

# Taking Control: Managing diabetes through blood glucose monitoring

## What is “diabetes control”?

It’s a phrase you’ll hear a lot as you tackle life with diabetes. Diabetes control or management means living your life in a way that helps lessen the effect of this disease on your body — both now and in the long run.

While there’s no cure for diabetes, taking control lets you put diabetes in its place. It can help you feel better and be able to do more now. And it can reduce the risk of very real complications that go with this disease.

Diabetes, whether it’s type 1 or type 2, keeps the food you consume from being changed into usable energy. The “sugar” or glucose created by the food you eat stays in your blood and, at high levels, can lead to complications ranging from blindness to heart attacks and strokes to death.

Using the tools of control — including diet, physical activity, oral medications and insulin — in various combinations can keep glucose at normal or at least acceptable levels in your blood. And, control can help you delay or even avoid the complications of diabetes.

## **THOUSANDS OF TEST CASES LATER, THE NEED FOR CONTROL IS CLEAR.**

For years, doctors have been telling their patients with diabetes to take care of themselves so they could live longer and better.

The advice seemed to make sense. But no one really knew how true it was until two huge research projects were completed.

The first studied more than 1400 teenagers and young adults with type 1 diabetes for 10 years. Called the Diabetes Control and Complications Trial, the test showed that lowering blood sugar levels with insulin reduces the risk of developing diabetic eye disease and the risk of kidney disease by 35%-75% and significantly lowers high cholesterol levels, that can lead to heart attacks.

More recently, scientists turned their attention to people with type 2 diabetes in a trial called the United Kingdom Prospective Diabetes Study. More than 5,000 patients participated. And after 20 years, it was determined that tight control works for patients with type 1 diabetes as well as for patients with type 2 diabetes. Eye, kidney and heart problems were all reduced by lowering HbA<sub>1c</sub> levels. The study also found that even a small drop in those levels reduces the risk of complications for people with diabetes.

## **Monitoring lets you know if you’re in control.**

Not so long ago, patients had few reliable ways to measure their blood sugar levels.

Today, things are much easier and more accurate.

Technology has given both doctors and people with diabetes the power to know instantly how much sugar is in the blood and to track the level of diabetes control over time.

### **Hemoglobin A<sub>1c</sub> – a great, big, precise picture of control.**

If you've been diagnosed with diabetes, you're probably already familiar with some of the monitoring tools your doctor uses.

A test that your doctor will regularly use to see if your blood sugar has been high over a period of months is called a glycosylated hemoglobin test (also called a "hemoglobin A<sub>1c</sub>" or "HbA<sub>1c</sub>"). This test measures how much sugar has become attached to your red blood cells. If most of your recent blood sugars have been in the normal range, your HbA<sub>1c</sub> test will also be normal. If you've had many higher-than-normal readings, your HbA<sub>1c</sub> test will also be higher.

Recently, machines that allow you to monitor HbA<sub>1c</sub> at home have become available.

### **Glucose monitors allow good control at home.**

The technology that was once available only to doctors is now at the fingertips of every person with diabetes. Home monitoring glucose machines are available in a variety of shapes and sizes with a wide range of user-friendly features. Unlike monitors that test long term controls, these machines give you a snapshot of your blood sugar at the moment you test.

Home monitoring of blood sugar is very easy to do. A drop of blood from your finger is placed on a special test strip or into a small machine. You can then "read" the exact level of sugar in your blood.

Initially, your doctor may have you check your blood sugar several times a day. As your blood sugar is brought under good control, you may be able to test less frequently.

### **TESTING FOR KETONES.**

When the body doesn't have enough insulin available to convert food, you start burning fat. That may sound good. But it has a downside. As the fat is burned, it produces substances called ketones. And ketones are toxic to humans.

By dipping the commercially available ketone strip into a small sample of urine, you can tell if your ketones are low, moderate or high.

The American Diabetes Association advises that you check for ketones when your blood sugar reads over 240 mg/dL, when you're ill (especially if you've been vomiting, have trouble breathing or concentrating, or have fruity-smelling breath), during pregnancy, when you're under stress or when you're chronically tired.

Doctors often ask patients to test their fasting blood glucose (or FBG). This means getting a reading on your blood before you've eaten breakfast. That number gives the doctor an idea of your background blood level that hasn't been affected by food.

