

# Insulin dosing using an insulin-to-carb ratio and correction factor

## Information for patients and families

If you are taking rapid acting (mealtime) insulin, this information may be helpful to you. Rapid acting insulin can be used to cover the carbohydrate in your meals and help correct your blood sugar when it gets too high.

Using an insulin-to-carbohydrate factor helps you match your insulin to the amount of carbohydrate you are eating. A correction factor helps you figure out how much insulin you need to bring your sugar down when it is high.



## What is an insulin-to-carbohydrate ratio?

An insulin-to-carb ratio tells you how much rapid acting insulin you need to cover a specific amount of carbohydrate. This allows you to dose your insulin based on the amount of carbohydrate that you eat at a meal.

For example, an insulin-to-carb ratio of 1:10 means **1 unit of insulin will cover 10 grams of carbohydrate.**

Some people have a different insulin-to-carb ratio for breakfast than at other meals.

To use an insulin-to-carb ratio, you need to count the carbohydrate at a meal.

# How do I count carbohydrate?

## Step 1: Find the information

You can find the amount of carbohydrate on:

- the “Nutrition Facts” panel of packaged food
- the internet (many restaurants provide this information online)
- Apps such as myfitnesspal or calorieking

## Step 2: Measure your portions

- Use measuring cups and weigh scales to count your carb more accurately.
- If you are eating foods containing fibre, you should subtract the fibre from the total carb to determine the net carb. The net carb is the amount that will affect your blood sugar.

## Step 3: Add up the carbohydrate in your meal or snack

Example:	1 cup cooked rice .....	45 g
	½ cup green beans.....	0 g
	3 oz grilled chicken breast.....	0 g
	Salad greens and dressing.....	0 g
	1 cup strawberries.....	<u>7 g</u>
	Total Carbohydrate	52 g

## Step 4: Take the total carbohydrate and divide it by the second number in the insulin-to-carb ratio

Example: If your insulin to carb ratio is 1:10, then 1 unit of insulin will cover 10 grams of carbohydrate

52 grams of carbohydrate ÷ 10 = 5.2. This means you would need 5 units of insulin to cover this meal (round the number down to 5).

## What if I am high before the meal?

If you are above your target blood sugar (4 to 7 mmol), you may decide to take **extra insulin** to correct your blood sugar and get you back into a better range. To decide how much extra insulin you need, you will use a correction factor.

## What is a correction factor?

A correction factor is how much 1 unit of rapid acting insulin will lower your blood sugar.

## What is *my* correction factor?

To calculate your correction factor:

1. Add up all insulin taken in the day (long acting and rapid acting). This is called your Total Daily Dose (TDD).
2. Divide 100 by your TDD. The result is your correction factor.

Example:  $100 \div 50 \text{ units (TDD)} = 2.0$

In this example, 1 unit will lower your blood sugar by 2 mmol/L.

If your blood sugar is 10 mmol/L, then 1 unit will lower it to 8 mmol/L and 2 units will lower it to 6 mmol/L.

## How do I calculate my insulin dose?

1. Count your carbohydrates and divide by your insulin to carb ratio, to figure out the amount of insulin you need for the meal
2. Test your blood sugar. If blood sugar is higher than 7 mmol/L, calculate how much correction insulin you need using your correction factor.
3. Add the meal insulin + correction insulin together to determine the dose of insulin needed at that time. This dose will help you get back to target in 4 hours.

## Let's try it out!

### Breakfast

English muffin	= 23 g carbohydrate
Peanut butter 1 TBSP	= 3 g carbohydrate
Jam 1 TBSP	= 13 g carbohydrate
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Total Carbohydrate	= 39 g carbohydrate

1. My insulin-to-carb ratio is 1:10g
  - $39 \text{ g} \div 10 = 3.9 \text{ units (4.0 units)}$  for the food
2. My blood sugar is 13.0 which is 6 mmol higher than I want to be. Based on my correction factor, I need 1 unit to lower my blood sugar by 2 mmol/L.
  - $6 \div 2 = 3 \text{ units}$  needed to get back to 7 mmol.
3. I need 4 units for food + 3 units to correct. This means my dose should be 7 units at this meal.

## My suggested insulin-to-carb ratio and correction factor:

Insulin-to-Carb Ratio \_\_\_\_\_

Correction Factor \_\_\_\_\_

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