

# Managing diabetes if you have pancreatic cancer

## Information about type 3c diabetes

Pancreatic cancer and surgery to remove the cancer can cause diabetes. This may be a type of diabetes called type 3c diabetes. This information is for people with pancreatic cancer and diabetes.

Managing diabetes if you have pancreatic cancer can be complicated. Speak to your medical team for help with managing diabetes, and ask them any questions you have.



You can also speak to our specialist nurses on our confidential Support Line for support with diabetes. Call free on **0808 801 0707** or email **nurse@pancreaticcancer.org.uk**



We have information about diabetes as a symptom before people are diagnosed with pancreatic cancer on our website at: **pancreaticcancer.org.uk/symptoms**

We have information about diabetes as a risk factor of pancreatic cancer at: **pancreaticcancer.org.uk/riskfactors**



# Contents

Key facts.....	3
What are the symptoms of diabetes?.....	4
What is type 3c diabetes?.....	4
Who treats diabetes?.....	7
Blood sugar levels explained.....	8
What is hypoglycaemia (a hypo)?.....	14
How is type 3c diabetes treated?.....	16
Daily life and type 3c diabetes.....	18
Healthy eating and type 3c diabetes after surgery to remove pancreatic cancer.....	23
Questions to ask your doctor, nurse or dietitian.....	25
Further information and support.....	26



## Key facts

- Diabetes is a condition where the amount of glucose (a type of sugar) in your blood is too high.
- Your pancreas normally makes hormones called insulin and glucagon which keep your blood glucose at the right level.
- Pancreatic cancer or surgery for the cancer can stop your pancreas making enough of these hormones. This can cause type 3c diabetes.
- Type 3c diabetes is different to type 1 and type 2 diabetes. A lot of information about type 1 and type 2 diabetes may not be right for you.
- Symptoms of type 3c diabetes are similar to other types of diabetes and can include feeling thirsty, needing to pee more often, feeling hungry, losing weight without trying to, and feeling light-headed or confused.
- There are ways to manage type 3c diabetes. Most people will need medicine to do this. This may be tablets or insulin injections.
- You may see a diabetes specialist nurse and a specialist dietitian to help you manage your diabetes.
- As well as making insulin and glucagon, your pancreas also makes enzymes which break down your food. Pancreatic cancer and surgery to remove the cancer can affect this. If you have type 3c diabetes you may have problems digesting your food. Pancreatic enzyme replacement therapy (PERT) helps with this.
- It can be confusing managing diabetes when you have pancreatic cancer. Speak to your medical team if you have any questions or worries. They will work with you to manage your diabetes.



## What are the symptoms of diabetes?

The symptoms for type 3c diabetes are similar to other types of diabetes and can include:

- feeling thirsty
- weight loss
- needing to pee more often
- fatigue
- feeling light-headed
- palpitations
- sweating
- confusion.

**“ It is worthwhile looking out for symptoms of diabetes. It was only after I mentioned my partner’s unusual increased thirst and the need to go to the loo that he had a blood test which confirmed the diagnosis.”**

## What is type 3c diabetes?

Diabetes is a condition where the amount of glucose (a type of sugar) in your blood is too high. The amount of glucose in your blood is called your blood sugar level or blood glucose level.

The pancreas usually produces hormones called insulin and glucagon which keep the amount of glucose in your blood at the right level. If you have pancreatic cancer, you may not produce enough of these hormones. This means that your blood sugar level may become too high or too low.

There are different types of diabetes. You may have heard of type 1 and type 2 diabetes. Type 3c diabetes is different to these and is treated differently. It is caused by damage to the pancreas. It is sometimes called pancreatogenic or brittle diabetes.

People with pancreatic cancer, pancreatitis (inflammation of the pancreas) and people who have had surgery to remove part of the pancreas may get type 3c diabetes. People who have had their whole pancreas (total pancreatectomy) removed will have type 3c diabetes.



## What are insulin and glucagon?

Insulin and glucagon are hormones made in the pancreas. Hormones are chemical messengers carried in the blood which do specific things in the body. Insulin and glucagon keep the amount of glucose in your blood at the right level.

- **Insulin** reduces the amount of glucose in your blood. It does this by moving glucose from the blood into cells in the body, where it is either stored or used for energy.
- **Glucagon** helps to increase the amount of glucose in your blood when needed, by releasing glucose that is stored in your liver.

When you digest food and drink, carbohydrates are broken down into glucose. The glucose passes into your blood causing a rise in your blood glucose level. If you do not have diabetes and the glucose level goes above the usual range, the pancreas produces insulin which brings it down. If the glucose level goes below the usual range, the pancreas will produce glucagon to bring the level up again.

