

WHAT IS THE RIGHT AMOUNT OF INSULIN?

CARB RATIOS

A carbohydrate ratio is also known as a carb ratio. A carb ratio is how many carbs one unit of insulin will cover.

Remember that when you eat or drink carbs you will usually need to give yourself insulin. You may not need to give insulin if you are treating a low blood sugar. You may not need to give insulin if you are going to exercise.

Carb ratios vary from person to person. Weight, activity level and gender are some things that affect what carb ratio a person needs.

In general, a carb ratio is 1 to 15. This means 1 unit of insulin for every 15 grams of carbs.

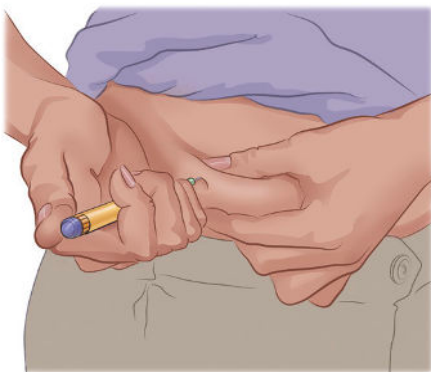
Your diabetes team will figure out your carb ratio with you. If you are resistant to insulin this could be something like 1 to 5 grams of carbs or 1 to 7 grams of carbs. This means you need more insulin for each gram of carbs. At first keeping a record of how some foods affect your blood sugar can help. Some carbs cause blood sugar levels to raise more than you think they will. If this happens a number of times for the same food, your diabetes team may recommend a change. They may tell you to give more insulin or eat a smaller serving of that food.

Many people find they need different carb ratios at different times of day. For breakfast people often need more insulin for their food. At lunch people often need less and at dinner somewhere in between the two.



WHAT IS A CORRECTION FACTOR?

This is how much 1 unit of rapid acting insulin will lower your blood glucose over 2 to 4 hours. Some people need more insulin to do this and some need less. In most cases, a good starting point is a factor of 1 to 50. This means 1 unit of insulin will bring your blood sugar down by a 50 mg/dl point drop. It can take 2-4 hours to drop.



How do I know what my correction factor is?

Your diabetes team sets your correction factor. Your team also changes it as needed.

Your correction factor can be a lower number, such as 10 mg/dl. A low number means that you are resistant to insulin. This means that you need more insulin to bring your sugar level down.

If your correction factor is a higher number such as 75 mg/dl or 100 mg/dl, it means you are very sensitive to insulin. This means you will need less insulin to bring your blood sugar down.

In most cases the correction factor is in the range of 30 mg/dl to 50 mg/dl.

ABOUT CORRECTION DOSES

What is a correction dose?

This is the dose of rapid or short acting insulin you give yourself to bring your blood sugar level back down to normal if you are high.

To figure out how much insulin you will need, you have to do some math using your correction factor. For instance, let's say your blood sugar level is 200 mg/dl. Let's say you want to have a blood sugar level of 150 mg/dl. And let's say your correction factor is 1 to 50. You will give one unit of insulin to bring your blood sugar level down by 50 to be at the 150 mg/dl level.

The mg/dl correction factor math looks like this:

- Current sugar level is 200 mg/dl minus 150 mg/dl, which is your desired sugar level.
- $200 \text{ mg/dl} - 150 \text{ mg/dl} = 50$. So, 50 mg/dl is how much you need to correct your sugar down.
- Since the correction factor is 50 mg/dl that means you divide 50 mg/dl correction factor by 50 mg/dl that you want to bring down by 1 unit of insulin.
- $50 \div 50 = 1$
- Then 1 unit of rapid or short acting insulin is the correction dose you would give yourself to bring your sugar level down.

You may need different correction doses through the day. Most often people need a different correction dose, more for breakfast and less for lunch.

When do I give a correction dose?

It is important to check your blood sugar before you eat a snack or a meal so you can know if you need to give a correction dose.

- **Before a meal after checking your blood sugar:** The best time to give a correction dose is before a meal. This is so your blood sugar does not go too low or too high.
- **If you are high between meals:** If you are giving a correction dose between meals, you will need to consider the insulin that is still in your body from the last shot. This is called "insulin on board". If you give correction doses too often you can "stack" insulin, which means giving too much insulin within a short period of time. Because insulin can take an hour or two to peak and can last in your body for 6 hours, it is easy to think the dose hasn't worked. Remember to wait 2 hours and see what the dose does. If you are still high, you can give half of a correction dose. Talk to your diabetes team to learn more about giving correction doses between meals and snacks.

I use a correction dose before meals if I need it.

Now my blood sugar is more in range.



How do I give a correction dose between meals if I am going to eat something?

- **With the insulin pump:** You will enter the amount of carbs you plan to eat and your blood sugar. The pump will subtract the dose still in your body from your correction dose.
- **With insulin shots:** A good rule is to give half a correction if you are correcting between meals or at bedtime. This avoids stacking. Stacking means giving too much insulin too often. That can lead to a low blood sugar reaction. Stacking can lead to a low glucose reaction. For example, if your correction dose is 1:50, a half correction dose is 1:100. A half dose will help safely reduce your blood glucose level.



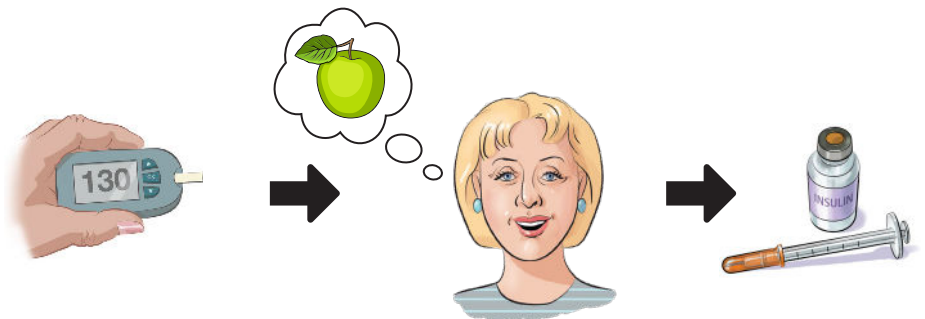
What is a pre-meal or bolus dose?

A bolus dose is the total dose of insulin you give before you eat. It consists of a correction dose if you need one and a dose of insulin to cover the amount of carbs you are about to eat. It can also be called a carb dose or carb bolus.

Let's Do the Math

It is important to check your blood sugar before you eat. If your blood sugar is high, you will need to add a correction dose to the carb dose. This is an example if your correction factor is 1 to 50 and you plan to eat 15 carb grams.

- Your blood sugar is 200 mg/dl and should be 150 mg/dl.
- You want to eat a small apple that is 15 grams of carbs.
- Your correction dose is 1 unit of insulin and your carb bolus is 1 unit of insulin. You will need to give yourself 2 units of insulin.



If you are low you may need to subtract insulin from the total dose, in most cases by 1 or 2 units. This is an example if your correction factor is 1 to 50, your blood sugar is 70 mg/dl and you plan to eat 30 grams of carbs.

- You need to eat. You plan to eat 15 carb grams of cereal and 15 carb grams of milk. That is 30 total carb grams.
- You would normally give yourself 2 units of insulin.
- You check your blood sugar. It is at 70 mg/dl and should be 150 mg/dl.
- You would subtract 1 unit of insulin from the total carb dose of 2 units.
- You would only need 1 unit of insulin to cover the food you plan to eat and bring your blood sugar up from the low.