

Healthy Eating in Pregnancy

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Learning points

- 1** During pregnancy the maternal diet must provide sufficient nutrients to meet the mother's usual requirements as well as those of the growing fetus and stores for use during the third trimester and lactation
- 2** A healthy balanced diet for pregnancy is based on the five food groups in the Eatwell Plate with additional supplements of folic acid during the first trimester and vitamin D throughout pregnancy
- 3** Nutrient deficiencies in UK women prior to conception and during pregnancy include iron, iodine, folate and vitamin D
- 4** Women who choose not to eat fish need to take a supplement suitable for pregnancy containing omega 3 fatty acids and iodine
- 5** Vegan women also need supplements providing iron, calcium and vitamin B₁₂
- 6** Energy intake (calories) only needs to be increased by about 200kcal/day during the last trimester. No increase is needed during the first two trimesters
- 7** Food safety requires more care during pregnancy as fetal development can be adversely affected by food-borne organisms and pollutants

Diet and influence on the fetus

The nutritional status of a woman before and during pregnancy influences:

- the growth and development of her fetus and forms the foundations for her child's later health¹
- the mother's own health, both in the short and long term²

In the first few weeks the fetus relies on simple diffusion of oxygen and nutrients from the mother's blood. From about 12 weeks the placenta controls the nutrient and oxygen supply to the fetus and the removal of waste products. The placenta also has a role in releasing hormones into the maternal blood which may modify maternal appetite and availability of nutrients.

The physiological adaptations in the pregnant women include:

- increased absorption and decreased excretion of some nutrients
- increased storage of nutrients in early pregnancy to meet the needs of the mother and fetus later in pregnancy and during lactation

Consequently pregnant women only require higher amounts of some nutrients in their diet compared to non-pregnant women. These nutrients are: Thiamine, riboflavin, folate, vitamins A, C and D, calcium, phosphorus, magnesium, zinc, copper, selenium³, iodine^{4,5} and the essential omega 3 fatty acids⁶.

All but two nutrients - **folate/folic acid** and **vitamin D** - can be consumed in sufficient quantities by eating a well-balanced, nutritious diet based on the five food groups in the Eatwell Plate⁷. Dietary supplements of both folic acid and vitamin D are recommended^{2,3,8,9}. Supplementary folic acid is needed prior to conception and up until 12 weeks gestation to lower the risk of neural tube defects¹⁰ and supplementary vitamin D is recommended throughout pregnancy and breastfeeding. Some pregnant women are entitled to free vitamin tablets containing both these vitamins under the Healthy Start scheme (www.healthystart.nhs.uk).

In addition, extra care with food safety is crucial to prevent foodborne illnesses that could harm the mother and/or the fetus.

A balanced and nutritious diet for pregnancy

Table 1 (opposite) provides more specific recommendations on combining the five food groups for an optimally nutritious diet during preconception and pregnancy. The table shows the main nutrients supplied by each food group plus the number of servings required each day to provide an adequate intake of energy and nutrients.

In summary:

- **Starchy foods and fruit and vegetables** - included at all meals and some snacks
- **Milk, cheese and yogurt or calcium enriched soya alternatives** - three servings per day
- **Meat, fish, eggs, nuts or pulses** - two to three servings per day including fish twice per week, at least one of which should be oily fish
- **Oils butter and fat spreads** - include small quantities in food and meal preparation for essential fatty acids
- **Sugary foods and packet snacks** - they provide few nutrients so include in very small amounts but if you are overweight it is best to avoid them
- Take supplements of folic acid and vitamin D

Note: Non-dairy milks such as those based on soya, nuts, oats, rice and other foods do not provide the same levels of nutrients as cows'/goats' milk. Some non-dairy milks such as some soya milks are fortified with calcium however the B vitamin and iodine levels are lower than in cows'/goats' milk. Therefore these milks cannot be counted towards the three servings per day of milk, cheese and yogurt. Supplements as shown in Table 3 will be needed to compensate when non-dairy milks are used in place of cows'/goats' milk.

Overcoming dietary problems arising during pregnancy such as nausea and vomiting, constipation, taste changes, cravings, heart burn and oesophageal reflux are discussed in **Factsheet 6.2**

