From the Insulin Dose Guide for Insulin Pumps, CGMs, and AIDs

Check Your Carb Factor (CarbF or ICR)

Basics

Your Carb Factor (CarbF, Insulin to Carb Ratio, ICR, or I:C) is the number of grams of carbohydrate that one unit of insulin covers for you. For example, if you take 1 unit of insulin for every 8 grams of carb, then 8 is your CarbF. The CarbF is different for different people and can differ slightly during the day for the same person.

CarbFs are important because:

- They allow your glucose to go from a relatively normal value before a meal to a relatively normal one before the next meal by matching the carbs eaten with the bolus taken.
- They reduce glucose spikes between meals, especially when you give a bolus early.

Once you program a CarbF into your pump, your Bolus Calculator does the math — enter the grams of carbs you're eating and let your BC calculate how much insulin to give, down to tenths of a unit. If your CarbF turns out to be 8.6 grams per unit, just program that into the bolus calculator, and it will give you precise bolus recommendations every time. Plus, you don't have to do any awkward math in your head!

The CarbF number for lunch often has to be set slightly higher to give less insulin than that at breakfast. The need for a higher number comes from the prolonged 5-hour period over which a breakfast bolus lowers the glucose and the Way Pumps and AIDs Often Stack Insulin in Error. The dinner CarbF number, in contrast, is often the same or smaller than breakfast for those who consume most of their carbs in the last meal of the day.

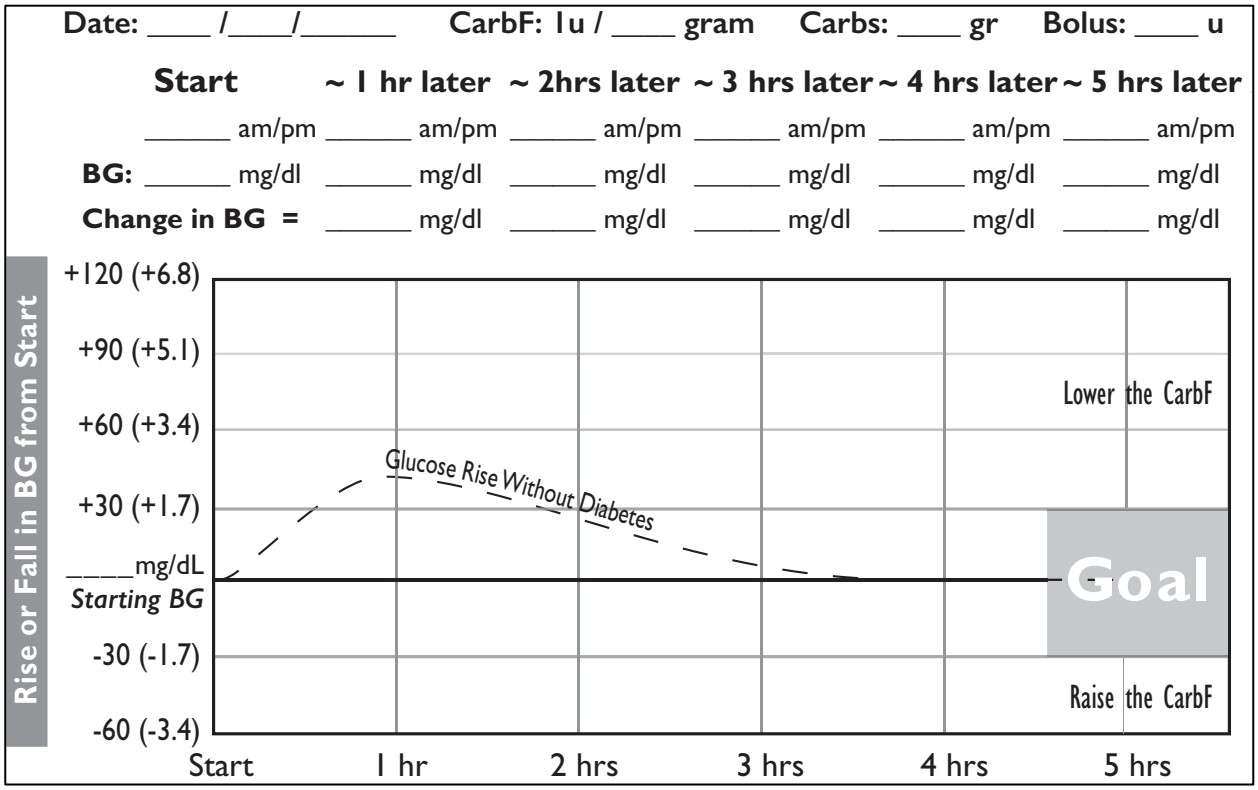
The best-kept secret for CarbFs: always bolus 20 to 30 minutes before meals when you can.

Steps to Check Your CarbF

Start by finding a CarbF or verifying the one you have with the Pump Settings Tool. Begin with a single CarbF for the entire day, and then make changes later based on your checking results and experience.

To check, eat enough grams of carbs that are low in fat and protein to challenge your CarbF, such as grams of carb equal to about half your weight in pounds. (Example: if you weigh 140lbs, consume 70 grams of carbs). Make sure your carb count is accurate. Weigh or measure your food, or have something with its nutritional information at hand.

