University Hospitals Birmingham NHS Foundation Trust



Diet and diabetes: for those <u>not</u> requiring insulin

Building healthier lives

UHB is a no smoking Trust

Diabetes mellitus (often shortened to diabetes) is a condition where the body is unable to make enough or respond properly to a hormone called insulin. Insulin helps blood glucose (sugar) enter our body cells to be used as energy – without insulin, blood glucose levels rise above normal.

There are lots of different types of diabetes, but it is likely you have: Type 2 diabetes: this is when the body either does not produce enough insulin, or the insulin it produces does not work as well as it should (insulin resistance). There are several treatment options for those with type 2 diabetes. As the pancreas becomes weaker, the body requires more support to control blood glucose levels. This is usually treated with oral medication and/or insulin injections.

Lifestyle changes, such as following a balanced diet, increasing physical activity, and weight control are especially important in managing this type of diabetes.

Diabetes medication

Many different types of diabetes medications are available; these can be prescribed on their own or in combination as each medication works in a different way to lower blood glucose levels. Some medications act more aggressively than others and can increase the risk of low blood glucose levels (hypoglycaemia or 'hypo'). These medications include:

- Sulphonylureas e.g. Gliclazide/Glimepiride/Glipizide
- Any insulin e.g. Novomix 30/Humalog Mix 25/Novorapid/Lantus/ Levemir/Apidra/Insulatard/Actrapid

If you have been prescribed the above medications, the "Why do I sometimes feel shaky, dizzy and sweaty" leaflet may also be useful. If you have been prescribed other diabetes medications such as Metformin, Empagliflozin, Pioglitazone, Linagliptin, Ozempic or Victoza your risk of hypo is minimal.

Diet and diabetes

Whilst there is no 'special diet' to follow, understanding how different foods can affect your weight and your blood glucose levels will help you to make healthier food choices.

Most of us eat different foods everyday – it is important to have variety in your diet to get the many different vitamins and minerals we need. A balanced diet should contain food from each of the three main nutrients (see Eatwell diagram):

- **Carbohydrates (CHO)** are important as they provide our bodies with energy needed to function. Insulin helps the blood glucose enter our body's cells to be used as energy however eating carbohydrate in excessive amounts can increase blood glucose levels and affect weight control. For examples of CHO see page 7
- **Protein** foods help with tissue repair and muscle strength. However, eating more than you need will lead to weight gain.
- **Fat** provides some essential vitamins, but is only needed in very small amounts in your daily diet. Too much will lead to weight gain and increases your risk of complications including those from diabetes, heart disease and stroke

"A varied, balanced diet is important in helping control blood glucose levels – no matter what medication you have been prescribed, following a healthy way of eating is key to good diabetes control."

Tips to a healthier diet/lifestyle:

- Eat regular meals aim to have x3 meals per day
- Include carbohydrate with each meal, keeping your carbohydrate portion sizes consistent
- Avoid snacking (unless advised by Diabetes Team)
- Keep physically active



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Carbohydrate and diabetes

Foods that contain starch and sugar are collectively called carbohydrates; when digested these foods are broken down to glucose and absorbed into the bloodstream.

Carbohydrates are important as they provide our bodies with energy needed to function. For people with diabetes, eating large amounts of these foods will increase blood glucose levels because there is not enough insulin working in your body.



What can I do to help my blood glucose levels?

Whilst there is no 'special diet' to follow, there are a number of small changes you can make. These are changes to the timing, amount and type of carbohydrate you choose to eat.

Timing – spread carbohydrate throughout the day

Eating regular meals spreads the carbohydrate load across the day. This reduces the amount of glucose released into your blood at one time.

Amount – eat regular, consistent portions of carbohydrate at mealtimes

All carbohydrate foods are digested and absorbed into the blood as glucose – the more you eat, the greater the effect on your blood glucose level.

For example, you might normally have one slice of toast at breakfast but today you feel hungry so you have a bowl of cereal and two slices of toast. Today, your blood glucose level will be higher because you have eaten more carbohydrate.

Eating similar portion sizes of carbohydrate at each mealtime helps to keep your blood glucose level more stable and helps your diabetes team to prescribe the correct dose of medication.

Do not be tempted to cut out carbohydrate completely, some tablets e.g. Gliclazide require you to have carbohydrate at mealtimes to minimise the risk of you having a low blood glucose level (hypoglycaemia or 'hypo').

Type – choose carbohydrate foods that are broken down slowly

When you feel that you are eating the correct amount of carbohydrate, you may wish to look at the type. Different types of carbohydrate are digested at different speeds and so changes how quickly they may affect your blood glucose level; this is also called the Glycaemic Index (GI).

Lower GI foods are slower to raise blood glucose levels which allows your body to handle the glucose more efficiently. They are also often higher in essential nutrients such as fibre, vitamins & minerals.

