Guide to Blood Glucose Meters/Monitors
Overview of Blood Glucose Meters

Blood glucose control is the most significant part of managing diabetes and avoiding its associated complications. The National Diabetes Education Program reports that individuals with type 1 and type 2 diabetes show medical benefits from tight glucose control. Establishing good control begins with one very important device—the blood glucose meter. With the correct glucose meter, tracking the success of proper eating habits and plenty of physical activity, as well as the improvements to your blood sugar that comes with insulin or oral medications, becomes much easier.

This guide can help you navigate the massive marketplace for diabetes supplies. The diabetes supply market changes constantly, so this series of guides should be your starting point for further detailed research regarding glucose meters.

What is a glucose meter?

These small, battery-operated monitors offer a convenient way to check blood sugar levels. Most meters “read” a drop of blood on a disposable test strip and display a result on a screen. Meters usually come with a lancing device, a test strip where you put the blood sample, and a control solution, which is a liquid used to check that the meter is working correctly.

Functions

Checking your blood glucose levels allows you to make daily adjustments in treatment, verify if you have extremely high or low levels, and understand how your diet and exercise affect glucose levels. According to the FDA, tight glucose control with blood glucose monitors has been shown to reduce and even prevent future complications. Having a glucose meter that suits your needs is paramount to ensure that you have the most accurate data that you need, exactly when you need it. Having the latest meter is not going to do the work for you, though; the tool is just the starting point for controlling your blood sugar levels.
Common features

Before purchasing a glucose meter, it is important to understand how they work. Here is a short run-down of the most common features.

Coding

To code, or calibrate, a meter, you manually program the device to recognize specific test strips. With newer “auto-code” or “no-code” meters, you can skip this step; the meter may automatically recognize the test strip codes. If coding is required, be sure to double-check that you have followed the manufacturer’s instructions correctly.

Size and shape

Size may vary, but most devices fit into your hand. Smaller versions are designed for travel or a more mobile lifestyle. Weight also varies, but examples could range from 1.2 ounces to more than 5 ounces. Your testing kit includes test strips and lancets as well as meters. Accessories could include carrying cases and containers for safe disposal of used lancing devices.

Size of sample

The latest meters use a small amount of blood for testing, which makes the process easier. Some meters might allow you to use blood from test sites other than fingertips, but equipment requirements and results might be different in this case. In available meters, the required sample size could range from 0.3 to 1.5 microliters; you can see these sizes in the graphic that follows.

Data storage & memory

Tracking blood glucose records over a period of time is an essential strategy in proper diabetes control. Find out if you can download data from your meter to other tools, which might help you track and spot patterns in your glucose management. Most devices include some memory, but the amount varies greatly. Test memory is generally measured as the number of test results stored, for example, from 50 to over 3,000 results.
Battery life
Manufacturers specify the required type of battery and also the expected battery life, which may be given as a time range in months, or a number of tests. For example, a 3-volt lithium battery should provide up to 2,000 tests for some models, while two replaceable AAA alkaline batteries might have a life of about six months.

Other features
Testing averages: Some models provide test result averages, for example, for 7 days, 14 days, or 30 days. Averages may also be based on all test results or only those results before or after meals.

Visual and audio options: Some models are designed with features especially for people with visual impairments. Backlighting is an important option for those who regularly test at night. A few models provide audio capability, which could also be helpful for people who have related visual complications. An alarm option, available in some meters, can also be useful as a reminder.

Measurement systems: Also important to consider are measuring system options. In the US, meters report results in milligrams of glucose per deciliter of blood, or mg/dl, while some countries use millimoles per liter, or mmol/L. Some meters can toggle between the two systems of measurements. Some home meters also provide “whole blood” or “plasma equivalent” results, which can be more easily compared with the results of tests done in labs using plasma.

Environmental conditions: Meter performance may vary at different temperatures and in conditions such as humidity. Check the recommended temperature range for any monitor.
How to choose the meter that’s the best for you

Our advice is that you decide which features are the most important to you and then review those features to compare which models would fit your needs. Secondly, it is important to listen to your health care team, as they can advise you on which blood glucose meter may be best for you. You should also check with your health care insurance company to find out which strips are covered, how often they are covered and the amount of test strips covered.

The choice of a meter is important, but even more crucial is your commitment to diabetes management. Set up a regular testing schedule with advice from your health care support team. Blood glucose monitoring is a tool in your daily diabetes self-management program, along with medications and a healthy, active lifestyle.