Table 1: Food groups and recommended servings

Food group	Foods included	Main nutrients supplied	Recommendation during pregnancy	Average serving sizes (cooked weights/ ready to eat)
1. Bread, rice, potatoes, pasta and other starchy foods	Bread, chapatti, breakfast cereals, rice, couscous, pasta, millet, potatoes, yam, and foods made with flour such as pizza bases, scones and pancakes	Carbohydrate B vitamins (excluding B ₁₂) Fibre Some protein, iron, zinc and calcium	Base each meal and some snacks on these foods Using wholegrain varieties will increase fibre intake to address constipation in susceptible women	2-3 slices bread (70-100g) 1-2 chapattis/1 large tortilla 150-200g rice/pasta 100-150g potatoes 40g dry breakfast cereal 150g cooked porridge 1 large scone (50g)
2. Fruit and vegetables	Fresh, frozen, tinned and dried fruit and vegetables	Vitamin C Phytochemicals Fibre Carotenes in brightly coloured fruit and veg	Include one or more of these at each meal and aim for at least five servings per day	One serving is about 3oz (80g) of any fruit or vegetable
3. Milk, cheese and yogurt	Whole, semi-skimmed and skimmed milk, flavoured milk drinks such as lattes, yogurts, cheese	Calcium Iodine in milk, cheese and yogurt Riboflavin Vitamin B ₁₂ Protein	Three servings of milk, cheese or yogurt per day Use low fat varieties if overweight or obese prior to or during pregnancy	One serving is: 200-250ml milk/yogurt 40g cheese 200ml custard/milk pudding
4. Meat, fish eggs, nuts and pulses	Meat, white and oily fish, eggs, nuts and pulses including dhal, hummus, falafel, chick pea/gram flour for example in bhajis	Iron Iodine in fish and eggs Omega 3 long chain fatty acids: DHA (docosahexaenoic acid) and EPA (eicosapentaenoic acid) from oily fish Protein Zinc Magnesium B vitamins including vitamin B ₁₂ in meat, fish and eggs	Two servings per day or three for vegetarians Two servings of fish per week, at least one of which should be oily fish e.g. salmon, mackerel, trout, herring or sardines Eat a food high in vitamin C at the same time as eggs, nuts and pulses to enhance iron absorption from these foods	One serving is: 3oz (90g) lean meat 3-4oz (90-120g) fish 2 eggs 50g nuts 250g cooked dhal 200g mixed bean salad 1 small pot (200g) hummus
5. Oils butter and fat spreads	Cream, butter, fat spreads (margarine), cooking and salad oils and mayonnaise	Vitamins A and E in butter, fat spreads and cream Vitamin E in oils The omega 3 fatty acid alpha-linolenic acid in rapeseed, walnut, soya and olive oils	Use small amounts in food and meal preparation	2 teaspoons (10g) butter 2 teaspoons (10g) oil for cooking or frying 2 tablespoons (30g) cream 2 tablespoons (30g) mayonnaise
Sugary foods and packet snacks	Chocolate, confectionery, jam, honey, syrup, sugar, sugar sweetened drinks, crisps and other high fat savoury snacks		Limit these to small quantities and do not eat in place of the other five food groups. For women who are overweight or obese, these foods are best avoided	If used: 2 teaspoons jam/honey/syrup 1 teaspoon sugar 2-3 squares chocolate 1 fun sized chocolate bar 10-12 crisps
Fluid	Water, all flavoured drinks, milk, tea, coffee and soup	Water Fluoride in areas with fluoridated tap water	About 6-8 drinks per day (1½-2 litres) will provide adequate fluid to prevent dehydration More drinks may be needed in hot weather and after physical activity. Limit caffeinated drinks and avoid alcohol	200-250ml/drink
Vitamin supplements	1. Folic acid before and up until 12 weeks gestation Either: 400µg (0.4mg)/day for most women Or: 5 milligram (5mg)/day on prescription for those women with: <ul style="list-style-type: none"> • spina bifida • a history of a previous child with a neural tube defect • pre-existing diabetes, epilepsy or obesity 2. Vitamin D: 10µg/day throughout pregnancy		Only buy supplements from a reliable company with good quality control i.e. brands on sale in pharmacies	

Low nutrient intakes in UK women of child bearing age

Most UK women of child bearing age would need to improve their diets to meet these recommendations. The latest UK National Diet and Nutrition Survey reports that the following nutrients are lower than recommended in the diets of some UK women of childbearing age:

- Vitamins A and D, riboflavin, folate, iron, iodine, calcium, magnesium, potassium, zinc, selenium and fibre.

Additionally, blood samples from the same survey showed that about 10 per cent of women are anaemic and, depending on the season, 10 to 40 per cent were deficient in vitamin D – more women in late winter and early spring and fewer in the summer months. Increasing sun exposure on skin during the UK summer months April to September will increase vitamin D levels. However current lifestyles and modes of dress do not allow adequate vitamin D synthesis in all women. Oily fish is the only good dietary source of vitamin D as other food sources (eggs, meat and some fortified foods) provide very small amounts.

Table 2: Percentage of girls and women with low blood levels indicating iron deficiency anaemia¹¹

Nutrient	Women 19-64 years	Teenage girls 11-18 years
Haemoglobin below 120g/L	9.9%	7.4%
Ferritin below 15µg/L	15.5%	27.5%

The nutrients that are commonly low in women of childbearing age are discussed further in

Factsheet 5.2

By changing to a balanced diet following the recommendations in Table 1, along with supplements of vitamin D and folic acid, the risk of nutrient deficiency is resolved.

Additional supplements providing certain nutrients will be needed by some women:

- **Omega 3 fats** are likely to be low in the diets of women who choose not to eat one or two portions of oily fish each week. These women need to be advised to take a supplement providing 200mg/day of DHA⁶ but should also be advised that better health outcomes from eating fish rather than taking omega 3 supplements have been reported¹².
- **Iodine** - women who do not eat fish and do not have three servings of cows' milk, cheese or yogurt per day are unlikely to reach the WHO recommended intake of 250µg iodine/day^{4,13}. The UK reference nutrient intakes (RNI) for pregnant women of 140µg/day of iodine has not been reviewed for many years and is now considered to be too low¹⁴. The consequences of poor iodine intake can compromise brain development in the fetus and consequently IQ levels in childhood and later life¹⁵. A supplement suitable for pregnant women providing 140-150µg/day should be considered for women who do not consume iodine-rich foods¹⁶. Kelp and seaweed supplements should not be taken as these may contain very high levels of iodine which can cause thyroid problems.

