

The Cystic Fibrosis Association of Ireland

Cystic Fibrosis Related Diabetes



PATIENT NAME: _____

DIETITIAN: _____

BLEEP NUMBER: _____ **DATE:** _____

This diet sheet was produced by the CF Interest Group
of the Irish Nutrition and Dietetic Institute (INDI)



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WHAT IS DIABETES?

Many children and adults with cystic fibrosis (CF) develop diabetes.

Cystic Fibrosis Related Diabetes (CFRD) is a unique type of diabetes.

Most people with CFRD are diagnosed using a Glucose Tolerance Test (GTT). Insulin is a hormone released from the pancreas and it controls the level of glucose in your blood. It moves nutrients, like sugars, from the blood stream into cells. These cells use the sugar for energy.

High blood glucose levels lead to the following symptoms:

- increased thirst,
- passing lots of urine,
- tiredness,
- blurred vision,
- weight loss.

The type of diabetes people with CF get is not treated in the same way as other types of diabetes. People with CFRD should not follow a low sugar, low fat diet. This is because they have higher energy requirements needing both sugar and fat as fuels.

With CF well-controlled diabetes helps nutrition to reach muscle cells and promotes weight gain. Poorly controlled diabetes can lead to a loss of muscle function and a deterioration in lung function.

Your CF dietitian, diabetes team and CF team will decide on the treatment that is most appropriate for you.

WHAT CAN CAUSE DIABETES?

In CF due to pancreatic insufficiency, secretion of insulin may be reduced. Many people with CF may also be insulin resistant which means that the body does not use insulin normally and therefore they require higher doses of insulin than normal.

HOW CAN I CONTROL MY DIABETES?

1. Insulin

The treatment of choice for all types of CFRD is insulin. CFRD is almost never treated with tablets. Insulin can only be given by injection.

There are many different types of insulin and your diabetes team will decide which is most appropriate for you.

The usual treatment regime is called the “basal-bolus” regime where people take a long acting injection of insulin (basal) once or twice during the day and separate doses of insulin (bolus) with meals and snacks.

Your doctor will decide what insulin is most appropriate for you.

Basal insulins (Lantus or Levemir) start working within 2 hours and last for 18-24 hours. You always need to take basal insulin whether you are eating or not. They should be taken at the same time each day.

Bolus insulins (Novorapid or Humalog) start working straight away and last 2-3 hours. They should be taken with meals and snacks and the doses are sometimes adjusted with varying carbohydrate intake, exercise levels and alcohol intake.

2. Diet

Why is the CF Diet Different from the Standard Diabetic Diet?

With CF, more calories are needed in the diet to help growth and weight gain. Because fatty foods are twice as rich in calories as sugars, a high fat diet is encouraged with very little sugar restriction and you are certainly not encouraged to lose weight!!

Will I Have to Avoid Sugary foods?

Generally your insulin regime enables you to eat some sweet foods, but you do need to avoid sugary drinks e.g. Lucozade, sugar containing drinks and sweets between meals.

It is best to eat very sweet foods with other foods, for example after a meal.

WHAT ARE CARBOHYDRATES?

Carbohydrates = Sugars + Starches

Sugary foods are absorbed from the stomach into the blood stream quickly and can cause your blood glucose to rise sharply. Taking starchy foods regularly throughout the day as meals or snacks helps to keep your blood glucose at the right level.

Your blood glucose will also be easier to control if you eat about the same amount of carbohydrate at each stage of the day.

Your insulin regime will need to be adjusted if you are eating more, or less, sugar or carbohydrate than usual.

Remember, neither protein nor fat foods will have a significant effect on blood glucose.

SUGARY FOODS "FAST RELEASE"	STARCHES "SLOW RELEASE"
White/brown sugar Sweets Soft drinks/squashes Fruit juice Honey Meringues	Bread Cakes and biscuits Potatoes Cereals Pasta Rice Crackers/crisp-bread Crisps/potato snacks
<i>Take small amounts with meals</i>	<i>Take at each meal</i>

REMEMBER: Take insulin with all foods containing carbohydrate

WHAT IS PROTEIN?

