Mount Sinai Hospital
Sinai Health System
Joseph & Wolf Lebovic Health Complex
Leadership Sinai Centre for Diabetes

Adjusting Your Carbohydrate-to-Insulin Ratio (CIR)

A Carb-to-Insulin Ratio (CIR) is the amount of carbohydrate that 1 unit of insulin will cover. CIRs can change over time so it is important to evaluate them periodically. For example, changes in body weight and/or activity level may require a change in your CIRs.

Many factors affect CIR. For the best results confirm the following: ☑

- ☐ Your basal rates are accurate. CIRs can be assessed properly ***only*** when you are getting the right amount of basal insulin. Refer to the Basal Assessment Form for more information.
- ☐ Blood glucose before meal is in target range.
- ☐ You have not eaten or given a correction bolus in the past four hours.
- ☐ No recent hypoglycemia.
- ☐ You are eating a meal for which you can accurately determine the carbohydrate content, and which does not contain excess fat or protein.
- ☐ You are not feeling ill or stressed.
- ☐ You have not exercised or consumed alcohol for 24 hours before testing CIR.

Steps for testing your CIR:

1. Give the food bolus but do ***not*** take a correction bolus. Do not bolus more than 20 minutes before eating.
2. Test your blood sugar before the meal, then 2 hours and 4 hours after the meal and record the results. Do not take a correction bolus during this period. Use the logbook on the reverse to record your CIR test results.

Your CIR is accurate:

- If your two hour after meal blood glucose is 2 to 4 mmol/L higher than your before meal blood glucose,

  AND

- If your four hour after meal blood glucose is within 2 mmol/L of your before meal blood glucose.

Your CIR needs to change:

- If your two hour after meal blood glucose increases by 4 mmol/L or more. In this case you need ***more*** insulin, so use a smaller CIR. Start by ***decreasing*** the grams of carb in your ratio by 1 or 2.

  For example: If your CIR was 15 grams for every 1 unit of insulin, change the ratio to 14 or 13 grams of carbohydrate for every 1 unit of insulin.

  OR

- If your two hour after meal blood glucose does not increase by at least 2 mmol/L. In this case you need ***less*** insulin, so use a larger CIR. Start by ***increasing*** the grams of carbohydrate in your ratio by 1 or 2.

  For example: If your CIR was 15 grams of carbohydrate for every 1 unit of insulin, change the ratio to 16 or 17 grams carbohydrate for every 1 unit of insulin.

Allow three to seven days to see the effects of a change to your CIR before making another change. If you have questions about your CIR test, contact your diabetes health care team to discuss the results.

Breakfast

Date	BG Pre-meal	Carbs (grams)	Insulin (units)	BG 2 hrs after	BG 4 hrs after
Hints	Start at target BG	Try to eat your "usual" amount of carb	Use your CIR to determine bolus (no correction)	**2 to 4 mmol/L above** pre-meal glucose	**Within 2 mmol/L** of pre-meal glucose

Lunch

BG Pre-meal	Carb (grams)	Insulin (units)	BG 2 hrs after	BG 4 hrs after
Start at target BG	Try to eat your "usual" amount of carb	Use your CIR to determine bolus (no correction)	**2 to 4 mmol/L above** pre-meal glucose	**Within 2 mmol/L** of pre-meal glucose

Dinner

Date	BG Pre-meal	Carbs (grams)	Insulin (units)	BG 2 hrs after	BG 4 hrs after
Hints	Start at target BG	Try to eat your "usual" amount of carb	Use your CIR to determine bolus (no correction)	**2 to 4 mmol/L above** pre-meal glucose	**Within 2 mmol/L** of pre-meal glucose

Snack

BG Pre-meal	Carb (grams)	Insulin (units)	BG 2 hrs after	BG 4 hrs after
Start at target BG	Try to eat your "usual" amount of carb	Use your CIR to determine bolus (no correction)	**2 to 4 mmol/L above** pre-meal glucose	**Within 2 mmol/L** of pre-meal glucose