Supplements providing these two nutrients are also shown in Table 3.



Healthy Start vitamins for women

Vegetarian diets

Many vegetarians' diets are significantly better than those of non-vegetarians but vegetarian mothers particularly at risk of poor nutrition are:

- those, including adolescents, who have decided to avoid meat and other animal foods without taking care to ensure alternative sources of the nutrients found in meat
- immigrants and ethnic groups who have dietary restrictions and/or are not able to access culturally familiar foods

Before and during pregnancy, vegetarian women need to plan their diets carefully to ensure adequate intakes of iron, iodine, omega 3 fats, riboflavin, calcium and vitamin B₁₂. They can do this by:

- eating three servings per day of milk, cheese or yogurt
- eating three servings of foods from food group four per day to increase their iron intake and including at the same time a food high in vitamin C such as citrus fruit, kiwi fruit, tomatoes, pepper or potato
- including two servings of fish per week, at least one of which should be oily fish*

* If fish is not eaten, a supplement suitable for pregnancy containing both omega 3 fats and iodine should be taken.

Vegan diets

Pregnant women who follow a vegan diet normally avoid all sources of animal foods including milk and milk products, eggs, meat and fish. They should take care to ensure that they consume sufficient:

- iodine by taking a supplement suitable for pregnancy providing 140-150µg/day (not kelp or seaweed supplements)
- vitamin B₁₂ from good sources such as fortified yeast extracts, fortified soya milk, fortified textured soya protein and fortified cereals. If these are not included in the diet a vitamin B₁₂ supplement may be needed
- calcium from fortified soya milk each day or by taking a calcium supplement
- iron from good sources such as nuts, pulses and fortified breakfast cereals at the same time as a food high in vitamin C
- omega 3 fats from walnuts and walnut or rapeseed oil on a daily basis or consider taking an omega 3 supplement

Table 3: Suitable supplements for pregnant women

Supplements	Nutrients provided	Suitable for	Availability
Healthy Start vitamins for women	400µg folic acid 10µg vitamin D 70mg vitamin C	All pregnant women Free to those eligible for Healthy Start benefits	Limited to those CCGs where staff distribute it Not available in retail outlets
Folic acid only several brands available	400µg folic acid	All pregnant women	Widely available in retail pharmacies, supermarkets and online
Vitamin D only several brands available	10-25µg vitamin D depending on the brand	All pregnant women	Widely available in retail pharmacies, supermarkets and online
Multi-vitamins and minerals suitable for pregnancy several brands available	10µg vitamin D B vitamins including 400µg folic acid and vitamin B ₁₂ Vitamins C, E and K Carotenoid forms of vitamin A Iron, iodine, zinc, selenium, magnesium and copper Some contain omega 3 fats	Vegetarians Pregnant women who eat little or no fish or dairy products Women and adolescents who do not eat a balanced diet	Widely available in retail pharmacies, supermarkets and online
Multi-vitamins and minerals including calcium suitable for pregnancy several brands available	10µg vitamin D B vitamins including 400µg folic acid and Vitamin B ₁₂ Vitamins C, E & K Carotenoid forms of vitamin A Calcium Iron, iodine, zinc, selenium, magnesium and copper Omega 3 fats	Vegan women Pregnant women who eat little or no dairy products or calcium fortified soya milks and products	Widely available in retail pharmacies, supermarkets and online
Only buy supplements from a reliable company with good quality control i.e. brands on sale in pharmacies			

Energy requirements

Energy requirements for women depend on their size, weight and activity levels. Although nutrient requirements are higher during the first two trimesters, energy requirements are not. If a mother had a body mass index (BMI) within the normal category (BMI 18.5–25kg/m²) and was maintaining her weight before pregnancy then her energy requirement during the first and second trimesters of pregnancy will remain about the same as before pregnancy. She should continue to eat the same size portions of food as she did before pregnancy and definitely **not** increase her food intake and 'eat for two'.

Additional energy is needed during the third trimester to support the growth of the fetus and to enable fat to be deposited in the mother's body for use during lactation. However considerable reductions usually occur in physical activity and the metabolic rate adjusts to help to compensate for these increased needs. The Department of Health recommends an extra 200 kcals per day from food for the final three months only³.

Examples of food providing 200kcal are:

- two slices of buttered bread or
- a bowl of wholegrain breakfast cereal with milk or
- a bowl of lentil and tomato soup and a bread roll



Underweight and overweight women

Energy intake from food and drink needs more consideration for underweight and overweight pregnant women. There are currently no UK evidence-based recommendations on appropriate weight gain during pregnancy for these women. However the American Institute of Medicine (IOM) recommends¹⁷:

Pre-pregnancy weight	Pre-pregnancy body mass index (BMI)* (kg/m ²)	Appropriate weight gain during pregnancy (kg)
Normal weight	18.5–24.9	11.5–16
Overweight	25–29.9	7–11.5
Obese	>30	5–9
Underweight	<18.5	12.5–18

* BMI = weight in kg divided by the square of height in metres (weight in kg/height in m²)

Normally 0.5–2kg of weight is gained during the first trimester of pregnancy and the remainder of the recommended weight gain is expected during the second and third trimesters.