If you have type 3c diabetes, your pancreas may make less insulin and glucagon than your body needs. If your whole pancreas has been removed, your body will not make any insulin or glucagon.

## Why is type 3c diabetes different to type 1 and type 2?

Type 3c diabetes is different to type 1 diabetes and type 2 diabetes.

- People with type 1 diabetes can't produce any insulin but make normal levels of glucagon. People with type 3c diabetes may produce less of all the hormones from the pancreas, including insulin and glucagon. If you have had your whole pancreas removed, you won't produce any insulin or glucagon.
- People with type 2 diabetes make insulin but it doesn't work properly, and they need more to do the same job. In people with type 3c diabetes the insulin works properly but they don't make enough of it.

The different types of diabetes need to be treated differently. This means that the usual treatment for type 1 or type 2 diabetes may not be right for you if you have type 3c diabetes. If you already had type 1 or 2 diabetes before being diagnosed with pancreatic cancer, your diabetes may now need to be treated differently. Most people with type 3c diabetes will need to take medicine, which may be tablets and/or insulin injections.



You may find that type 3c diabetes isn't as well known as type 1 or type 2 diabetes. **A lot of the information available about diabetes is for people with type 1 or 2 diabetes and may not be relevant to you.** For example, there is a lot of information that encourages people with type 2 diabetes who are overweight to lose weight. This will not be relevant to people with type 3c diabetes who have lost weight or are struggling to put weight back on.

## Diabetes and problems digesting food

If you have type 3c diabetes, you are likely to also have problems digesting your food.

As well as insulin and glucagon, the pancreas also makes enzymes which break down your food. If you have pancreatic cancer, your pancreas may not make enough of these enzymes, or they may be blocked from getting to the part of your bowel where they are needed. This means that food is not properly digested.

You can take capsules to replace the enzymes that your pancreas would normally make. This is called pancreatic enzyme replacement therapy (PERT) and will help you digest your food.

If you have problems digesting your food, you won't be fully digesting carbohydrates in your food. This means that less glucose will be absorbed into your blood. Once you start taking the pancreatic enzymes, your blood sugar level may rise because you will be digesting your food again.

This can change how your diabetes needs to be managed, and it may need to be monitored more regularly. If you notice your blood sugar levels have gone up, speak to your diabetes team as they may need to change your medicine. It's important that blood sugar levels are treated with medicine and not by reducing how much PERT you take. Read more about blood sugar levels on page 8.



Read more about problems with digestion and PERT in our booklet: **Diet and pancreatic cancer.**

Or on our website at: [pancreaticcancer.org.uk/diet](https://pancreaticcancer.org.uk/diet)



## Who treats diabetes?

Who you see to treat your diabetes may depend on services in your local area.

You may see a diabetes specialist nurse who will teach you how to monitor your blood sugar levels and help manage your diabetes medicine. You may also see a specialist dietitian, such as a diabetes, pancreatic or oncology dietitian, to help you manage your diabetes. Make sure you tell them that you have type 3c diabetes and pancreatic cancer. If you have not seen a specialist dietitian, ask your doctor or nurse to refer you to one. Your GP and hospital doctors may also help manage your diabetes.

Make sure you know who to contact about your diabetes. If you are not sure, ask your medical team.

It can be difficult and confusing to manage diabetes if you have pancreatic cancer. Your dietitian and diabetes nurse will help you manage your blood sugar levels (see page 8) and give you advice about how to live well with your diabetes (see page 18).



You can also speak to our specialist nurses on our free Support Line who can explain more about managing diabetes.



Read more about dietitians in our booklet:  
**Diet and pancreatic cancer.**  
Or on our website at: [pancreaticcancer.org.uk/dietitian](https://pancreaticcancer.org.uk/dietitian)



# Blood sugar levels explained

Your blood sugar level is the amount of glucose (a type of sugar) in your blood. You may also hear it called your blood glucose level. Blood sugar level is measured in units of millimole per litre – shortened to mmol/l.

When you digest food and drink, carbohydrates are broken down into glucose. The glucose passes into your blood and is either stored or used by the body for energy. It is important to have enough glucose in your blood to provide energy for your body to work properly.

## When blood sugar levels are too high or too low

High blood sugar levels can make you more likely to lose weight, feel more tired, thirsty and have problems concentrating. In the long term, high blood sugar levels can damage your heart, eyes, feet and kidneys.

High blood sugar levels can also increase the risk and severity of infections like colds, thrush, wound infections and urine infections. So it's important that your blood sugar level is properly managed if you are having chemotherapy or surgery.

A low blood sugar level of less than 4mmol/l is called hypoglycaemia (see page 14), or a hypo. This needs to be treated quickly. A hypo can cause seizures or loss of consciousness if it's not treated.

