



Royal Surrey
County Hospital
NHS Foundation Trust

Healthy eating in Type 2 diabetes

Nutrition and Dietetics Department

Patient information leaflet

Who is this leaflet for?

The aim of this leaflet is to summarise the key nutritional messages for:

- Individuals with type 2 diabetes
- Individuals with pre-diabetes
- Friends, carers and relatives of those with type 2 diabetes

What is type 2 diabetes?

This is when the amount of glucose (sugar) in the blood is too high. This is because the body cannot control it properly.

What is pre-diabetes?

Pre-diabetes is a condition where the blood glucose is raised but not high enough to be classed as diabetes. Individuals with pre-diabetes are at risk of developing diabetes in the future. The diet and lifestyle advice for those with pre-diabetes is the same as for those with diabetes. This advice will be outlined in this leaflet. The sooner you can make changes to your diet and lifestyle the better.

What causes type 2 diabetes?

Everyone needs a certain level of glucose (sugar) in their blood as glucose provides all cells with energy. Glucose comes from carbohydrate containing foods (sugars and starches). Your liver is also a storage site for glucose which can be released when needed eg: overnight.

A gland called the pancreas produces a hormone called insulin. Insulin acts like a key to allow glucose to enter the cells for energy. Cells make up every part of our body including our muscles and organs.

If you have diabetes your pancreas either:

1. Produces too little insulin
2. Produces some insulin but the cells in the body are resistant to the insulin (insulin resistance)
3. Both of the above

In all cases, this means that blood glucose levels rise. If left untreated for a long period, this can cause damage to your body.

Why do some people get diabetes?

Why diabetes develops in some people and not others is complex. We know certain risk factors can make it more likely for someone to develop diabetes. These are listed below:

- Being over-weight
- Having a large waist
- Being of African-Caribbean or South Asian background and over 25
- Having a parent, brother or sister with diabetes
- A history of high blood pressure, a heart attack or a stroke
- A history of polycystic ovaries or gestational diabetes
- A poor diet and lack of exercise can contribute to the development of diabetes.
- The risk can also increase with age.

What can happen if I do not control my diabetes?

If your blood glucose levels are too high in the long-term this can increase your risk of:

- Heart disease and stroke
- Eye problems (diabetic retinopathy)
- Feet problems (loss of sensation, diabetic ulcers)
- Kidney problems (loss of function)
- Other problems e.g. erectile dysfunction

What are the symptoms of high blood glucose?

- Tiredness – as your cells are not getting glucose for energy
- Weeing a lot – body tries to flush out extra glucose
- Thirst – the body tries to replace lost fluid from weeing
- Poor wound healing/infections – bugs feed off high blood glucose
- Blurred vision – high blood glucose can result in temporary changes to the shape of the lens of the eye
- You may also find, however that you don't have any symptoms.

What is Hba1c?

This is a test that is used to diagnose and monitor diabetes. Hba1c is now the most commonly used measure to diagnose diabetes. This is a long-term measure of your blood glucose control. It measures the amount of glucose that has attached to your red blood cells over the last 2-3 months.

- A reading over 48mmols/mol indicates diabetes
- A reading between 42mmols/mol and 47mmols/mol indicates pre-diabetes
- A reading below 42mmols/mol is normal

Can diabetes be cured?

Currently diabetes cannot be cured but it can be well managed. Carrying extra weight, particularly around the waist can cause insulin resistance. This places extra pressure on the pancreas. If you are overweight, losing weight can improve insulin resistance and help the body function better.

A recent trial, called DIRECT, demonstrated that a weight loss of 15kg or more (2.5 stone), has the potential to put Type 2 diabetes into remission (HBA1c below 48mmol/l without medications).