Women who gain weight within the IOM ranges are more likely to have better maternal and infant outcomes than those who gain more or less weight¹⁸.

Gaining too little weight during pregnancy - particularly in normal weight and underweight women - can result in infants being born with a low birth weight, which is associated with health problems for the child¹.

Excess weight gain during pregnancy can increase the risk of gestational diabetes, pre-eclampsia or having a big baby which can contribute to difficulties during delivery. It is also associated with maternal postpartum weight retention in the short, intermediate, and long term¹⁸ as well as with future development of obesity in children¹⁹. Nutritional care of overweight and obese women is discussed in more detail in **Factsheet 6.1**

Women with pre-existing medical conditions

These include conditions such as diabetes mellitus, food allergy and malabsorption syndromes. These women should be referred to a dietitian prior to pregnancy for advice and guidance and their nutritional status should be monitored closely throughout pregnancy. The extra nutritional care needed by these women is discussed in **Factsheet 5.3**



Adolescent girls

Adolescent girls may have increased nutritional requirements during pregnancy because they need to complete their own growth as well as providing for the fetus²⁰. The shorter the length of time between the onset of menarche and pregnancy, the greater the nutritional risk. In particular, teenagers will not have achieved their peak bone mass.

Nutritional status at conception is more likely to be suboptimal as the diets of many teenagers in the UK are poor¹¹ due to following factors:

- Making own independent food choices to fit in with their peer group
- Finalising their autonomy and rejecting family meals and family food values
- High intake of high calorie, low nutrient foods such as sweet drinks and junk foods
- Dieting to manage weight
- Following vegetarian diets without substituting alternative sources of iron when meat is eliminated
- Low intake of milk and milk products
- Irregular dietary habits (e.g. missing breakfast)²¹

In addition teenage mothers are often from socioeconomically deprived backgrounds²² linked to poor diets and smoking and, as around 75 per cent of teenage pregnancies are unplanned, adolescent girls are unlikely to be taking folic acid and vitamin D supplements prior to conception or in early pregnancy.

Studies have shown that teenage pregnancy is associated with:

- lower gestational weight gain
- an increased risk of low birth weight
- pregnancy-induced hypertension (PIH)
- pre-eclampsia
- pre-term labour
- iron deficiency anaemia
- maternal mortality

Pregnant teenagers under the age of 18 years are eligible to join the Healthy Start scheme regardless of their financial circumstances (www.healthystart.nhs.uk). If they join they will be entitled to receive free Healthy Start vitamin supplements (listed in Table 3) along with weekly vouchers to purchase milk, fruit and vegetables.



Food, drinks and supplements to avoid or limit during pregnancy

Vitamin A

There are two dietary forms of vitamin A:

- Retinol from animal sources e.g. whole and semi-skimmed milk products
- Carotenoids from plant sources - particularly brightly coloured vegetables and fruit

Both forms are found in a healthy balanced diet and are important during pregnancy. However high doses of retinol are associated with teratogenesis (malformations in the fetus)²³. To avoid high doses of retinol, pregnant women should eat a balanced diet but avoid:

- vitamin supplements containing retinol
- cod liver oil supplements and other fish oil supplements containing vitamin A
- liver and liver products such as liver pâté as liver contains very high amounts of retinol

Fish

Oily fish should be eaten once or twice per week because they are a good source of omega 3 fats and iodine for both mother and her fetus. They are limited to two servings per week because some of these fish contain dioxins and PCBs (polychlorinated biphenyls) that might affect the nervous systems of the fetus²⁴.

Swordfish, marlin and shark should be avoided due to possible high mercury levels²⁴. For the same reason tuna should be limited to four medium-sized cans per week (with a drained weight of about 140g per can) or fresh tuna steaks (weighing about 140g when cooked or 170g raw)²⁴.

Alcohol

Alcohol intoxication should be avoided at any stage of pregnancy and especially in the early weeks where it is associated with teratogenesis and may cause miscarriage. The advice around limiting or avoiding alcohol intake varies. Guidelines and evidence include:

- The safest approach in pregnancy is to choose not to drink at all
- Alcohol in the mother's blood stream crosses the placenta into the blood stream of a fetus and results in nearly equal concentrations in the mother and fetus
- UK mothers reporting intakes of one to two units of alcohol per week during the first trimester had an increased risk of premature birth and those drinking two or more units also had an increased risk of lower birth weight²⁵
- NICE recommends pregnant women avoid alcohol, particularly in the first trimester as small amounts of alcohol may be associated with miscarriage. They advise that women who choose to drink in the second and third trimesters should consume no more than one or two units of alcohol, once or twice a week⁸
- The Royal College of Obstetrics and Gynaecology state that one to two units once or twice a week has not been shown to be harmful after 12 weeks of pregnancy²⁶
- Alcohol has a detrimental effect on the absorption and use of folate thus compounding the problem in women who do not take folic acid supplements

- Regular binge drinking (five or more units of alcohol on one occasion) around conception and in early pregnancy, is particularly harmful to a woman and her baby
- Drinking heavily throughout pregnancy (more than 10 units per day) is linked with an increased risk of fetal alcohol syndrome. Fetal alcohol syndrome is characterised by reduced birth weight and length, a small head size with characteristic facial appearance and a variety of congenital abnormalities

Alcohol Units:

Units of alcohol	Alcoholic drinks
1	Half a pint of ordinary strength beer, lager or cider (3.5% alcohol by volume (ABV)) 125ml glass of wine (9% ABV) 25ml measure of spirits (40% ABV)
1.5	125ml glass of wine (11% or 12% ABV) One bottle of alco pops
2	175ml glass of wine (11% or 12% ABV)

Caffeine

A limit of 200mg/day is currently recommended because high levels of caffeine increase the risk of causing miscarriage or low birth weights²⁷.