## How do I know what my blood sugar level is?

Most people with type 3c diabetes will need to monitor their blood sugar level. There are different ways to do this.

### Blood sugar monitor

If you need to check your blood sugar level regularly, you may be given a blood sugar monitor. Your diabetes nurse will show you how to use it.

You will need to prick your finger to produce a small drop of blood, which you put onto a measuring strip in the monitor. It's important to wash your hands before you do this. The monitor tells you what your blood sugar level is within a few seconds.





## Flash glucose monitors and continuous glucose monitors (CGM)

Some people who take insulin use these monitors. The monitor is attached to your arm, a bit like a plaster, with a small needle that sits just under your skin. This constantly measures your blood sugar levels. Using a flash monitor or CGM means that you can easily check your blood sugar levels at any time, without pricking your finger.

Speak to your diabetes team about whether a flash monitor or CGM might be suitable for you. Some people can get a monitor for free on the NHS, so ask your team if you would be eligible. You can buy the monitors privately, but they are quite expensive.

## Blood tests

Some people don't need to check their blood sugar levels regularly, so won't need a blood sugar monitor. Your doctor or nurse will do blood tests to check your blood sugar levels. They may do a random blood glucose test which tells you what your blood glucose level is at that moment. Or they may do an HbA1c which shows what your blood glucose level has been on average over the past 12 weeks. Your doctor or nurse may also ask you about any symptoms you have.

Diabetes UK has more information about testing your blood sugar levels.

## What should my blood sugar level be?

There is an ideal range for blood sugar levels called the target range. The target range will be specific to you. It may depend on lots of things, including your cancer and treatment, your weight, and how well you are. It may change over time.

If you have lost weight, maintaining or putting on weight is important. The aim will be to manage the diabetes around your diet.

Speak to your diabetes team about your target range.

## How do I get my blood sugar level in the target range?

If you have type 3c diabetes, it can be hard to get your blood sugar level into your target range. Most people will need tablets or insulin to do this. Read more about how diabetes is treated on page 16.

The diabetes team will explain how to take your diabetes medicine and help you manage the diabetes. It usually takes a few weeks for your blood sugar levels to get into range once you start treatment.



## What can affect my blood sugar levels?

Blood sugar levels are affected by many things, including:

- cancer treatments and steroids
- pancreatic enzyme replacement therapy (PERT)
- illness
- different food and drinks
- activity levels
- pain
- stress.

Some chemotherapy drugs are mixed in sugary liquids. So your oncology team should take your diabetes into account when giving chemotherapy and should monitor your blood sugar levels. Some people find it harder to eat for a few days after having chemotherapy. You may also be sick or have diarrhoea. This can also affect your blood sugar levels.

If you are having chemotherapy, it's a good idea to monitor your blood sugar levels and let your medical team know if these are higher or lower than normal.

Steroids are sometimes given with chemotherapy or may be used to treat some symptoms like sickness. Steroids can make your blood sugar levels rise. Talk to your diabetes nurse about managing your blood sugar levels if you are having steroids.

## Diet and blood sugar levels

Different foods and drinks can affect your blood sugar levels. If you have type 3c diabetes, you should not try to manage your diabetes by reducing how much sugar you have.

If you can, eat regularly and don't skip meals. You may also need to take pancreatic enzymes when you eat, so that you are able to digest your food and absorb the nutrients from it.

Speak to your diabetes team if your blood sugar levels are often above or below your target range. Don't change or reduce what you eat to bring your blood sugar levels down unless this has been recommended by your diabetes team or dietitian. Changing what you eat could reduce the nutrition your body gets. And only change your diabetes medicine if your diabetes team tell you to.



If you have lost weight or are struggling to maintain your weight, you may be told to have snacks, drinks, and puddings containing sugar. Your blood sugar levels will be managed by the diabetes medicine. Speak to your diabetes nurse or dietitian if you have any questions about this.

Most people are told to avoid drinking sugary drinks outside of mealtimes as they can cause a big rise in your blood sugar level. This can make you feel less well, and it can be hard to bring the blood sugar level back down. But if you are unwell and can't eat, you may be advised to have sugary drinks.

**There is a lot of information online about changing your diet if you have diabetes – but this is mainly for people with other types of diabetes. This advice may not be right for you if you have type 3c diabetes.**

**“ It was made clear to me that with the correct insulin and Creon® I could eat what I wanted.”**

### **What if I have lost weight?**

If you have lost weight or strength, you may need more calories and protein in your diet to help you gain weight and strength. It may include having foods or nutritional supplements that increase your blood sugar level. Your diabetes will need to be managed around this. You may need more medicine to keep within your target range.