Participants on this trial were:

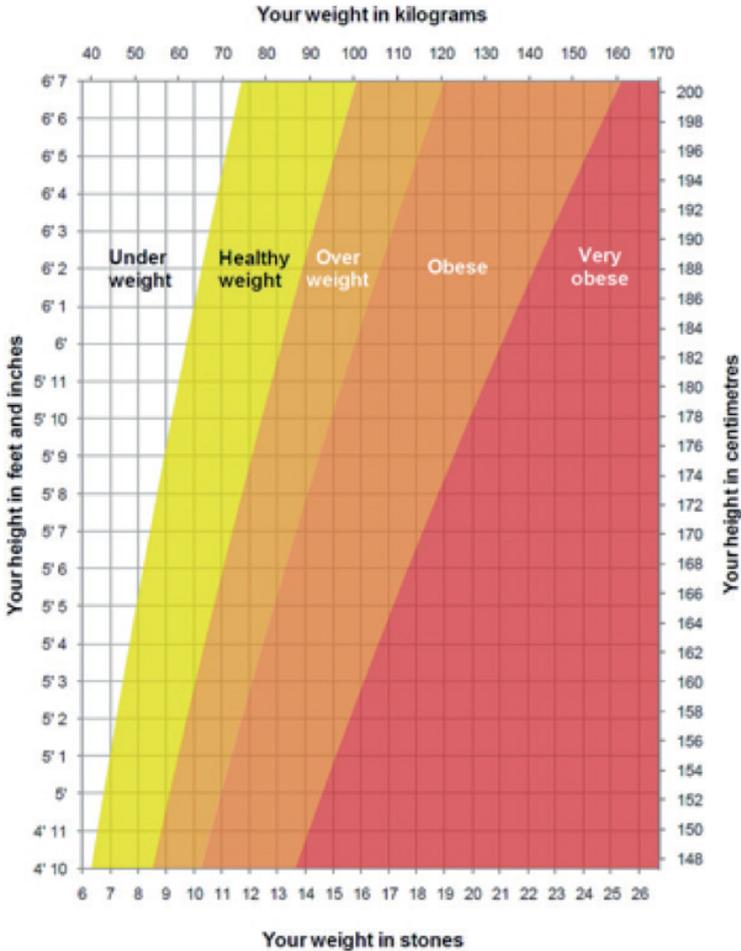
- 20-65 years of age,
- overweight (BMI 27 or greater)
- diagnosed with Type 2 diabetes for 6 years or less.

Further information about this can be found on the Diabetes UK website.

If you are seeking support for weight loss, please discuss with your GP, practice nurse or dietitian.

How do I know if I am over-weight?

The chart below can help determine whether your weight is in a health range for your height.



You can also measure your waist circumference. You have a higher risk of health problems if your waist size is:

- More than 94cm (37 inches) if you're a man
- More than 80cm (31.5 inches) if you're a woman

Your risk of health problems is even higher if your waist size is:

- More than 102cm (40 inches) if you're a man
- More than 88cm (34.5 inches) if you're a woman

What is the most effective way to lose weight?

Weight loss is very individual so the correct plan is the plan that works best for YOU. To lose weight, you need to reduce your overall calorie intake. Different approaches include: Mediterranean diet, lower carbohydrate diets, low fat diets etc. No matter which diet you choose, the key is to reduce your calories.

It is important to consider your lifestyle, activities, and any barriers that may slow your progress. Changing habits can take time and perseverance. Keeping a diary, having someone to be accountable to and planning ahead can help you stay on track.

Apart from losing weight, it is also important to consider a balanced approach to help keep your body healthy and maintain long-term changes.

How do I manage my diabetes?

