

Patient information

Insulin Pump Therapy: Session One Carbohydrate Counting

Therapies Department

Introduction

The aim of insulin pump therapy is to intensify and improve the management of your diabetes. The insulin pump uses only rapid acting insulin which is delivered in two ways via the pump:

- Basal insulin is the hourly dose of insulin which will keep blood glucose levels stable even if you don't eat.
- A bolus dose of insulin is given to either correct an elevated blood glucose value or to manage the glucose released from any carbohydrate which is contained in a meal or snack. The calculated amount will depend on the amount of carbohydrate eaten or the blood glucose value if the bolus is for a correction dose.

Carbohydrate counting will enable you to estimate the carbohydrate content of food and how to adjust your insulin dose according to the different compositions of food you eat and the activities you enjoy.

Counting carbohydrates with your insulin pump will give you the freedom to enjoy any food you would like to eat, when you would like to eat it; however it is still important to remember the principles of healthy eating for your overall health.

Identifying carbohydrates

In order to be able to count carbohydrates you need to be able to:

1. Identify the foods that contain carbohydrate.
2. Estimate the amount of carbohydrate a meal or snack contains.

1. Identify the foods that contain carbohydrate

Carbohydrates are broken down into glucose in the body and are an important source of energy. They are often referred to as complex carbohydrates (starches) and simple carbohydrates (sugars). As they have different structures they are therefore separated into different categories. Carbohydrate is sometimes abbreviated to CHO.

Type of Carbohydrates	Foods
Starch	Breads Cereals Rice Pasta Grains – e.g. Barley, Oats, Millet Flour Based Products
Vegetable Starch	Legumes (lentils, beans, peas) Potatoes/Yam/Squash Corn Parsnips
Fructose	Fruit - Dried/Tinned/Fresh/Frozen Fruit Juice
Lactose	Milk Yoghurt Ice Cream Custard
Sucrose (often added sugar)	Regular Fizzy Drinks Table Sugar Honey Chocolate and other Confectionary Sauces

All of the meals, snacks and drinks containing the different types of carbohydrates listed will increase the level of glucose in your blood and will therefore require insulin in the form of a bolus.

Usually you do not need to count carbohydrates from snacks or drinks that contain less than 5g of carbohydrates unless it is part of a meal.

2. Estimating the amount of carbohydrate that a meal or snack contains

There are different ways to estimate carbohydrate content such as food labels, carbohydrate counting books, measuring out food, the internet and restaurant/food retailers information.

As previously mentioned many of the foods we eat contain carbohydrates therefore when looking at labels **always use the 'total carbohydrate' value not 'of which sugars'**, as they all will affect blood glucose levels not just the 'of which sugars'.

Food labels will show carbohydrate value per 100g and often per portion/serving therefore you may need to work out how much carbohydrate is in your serving and not the one stated on the label e.g. a cereal portion on the box is often 30g but your portion may be 45g.

The dietitian will discuss how to estimate in more detail during your consultation however here are some tips to remember:

- Having kitchen scales with a calculator close by will come in handy.
- Serve your food in the kitchen rather than at the table initially. This way you can measure your serving size.
- Use handy measures such as cups/serving spoons for future reference.
- Don't get confused over cooked and dry weight for foods such as pasta and rice and initially try serving without the accompanying sauce.
- Be familiar with how food looks on the plate as this will help when eating out.
- Make your own carbohydrate list

Insulin to Carbohydrate Ratio

This is the amount of insulin required to control your blood glucose levels following the digestion of a given amount of carbohydrate. This is often abbreviated to ICR.

When starting insulin pump therapy most people will use a ratio of 1 unit of insulin to 10g of carbohydrate (1:10g). For example a meal containing 70g of carbohydrate will require 7 units of insulin.

Insulin to carbohydrate ratio can vary depending on factors such as body weight, physical fitness and insulin sensitivity however this will be determined by the insulin pump team.

Preparation for the next session

You now have enough information to keep your own food diary for the next few days until your next appointment.

You should record as much detail as possible, including:

- All the food and snacks that you have.
- The amount of carbohydrate they contain.
- The total of carbohydrate eaten each meal.

Remember to add in the carbohydrate content of any drinks you have e.g. fruit juice or milk. Do not include any foods that contribute less than 5g of carbohydrate, unless they are part of a meal.

Feedback

Your feedback is important to us and helps us influence care in the future.

Following your discharge from hospital or attendance at your outpatient appointment you will receive a text asking if you would recommend our service to others. Please take the time to text back, you will not be charged for the text and can opt out at any point. Your co-operation is greatly appreciated.

Further Information:

Nutrition and Dietetic Service

Royal Liverpool Hospital

Tel: 0151 706 2120

Text phone number: 18001 0151 706 2120

Diabetes Dietitians

The Royal Liverpool Hospital:

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Review: March 2025

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