**Don't avoid any foods or reduce how much you eat, unless your dietitian tells you to.** As this will stop you getting the nutrition that your body needs.

Speak to your dietitian about how to put on weight if you have diabetes. Tell them if your blood sugar levels are high. They may suggest changes to your medicine.



Read more about putting on weight in our booklet:

**Diet and pancreatic cancer.**

Or on our website: [pancreaticcancer.org.uk/dietsymptoms](https://pancreaticcancer.org.uk/dietsymptoms)

### **Which foods affect my blood sugar levels?**

Carbohydrates include starchy and sugary foods (see below). When you eat, carbohydrates are broken down into glucose. This is absorbed into the blood and makes your blood sugar levels rise.

Starchy carbohydrates are an important source of energy and a key part of a healthy diet. It's important that you eat food containing starchy carbohydrate.



Starchy carbohydrates are also important in preventing your blood sugar level dropping too low. Regular portions of starchy carbohydrates help to keep your blood sugar level constant, because the glucose is released more slowly from these foods than from sugary carbohydrates.

### **Examples of foods containing carbohydrate**

Starchy foods include:

- potato, yam, cassava and plantain
- bread, naan and chapatti
- pasta and noodles
- rice, couscous and quinoa
- unsweetened cereals such as wheat, bran, oats, barley, rye, millet and maize
- crackers and crispbread
- savoury pies and pastries
- breaded and battered food.

Foods containing both starch and sugar include:

- cakes
- biscuits
- sweet pastries
- sugary breakfast cereal.

Sugary foods include:

- ice cream
- sweets, chocolates and mints
- sugary fizzy drinks and squashes
- fruit juices and smoothies
- syrup and treacle
- jam, marmalade and lemon curd
- honey
- condiments including tomato ketchup, chutneys, sweet chilli sauce and brown sauce
- chocolate spread.

Be aware that food and drinks that have a lot of sugar but not much protein, fibre or fat can cause sudden peaks in your blood sugar.



Fruit, milk and yoghurt all contain sugar. But these are different to the sugar in sweets and sugary drinks and they have less effect on blood sugar levels. Fruit, milk and yoghurt also contain other important nutrients and can be eaten often as part of a healthy diet.

Speak to your dietitian if you would like more information about eating food containing carbohydrates.

### **Artificial sweeteners**

You don't need to avoid sugar if you have type 3c diabetes – it can be part of a balanced diet. But a lot of sugar in your diet does make it harder to keep your blood sugar levels within your target range.

You can use sweeteners instead of sugar and choose 'no added sugar' options if you want to reduce the amount of sugar you have. Some sweeteners may cause diarrhoea (runny poo), and you should avoid these. Check the brands with your dietitian. 'Diet' versions of sugary drinks won't affect blood sugar levels.

Diabetic foods aren't recommended. They are expensive and can also cause diarrhoea if you have a lot of them.

### **Which foods should not make my blood sugar levels rise?**

These foods should not make your blood sugar levels rise or drop:

- meat, fish, eggs, cheese, quorn®, soya protein and tofu
- butter, margarine, lard, ghee, cream, cooking oils and oil-based dressings
- vegetables (except potatoes) and salads
- lentils, beans, pulses, nuts and seeds (although some people may find these do increase blood sugar levels)
- herbs, spices, soy sauce and vinegars
- small amounts of sauces and pickles.

Although these foods may not affect your blood sugar levels, most contain proteins and fats, so you will still need to take pancreatic enzymes when you eat them.



## What is hypoglycaemia (a hypo)?

Hypoglycaemia or a 'hypo' is a low blood sugar level of less than 4mmol/l. Some people find it helpful to remember 'four is the floor', so not to go below this. If untreated, a hypo can cause seizures or loss of consciousness. It needs to be treated promptly.

A hypo can be caused by:

- missing a meal, or having a meal or snack later than usual
- eating less starchy or sugary food (carbohydrate) than usual
- being more active than usual
- not taking enough pancreatic enzymes, or forgetting to take your enzymes with food or drinks
- drinking alcohol without food
- injecting too much insulin
- being sick after taking your mealtime insulin.

Some treatments for diabetes increase how much insulin your pancreas makes. These include gliclazide and glimepiride. If the dose of these is too high, this can also cause a hypo.

Symptoms of a hypo include:

- hunger
- trembling
- headache or light headedness
- blurred vision
- paleness
- sweating and cold sweats
- palpitations (fast or pounding heartbeat)
- tingling lips
- diarrhoea
- mood changes, anxiety, irritability or aggression
- problems concentrating
- passing out.



## How is a hypo treated?

There are two steps to treating hypoglycaemia. You must follow both steps to properly treat the hypo. It might be useful to share this information with the people you spend time with, particularly if you have recently been diagnosed with diabetes or if you don't always recognise the symptoms of a hypo.