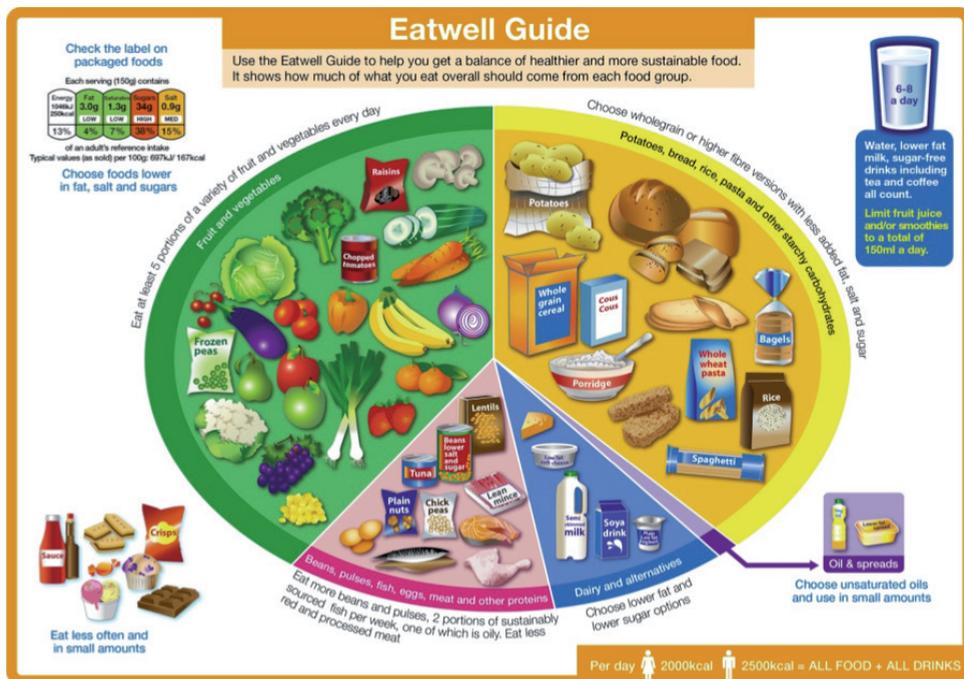
Following a healthy diet and keeping active will help manage your diabetes. Your doctor or practice nurse may also recommend medications. If you are over-weight, losing weight is important.

What is a healthy balanced diet?

A healthy balanced diet contains a variety of types of food. The EatWell Guide is made up of five food groups. These include:

- Fruit and vegetables
- Starchy carbohydrate foods, such as wholemeal bread and wholegrain cereal
- Protein-rich foods such as meat, fish, eggs and lentils
- Dairy foods
- Oils and spreads

It is important to eat a range of foods from each of the food groups. The diagram below represents a healthy balanced diet:



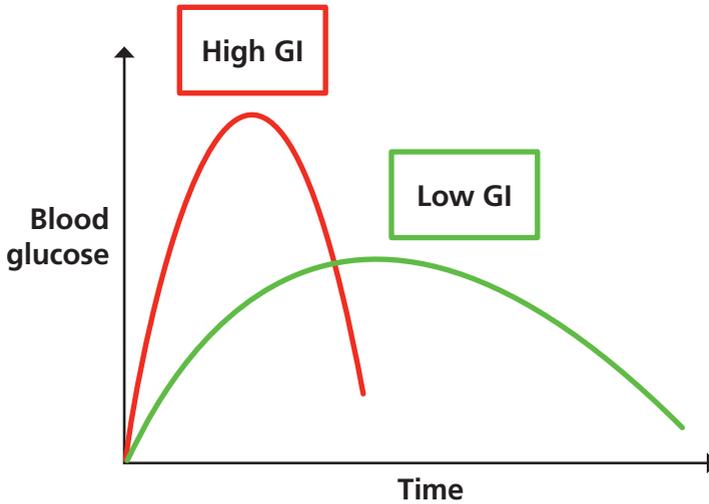
What are carbohydrates?

The glucose in our blood comes mainly from the carbohydrates we eat. There are two types of carbohydrates; starches and sugars. Starchy foods include bread, pasta, rice, cereals and potatoes, etc. Sugary types of carbohydrate include cakes, biscuits, sugary drinks and confectionary. It is recommended that we get our energy from small portions of wholegrain starches at meal times. These provide slow-release energy as well as other nutrients and fibre. Limit sugary foods as these lead to blood glucose spikes and can lead to weight gain. Fruit contains the natural sugar, fructose. Although they contain carbohydrate, fruit also contain a lot of vitamins, minerals and fibre so it is advised to limit these rather than cut them out completely.

Glycaemic index

The Glycaemic index (GI) is a ranking of foods based on their overall effect on blood glucose levels. Slowly absorbed foods have a low GI rating; foods that are more quickly absorbed have a higher rating.

