

# Diabetes: Blood Sugar Testing at Home

## Why is blood sugar testing important?

Measuring blood sugar (glucose) levels at home has become a cornerstone of diabetes care. Measuring blood sugar regularly can:

- Help you know if your blood sugar is within your target range. Staying in a healthy range can help prevent or delay the long-term complications of high blood sugar, such as heart, kidney, eye, nerve, and circulation problems
- Help you know if your blood sugar is too low or too high and treatment is needed
- Help you know how much and which type of medicine to use
- Prevent low blood sugar at night
- Help you manage illness at home
- Let you know if you need to do a ketone test (if you have type 1 diabetes)
- Help you understand the effects of certain foods, exercise, and stress on your blood sugar
- Help your healthcare provider know if changes in your treatment are needed

## What supplies are needed?

Doing a blood test requires:

- **Finger-pricking (lancing) device:** A finger-pricking device (called a lancet) is used to get a drop of blood for the test. The lancet can often be set at different depths for different people. Adjustable lancets are good for young children and tender skin and for when you do not need the lancet to go deep. Remember to change the lancet every day. A sharp and clean lancet helps prevent injury and infection.
- **Blood glucose meter (glucometer):** Most people use blood glucose meters to test blood sugar. Not all meters measure in the same way, so the results from different meters are not always the same. It doesn't matter which type of meter you choose as long as you always use the same meter. Bring the meter to each clinic visit. Your healthcare provider can get a record of the test results from the meter.

Some features to look for in a meter include:

- **Accuracy:** Make sure the meter is accurate in the environment where you live, for example, in cool or hot temperatures, high humidity, or high altitude
- Ability to store at least the last 100 test values (to share with your healthcare provider at your checkups) and to download the information at the clinic or at home
- Small size for easy carrying
- Quick testing time
- Easy to keep clean

- Ability to check meter accuracy with a control solution or strip

Your provider, nurse, diabetes educator, or pharmacist can show you how to use your meter.

- **Test strips that are put into the blood glucose meter:** When choosing test strips, make sure they work in the meter you are using. Look for strips that need only a small drop of blood and can draw the blood into the strip. If you have health insurance, make sure you know what types of strips your insurance will pay for before you choose your meter.
- If meters are not available, color-changing blood sugar strips may be used to test blood sugar.

## How is the blood sugar test done?

You can get a drop of blood from a finger or toe. To get a drop of blood:

1. Wash the area with warm water. This increases blood flow and makes sure there is nothing on the finger or toe that may change the reading. It also helps prevent infection. Do not routinely wipe the finger with alcohol. Any trace of alcohol left on the skin will interfere with the test. Occasionally, when you are away from home (for example, camping or at picnics), you may use alcohol-free travel wipes to clean the area. If alcohol wipes are the only cleaner available, be sure to let the alcohol dry completely before pricking your finger.
2. Air dry the area before pricking.
3. Use the lancet to prick the side of the finger or toe rather than the fleshy pad on the tip of the finger or toe (pricking the pad is more painful). It is often helpful to place the finger on a table. This helps prevent the natural reflex of withdrawing the finger when it's poked.
4. Put the drop of blood on the test strip. (If a test strip has been in a cooler or refrigerator, bring it to room temperature before you use it.) Make sure you completely cover the required area on the strip with blood. Putting too small a drop on the strip is a common error.
5. Put the strip in the blood glucose meter to measure the sugar level.

If you are using color-changing strips, compare the color to the color chart on the package at the appropriate time. You will have to use a watch with a secondhand or a kitchen timer and be careful to check the level after the exact amount of time required according to the package directions.

Avoid incorrect blood sugar results by making sure:

- Your meter is clean.
- The test strip is not outdated.
- The meter is set up for the current box of test strips.
- The meter and test strip are at room temperature.
- Your blood drop is big enough.

## Do I have to prick a finger or toe?

You can prick other parts of the body. Pricking other sites, like the forearm, may not hurt as much. Other places to test include the fleshy part of the hand, upper arm, thigh, and back of the lower leg. The lancet blade or needle must be dialed to the maximum depth to get enough blood from these sites. Make sure you have a meter that works for these testing sites.

The main problem with not using a fingertip is that the blood flow through other parts of the body, like the arm, is slower than through the fingers. The slower blood flow means the blood sugar value is 10 minutes behind the blood sugar value in the fingertip. If you are going to prick another site, like the arm, rub the site before pricking. Rubbing increases blood flow in the area.

If you are having symptoms of low blood sugar, prick your fingertip. It's faster and you will know what your blood sugar level is more quickly.

A continuous glucose monitor (CGM) may be useful if you take frequent insulin doses to keep your blood sugar in a very narrow range. A CGM can display and record glucose readings every 1 to 10 minutes, day and night, using a sensor placed under the skin. A CGM can be set to sound an alarm when blood sugar reaches a certain low or high point. Ask your healthcare provider how often you should do a sugar test of blood from your finger to make sure the CGM is working accurately.

## When should I do a blood sugar test?

Your healthcare provider will tell you when and how often you need to check your blood sugar.

Some common testing times include first thing in the morning, before meals or exercise, before driving, at bedtime, and any time you feel like your blood sugar may be too high or too low. You should also check your blood sugar when you are feeling ill.

You may need to test more often when your medicine is changed.

## What should the blood sugar level be?

The desired blood sugar levels at different times are:

- **Fasting or before meals:** 70 to 130 milligrams per deciliter (mg/dL), or 3.9 to 7.2 millimoles per liter (mmol/L)
- **After meals** (1 to 2 hours after the time you started a meal): less than 180 mg/dL (10 mmol/L)
- **Bedtime:** 100 to 140 mg/dL (5.5 to 7.8 mmol/L)

Ask your healthcare provider what upper and lower blood sugar goals he or she recommends for you. Also ask your provider to write down what you should do if your blood sugar result is too high or too low.

## Should I keep written records?

Keeping good records to look for patterns in blood sugars is essential. Keep written records even if your meter is able to store results (in case the meter breaks). Write down the time of the test, the date, how you feel, and the blood sugar value. You may also want to note when you exercised, were sick, or felt stressed. It may be helpful to record what you ate for a bedtime snack or any evening exercise to see if these are related to morning blood sugars. Also, keep a record of when you have low blood sugar reactions and what you think might be possible causes. **Always take your blood sugar records to checkups with your healthcare provider.** You can then share this diary with your provider or diabetes educator and they can help you learn what affects your blood sugar, and this will help you control it better.

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