**Step 1:** Straight away, take 15-20g of fast acting carbohydrate (sugar). For example:

- 4-6 dextrose or glucose tablets
- 5 jelly babies
- 5 fruit pastilles
- 10 jelly beans
- 2 tubes of glucose gel like GlucoGel® or one 60ml bottle of Glucojuice®
- about 200ml fruit juice.

Milk, foods with fat (like chocolate) or sugar added to drinks are not effective at this stage, as they won't increase your blood sugar level fast enough.

Wait 10-15 minutes and check your blood sugar level again. If it remains low (below 4mmol/l) repeat step 1. If it has come back to the target range (above 4mmol/l) then go to step 2.

If you have repeated step 1 three times and your blood sugar level is still below 4mmol/l, phone 999 for an ambulance.

**Step 2:** Eat 15-20g of starchy carbohydrate. This causes a gradual rise in your blood sugar level and can help to keep your sugar level steady after a hypo.

This could be:

- half a sandwich
- 2 plain digestive biscuits or 3 rich tea biscuits
- a medium banana
- a small bowl of cereal
- 1 medium or thick slice of toast
- a 300ml glass of milk
- or your next meal, if it's due.

Read more about foods containing carbohydrate on page 12.

If you take pancreatic enzymes, don't forget to take these with step 2 of your hypo treatment. You don't need enzymes with step 1.



Always keep something to treat a hypo with you when you are out and about. If you drive, keep something in the car.

You should also keep your testing kit and something to treat a hypo by your bed in case you have a hypo overnight. If you have type 3c diabetes, your pancreas doesn't produce enough glucagon and that can make night time hypos more likely.

Night time hypos are also more likely if you:

- have been more active than usual during the day
- had a blood sugar reading before bed that was less than 6mmol/l
- had a hypo earlier that day
- have taken fewer enzymes than you need, or have forgotten to take them
- have had more than one alcoholic drink that day.

If any of these have happened, you may need a bedtime carbohydrate snack to reduce the risk of a hypo. It is important that you don't inject insulin with this snack as this could cause your blood glucose levels to drop too low. Do take your pancreatic enzymes with the snack though.

If you have regular hypos, speak to your diabetes team. It's likely that your diabetes medicine will need to be changed.

## How is type 3c diabetes treated?

Type 3c diabetes can be treated with tablets or insulin. Your diabetes team will work out the best treatment for you. Treating problems with digestion using pancreatic enzymes is also an important part of managing diabetes for people with pancreatic cancer.

You may hear that diabetes can be managed by changing what you eat. But it's different with pancreatic cancer and type 3c diabetes. Your diabetes should be managed around your diet.

### Tablets to treat diabetes

Tablets commonly used to treat type 3c diabetes increase how much insulin your pancreas makes – for example, gliclazide and glimepiride. Because these tablets make your pancreas produce more insulin, you may get hypoglycaemia (low blood sugar levels) if the dose is too high. Read more about hypoglycaemia on page 14.





Other tablets may be used to treat your diabetes. Speak to your diabetes team about how your tablets work and any side effects they may have.



You can also speak to our specialist nurses on our free Support Line if you have any questions.

## Insulin

You might need to take insulin to treat your diabetes. This replaces the insulin that your pancreas normally makes. If you have had your whole pancreas removed, you will need to take insulin. There are different types of insulin and ways to take it. Your diabetes team will talk to you about what is best for you.

### Taking insulin

You should be referred to a diabetes nurse who will explain how to take the insulin and manage your diabetes. Sometimes this might be done by the practice nurse at your GP surgery.

Your insulin dose will depend on several things, including your weight, how much you eat and your lifestyle. The dose may need to change over time, especially if your weight, appetite or activity level changes. It may take a few weeks to get the insulin dose right so that your blood sugar levels are within your target range most of the time. Your diabetes team will help you with this.

Insulin is taken as an injection. The diabetes nurse will show you how to do this. If you can't inject it yourself and there isn't someone else who can do it, a district nurse may do this for you.

If you take insulin you will need to monitor your blood sugar levels (see page 8) a few times a day. Your diabetes nurse will also show you how to do this. If your blood sugar levels are not within your target range, tell your diabetes nurse. They may suggest changing to a different type of insulin or a different dose. You may later learn to change the dose yourself.

Treating type 3c diabetes with insulin can seem complicated. Your diabetes nurse will help you learn how to manage it. You may need a few appointments with them before you feel confident with this. If you are unsure about anything or have any questions, make sure you speak to your diabetes nurse.