The diagram below shows how lower GI foods can help stabilise blood glucose levels and reduce the body's insulin response.



Do other factors affect the GI of food?

There are many factors which affect the GI of a food. These include: type of sugar or starch, ripeness, processing, preparation, cooking methods, fibre, fat and protein content.

Remember:

- LOW GI does **NOT** always = healthy
- HIGH GI does **NOT** always = unhealthy

E.g. a chocolate bar can be low GI due to the high fat content.

What is the Glycaemic load (GL)?

GL provides a value for foods combining the effect they have on blood glucose (GI) plus their portion size. If you are eating a high GI food keep the portion size very small to limit the effect on blood glucose.

Low GI (55 or less)	Medium GI (56-69)	High GI (70 or more)
Granary bread	Wholemeal bread	Bagel
Sourdough bread	Oat cakes	Baguette
Chickpea flour bread/ chapattis	Special K®	White bread
Rye bread	Weetabix®	Cheerio's®
Muesli	Shredded wheat®	Coco pops®
Porridge	White basmati rice	Cornflakes®
Brown rice	Gnocchi	White rice
Pasta (durum wheat)	Risotto rice	Instant pasta/rice
Quinoa	Canned potato	Baked potato
Bulgar	New potato	Mashed potato
Sweet potato	Beetroot	Parsnips
Yam	Apricots, pineapple, raisins	Watermelon
Baked beans		
Lentils/pulses		
Apples, banana, cherries, orange, pear, peach, blueberries		

What are the important tips for a healthy diet?

- Eat at regular times. Try to include breakfast, lunch and an evening meal.
- Include a small amount of low GI, starchy food at each meal e.g. bread, rice, pasta, potatoes, porridge and cereals. Opt for wholegrain varieties. Portion size guidance is provided in this leaflet.

- Have at least 5 portions of vegetables and/or fruit every day. Eat a variety of types and colours. Fresh, frozen, dried, tinned and juices all count towards the 5 portions. (Potatoes are a starchy food, so do not count them as one of your 5-a-day). Try to limit fruit to no more than 3 handfuls a day and spread them out across the day.
- Eat moderate amounts of protein, such as meat, fish, eggs and pulses (beans and lentils). Choose lean cuts of meat, remove excess fat and avoid frying where possible.
- Oily fish, such as tinned or fresh mackerel, herring, sardines, salmon or fresh tuna should be eaten twice a week. Canned tuna is a good source of protein but it does not count as part of your oily fish intake.
- Aim for 2-3 portions of low fat dairy products each day. e.g. 1/3 pint (200ml) of semi-skimmed, 1% or skimmed milk, a 125g pot of low-fat yoghurt or a small matchbox size (30g) piece of cheese. Aim to have 100g or less of cheese a week.
- Reduce your intake of fatty and sugary foods. Information on food labelling is provided below.
- Drink plenty of fluid. Aim for 8-10 cups per day (1 cup = 200ml). Include a variety of fluids e.g. water, low calorie squash, tea and coffee, but limit fruit juice to one small glass (150ml) per day and avoid drinks containing added sugar.
- Excessive intake of alcohol should be avoided. Alcohol is high in calories and a reduction can help weight control. It is recommended that men and women do not exceed 14 units per week. It is important you spread your alcohol intake across the week. Include at least 2 alcohol-free days per week. 1 unit is equivalent to half a pint of 4% lager, 76ml of 13% wine or 1 single 25ml measure of spirit.

