to the CWT standards.

Table 3 Summary of Results

Nutrient	Standard	Nursery						
		A	B	C	D	E	F	G
Weight(g)	547	√	x	x	x	x	x	x
Energy (kcal)	903	x	x	x	x	x	x	x
Fat (g)	35	x	x	√	x	x	x	x
Saturates	15	x	x	√	x	√	x	x
Total CHO(g)	120	x	x	x	x	x	x	x
Fibre(g)	8.1	√	x	x	√	√	x	√
Protein(g)	11	√	√	√	√	√	√	√
Fe (mg)	5.5	x	x	x	x	x	x	x
Ca (mg)	260	√	√	√	√	√	√	√
Zinc(mg)	4.3	x	x	x	x	√	x	x
Salt(g)	1.6	√	x	√	√	√	√	√
Starchy Food	At each meal plus snack	x	x	√	√	√	√	√
Fruit	1-2 /day	√	√	√	√	√	√	√
Vegetables	2-3/day	√	√	√	√	√	√	√
Dairy	2-3/day	√	√	√	√	√	√	√
Meat, fish & alternatives	At each meal	x	x	√	√	√	√	√
Oily fish	Once per week	√	x	√	√	√	√	√

Summary of Main Points

- Many of the nurseries provided varied and interesting meals; some with 4 or 5 week menu cycles and catered for children with special diets. Several produced the majority of their meals from scratch and this was reflected by the low salt and sugar content of the food.
- Six of the seven nurseries had a food or nutrition policy and one was in the process of writing theirs. One had completed their policy since the time of the previous analysis. Several of the nurseries reported that their catering or nursery staff received nutrition training.
- All of the nurseries had revised their menus since the last analysis and had made positive improvements, particularly in relation to the balance and frequency of foods offered. This resulted in more of them meeting the food based standards compared to the previous analysis.
- Several nurseries had an ethos of happy meal times, with staff sharing meal times with the children and acting as good role models, which is excellent.
- Six out of seven nurseries met the salt target compared to seven out of ten in the previous analysis.
- Six out of the seven nurseries now provided oily fish once per week compared to only two out of ten in the original analysis.
- Five out of the seven nurseries now provided a starchy food at both meals and a snack compared to only two out of ten in the first survey.
- All seven nurseries met the standard for both fruit and vegetable provision whereas only five out of ten in the original analysis met the standard for vegetable provision, with all ten meeting the standard for fruit provision.
- Five out of seven nurseries now provided meat, fish or an alternative non-dairy source of protein at each meal compared to only three out of ten in the previous analysis.
- As in the original analysis all nurseries provided adequate protein and calcium.
- As in the previous analysis no nursery met the iron target but one met the zinc target compared to none in the previous analysis.
- Only one nursery provided appropriate portion sizes (nursery A), although another provided slightly under the expected amount. Several had reduced their portion sizes compared to the first analysis but the portions still remained large with the energy, fat and carbohydrate content generally remaining low. Several of the nurseries stated that not all the food was being eaten, reinforcing the fact that the portions given were too large. One nursery provided adequate fat (nursery C) compared to none meeting this target in the previous analysis.

- The CWT guidelines recommend children in full day care are provided with a mid-morning and afternoon snack plus lunch and tea. The omission of an afternoon snack or tea will mean that children attending full time day care are missing out on an opportunity to refuel and consume vital nutrients. One nursery did not provide an afternoon snack and another did not provide tea. This is an improvement compared to the previous analysis when five out of the ten nurseries did not provide an afternoon snack.
- It is encouraging to see that all the nurseries have made positive improvements to the menus and food provision since the previous analysis. However there are still several improvements to be made as regards portion size, energy, fat, carbohydrate, iron and zinc content.

Recommendations

- The nurseries should continue to look at their menus with a view to making further small adjustments which will lead to improvements to the nutritional profile of the food provided.
- Portion control should be looked at to ensure that children are not being given significantly larger or smaller portions than expected.
- All nurseries should seek nutrition and the early years training for catering and nursery staff.

Useful Resources

- The CWT provides an excellent menu planning guide as part of its resource Eating Well for under -5's in Child Care: Training Materials. This can be obtained from www.cwt.org.uk.
- The NHS Change4life campaign includes an Early Years Toolkit which provides suggestions for snacks and food related resources. This can be found on www.nhs.uk/Change4Life.
- The NHS birth to five guide provides practical information regarding healthy eating from weaning to age years. The document can be downloaded from http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/@ps/@sta/@perf/documents/digitalasset/dh_117167.pdf
- The infant and toddler forum provide a range of materials for professionals regarding food and nutrition www.infantandtoddlerforum.org.uk and also advice sheets for parents on www.littlepeoplesplates.co.uk

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