### Will the injection hurt?

It's normal to worry about injecting yourself when you first use insulin. The needles used are very thin so it does not usually hurt. But it can still take a little while to get used to it.

If you are worried, speak to your diabetes nurse. They will show you the best way to inject the insulin and will be able to help you deal with any worries.

**“ My partner was stressed at the thought of having to have more injections. However, the daily injections very quickly became routine, and he was able to do the blood sugar test and injection quickly and easily.”**

Diabetes UK and the NHS website have more information about injecting insulin and things that can help if you are worried about it.

## Daily life and type 3c diabetes

Diabetes can have an impact on your daily life. The information here explains how to deal with this.

### Driving and insulin

By law, if you are prescribed insulin, you must tell:

- your insurance company
- the Driver and Vehicle Licensing Agency (DVLA), if you live in England, Scotland or Wales
- the Driver and Vehicle Agency (DVA), if you live in Northern Ireland.

This is because of the risk of having a hypo (see page 14) while you are driving. If you have a hypo, this could cause an accident as you will be slower to react to things while driving or could pass out. If you don't tell the DVLA, you could be fined up to £1000, and you could also be prosecuted if you have an accident.

If you only take tablets to manage your diabetes, check with your doctor or diabetes nurse whether you need to tell these organisations.

You should also tell these organisations about any changes in your diabetes or treatment. This includes any complications which might affect your ability to drive safely. For example, if you have had a severe hypo where you needed help from another person. You can read more on the GOV.UK and nidirect websites.

## How to drive safely if you take insulin

Check your blood sugar level (see page 8) less than 2 hours before the start of your journey, and every two hours during the journey.

If your blood sugar level is 5mmol/l or less, you should have some carbohydrate before driving. Some people find it helpful to remember this as 'five to drive'.

If your blood sugar level is less than 4mmol/l before or during driving, **do not drive**. This is hypoglycaemia, and you should follow these steps.

- Stop the vehicle.
- Switch off the engine, remove the keys from the ignition and move from the driver's seat.
- Take some fast acting carbohydrate such as glucose tablets or jelly babies.
- Wait 10 minutes, then check your blood sugar level again. If it's higher than 4, take some longer acting starchy carbohydrate (see page 12). If you take pancreatic enzymes, don't forget to take these with it.
- Do not start driving until 45 minutes after your blood sugar level has returned to above 5mmol/l.
- If you use a flash glucose or continuous glucose monitor (see page 9) and the reading is 4mmol/l or below, you must stop driving and confirm your glucose test reading with a finger prick test.

Always take your blood sugar monitor and some fast acting carbohydrate with you when you drive. It's a good idea to keep an emergency supply of carbohydrate in your car.

Ask your doctor or diabetes nurse if you have any questions about driving.

## Physical activity if you take insulin

Physical activity can help you feel better and cope with your cancer treatment. Physical activity may affect your blood sugar levels, making you more likely to have a hypo. If you take insulin, speak to your diabetes team about managing your blood sugar levels while exercising.

If you start to do more physical activity, you may need to change the amount of carbohydrate and/or insulin you have. Your diabetes team can help you with this.

It's a good idea to monitor your blood sugar levels before, during and after exercise. This can help you understand how exercise affects your blood sugar levels. Try keeping a record of your blood sugar levels while you are exercising, to spot any trends.



If your blood sugar levels drop during or after exercise, then always keep hypo treatments with you.

You may be more likely to have a hypo during exercise, just afterwards and 6-8 hours later. Your blood sugar levels can keep dropping even the day after physical activity.

## Eating out if you take insulin

Eating out can be a chance to see friends and family and do something you enjoy. You can still eat out if you have diabetes, but you may need to change the timing or amount of insulin you take. Speak to your diabetes nurse about this.

If you have larger portions or more fatty foods when you eat out, remember that you may need more pancreatic enzymes with this food. If you take longer to eat your meal or have several courses, you may also need to take more enzymes, and spread them out through the meal.

## Alcohol and insulin

Talk to your diabetes team about whether you can have a small amount of alcohol, and how much they would suggest as the limit.

### Drinking and hypos

Drinking alcohol makes hypoglycaemia more likely. And if you have had too much alcohol, you may not recognise or treat a hypo properly.

Make sure that you tell the people you are drinking with that you have diabetes. Sometimes people mistake the signs of a hypo for being drunk. You might also want to tell them how to treat a hypo.

### Things to be aware of when drinking alcohol

- Never drink alcohol on an empty stomach or after exercise. Always have some starchy carbohydrate (see page 12) when drinking alcohol.
- Always carry identification with you, as well as a hypo treatment and your pancreatic enzymes when you are out.
- Always have a starchy carbohydrate snack, such as cereal or toast, before going to bed if you have been drinking alcohol. Don't forget to take your pancreatic enzymes with it.