Instead of...	Try these...
White bread, sugar coated breakfast cereals, croissants	Granary, rye or sourdough bread, wholegrain breakfast cereals, porridge.
Sugar (e.g. in drinks, cooking or as a topping)	Artificial or natural sweetener e.g. Canderel®, Sweetex®, Hermesetas®, Splenda®, Stevia®.
Squashes and fizzy drinks	Low calorie/diet versions with no added sugar.
Desserts and puddings, milk puddings, jellies, ice cream, fruit tinned in syrup	Fruit canned in juice, low fat/diet yogurts, fresh fruit, sugar-free jelly, low calorie instant whip or mousses, low calorie ice cream or ice lollies.
Cakes, doughnuts, pastries, cream-filled or chocolate biscuits, crisps	Fresh fruit, wholegrain crackers, rice cakes, scones, teacakes or plain biscuits (Rich Tea, garibaldi, digestives).
Fried and fatty foods	Use only small amounts of oil in cooking. Choose lean meats, remove any visible fat. Grill, boil, steam food instead of frying or roasting. Ready prepared meals should be the lower fat, lower calorie or 'healthy' options.
Butter, lard ghee, hard margarine, palm oil, coconut oil	Choose a low fat spread labelled 'high in monounsaturates'. Use these sparingly, spread thinly. Cook with olive or rapeseed oil. Try oil sprays.
Full fat milk and cheese	Semi-skimmed, 1 % or skimmed milk. Limit cheese to small portions (30g) of low fat varieties at meal times only. Try soft cheeses e.g. cottage cheese, 'light' cream cheese. If you dislike low fat options, try grating a smaller portion of hard cheese.
Sauces and dressings	Try low fat vinaigrette or low fat salad cream. Choose a tomato based sauce. Prepare your sauces from scratch if possible, to control how much fat goes in these.
Additional salt on food	Pepper, dried herbs and spices, fresh ginger, reduced salt stock cubes.

Food labelling guide

The traffic light system makes it easier to choose healthier options but not all labels use this. The table below shows you the cut-off points for high, medium and low for nutrients. Aim to buy products which are green but some may be amber. Red foods should be eaten in moderation.

	Fat	Saturated Fat	Sugars	Salt
Low	3g or less	1.5g or less	5g or less	0.3g or less
Medium	3.1g – 17.5g	1.6g – 5g	5.1g – 22.5g	0.31 – 1.5g
High	Over 17.5g	Over 5g	Over 22.5g	Over 1.5g

Should I buy “diabetic” products?

No! This is unnecessary and these products are not recommended. Diabetic products can still affect your blood glucose as well as being high in fat. They are also expensive and can have laxative effects if eaten in large quantities. Just use normal products but consume in moderation e.g. as an occasional treat.

What can I eat for breakfast?

- High fibre cereal e.g. unsweetened muesli, Weetabix®, Shredded Wheat®, with milk and/or low fat yoghurt
- Porridge
- Small glass of unsweetened fruit juice or piece of fruit (dried or fresh), eaten on its own or added to cereal or porridge
- Granary toast with a scraping of low fat spread and/or jam, marmalade, honey, Marmite® etc
- Small portion of fruit salad with low fat yoghurt
- Boiled or poached egg and wholegrain toast
- Lean grilled bacon, grilled tomatoes, baked beans or mushrooms wholegrain toast

What can I eat for main meal?

Meat dishes

- Always choose lean cuts of meat, remove any remaining visible fat and cook without using excess oil
- Stewed lean meat with vegetables e.g. chicken casserole
- Stir fry pork or chicken with vegetables
- Grilled and roasted meats with gravy made without added fat Fish dishes
- Choose a variety of oily fish & white fish
- Try grilling or baking in the oven, rather than frying
- Cook with herbs or a small amount of a tomato-based sauce
- Fish pie, made without cream or cheese
- Grilled or oven baked fish fingers or fish cakes
- Avoid battered fish particularly if served with chips

Pasta dishes

- Use a tomato-based sauce rather than creamy or cheese based varieties

Salads

- Try cold lean meat, fish (fresh or tinned) or eggs. Use a variety of salad ingredients. E.g. lettuce, tomato, cucumber, mushroom, pepper
- Aim to include a small portion of starch with your salad, e.g. bread, new potatoes, couscous, rice or pasta
- Limit mayonnaise, salad cream or dressing to a dessert spoon size. Opt for low fat varieties
- Avoid high fat foods such as quiche and pastry products

Vegetarian dishes

- Use a variety of pulses, Quorn® or soya products rather than cheese
- Vegetable lasagne or spinach ravioli with a tomato sauce
- Vegetable curry with a small portion of rice
- Stuffed whole peppers, tomatoes or mushrooms

What can I eat for a snack or light meal?