Carb Factor Checking Tool



1. Start a carb factor check when your glucose is between 90 and 140 mg/dL (5.0 – 7.8 mmol/L), you have not eaten in the last 3 hours, and have not taken a bolus in the last 5 hours. Enter this value on the Starting BG line.
2. Temporarily set your Glucose Target to 100, enter the grams of carb into your bolus calculator with no glucose reading (You are testing only the CarbF.), and take the recommended bolus 20 minutes before you eat. After the bolus, reset your Glucose Target to its original setting.
3. Check your glucose or look at your CGM screen and record the value above each hour to plot how your glucose responds in the graph above. Check also if you feel your glucose is low.
4. If your glucose falls more than 30 mg/dL (1.7 mmol/L) below your starting glucose, stop checking and have some carbs if needed.
5. If your glucose rises or falls more than 30 mg/dL (1.7 mmol/L) below your starting glucose, see Graphic 11.6 and Table 11.2 for how to adjust your CarbF.

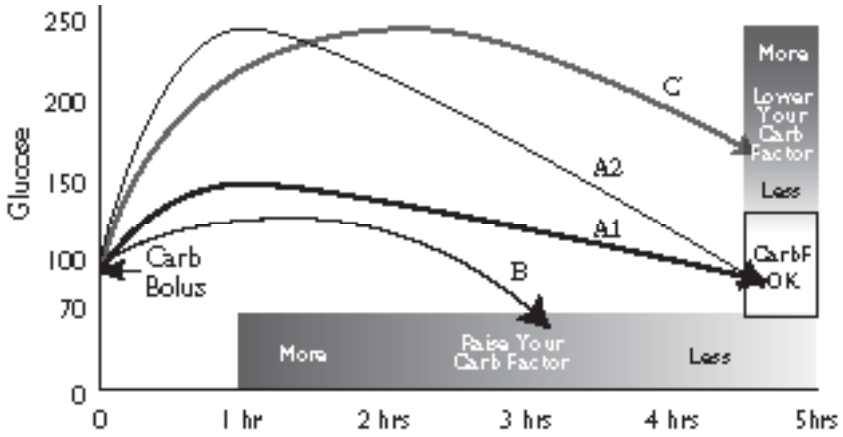
An accurate CarbF will bring your glucose into the goal box after 5 hours.

Adjust Your CarbF from Your Results

Make changes to your CarbF using Graphic 11.6 as a guide and Table 11.2 for the degree of change. If your checks show that your CarbF needs a major increase or decrease, your basal rates or CorrF may also need to be changed.

Remember: smaller CarbFs give larger boluses and larger CarbFs give smaller boluses.

11.6 Change Your Carb Factor



Change the CarbF from the Glucose Path in your Test:

1. The CarbF is optimal when your glucose ends up within 30 mg/dL (1.7 mmol/L) above or below your starting glucose (Arrow A1) after 5 hours. Recheck to verify.
2. If your glucose spikes after eating but is OK at 5 hours (A2), your CarbF is probably OK. To stop the spike, bolus earlier, try a Super Bolus, or switch some carbs to a lower glycemic index variety.
3. If your glucose goes low (B), increase your CarbF to make carb boluses smaller. See Table 11.2 for suggestions on how much to raise your CarbF number.
4. If your glucose ends up at 30 mg/dL (1.7 mmol/L) or more above your starting glucose at 5 hours (C), decrease your CarbF to make carb boluses larger. See Table 11.2 for suggestions on how much to lower your CarbF number.

Check and adjust your CarbF until it consistently brings your glucose within (+/-) 30 mg/dL of your starting glucose for that meal.

CarbFs work very well when only carbs are eaten. Even low glycemic index carbs that digest slowly can be matched with extended boluses. However, fats and proteins also impact your glucose after a meal and have effects that are more variable. Visit How to Bolus for Fat and Protein for more information.

11.2 How to Change the CarbF (ICR)

If current CarbF is:	Adjust up or down by:
Less than 5.0 gr/u	+/- 0.2 to 0.3 gram/u
5-10 grams/u	+/- 0.3 to 0.5 gram/u
10-15 grams/u	+/- 1.0 gram/u
16-24 grams/u	+/- 1 to 2 grams/u
Larger CarbF changes are occasionally needed.	

Derived from **Pumping Insulin** to improve your glucose results. Be sure to check all your bolus calculator settings against those in right column of the Pump Settings Tool.

Now that your basal rates and CarbF are set, its time to Check Your Correction Factor.

Quick Check of Your Carb Counts

Are your carb counts accurate? A quick way to check is to multiply the average daily grams of carb in your pump history by 10. This number estimates your average daily calorie intake.

For example, if someone weighs 200 lbs and has a 14-day average of 100 grams of carb a day, their estimated calorie intake would be 1,000 calories. If calories or grams appear low, as in this case, consider: are you on a weight loss diet, are you on a low carb diet, are you not consistently using the Bolus Calculator, or are you perhaps undercounting carbs? If undercounting appears likely, for measuring carbs at home, get a gram scale and use Appendix A (page 230) with hundreds of off the shelf foods from the 6th edition of **Pumping Insulin**. For measuring carbs at restaurants, get a copy of the **Calorie, Fat, and Carbohydrate Counter**.