

Home testing for people with type2 diabetes

Key Points

- Testing your blood glucose levels enables you to see what your levels are and to know when you need to seek help with managing them
- Blood glucose testing enables you to find out how different foods affect your blood glucose levels
- Self blood glucose testing enables you to pick up emergency situations. You can quickly tell if your blood glucose levels are too high or too low
- Self blood glucose testing lets you know if your medication needs are changing (if you are either consistently too high or consistently too low)
- Self testing always gives more information if you test at various times of the day and record these results. You can then analyse them and seek advice if need be
- If you have type2 diabetes you are not at risk of developing problems with ketone levels in your blood. Therefore testing urine for ketone levels is not necessary for you
- Testing your urine for glucose is now only recommended for those people who are unable to test their own blood glucose levels. It is a very inaccurate way of testing
- If you have a community services card you can get your blood glucose testing meter free of charge, through Diabetes New Zealand. See your practice nurse, doctor or diabetes nurse if you want to apply for one

Testing your urine for glucose is not an ideal home testing too. Why?

- It's not very accurate
- Each individual put out glucose into their urine at different levels (e.g., one person may release glucose into their urine when their blood glucose level goes over 10mmol whereas the next person might not release any glucose until their blood glucose levels are above 15mmol)
- Testing your urine for glucose only lets you know that your blood glucose levels were high at the time that your body made the urine. Depending on when you last passed urine this could be anything up to 10 -12 hours ago. By the time you do the test your blood glucose level might be perfectly healthy again.

How do I learn to do self blood glucose testing?

Firstly, you need to get a home blood glucose meter. There are a number of different models available. Check out the [Diabetes New Zealand Shop](#) for examples. If you have a community services card you can get a blood glucose meter, free of charge, from Diabetes New Zealand. Your doctor, practice nurse or diabetes nurse educator will have to fill in an application form for you.

If you don't have a community services card you can expect to pay between \$30 - \$50 to get fully set up with testing equipment. Remember if you are buying or applying for a home testing meter that you will also need a finger pricking device. Some meters are sold without these so it pays to check.

Once you have your meter you need to learn how to use it. There are several options:

- The practice nurse at your GP surgery may be able to teach you
- A diabetes nurse educator can teach you (this is a very good option as a diabetes nurse can also run over issues such as the most useful times to test and how you can use the information that testing gives you)
- Some pharmacists can teach you
- Some cities have a representative from the company supplying your meter and they will be able to teach you if they are available

It is important to learn to use your meter correctly because the meter can give you wrong results if you are not using it properly. You also need to learn when to test (what times of the day and how many days of the week).

How often should I test?

This depends on a number of factors. Different diabetes services (the diabetes service for your area is often located at the major base hospital for your region) recommend different patterns of testing times. No one way is right or wrong. If you are in any doubt, talk to your nearest specialist diabetes team or your GP.

The pattern of testing times that is recommended to you will also depend on a number of other factors:

- Whether you are newly diagnosed with diabetes or if you have had it for a long time
- Whether you are prone to having low blood glucose levels
- Whether your diabetes is stable or unstable at the time
- Whether you are sick with another condition
- Whether you are on other [medications](#) that can make you blood glucose levels go high or low
- What suits your particular lifestyle
- How comfortable you feel with your diabetes

What are some testing time options?

This section starts with the more intensive testing schedules that are useful when you are newly diagnosed and trying to understand and stabilise your blood glucose levels. Or when your diabetes is unstable and you may be establishing onto a new medication. Later in the section are some less intensive testing schedules that you may wish to use once your diabetes is stable.

Four times a day before meals and bedtime. An example of this type of testing looks like this:

Date or day of the week	Before breakfast (fasting glucose level)	Before lunch	Before dinner	Before bed (but before supper)
Monday	7.8	13.2	8.5	6.3
Tuesday	6.2	14.3	6.8	5.3
Wednesday	5.6	11.3	5.2	6.1
Thursday	4.8	11.6	9.2	5.9
Friday	5.2	9.3	5.8	5.1

This way of testing enables you to look down the page and see what your blood glucose levels tend to be like at any particular time. You can then pick up 'patterns' in your blood glucose levels. Once you have established the patterns you can identify problem areas (times when your blood glucose levels fall out of the target zone). Try to ignore the occasional out-rider result. Look for the trends.

Can you see in the results above the problem time of the day? It's clear from these results that the pre-lunch blood glucose levels are the ones that are usually out of range.