Soups

- Home-made, tinned or packet soup
- Try consommé or soups with beans, vegetables and pulses e.g. lentils
- Avoid “cream of” soups

Sandwiches

- Use granary/sourdough bread, rolls, baguettes or pitta bread
- Choose fillings of lean meats, fish, salad, cottage cheese or egg
- Avoid full fat cheese, paté and fillings mixed with mayonnaise

Jacket potatoes

- Filled with baked beans, tuna, reduced fat coleslaw, cottage cheese, ham and pineapple
- Avoid full fat cheese and fillings mixed with mayonnaise, oil or cream

Toast

- Topped with baked beans, tinned tomatoes, scrambled egg or sardines/pilchards/ mackerel
- Avoid using butter, margarine or spread

What can I eat for dessert?

- Fresh fruit
- Stewed fruit, sweetened with artificial sweetener. Try topping with low fat yoghurt or fromage frais
- Tinned fruit in natural juice (not syrup)
- Natural or fat free yoghurt with berries
- Sugar-free jelly. Try adding tinned fruit
- Sugar-free mousse (made with semi-skimmed, 1% or skimmed milk)
- Low fat/low sugar milk puddings

What should I choose when eating out?

Restaurants

- Try light starters e.g. clear soup, melon, lean meat/fish or salad. Avoid cheese, bread and butter, mayonnaise and salad dressings
- Some restaurants serve very large portions. Do not feel you have to finish everything on your plate. You can also ask for a smaller portion
- Try grilled meat or fish with salad for the main course
- Ask for food to be served without extra butter, oil or rich sauces added
- Ask for dressing, sauces or gravy to be served on the side and only use small amounts
- Avoid fried food where possible e.g. chips. Fried foods are often described as “crispy” or “crunchy” on the menu
- Opt for tomato based sauces instead of creamy versions
- Ask for low fat milk with coffee and tea
- Only order a dessert after your main course if you are still hungry

Meals out with friends and family should be enjoyable and not a source of anxiety. The occasional indulgent meal can be allowed as a treat. If you eat out regularly try to make sensible choices and avoid eating too much. Takeaways can be very unhealthy options, so it is best to limit these as much as possible.

Takeaways

Type	Healthier options	Limit these options
Sandwich Shop	Wholegrain/granary bread, roll, pitta or wrap with salad and: tuna and sweetcorn, low fat cheese spread, smoked salmon, cottage cheese, lean meat, chicken/turkey, sardines	Croissant, pies, pastries, doughnuts, cornish pasties, sausage rolls, salad dressing, mayonnaise, salad cream, butter and spread
Fast Food	Grilled, plain chicken, beef, fish or vegetable burgers, potato wedges, salad, no added sauces	Fried, coated chicken, fish or beef burgers, quarter pounders, added extras such as bacon and cheese, chips, milkshakes, mayonnaise
Pizza	Thin crust base with low fat toppings e.g. ham and pineapple, lean meat, extra tomatoes and vegetables	Thick or stuffed crust, extra cheese, salami, pepperoni, garlic bread
Chinese	Stir fried dishes, boiled rice, chop suey dishes, beef in oyster sauce	Fried rice, deep fried batters, duck, ribs, seaweed, spring rolls, sweet and sour dishes, prawn crackers, heavy sauces
Indian	Balti and tandoori dishes, tikka dishes (not masala), boiled rice, chappati, tomato based curries	Korma and cream/coconut based dishes, naan, biryani, pilau rice, fried samosas, bhajis, poppadoms
Café	Baked beans, tinned tomatoes, mushrooms, poached egg on wholemeal/granary toast, grilled bacon sandwich, salads	Pastry, sausage roll, quiche, fried bacon and eggs, sausages, pasty, chips, cream cakes or desserts
Coffee shop drinks	Americano with skimmed milk, espresso, "skinny" latté, cappuccino, small fresh fruit juice	All drinks made with full fat milk including cappuccino, latté, mocha and hot chocolate. Avoid syrup flavours

What does a typical menu look like?