The caffeine content of drinks and chocolate is:

1 shot of espresso coffee.....	140mg
1 mug of filter coffee.....	140mg
1 mug of instant coffee	100mg
1 cup of brewed coffee	100mg
1 mug of tea	75mg
1 cup of tea	50mg
1 cup/mug decaffeinated tea or coffee.....	about 10mg
1 can of cola	up to 40mg
1 can of energy drink	up to 80mg
1 bar of plain chocolate	up to 50mg
1 bar of milk chocolate.....	up to 25mg

Certain cold and flu remedies also contain caffeine.

Herbal teas

Little information is known about the effects of herbal teas on the fetus and as a precautionary measure NHS Choices suggest limiting these to a maximum of four cups per day.



Food safety

General food hygiene should be followed carefully but extra care should be taken because certain foodborne illnesses can cause miscarriage, stillbirth, and abnormalities in the developing fetus or severe illness in the newborn.

Foodborne illness	Foods/materials to avoid
Listeriosis - a flu-like illness caused by the bacteria, <i>listeria monocytogenes</i>	<ul style="list-style-type: none"> • Pâté - meat, fish or vegetable unless tinned or pasteurised • Mould ripened soft cheeses e.g. brie, camembert, blue-veined cheeses • Unpasteurised milk and milk products • Ready meals especially those containing chicken that are not reheated before consumption
Salmonella - a bacteria which is the major cause of food poisoning in the UK	<ul style="list-style-type: none"> • Raw or partially cooked eggs and foods containing them such as mayonnaise and mousse • Undercooked poultry and other meat
Toxoplasmosis - a disease caused by the parasite <i>toxoplasma gondii</i> found in raw meat, soil and cat faeces	<ul style="list-style-type: none"> • Raw or undercooked meat • Unpasteurised milk and milk products • Soil • Cat litter trays
Campylobacter - a bacteria that commonly causes food poisoning in the UK	<ul style="list-style-type: none"> • Undercooked poultry • Unpasteurised milk and milk products • Untreated water • Soil • Domestic pets

Precautions to take:

- Avoid pâté and unpasteurised milk products
- Only eat soft cheeses if they have been cooked e.g. blue-veined cheeses and soft cheeses with a white rind
- Wash vegetables and salad thoroughly to remove any soil or dirt
- Only buy unwrapped foods, e.g. cooked meats and prepared salads, where scrupulous food handling guidelines have been followed as these foods can easily become contaminated
- Reheat ready meals to piping hot right through - heat once only and discard the leftovers
- Cook eggs so that both the white and yolk are solid
- Thoroughly cook all meat
- Defrost poultry in the fridge and cook until piping hot right through
- Only buy raw shellfish, e.g. prawns, cockles and mussels if they are packaged and stamped with a use-by date and cook them thoroughly
- Wash hands after handling raw meat, fish or shellfish
- Wash hands after touching cats
- Wear rubber gloves when emptying cat litter trays
- Wear gloves while gardening
- Don't help with lambing or milking ewes that have recently given birth

Foods safe to eat during pregnancy:

- Cooked shellfish, including prawns that are part of a hot meal and have been cooked thoroughly
- Live or bio yogurt
- Probiotic drinks
- Fromage frais
- Crème fraîche
- Soured cream
- Spicy food
- Mayonnaise, ice cream and salad dressing made with pasteurised egg. Home-made versions may contain raw eggs and must be avoided
- Honey may be eaten during pregnancy, but is not suitable for infants under 12 months of age
- Pasteurised cheeses including:
 - hard cheese, such as cheddar and parmesan
 - feta
 - ricotta
 - mascarpone
 - cream cheese
 - mozzarella
 - cottage cheese
 - paneer
 - halloumi
 - processed cheese, such as cheese spreads

Allergies

Avoiding specific foods during pregnancy will not reduce the risk of the fetus developing a food allergy following birth or later in life. Any previous recommendations along these lines have been withdrawn following recent evidence.



Scan of a fetus at 22 weeks gestation

Achieving healthy eating recommendations during pregnancy



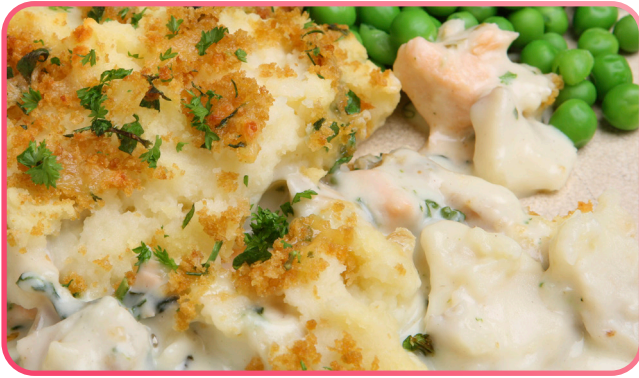
Many different combinations of foods can satisfy the healthy eating recommendations in Table 1.