This person might need to look at what they are eating between breakfast and lunch. If they are happy that they are usually making healthy food choices at this time of the day they could next examine their level of activity in the morning. Are they active or inactive? Would it be beneficial to walk to work briskly instead of taking the train? They might like to increase their level of activity and see whether this makes a difference.

Once they are happy with the choices they are making with both their food and exercise it's time to look at the medication that is working for them during the time between breakfast and lunch. Are they having any medication at this time? If so is it enough? Once they are at this stage it is helpful to visit the doctor in order to discuss their results and their ideas.

Another factor for them to take into account is their HBA1c levels. HBA1c is a laboratory test that can give you an indication of what your average blood glucose level has been over the previous 6 - 8 weeks (it's good to aim to keep your HBA1c less than 7%). Your HBA1c gives a reliable indication of what your overall risk is in relation to going on to develop complications because of your blood glucose levels.

Read more about HBA1c levels in the ["Understanding your lab tests"](#) section of this web site.

Testing four times a day in this way is very intensive. It is a way to gain information quickly. However, once this information is gained and your blood glucose levels are where you want them to be, testing can be reduced. Otherwise your fingers can end up getting very sore.

The testing method above can be modified so as to get the same information over time, but reduce your testing down to twice a day. To do this you can alternate your testing times as follows:

Date or day of the week	Before breakfast (fasting glucose level)	Before lunch	Before dinner	Before bed (but before supper)
Monday	7.8		8.5	6.3
Tuesday		14.3		5.3
Wednesday	5.6		5.2	6.1
Thursday		11.6		5.9
Friday	5.2		5.8	5.1

As you can see this person is alternating their testing between before breakfast and before tea on one day and then before lunch and before bed on the next. They are only testing twice daily, but over time, they get a good spread of results through the day. This means they can still see the trends emerging. Many people who like to test often (some people find they like to test daily as it 'keeps them on track') prefer this method of testing.

This way of testing can also be arranged in a different way. You could, for example, choose to test four times a day on 2 - 3 days of the week. This gives you a number of whole days a week without testing. If your blood glucose levels are stable this can be an option that suits some people.

Some people who like to test every day but only once a day use a pattern as below:

Date or day of the week	Before breakfast (fasting glucose level)	Before lunch	Before dinner	Before bed (but before supper)
Monday	7.8			
Tuesday		14.3		
Wednesday			5.2	
Thursday				5.9
Friday	5.2			
Saturday		9.8		
Sunday			4.6	

This person moves their test time forward every day. But, over time, it is possible to see patterns emerging. The problem time here is the high before-lunch levels.

Testing two hours after your meals. Many diabetes professionals encourage people to also test about 2 hours after a meal. Some research suggests that keeping your post-meal blood glucose levels in a healthy range has a big impact on reducing your risk of developing complications. If you are including after-meal testing use one of the above patterns but substitute some of the pre-meal tests for after-meal tests. But always remember to get some pre-meal tests in.

So there are various types of testing that will allow you to 'pattern' manage your diabetes. When you are analysing your test results always remember to also bear in mind your food and activity levels.

One of the arts that you will learn as you become more familiar with your diabetes is how to bear all these factors in mind when assessing your blood glucose levels.

It is essential to take your blood glucose record book to any appointment with your doctor, diabetes nurse educator or diabetes specialist. This way you can work as a team when analysing your results and deciding on any medication or lifestyle changes.

Remember to write any unusual events into your blood glucose monitoring diary. Examples of these might be that you had a hypo (low blood glucose) or that you had been to a party and had birthday cake or the like. This will help to throw more light on your results when you work through them with your diabetes team.

Practical tips for self blood glucose testing

1. Record your results in a diabetes diary. This will make it easier for you to see trends over time. You can also use your diary as a motivational tool. Putting a tick in your diary for the days you achieve your exercise or food goals (or any other kind of goal) can be very encouraging over time
2. Prick your fingers on the side of your finger (towards the tip) rather than on the pad (or tip) of your finger. This will be more comfortable for you, especially if you use a keyboard
3. If you drop your hand down close to the floor after pricking it then wait for a few moments, the blood will rush into your hand. When you then squeeze out the blood you will get a much larger sample. You may find that by doing this you may also be able to reduce the depth gauge on your finger pricker which will mean your finger prick will be less deep. This will make your testing more comfortable
4. Make sure your hands are clean before testing. If you have been handling something sweet before testing the residue of it on your fingers may get into your test and make it falsely high
5. You will get a much better-sized drop of blood if your hands are warm before testing

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