Always remember that snacks, puddings, cakes and biscuits should only ever be eaten in small quantities, even when choosing low fat or low sugar varieties.

Breakfast: Porridge or wholegrain cereal or granary toast with low fat spread. Fruit

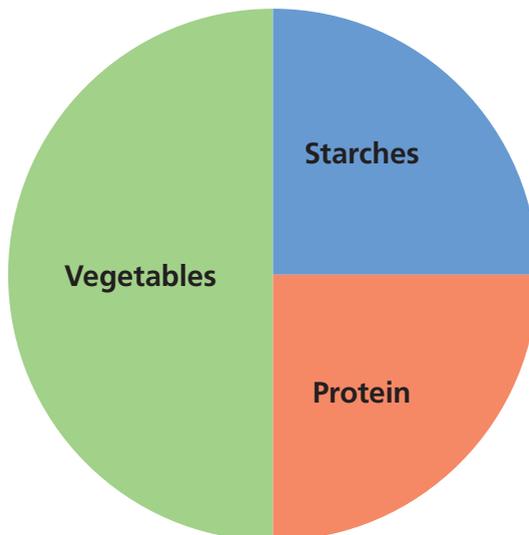
Snack Meal: Granary bread or roll with mixed salad and lean meat, fish, beans, egg or low fat cheese. Greek/natural yoghurt with berries

Main Meal: Small portion potatoes, rice or pasta. Large serving of vegetables or salad. Lean meat, fish, pulses or vegetarian dish. Fruit or low calorie dessert

Between Meals: Fruit, vegetable sticks, popcorn or plain biscuit if required. Water, 'no added sugar' squash. Tea and coffee without added sugar.

How can I manage portions?

This is a very simple but useful picture to help guide portion sizes and nutritional balance.



How can exercise help manage my blood glucose?

Exercise can help lower blood sugar levels as well as improving fitness. This helps reduce the risk of the complications associated with diabetes. It is recommended everyone does 150 minutes of moderate activity per week. This could be 30 minutes on 5 days of the week. This could include a brisk walk, swimming, dancing or sports. You should feel out of breath but still able to hold a conversation. Day-to-day activities such as doing the housework and mowing the lawn can also count towards your weekly target. Keep active by taking the stairs instead of the lift or get off the bus a stop early.

It is also recommended to undertake strengthening exercises twice per week in addition to the above. This includes lifting weights, using resistance bands or doing sit-ups. Try to do at least one set of each exercise with 8-12 repetitions in each set.

Reference sources

- NHS Choices healthy eating
www.nhs.uk/Livewell/healthy-eating/Pages/Healthyeating.aspx
- NHS Choices physical activity guidelines
www.nhs.uk/Livewell/fitness/Pages/physical-activity-guidelinesfor-adults.aspx
- British Heart Foundation
www.bhf.org.uk/heart-health/prevention/healthy-eating.aspx
- British Dietetic Association food facts
www.bda.uk.com/foodfacts/home
- Diabetes UK
www.diabetes.org.uk
- www.gov.uk/government/publications/the-eatwell-guide
- Carbs and Cals Calorie counter Chello publishing (book or app) ISBN: 978-1-9082611-5-1
- www.directclinicaltrial.org.uk/

Contact details

Nutrition and Dietetics Department

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Email: rsch.dietitians@nhs.net

PALS and Advocacy contact details

Contact details of independent advocacy services can be provided by our Patient Advice and Liaison Service (PALS) who are located on the right hand side as you enter the main reception area. PALS are also your first point of contact for health related issues, questions or concerns surrounding RSCH patient services.

Telephone: 01483 402757

Email: rsc-tr.pals@nhs.net

Opening hours: 9.00am–3.00pm, Monday to Friday

If you would like information documents in large print, on tape or in another language or form please contact PALS.

Past review date: May 2019

Future review date: May 2022

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PIN190529–1076