Snacks

Swapping low nutrient snacks such as crisps and similar packet snacks, chocolate bars, plain cakes and biscuits for those listed below will improve nutrient intakes.

- Nuts with dried fruit
- Mug of vegetable soup
- Fresh fruit
- Vegetable sticks e.g. carrot, cucumber, pepper, baby corn and dips based on yogurt, cream cheese or hummus
- Wholegrain breakfast cereals with milk
- Cheese with crackers or crispbread
- Sandwiches, bread rolls and pitta breads with fillings such as fish pâté, egg, nut butters, cold meat along with salad or roasted vegetables
- Bread or toast with a spread
- Cheese on toast
- Yogurt or fromage frais
- Crumpets, scones, currant buns, teacakes, scotch pancakes, fruit muffins
- Small slice of cake or one or two biscuits containing dried fruit, nuts or vegetables, e.g. fruit cake, carrot cake, date and walnut loaf





Sample menus

Menu 1

Meal/snack	Food and drinks	Food groups	Caffeine content (mg)
Early morning	Mug of tea with milk		75
Breakfast	Porridge or wholegrain breakfast cereal and milk with fresh fruit slices or dried fruit Water to drink	1, 2, 3	
Mid-morning	Skinny latte, decaffeinated Banana	3 2	10
Midday meal	Chicken and salad sandwich Bunch of grapes Water to drink	1, 2, 4, 5 2	
Afternoon snack	Mug of tea with milk Muffin/cake containing dried fruit	Sugary foods	75
Evening meal	Oily fish and potato pie with green beans Fruit salad Yogurt Water to drink	1, 2, 4 2 3	
Supplements	Folic acid and vitamin D		

This menu has:

Food group 1 - three servings: breakfast cereal, bread, potato

Food group 2 - six servings: fresh fruit slices/dried fruit, banana, salad, grapes, green beans, fruit salad

Food group 3 - three servings: milk on cereal and in tea, skimmed milk in latte, yogurt

Food group 4 - two servings: chicken, fish

Food group 5 - one serving: butter on bread

Sugary foods - one serving muffin/cake

Caffeine content: 160mg



Menu 2: Vegetarian

Meal/snack	Food and drinks	Food groups	Caffeine content (mg)
Early morning	Mug of tea with milk		75
Breakfast	Bread/toast/chapatti Boiled egg Fresh orange segments Water to drink	1 4 2	
Mid-morning	Wholegrain crackers with cheese Cup of tea with milk	1, 3	50
Midday meal	Rice and dhal Vegetables including tomatoes Yogurt and figs/dates Water to drink	1, 4 2 2, 3	
Afternoon snack	Nuts and pineapple chunks Water to drink	2, 4	
Evening meal	Chickpea and vegetable curry with flatbread Mango slices Lassi to drink	1, 2, 4, 5 2 3	
Supplements	Folic acid, vitamin D and omega 3		

This menu has:

Food group 1 - four servings: bread/toast/chapatti, crackers, rice, flatbread

Food group 2 - six servings: orange, vegetables with dahl, figs/dates, pineapple, vegetables in curry, mango

Food group 3 - three servings: cheese, yogurt, lassi

Food group 4 - four servings: egg, dahl, nuts, chickpeas with high vitamin C foods to aid iron absorption (orange, tomatoes, kiwi fruit, mango)

Food group 5 - one serving: oil used for frying dhal and curry

Caffeine content: 125mg



Menu 3: Low income

Meal/snack	Food and drinks	Food groups	Caffeine content (mg)
Early morning	Mug of tea with milk		75
Breakfast	Two Weetabix™ with milk Banana Water to drink	1, 3 2	
Mid-morning	2 clementines Cup of tea with milk	2	50
Midday meal	Baked beans on wholemeal toast Carrot and celery sticks Tinned peaches Yogurt Water to drink	1, 4 2 2 3	
Afternoon snack	Bread/toast with butter and jam Cup of tea with milk	1, 5, Sugary foods	50
Evening meal	Chicken and potato wedges Peas and beans Stewed apple and custard Water to drink	1, 4, 5 2 2, 3	
Supplements	Folic acid and vitamin D		

This menu has:

Food group 1 - four servings: Weetabix™, wholemeal toast, bread, potato wedges

Food group 2 - six servings: banana, clementines, carrot and celery sticks, tinned peaches, peas and beans, stewed apple

Food group 3 - three servings: milk on cereal and in tea, yogurt, custard

Food group 4 - two servings: baked beans, chicken

Food group 5 - two servings: butter/oil on potato wedges

Sugary foods - one serving: jam

Caffeine content: 175mg



Menu 4: Convenience food

Meal/snack	Food and drinks	Food groups	Caffeine content (mg)
Breakfast	Bagel with cream cheese Bunch of grapes Mug of tea with milk	1, 3 2	75
Mid-morning	Decaffeinated latte Currant bun	3 1	10
Midday meal	Hummus and roasted vegetable wrap Fruit yogurt with blueberries Water to drink	1, 4, 2 2, 3	
Afternoon snack	Small packet of peanuts 2 satsumas Fizzy water to drink	4 2	
Evening meal	Lasagne and green salad Strawberries and small slice chocolate and walnut cake	1, 2, 3, 4 2, Sugary foods	
Supplements	Folic acid and vitamin D		