Read more about things to be aware of when drinking alcohol on the Diabetes UK website.



## Monitoring your diabetes

If you have pancreatic cancer and type 3c diabetes, it can be hard to deal with symptoms and to work out what is causing them. It is a good idea to keep a record so that you and your diabetes team can look back and spot any patterns.

Here are some ideas about what to record:

- what you have had to eat and drink
- how much insulin or other medicines you have taken
- how many pancreatic enzymes you have taken
- your blood sugar level readings
- how active you have been
- any symptoms you have had, such as diarrhoea (runny poo), bloating, tiredness, high temperature, dizziness or pain.



We have a diary that you could use to monitor your diabetes. You can download and print copies of the diary at:

**[pancreaticcancer.org.uk/diabetes](https://pancreaticcancer.org.uk/diabetes)**

## How can illness affect blood sugar levels?

Illness and infections can raise your blood sugar levels. Even if you are not eating, your blood sugar level can still rise when you are ill. This is because the body releases sugar into the blood as it fights infections.

If you take tablets for your diabetes, the tablets may not work properly if you are sick or have diarrhoea. This can cause a rise in blood sugar levels.

### What to do if you are ill

Your diabetes nurse may have told you how to manage your diabetes if you are ill, for example if you have flu. Follow their guidance.

If you are unwell and you have not been given guidance, speak to your diabetes nurse. They will be able to give you advice for your specific situation. If you can't speak to your diabetes nurse, contact your GP or medical team.

If you are being sick for more than half a day, are not improving, or are unsure what to do, get urgent medical advice from your medical team or NHS 111.



## **Diabetic ketoacidosis (DKA) and hyperosmolar hyperglycaemic state (HHS)**

If you have diabetes, an illness or infection can sometimes cause conditions called diabetic ketoacidosis (DKA) or hyperosmolar hyperglycaemic state (HHS). These happen when blood sugar levels become very high.

If you are unwell, speak to your diabetes team.

Both conditions have similar symptoms, which can include:

- high blood sugar levels
- feeling very thirsty
- needing to pee more often
- feeling tired and sleepy
- confusion
- blurred vision
- stomach pain
- feeling or being sick
- sweet or fruity-smelling breath (like nail varnish or pear drop sweets)
- passing out.

DKA and HHS are both serious conditions that need treating urgently. Go to A&E immediately if you think you have DKA or HHS. Tell them you have diabetes.

Find out more about DKA and HHS from Diabetes UK or ask your diabetes nurse for more information.



# Healthy eating and type 3c diabetes after surgery to remove pancreatic cancer

**This information is about diabetes for people who have had surgery to remove pancreatic cancer, have recovered from the surgery, and are a healthy weight.**

If you are still recovering from surgery or are trying to put weight on, our information about diabetes if you have lost weight (see page 11) may be more helpful.

If you have had surgery to remove pancreatic cancer, you will have had part of your pancreas removed and may have type 3c diabetes. You may also need to take pancreatic enzymes to digest your food. If the whole pancreas was removed (total pancreatectomy), you will have type 3c diabetes and will need to take insulin (see page 17) for this, as well as enzymes for digestion.

After you have recovered from the surgery, you may find that your appetite improves and you start to put on weight and get stronger. It is recommended to eat a healthy balanced diet that keeps your blood sugar level in your target range (see page 9), and helps keep you well.



Read more about surgery in our fact sheet:

**Surgery to remove pancreatic cancer.**

Or at: [pancreaticcancer.org.uk/surgery](https://pancreaticcancer.org.uk/surgery)

Read more about PERT in our fact sheet:

**How to manage problems with digestion using PERT**

Or on our website at: [pancreaticcancer.org.uk/pancreaticenzymes](https://pancreaticcancer.org.uk/pancreaticenzymes)



## Eating well with type 3c diabetes if you are a healthy weight

The aim is to eat a diet that you enjoy, that is good for you and that keeps your blood sugar levels in your target range. Be aware that this information is for people who are a healthy weight – **it's not suitable for people who have lost weight.**

