



## Monitoring Your Blood Glucose Levels

Testing your blood glucose is a simple way to measure the level of glucose in your blood at the moment you test it. Testing your blood glucose can help you:

- Find out what your glucose is at any time.
- Better control your blood glucose levels.
- Make better decisions about how to treat your glucose problems (high- or low-blood-glucose symptoms).
- Make needed changes to your treatment plan, in conjunction with your health care team.
- See how changes in your treatment plan have affected your blood glucose control.

The National Diabetes Education Program recommends the following target goals for blood glucose monitoring. However, your health care team will help you set blood glucose goals specifically for you. These goals can vary depending on age, other medical problems and frequency of low-blood-glucose reactions.

	WHOLE BLOOD GLUCOSE	PLASMA
Time	Goals	Goals
Before meals	80 to 120 mg/dl	90 to 130 mg/dl
Bedtime	100 to 140 mg/dl	110 to 150 mg/dl

### How to Test Your Blood Glucose

There are many different types of blood glucose meters. Your health care team can help you choose the one that best meets your needs. All blood glucose meters use whole blood to measure glucose, while laboratory equipment uses just the plasma portion of blood. Whole blood results run about 12 percent lower than plasma results. Some blood glucose meters can be calibrated to give plasma test results. It is important to know the type of meter you are using when you are comparing your results to published goals.

To test your blood glucose, you need the following equipment:

- A blood glucose meter\*
- Strips specific for the meter you will be using
- A device to prick the finger (lancet)
- A sharps disposal container

\* Some strips allow you to test blood glucose without using a meter. This method is not as accurate.



Below are the steps for testing your blood glucose:

1. Prepare the lancing device with lancet.
2. Wash your hands.
3. Prepare the meter and strip.
4. Prick the side of your finger (or other area as recommended by the lancing device manufacturer).
5. Get a drop of blood.
6. Place the drop of blood onto the strip according to the specific meter instructions.
7. The meter will read the results.
8. Record the value in your log book.
9. Dispose of the lancet in a sharps disposal container.

These suggestions can help you have more accurate tests:

- Review the manual that comes with your meter.
- Use soap and warm water to wash your hands before testing. Warm water will help give you a good drop of blood.
- Before pricking your finger, work to increase the blood flow to the finger by:
  1. Gently “milking” your finger by squeezing and releasing it several times.
  2. Holding your hand in a downward position, below the level of your heart.
  3. Rubbing your hands together.
- Be sure to get the right amount of blood on the strip.
- Doing the test incorrectly will give you the wrong results.
- Always dispose of lancets properly.
- Know your blood glucose goals and keep a log of your blood glucose results.
- Take your log book with you when you visit your health care team.
- Call the toll-free number on the back of your meter if you are having problems with the meter.
- Your test results will help you and your health care team make changes in your treatment plan.

How to care for the strips and meter:

- Keep the strips in the original container with the cap tightly closed. Don't lay the strips loosely in the meter case.
- Do not put strips out in direct sunlight or expose them to very hot or cold weather or high humidity.
- Clean your meter as directed. (Some meters do not require cleaning.)
- Check the expiration date on your strips and discard strips if the expiration date has passed.



- Code or calibrate your meter each time new strips are used.
- Use control solution to check for the accuracy of the strips and meter. Check the manufacturer’s directions about how often you should do so. Once the bottle of control solution has been opened, it is good for three months.

### Blood Glucose Testing Timetables

There are many reasons to test your blood glucose at different times of the day. Checking only once a day won’t tell you the level of your blood glucose throughout the day. Checking at different times lets you and your health care team know your overall blood glucose control and how to make changes in your treatment plan if needed. Here are some of the most common times to check glucose levels:

- Before each meal and at bedtime
- Once a day, testing before a different meal each day
- Once a day, alternating times. Then, a few days before your physician visit, increase frequency to two to four times a day.
- Fasting and one or two hours after a meal
- Between 2 a.m. and 4 a.m. You may need to occasionally take a blood glucose reading during the sleeping hours.

### Twice-a-Day Options for Blood Glucose Testing

Option		Before Breakfast	After Breakfast	Before Lunch	After Lunch	Before Supper	After Supper	Before Bedtime
1	Day 1	✓				✓		
	Day 2			✓				✓
2	Day 1	✓	✓					
	Day 2			✓	✓			
3	Day 1	✓	✓					
	Day 2					✓	✓	



Work with your health care team to find the testing schedule that works best for you. Keep in mind that there is no one testing plan for everyone.

You should increase the frequency of testing:

- When you are sick
- Before and after exercise
- When your blood glucose is too high or too low
- When you are under a lot of stress
- After changes have been made to your treatment plan

### How to Use Your Blood Glucose Readings

Watch for patterns, such as high or low glucose values at the same time each day. Look at the whole picture. Don't let one reading upset you. If you find your glucose level is high, do extra testing until levels return to the target range.



#### WHEN TO CALL YOUR HEALTH CARE TEAM

*Call right away if you have:*

- Blood glucose readings less than 70 mg/dl for two readings in a row that cannot be explained
- Blood glucose readings more than 240 mg/dl or over your target range for two readings in a row
- Blood glucose readings more than 240 mg/dl with symptoms of high blood glucose (extreme thirst, excessive urination, positive ketones in urine or blood, fatigue)
- Blood glucose readings more than 240 mg/dl with symptoms of illness

If any of the above symptoms occur, don't wait until your next appointment — **call your health care team right away.**

You may need to change your treatment plan now.

## Understanding Ketone Testing

People with type 1 diabetes need to test for ketones to help manage diabetes. If you have type 2 diabetes, talk with your health care team to see if ketone testing is right for you.

### **Why You Need to Test for Ketones**

- When you don't have enough insulin, your body cannot use blood glucose for an energy source, so your body uses fat as its fuel source.
- Burning fat for energy causes ketones to build up in the blood.
- An excess of ketones causes the blood to become acidic. This causes you to be very sick.
- The body tries to get rid of the ketones, mainly through the urine.

### **How to Test for Ketones**

Ketone test strips can be purchased from the drugstore. Ketones can be tested using either blood or urine.

**Urine testing.** Urinate in a container and dip the stick into the urine, or urinate directly onto the strip. Wait the amount of time stated on the bottle. Then compare the strip to the color chart.

- The pad will not change colors if the urine is negative for ketones.
- The pad will change to a different color if ketones are present in the urine.
- Usually, the darker the color, the more ketones there are in the urine.

**Blood testing.** There are some meters that will test for either blood glucose or blood ketones. Be sure to follow the manufacturer's instructions. The meters that can test for ketones are very useful for people who may be using insulin pumps or for people with type 1 diabetes who are experiencing difficulty with blood glucose control.

### **When to Test for Ketones**

You should test for ketones when your blood glucose is more than 240 mg/dl or you are feeling sick. If the amount of ketones present is:

- **Negative** — Keep testing if glucose is more than 240 mg/dl or if you feel sick.
- **Small** — Drink plenty of nonsugar liquids, and keep testing.
- **Moderate/large** — Drink plenty of nonsugar liquids, and call your doctor.

See page 15 for more information on ketones.