Also helpful is a postprandial (after meal) test. Usually, the patient will be asked to test two hours after a meal. This number gives the doctor an idea if the treatment he or she has prescribed is working to change food into usable energy.

Unlike the HbA<sub>1c</sub> test your doctor will do, home testing gives you an instant snapshot of your blood sugar level at that moment only. Both tests are helpful in getting a clear understanding of the level of control.

### **“BUT DOES IT HURT?”**

Truthfully? Home testing does hurt. But only a little. Over the years, the lancets used to “poke” yourself for a drop of blood have become more sophisticated and less painful. You can even buy models that let you adjust the depth of the poke.

Remember to use the sides of your fingers as the site for your sample, and to never use the same finger twice in a row.

Your doctor or certified diabetes educator can help you with techniques to lessen the pain.

Look at it this way — testing may hurt a little at first. But that little poke may help to save your sight, your legs, even your life.

### **Now that you know your number, what do you do with it?**

Monitoring of blood sugar, either at home or in the doctor's office, is a step on the way to good control.

But remember — the point isn't just to know your numbers. The point is to continually bring them or keep them within the range set by your doctor.

Once you've tested your blood and know your number, write it down. Keep a diary that allows you to record the time of the test and the number you got, as well as jotting down comments that might have contributed to your test result — such as being ill, or eating too much or too little.

As you record your numbers, watch for trends. Do you tend to test higher than your target range at a particular time of day? Do certain foods affect your results differently? Is your planned physical activity affecting your readings?

The final and most important step is to share your diary with your doctor. When you visit, he or she will want to see your progress and perhaps make adjustments to your diet, physical activity, exercise or medication. Between visits, call your doctor to report any ongoing numbers that suggest trouble in your management of diabetes.

Finally — tell the truth. Of course you'll want to hit your target range every time. But remember, it's the numbers outside the range your doctor needs to see to make necessary changes. Don't "cheat" when you write down your numbers. Because you'll only be cheating yourself.

### **RIGHT ON THE NUMBERS.**

What's the perfect HbA<sub>1c</sub> or FBG number for a person with diabetes? There isn't one. Blood sugars go up and down even in people without diabetes. But here are the ranges the American Diabetes Association encourages people to achieve:

**80-120 mg/dL**  
**Before meals**

**100-140 mg/dL**  
**At bedtime**

**HbA<sub>1c</sub>**  
**Less than 7%**

Remember, these are only guidelines. Your doctor may choose different numbers as best for you.

## **HIGHS AND LOWS OF DIABETES**

### ***Emergency instructions***

#### **HIGH BLOOD SUGAR**

(hyperglycemia or acidosis)

##### **SYMPTOMS:**

- Gradual onset of symptoms
- Sleepiness
- Excessive thirst
- Frequent urination
- Flushed skin color
- Nausea, vomiting
- Fruity or wine-like smelling breath
- Heavy breathing
- May result in unconsciousness

##### **ACTIONS:**

If you're not sure whether it's high or low blood sugar, take sugar-containing food or drink

***If not better in 15 minutes, call your health care provider***

#### **LOW BLOOD SUGAR**

(hypoglycemia or insulin reaction)

##### **SYMPTOMS:**

- Sudden onset of symptoms
- Poor coordination – difficulty maintaining balance
- Angry, moody temper
- Pale skin coloration
- Confusion and/or disorientation
- Sudden hunger
- Unnatural sweating
- Trembling
- May result in unconsciousness

##### **ACTIONS:**

Eat high-sugar foods, such as soda, candy, milk or fruit juice DO NOT drink diet drinks

***If not better in 15 minutes, call your health care provider***

### **IN THIS CASE, THE MACHINE BEATS THE BRAIN EVERY TIME.**

After a while, you may think you can pretty much guess what your sugar level is by the way you feel. Guess again.

True, over time you will start to connect the way you feel with the numbers you're getting. But so many of those feelings can be the result of things other than your diabetes. For example, are you thirsty because your blood sugar is high, or because it's a hot and humid day? It's always better to grab the machine and know for sure.

**Places to turn for more information:**

**American Diabetes Association**

Toll-free information hotline: **1-800-DIABETES**

**[www.diabetes.org](http://www.diabetes.org)**

**American Association of Diabetes Educators**

To find a local diabetes educator: **1-800-Teamup4**

**[www.aadenet.org](http://www.aadenet.org)**

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