

How to measure human blood glucose levels in the lab

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Updated 10 December 2019

Why test your blood sugar

The information in this first section is sourced from the Mayo Clinic (<http://www.mayoclinic.org/diseases-conditions/diabetes/in-depth/blood-sugar/art-20046628>).

Blood sugar testing — or self-monitoring blood glucose — provides useful information for diabetes management. It can help you:

- Judge how well you're reaching overall treatment goals
- Understand how diet and exercise affect blood sugar levels
- Understand how other factors, such as illness or stress, affect blood sugar levels
- Monitor the effect of diabetes medications on blood sugar levels

- Identify blood sugar levels that are high or low

What you will need to conduct the test

You will need to have the following items ready:

- The Blood Glucose Sensor
- An electrode. (Note that each electrode is individually packaged)
- A lancing device
- Alcohol swab

Procedure

<https://www.youtube.com/watch?v=mQKF70g7s0E>

1. Open an electrode packet by tearing at the notch on each side of the packet. Tear off the smaller end of the packet so that the contact bars of the electrode are showing. Pull the electrode out of the packet. Save the packet for disposal of the electrode. Do not use the electrode if it is bent, scratched, wet or damaged.
2. Insert the contact bars of the electrode into the test port of the Glucose sensor. Push the electrode in until it stops. The sensor turns

on by itself, and is now ready for you to apply a drop of blood to the tip of the electrode.

3. Warm the finger, then sterilise by swabbing with ethanol and dry thoroughly (this can be done ahead of time to allow your finger to warm up, as ethanol will cool the finger and restrict blood flow to the region).
4. Collect the blood in the fingertip with the thumb and pierce quickly with a lancing device.
5. Allow a drop of blood to accumulate then transfer this to the target area of the electrode. The sensor will automatically begin to countdown and your blood glucose result will be displayed after 5 seconds.
6. Place the electrode packet over the used electrode and remove it from the sensor.
7. **Dispose of the lancing device and the electrode in a Biohazard sharps bin immediately.**

Blood glucose monitoring by diabetics

*The information in this first section is sourced from
Diabetes Australia*

(<https://www.diabetesaustralia.com.au/blood-glucose-monitoring>).

One of the main aims of diabetes treatment is to keep blood glucose levels within a specified target range. The key is balancing your food with your activity, lifestyle and diabetes medicines. Blood glucose monitoring can help you understand the link between blood glucose, food, exercise and insulin. Over time your readings will provide you and your health professionals with the information required to determine the best management strategy for your diabetes. Maintaining good blood glucose control is your best defence to reduce the chances of developing complications from diabetes.

When and how often you should test your blood glucose levels varies depending on each individual, the type of diabetes and the tablets and/or insulin being used.

How do I test my blood glucose levels?

To test your blood glucose levels, you prick your finger with the lancet and add a small drop of blood onto a testing strip. This strip is then inserted into the meter, which reads the strip and displays a number – your blood glucose level.

Blood glucose levels are measured in millimoles per litre of blood (mmol/L).