Protein is found in eggs, meat, fish, cheese and nuts.

Protein is essential for muscle development and fighting infection.

Protein alone will not increase blood glucose levels.

WHAT IS FAT?

Fat is found in butter, margarine, cooking oils, mayonnaise and cream and can be hidden in other foods (e.g. pastries, some meat products, crisps and cakes).

Fat, like protein, does not directly affect blood glucose levels, but you still need to take your usual pancreatic enzymes.

HOW OFTEN WILL I HAVE TO EAT?

It is very important that you eat regularly:

BREAKFAST	Cereal with milk (sugar if required) Bread, croissants, bagels with spread & jam/marmalade Cooked breakfast (rashers, sausages etc.) Milk/juice/tea/coffee (sugar if required)
MID MORNING	See Snacks (next page)
LUNCH	Bread/ciabatta/rolls/jacket potatoes/bagels Meat/Fish/Chicken/Cheese/beans Full fat yoghurt/crisps/fruit/chocolate
MID AFTERNOON	See Snacks (next page)
EVENING MEAL	Meat/fish/egg/cheese Potato/pasta/rice/bread Cake/fruit pie & custard/full fat yoghurt/ice cream
BEDTIME	See Snacks (next page)

SNACKS

It is important that you eat three snacks during the day as well as your meals. Choose something like:

Biscuits	Cake	Toast & butter
Scones with spread	Glass of milk	Toasted sandwich
Crisps & nachos	Chocolate bar	Cereal
Peanuts*	Drinking chocolate	Yoghurt
Crackers & cheese	Pastry	Supplement drink
Popcorn	Ice-cream	Cheese*

* *These snacks do not contain carbohydrate and therefore don't need additional insulin (when eaten alone).*

REMEMBER: You will need insulin with all carbohydrate containing snacks

CAN I TAKE NUTRITIONAL SUPPLEMENTS?

Many people with CF take high-energy supplementary drinks to help them consume enough calories and help them to prevent weight loss, particularly during infection. Your dietitian will suggest when you should take these and which ones are appropriate. Your Diabetes nurse will suggest how much insulin to take.

Glucose drinks could cause very high blood sugars and are therefore generally best avoided. These include:	Supplements and feeds that are suitable:
Polycal liquid Maxijul liquid	Ensure Plus/Fortisip/Fresubin Energy Home-made milkshakes Build up/Calshake/Scandishake Elemental Feeds Calogen/Liquigen Fortijuice/Enlive Fortifresh Procal

WHAT IS THE NORMAL RANGE FOR MY BLOOD GLUCOSE LEVELS?

Before all meals 4-7 mmols/L

Occasionally your blood glucose may be high e.g. 13 mmol/L. If it returns to normal and you feel well, then it will not cause you harm. If it is regularly high, you need to change your insulin or your diet.

If your blood glucose levels are higher during a chest infection it may be because you have become more insulin resistant. This is very common during infection and your insulin requirements generally return to normal once the infection has cleared.

WHEN ARE THE BEST TIMES TO CHECK MY BLOOD GLUCOSE?

- Before each main meal and snacks.
- Occasionally 2 hours after meals and snacks to ensure you are getting adequate insulin for that meal.
- If you feel unwell or think you are developing an illness (often blood glucose levels rise pre illness) or a low blood sugar level.
- Before and after strenuous exercise.
- Record your blood levels in your blood test book and note any problems or comments, for example, extra food or additional stress.
- Before driving or using machinery.

REMEMBER: Bring your log book to the clinic so that your diabetes nurse/doctor/dietitian can review them and highlight any patterns

WHAT IS HYPOGLYCAEMIA?

Hypoglycaemia (“hypos”) occurs when blood glucose is low (i.e. less than 4mmols/L).

Symptoms may include:

Confusion – Sweating – Weakness – Tingling – Dizziness – Hunger

Hypos may be caused by:

- Missed or delayed snack or meal.
- Insufficient starchy food (carbohydrate) at previous meal.
- More frequent or prolonged periods of exercise.
- Taking more insulin than you need.