1. Starchy CHO	2. CHO as	3. CHO as	4. CHO in			
	fructose	lactose	snacks			
These foods often form the basis of meals, for example:	Whether dried or fresh, fruit contains natural sugar, for example:	Liquid dairy products contain milk sugar (lactose), for example:	These products often have large amounts of added sugar and fat, for example: Sugar Honey Sugary drinks Sweets Fruit juices Crisps Biscuits Chocolate			
Wholegrain cereals (All Bran, coarse porridge) Potatoes/sweet potato, Granary/seeded/ rye breads Wholegrain pasta Basmati rice	Apples Oranges Raisins Strawberries Mangos	Milk Yoghurts Ice cream Crème fraiche Fromage frais				
These are an	These are an	These are an	If eaten regularly			
important part	important part	important part	they may cause			
of a balanced,	of a balanced,	of a balanced,	weight gain/			
varied diet as they	varied diet as	varied diet as	erratic blood			
provide 'slow	they provide	they provide	glucose control			
release' energy,	essential fibre,	essential	– avoid these			
fibre, vitamins and	vitamins and	vitamins and	foods where			
minerals.	minerals.	minerals.	possible.			

Fat and diabetes

Having diabetes is a risk factor for heart disease and other conditions; being overweight increases your risk further. Eating as little fat as possible and choosing 'healthier' fats will help with weight control and reduce your risk of complications.

Saturated fat (such as butter, lard, fat on meat and in cakes and pastries)	Polyunsaturated fat (such as plant- based oils and spreads)	Monounsaturated fat (such as olive & rapeseed oils & spreads)	Omega-3 (such as salmon, trout and fresh tuna)
 High energy Too much can cause weight gain Can increase cholesterol levels More then 5g per 100g is high 	✗ High energy✗ Too much can cause weight gain	 ✗ High energy ✗ Too much can cause weight gain 	
 Swap to other fats where possible Choose reduced fat options Limit these foods to treats eaten occasionally Do not add any extra fat Less than 1.5g per 100g is low 	 ✓ Swap to monounsatu- rated fat where possible ✓ Choose reduced fat options ✓ Do not add any extra fat 	 ✓ Choose reduced fat options e.g. olive oil based spread ✓ Do not add any extra fat ✓ Use rapeseed/ ground nut oil for cooking and olive oil for dressings 	 Choose oily fish Vegetarian sources include linseed/ flaxseed

Protein and diabetes

Where possible choose lean/low fat sources of protein – aim to have x2 small portions daily.

Meat, poultry and eggs	Fish	Milk and dairy	Beans pulses, nuts and seeds			
✓ Good source of iron	 Oily fish contain omega-3; important for heart health White fish lower in fat 	✓ Good source of calcium	 ✓ Good vegetarian source of protein ✓ Contains monosaturated fat; better for heart health ✓ Good source of fibre 			
Suggestions:	Suggestions:	Suggestions:	Suggestions:			
 Choose lean cuts of meat Keep portion sizes to 2–3 oz (50–75g) Trim off excess fat Remove skin from poultry Avoid adding fat - grill/steam/ poach/boil instead Limit eggs to one per day 	 Aim for two portions a week include one portion of oily fish Oily fish include mackerel, sardines, salmon, trout, fresh tuna 	 Choose low fat varieties Milk and other 'liquid' dairy will contain carbohydrates too and will affect your blood glucose level 	 Avoid varieties with added salt Some beans and pulses will contain carbohydrate but normally will not affect your blood glucose level Be aware that the sauces that these foods often come in may contain sugar and will affect your blood glucose level 			

Alcohol and diabetes

Unless advised by your doctor, there is no reason to completely avoid alcohol because of your diabetes. Alcoholic drinks do contain varying amounts of alcohol and carbohydrate so will affect your weight and may also affect your blood glucose levels.

There are no 'safe' limits. It is recommended that you keep your alcohol intake to less than 14 units per week.

It is also recommended that if you are drinking up to 14 units of alcohol, this should be spread over the week.



If you take any of the medications which increase your risk of hypo, you should take the following precautions if drinking more than three units of alcohol:

- Drink with meals not on an empty stomach
- Do not skip usual meal/cut down on carbohydrate intake
- Have a small carbohydrate containing snack before bed if drinking in the evening such a slice of toast or a small bowl of cereal

Body weight and diabetes

Eating/drinking provides energy which is used to perform everyday activities such as breathing and walking; any energy not used is stored in the body as fat. The more fat stored, the less effective insulin becomes resulting in higher blood glucose levels.



Measuring your waist and estimating your Body Mass Index (BMI) can help identify if you are at risk of secondary complications. The greater your waist size and/or BMI the greater you are at risk.