This menu has:

Food group 1 - four servings: bagel, currant bun, tortilla in wrap, pasta in lasagne

Food group 2 - six servings: grapes, roasted vegetables, blueberries, satsumas, green salad, strawberries

Food group 3 - four servings: cream cheese, milk in latte and in tea, plain yogurt, cheese in lasagne

Food group 4 - three servings: hummus, peanuts, meat in lasagne

Food group 5 - two servings: oil on roasted vegetables and in lasagne

Sugary foods - one serving: chocolate and walnut cake

Caffeine content: 85mg

References

1. Berti C, Cetin I, Agostoni C, Desoye G, Devlieger R, Emmett P M, et al. Pregnancy and infants' outcome: nutritional and metabolic implications. *Crit Rev Food Sci Nutr*. 2014. doi: 10.1080/10408398.2012.745477
2. National Institute for Health and Care Excellence. Public Health Guidance 11. Improving the nutrition of pregnant and breastfeeding mothers and children in low income households, 2008
3. Department of Health. Dietary Reference Values for Food Energy and Nutrients for the UK. Report No 41. Report of the Panel on Dietary Reference Values of the Committee on Medical Aspects of Food Policy. HMSO, London, 1991
4. World Health Organization. Assessment of Iodine Deficiency Disorders and Monitoring Their Elimination, 2nd edn. Geneva, 2007
5. Delange F. Iodine requirements during pregnancy, lactation and the neonatal period and indicators of optimal iodine nutrition. *Public Health Nutrition*. 2007;10:1571-1580
6. Koletzko B, Cetin I, Brenna JT. Dietary fat intakes for pregnant and lactating women. *British Journal of Nutrition*. 2007;98:873-877. doi: 10.1017/S0007114507764747
7. Public Health England. Your Guide to the Eatwell Plate. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/340869/2014-250_-_eatwell_plate_Final_version_2014.pdf
8. National Institute for Health and Care Excellence. Clinical Guidance 62. Antenatal care: routine care for the healthy pregnant women, 2008
9. Scientific Advisory Committee on Nutrition. The influence of maternal, fetal and child nutrition on the development of chronic disease in later life, 2011
10. Department of Health. Folic Acid and the Prevention of Neural Tube Defects. Report of an Expert Advisory Group for the Department of Health. HMSO, London, 1992
11. Public Health England and the Food Standards Agency (2014) National Diet and Nutrition Survey: results from Years 1 to 4 (combined) of the rolling programme for 2008 and 2009 to 2011 and 2012
12. Oken, E and Belfort, M B. Fish, fish oil, and pregnancy. *JAMA*. 2010;304:1717-8
13. Bath S C, Sleeth M L, McKenna M, Walter A, Taylor A, Rayman M P. Iodine intake and status of UK women of childbearing age recruited at the University of Surrey in the winter. *Br J Nutr*. 2014. 112(10), 1715-1723
14. Bath S C, Walter A, Taylor A, Wright J, Rayman M P. Iodine deficiency in pregnant women living in the South East of the UK: the influence of diet and nutritional supplements on iodine status. *Br J Nutr*. 2014. 111(9), 1622-1631
15. Bath S C, Steer C, Golding J, Emmett P and Rayman M P. Inadequate iodine status in UK pregnant women adversely affects cognitive outcomes in their children: results from the Avon Longitudinal Study of Parents and Children (ALSPAC). *Lancet*. 2013. doi: 10.1016/S0140-6736(13)60436-5
16. British Dietetic Association. Food Fact Sheet Iodine. 2013. <https://www.bda.uk.com/foodfacts/Iodine>
17. Institute of Medicine. Weight Gain During Pregnancy: Reexamining the Guidelines. 2009. <http://iom.edu/Reports/2009/Weight-Gain-During-Pregnancy-Reexamining-the-Guidelines.aspx>
18. Viswanathan M, Siega-Riz A M, Moos M K, Deierlein A, Mumford S, Knaack J et al. Outcomes of Maternal Weight Gain, Evidence Report/Technology Assessment No. 168. Rockville USA: Agency for Healthcare Research and Quality. 2008
19. Herring S J, Rose M Z, Skouteris H, Oken E. Optimizing weight gain in pregnancy to prevent obesity in women and children. *Diabetes Obes Metab*. 2012;14(3):195-203. doi: 10.1111/j.1463-1326.2011.01489.x
20. Scholl T O and Hediger M L. A review of the epidemiology of nutrition and adolescent pregnancy: maternal growth during pregnancy and its effect on the fetus. *J Am Coll Nutr*. 1993;12(2):101-7
21. Burchett H and Seeley A. Good enough to eat: The diet of pregnant teenagers. The Maternity Alliance/The food Commission. London, 2003
22. Conrad D. Deprivation-based inequalities in under-18 conception rates and the proportion of under-18 conceptions leading to abortion in England, 1998-2010. *Journal of Public Health*. 2012;34(4):609-14
23. Department of Health (1990) Women cautioned: Watch your vitamin A intake. Department of Health Press Release No 90/507. Department of Health. London
24. NHS Choices. 2014. <http://www.nhs.uk/conditions/pregnancy-and-baby/pages/foods-to-avoid-pregnant.aspx#close>
25. Nykjaer C, Alwan N A, Greenwood D C, Simpson N A B, Hay A W M, White K L M et al. *J Epidemiol Community Health*. 2014;68:542-549. doi:10.1136/jech-2013-202934
26. The Royal College of Obstetrics and Gynaecology. 2014. <https://www.rcog.org.uk/en/news/rcog-statement-on-jech-study-looking-at-alcohol-consumption-in-early-pregnancy/>
27. Food Standards Agency. High caffeine energy drinks and other foods containing caffeine. 2008. <http://www.food.gov.uk/safereating/chemsafe/energydrinks>