How do I treat a ‘Hypo’?

Take fast release carbohydrate such as a drink immediately e.g. 120ml lucozade, 150ml ordinary cola, 200ml orange juice or 5 glucose tablets. Wait 15 minutes so that the sugar is absorbed and then take some slow release carbohydrate food e.g. toast, biscuits, bread and butter. Check your blood sugar levels again after 30 minutes

How do I prevent a Hypo?

- Eating regularly and on time.
- Ensuring that you eat enough starchy food at meal/snack.
- Taking the correct amount of insulin prescribed.
- Eating before and after you exercise.
- Always carry sugar tablets, sweets or a drink when you’re out and about just in case symptoms of hypo occur.

N.B. Make sure your family and close friends know of your diabetes and know what to do if you have a hypo



WHAT IS HYPERGLYCAEMIA?

Hyperglycaemia or high blood glucose level may be caused by:

- not taking enough insulin,
- eating much more than usual,
- oral or i.v. steroid treatment,
- chest infections and fever.

Sometimes you may have no symptoms at all.

Hyperglycaemia may lead to a feeling of thirst and tiredness. In the long term hyperglycaemia may cause weight loss and a deterioration in lung function.

What do I do if I feel unwell?

- Don't be surprised if during a chest infection you find that your blood sugars are higher than normal. This is quite normal and you may just need more insulin. Speak to your diabetes nurse or dietitian. Check your blood sugars frequently (at least 2-4 times daily) and record them in your logbook.
- If you have a poor appetite, don't stop your basal insulin and take short acting insulin with meals. If you are not eating do not take short acting insulin.

Drink plenty of fluids to avoid dehydration.

REMEMBER: Never stop taking your insulin – even when you are ill

What if I take an overnight feed?

If you are on an overnight feed, remember to check your blood sugar level after you finish the feed, and before breakfast. Most people on an overnight feed take extra longer-acting insulin to ensure blood glucose levels are kept within the normal range.

Your insulin will need to be altered if your feed is changed or reduced.

Eating Out

If you are on a basal bolus regime take your bolus insulin with the main course or dessert (many people have a hypo if they inject with their starter).

CAN I STILL EXERCISE WITH DIABETES?

Exercise is a very important part of your life. During exercise you will use up more carbohydrate than usual. To prevent your blood sugar level from falling too low you may need to take extra carbohydrate before you start. Check your blood sugar before, during and after you do any exercise.

Aim to have a blood glucose level between 8-12 before exercise.

For short but intense exercise (e.g. aerobics, swimming, cycling) take fast release carbohydrate (e.g. fizzy drink) and slow release carbohydrate (e.g. bread, fruit, biscuits).

If you find it difficult to eat before exercise, then reduce your bolus insulin by half at the meal closest to exercise.

For more prolonged exercise (e.g. walking, football, golf) take slow acting carbohydrate (e.g. sandwich or extra potatoes) with your meal before hand. You may need a top-up of starchy food (e.g. bananas or cereal bars) if the exercise goes on for more than 2-3 hours.

Talk to your diabetes nurse about adjusting your insulin.

CFRD & ALCOHOL FOR THE OVER 18'S

In general there is no need to give up alcohol just because you have diabetes.

Drinking too much alcohol, or drinking alcohol on an empty stomach can cause a low blood sugar level.

To avoid going hypo never drink on an empty stomach, and if you are going to be out late always remember to top up with a carbohydrate containing snack.

Remember there is still a risk of going low several hours after you have stopped drinking so make sure you eat before you go to bed and have a breakfast the next morning.

NOTES



NOTES

YOUR INDIVIDUAL CFRD INFORMATION

DIETITIAN:

DIABETES NURSE SPECIALIST:

CURRENT INSULIN REGIME:

SPECIFIC DIETARY ISSUES:

Other Notes:

*Further enquiries about literature, including booklets
produced by the Association can be obtained from:*

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