To measure your waist



To measure your waist:

- 1. Find the top of your hip bone
- 2. Find your lowest rib
- 3. Measure in between these points making sure the tape measure is kept level with the floor and not pulled too tight

		At risk
	White European	>90cm (>35inches)
Men	Black, Asian and other minority ethnic groups*	>94cm (>37inches)

	White European	>80cm (>32inches)
Women	Black, Asian and other minority ethnic groups*	>80cm (>32inches)

*these groups are known to have an increased risk of diabetes

To estimate your BMI

Using the table opposite:

- 1. Find your weight along the top of the table
- 2. Find your height along the side of the table
- 3. Follow along the column and row; where they meet is an estimation of your BMI
- E.g. For an individual of 175cm, weighing 85kg; BMI = 27.8kg/m2

Weight in kilograms

90	42.8	41.4	40.0	38.7	37.5	36.3	35.2	34.1	33.1	32.1	31.1	30.2	29.4	28.6	27.8	27.0	26.3	25.6	24.9
87.5	41.6	40.2	38.9	37.6	36.4	35.3	34.2	33.1	32.1	31.2	30.3	29.4	28.6	27.8	27.0	26.3	25.6	24.9	24.2
85	40.4	39.1	37.8	36.5	35.4	34.3	33.2	32.2	31.2	30.3	29.4	28.6	27.8	27.0	26.2	25.5	24.8	24.2	23.5
82.5	39.2	37.9	36.7	35.5	34.3	33.3	32.2	31.2	30.3	29.4	28.5	27.7	26.9	26.2	25.5	24.8	24.1	23.5	22.9
80	38.0	36.8	35.6	34.4	33.3	32.2	31.3	30.3	29.4	28.5	27.7	26.9	26.1	25.4	24.7	24.0	23.4	22.8	22.2
78	36.9	35.6	34.4	33.3	32.3	31.2	30.3	29.3	28.5	27.6	26.8	26.0	25.3	24.6	23.9	23.3	22.6	22.0	21.5
75	35.7	34.5	33.3	32.2	31.2	30.2	29.3	28.4	27.5	26.7	26.0	25.2	24.5	23.8	23.1	22.5	21.9	21.3	20.8
73	34.5	33.3	32.2	31.2	30.2	29.2	28.3	27.5	26.6	25.8	25.1	24.4	23.7	23.0	22.4	21.8	21.2	20.6	20.1
70	33.3	32.2	31.1	30.1	29.1	28.2	27.3	26.5	25.7	24.9	24.2	23.5	22.9	22.2	21.6	21.0	20.5	19.9	19.4
68	32.1	31.3	30.0	29.0	28.1	27.2	26.4	25.6	24.3	24.1	23.4	22.7	22.3	21.4	20.3	20.3	19.7	19.2	18.7
65	30.9	29.9	28.9	27.9	27.1	26.2	25.4	24.6	23.9	23.2	22.5	21.8	21.2	20.6	20.1	19.5	19.0	18.5	18.0
63	29.7	28.7	27.8	26.9	26.0	25.2	24.4	23.7	23.0	22.3	21.6	21.0	20.4	19.8	19.3	18.8	18.3	17.8	17.3
60	28.5	27.6	26.7	25.8	25.0	24.2	23.4	22.7	22.0	21.4	20.8	20.2	19.6	19.0	18.5	18.0	17.5	17.1	16.6
58	27.3	26.4	25.6	24.7	23.9	23.2	22.5	21.8	21.1	20.5	19.9	19.3	18.8	18.3	17.7	17.3	16.8	16.4	15.9
55	26.2	25.3	24.4	23.6	22.9	22.2	21.5	20.8	20.2	19.6	19.0	18.5	18.0	17.5	17.0	16.5	16.1	15.6	15.2
53	25.0	24.1	23.3	22.6	21.9	21.2	20.5	19.9	19.3	18.7	18.2	17.6	17.1	16.7	16.2	15.8	15.3	14.9	14.5
50	23.8	23.0	22.2	21.5	20.8	20.2	19.5	18.9	18.4	17.8	17.3	16.8	16.3	15.9	15.4	15.0	14.6	14.2	13.9
48	22.6	21.8	21.1	20.4	19.8	19.1	18.6	18.0	17.4	16.9	16.4	16.0	15.5	15.1	14.7	14.3	13.9	13.5	13.2
45	21.4	20.7	20.0	19.3	18.7	18.1	17.6	17.0	16.5	16.0	15.6	15.1	14.7	14.3	13.9	13.5	13.1	12.8	12.5
	145.0	147.5	150.0	152.5	155.0	157.5	160.0	162.5	165.0	167.5	170.0	172.5	175.0	177.5	180.0	182.5	186.0	187.5	190.0
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Obese

Overweight

Normal

Underweight

Activity and diabetes

Aim to be active for at least 30 minutes every day – by being more active, less energy needs to be stored. If you do not usually exercise or have any other health conditions, please discuss this with your GP before starting.

Activity can include using the stairs instead of a lift, brisk walking, swimming, dancing and gardening. If you are currently not able to manage 30 minutes in one go, start slowly and gradually increase your activity. Doing so may:

- Improve your response to insulin
- Help control weight
- Reduce your stress levels
- Improve your heart health
- Improve how you look/feel

Please use the space below to write down any questions you may have and bring this with you to your next appointment.

Contact details

Queen Elizabeth Hospital Birmingham Nutrition & Dietetics Department Telephone: **0121 371 3485**

Heartlands, Solihull Hospital and Good Hope Hospital Diabetes Dietitians Telephone: **0121 424 3146**

Solihull Community Diabetes Service Telephone: **0121 770 4432**

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