Resources

British Dietetic Association, Pregnancy Food Factsheet <https://www.bda.uk.com/foodfacts/Pregnancy>

Healthy Start www.healthystart.nhs.uk

International Society for the Study of Fatty Acids and Lipids <http://www.issfal.org/statements/pufa-recommendations/statement-4>

Midwives Information and Resource Service (MIDIRS) information leaflets www.infochoice.org

The Pregnancy Book - Department of Health
http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_107302

Tommy's charity: <https://www.tommys.org>

NHS Choices <http://www.nhs.uk/Conditions/pregnancy-and-baby>

Start4 Life www.nhs.uk/start4life/Pages/healthy-pregnancy-baby-advice.aspxz



Healthy Eating in Pregnancy

GUIDANCE & TIPS FOR PARENTS

During the first six months of pregnancy you do not need to eat extra food but you may need to change the foods you are eating to make sure you and your baby are getting all the nutrients you need.

Have a **regular meal routine** of three meals each day with one or two planned snacks.

Base each meal and some snacks on **starchy foods** such as bread, rice, potatoes, pasta, cous cous, breakfast cereals and low sugar and fat snack foods based on flour such as scones, buns and teabread. Using wholegrain varieties will increase fibre intake if you have a tendency towards constipation.

Include **fruit and vegetables** at all meals and some snacks. Aim for at least five servings per day but more if possible. You can use fresh, frozen, tinned and dried fruit and vegetables.

Include **milk, cheese or yogurt** three times per day. This is to ensure adequate calcium and particularly iodine which is important for your baby's brain development. One serving is 200-250ml milk/yogurt or about 40g cheese. Note: non-dairy milks such as soy milk, nut milks and oat milks contain virtually no iodine.

Include two to three servings a day of **meat, fish, eggs, nuts or pulses**. These are the best sources of iron which is needed to prevent anaemia. Eat fruit and vegetables high in vitamin C at the same time as eggs, nuts and pulses to enhance iron absorption from these foods.

Include some **oily fish** once or twice per week to provide omega 3 fats which are important for your baby's development and vision. Other ways to increase omega 3 fats are to use **rapeseed oil** for cooking, eat **walnuts** and use **walnut or olive oil** in dressings.

Thinly spread butter, fat spreads, jam and honey and only use cream, mayonnaise and oils sparingly.

Snacks

Swap crisps and similar packet snacks, chocolate and confectionery for more nutritious snacks such as:

- Nuts with dried fruit
- Fresh fruit
- Vegetable sticks e.g. carrot, cucumber, pepper, baby corn and dips based on yogurt, cream cheese or hummus
- Wholegrain breakfast cereals with milk
- Cheese with crackers or crispbread
- Sandwiches, bread rolls and pitta breads with fillings such as fish pâté, egg, nut butters, cold meat along with salad or roasted vegetables

- Toast with a range of spreads
- Cheese on toast
- Yogurt or fromage frais
- Crumpets, scones, currant buns, teacakes, scotch pancakes

If you are having a small slice of cake or some biscuits choose those that contain dried fruit, nuts or vegetables, e.g. fruit cake, carrot cake or date and walnut loaf.

Fluids

Have about **six to eight drinks per day (1½-2 litres)** to provide adequate fluid to prevent dehydration. More drinks may be needed in hot weather and after physical activity. Limit caffeine intake in drinks and food to less than 200mg/day, e.g. four small cups of tea or two mugs of instant coffee.

Alcohol: it is safest not to drink at all during pregnancy and especially in the first trimester. If you do choose to drink alcohol in the second and third trimesters limit it to a maximum of one or two units of alcohol once or twice per week.

Supplements

- Take **folic acid** before and during the first trimester of your pregnancy and take **vitamin D** throughout pregnancy
- If you do not have three servings of milk, cheese or yogurt each day and/or do not eat fish then choose a supplement suitable for pregnancy that contains iodine and omega 3 fats
- Avoid any supplements containing retinol or fish oil supplements containing vitamin A
- Only buy supplements from a reliable company with good quality control i.e. brands on sale in pharmacies

Be sure to follow **food safety guidelines** to avoid foodborne illnesses

- Avoid liver, undercooked meat/fish/eggs and unpasteurised dairy products
- Avoid swordfish, marlin and shark and limit tuna to four medium-sized cans per week (with a drained weight of about 140g per can) or fresh tuna steaks (weighing about 140g when cooked or 170g raw)
- Reheat any convenience food to piping hot before eating - only heat once
- Carefully wash vegetables and fruit to remove any soil



The healthiest start in life
from pregnancy to preschool

The Infant & Toddler Forum CIC is committed to a world where every child has the healthiest start in life

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