- Aim to have 3 normal sized meals a day without many snacks, or 3 small meals with snacks.
- You may find that if you miss meals it is harder to keep your blood sugar levels within your target range.
- Be aware of how much sugar you eat, as sugar raises your blood sugar level. If you have a lot of sugary food, try to reduce sugars added to foods and drinks. You could try replacing sugar with sweeteners.
- Aim to have at least five portions of fruit and/or vegetables a day.
- If you drink fruit juice, 150ml counts as one of your five a day. Any more than this may cause a rapid rise in your blood sugar level. Have the fruit juice at a mealtime.
- When you use fat, try to use fats from olive, sunflower, corn and rapeseed oils rather than animal fats such as butter, lard or ghee.
- Eat regular portions of oily fish, such as herring, salmon, sprats, sardines, mackerel and trout. Aim for 1-2 portions each week.
- Use small amounts of nuts and seeds as snacks or as part of a meal.
- Have protein in each of your main meals. Food containing protein include beans, pulses, nuts, seeds, tofu, soya, meat, fish, dairy and eggs.
- Read the nutritional information on packaged foods. Aim for foods that have low or medium levels of sugar, fat and salt.
- If you take pancreatic enzymes, make sure you take these when you eat or have milky drinks.
- If you take tablets or insulin for diabetes, make sure you take these as recommended to manage your blood sugar levels.

The NHS website and Diabetes UK have more information about eating healthily.





## Questions to ask your doctor, nurse or dietitian

Why have I developed diabetes?

Will having surgery mean I develop diabetes?

Do I have type 3c diabetes?

How should I manage my diabetes?

Who can help me manage my diabetes?

Will I need to monitor my blood sugar levels? How should I do this?

Who should I contact if my blood sugar levels are not in the target range?

Will I need to take tablets or insulin?

How do I take insulin?

How should I manage my diet if I have diabetes and pancreatic cancer?



# Further information and support

## Pancreatic Cancer UK support

We are here for everyone affected by pancreatic cancer.

### Our specialist nurses are here to talk now

If your world has been turned upside down by a pancreatic cancer diagnosis, we are here to talk now. We can answer your questions, recommend practical steps and provide the emotional support you and those close to you need, when you need it most.

Call free on **0808 801 0707** or email **nurse@pancreaticcancer.org.uk**

### Expert information

Our free information covers everything about pancreatic cancer to help you understand your diagnosis, ask questions, make decisions and live as well as you can.

Go to: **pancreaticcancer.org.uk/information**

Download or order our free publications at:

**pancreaticcancer.org.uk/publications** or call **0808 801 0707**

### Our online forum

The forum is a supportive online space where everyone affected by pancreatic cancer can be there for each other at any time.

Go to: **forum.pancreaticcancer.org.uk**

### Our online support sessions

Our online support sessions are hosted by our specialist pancreatic cancer nurses and will give you the chance to connect with others who have also been diagnosed.

Go to: **pancreaticcancer.org.uk/supportsessions**

### Real life stories

Read other people's experiences of pancreatic cancer to find out how they coped with their diagnosis and treatment, and their tips on looking after themselves.

Go to: **pancreaticcancer.org.uk/stories**



## Useful organisations

### Diabetes UK

[diabetes.org.uk](https://diabetes.org.uk)

**Helpline: 0345 123 2399** (Mon-Fri 9am-6pm)

Information on managing different types of diabetes.

### GOV.UK

[gov.uk/diabetes-driving](https://gov.uk/diabetes-driving)

Information about driving and diabetes, and how to tell the DVLA (Driver and Vehicle Licensing Agency) about your diabetes.

### Macmillan Cancer Support

[macmillan.org.uk](https://macmillan.org.uk)

**Support Line: 0808 808 00 00** (7 days a week, 8am-8pm)

Provides practical, medical and financial support for anyone affected by cancer.

### Maggie's

[maggies.org](https://maggies.org)

**Tel: 0300 123 1801**

Centres around the UK and online offering free, practical, emotional and social support for anyone affected by cancer.

### NHS 111 Wales

[111.wales.nhs.uk](https://111.wales.nhs.uk)

Health information in Wales, including local services.

### NHS Inform

[nhsinform.scot](https://nhsinform.scot)

Information about different health conditions and living well, and local services in Scotland.

### NHS Website

[nhs.uk](https://nhs.uk)

Information about health conditions, living well, care, and local services in England.

### nidirect

[www.nidirect.gov.uk](https://www.nidirect.gov.uk)

Information about local services in Northern Ireland, including the Driver and Vehicle Agency (DVA).

This fact sheet has been produced by the Support and Information Team at Pancreatic Cancer UK.

We make every effort to make sure that our services provide up-to-date, accurate information about pancreatic cancer. We hope this will add to the medical advice you have had, and help you make decisions about treatment and care. This information should not replace advice from the medical team – please speak to the medical team about any questions.

Email us at **publications@pancreaticcancer.org.uk** for references to the sources used to write this fact sheet.

### **Give us your feedback**

We are always keen to improve our information, so let us know if you have any comments. Email us at **publications@pancreaticcancer.org.uk** or write to our Information Manager at the address on the back cover.

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© Pancreatic Cancer UK June 2023  
Review date June 2026

Registered charity number 1112708 (England and Wales), and SC046392 (Scotland)