

# Checking your insulin to carbohydrate ratio (ICR)

As you get older and change your routine or lifestyle, your insulin to carbohydrate ratio (ICR) will also change. It is important to check if your ICR is still right. The best way to do this is to check your blood glucose regularly.

Bolus (rapid-acting) insulin lasts for a short time. Test your blood glucose before your bolus and after [redacted] hours to check if your ICR is correct. This is sometimes called taking **paired readings**.

Speak to your diabetes team to help you to plan when is best to check your ICR. Only check your ICR when you are well and follow your normal routine 24 hours before and during the checking period.

## To check if your ICR is right:

1. Calculate your carbohydrate and bolus as normal.
2. After [redacted] hours, test your blood glucose again.
  - If your blood glucose is within [redacted] mmol/l of your pre-meal result, your ICR is correct.
  - If your blood glucose is higher or lower than your pre-meal result, you may need to change your ICR.
3. Look for patterns in your blood glucose results.  
**Do not change your ICR based on one set of paired readings.**

If your blood glucose tends to be higher, your ICR may need to decrease, for example change from 1:10 to 1:8.

If your blood glucose is lower, your ICR may need to increase, for example from 1:10 to 1:12.



Annie has checked her basal insulin and knows it is correct. Now she wants to check her ICR at different stages of the day. First she checks at breakfast. Her ICR at this time is 1:10.

Date	ICR = 1:10	Breakfast
15/04	Blood glucose before food	5.2mmol/l
	Carbohydrate	50g
	Bolus insulin	5 units
	Blood glucose 2 hours after food	6.1mmol/l

Both readings are within her target range, so her breakfast ICR is correct. Now she checks at lunchtime. Her ICR at this time is 1:10.

Date	ICR = 1:10	Lunch
15/04	Blood glucose before food	4.7mmol/l
	Carbohydrate	40g
	Bolus insulin	4 units
	Blood glucose 2 hours after food	9.3mmol/l

This reading shows a rise in Annie's blood glucose. She may need to take more insulin by decreasing her ICR to 1 unit of insulin for every 8 grams of carbohydrate (1:8). Using this decreased ICR, her bolus at this meal would become 5 units (40g carbohydrate ÷ 8 ratio = 5).

She will continue to take paired readings to make sure that this is a pattern, and discuss any changes with her diabetes team.

Now she checks at dinner. Her ICR at this time is 1:10.

Date	ICR = 1:10	Dinner
15/04	Blood glucose before food	7.2mmol/l
	Carbohydrate	84g
	Bolus insulin	8 units
	Blood glucose 2 hours after food	3.8mmol/l

This reading shows a drop in Annie's blood glucose. She may need to take less insulin by increasing her ICR to 1 unit of insulin for every 12 grams of carbohydrate (1:12). Using this increased ICR, her bolus at this meal would become 7 units (84g carbohydrate ÷ 12 ratio = 7).

She will continue to take paired readings to make sure that this is a pattern, and discuss any changes with her diabetes team.



## Now check your ICR

Date	ICR =	Meal
	Blood glucose before food	
	Carbohydrate	
	Bolus insulin	
	Blood glucose <input type="text"/> hours after food	

Before you make any changes to your ICR:

- check your injection sites (lumpy sites affect the absorption of your insulin)
- check that you are calculating carbohydrate correctly
- check that you are calculating your bolus correctly
- check patterns in your blood glucose over a few days.

**Discuss changes with your diabetes team.**

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