

Pass This Test!

When it comes to blood glucose levels, your best guess may not be good enough.

Before you read on, stop and guess your blood sugar (glucose) level. Write down the figure. Now test your blood sugar. How did your guess and the results of the actual test compare?

If your guess was too low, or too high, you are not alone. A 2005 study of 104 people (published in the *British Journal of General Practice*) found that:

- 60 percent did not guess correctly
- 45 people guessed too low
- 18 guessed too high.

The results of this study help to settle a debate. This is the question. If you have type 2 diabetes, should you test your blood sugar? Here is what the experts at Johns Hopkins say. They talk about why you should test, not guess your blood sugar based on how you feel.

Understand the reasons to test

Guessing your blood sugar level is not safe. This is true even if:

- You have type 2 diabetes
- Your blood sugar only goes up and down in a moderate range
- You tend not to have symptoms of high or low blood sugar.

“Most people feel no different whether their blood glucose reading is 95 mg/dL or 195 mg/dL. But there are huge implications for being at the high and low ends of this spectrum,” says endocrinologist Todd Brown.

Your blood sugar affects your risk of having long term problems. When your average blood sugars rise, your risk does too. Here is an example. Let's take 2 people; one has an average blood sugar of 195 mg/dl, and for the other it is 95 mg/dl. Compared to the one with the lower number, the person with the higher number has a much higher risk of:

- Eye disease
- Kidney disease
- Nerve disease
- Heart attack
- Stroke.

People may have blood sugars that stay low. This may mean that your medicine needs to be adjusted. Testing can help you catch low blood sugar before symptoms kick in. Symptoms include:

- Dizziness
- Confusion
- Sweating
- Hunger
- Loss of consciousness.

Christine McKinney, M.S. is a diabetes educator. She says that you need to get a correct measure of your blood sugar. It is the only way you can tell if changes you make are working. Changes may be in: what you eat, or your diet; your activity level, or exercise; or your medicine. Through testing, patients can learn to spot the signs and symptoms that may accompany high and low blood glucose levels.”

The bottom line? Testing helps people with diabetes get involved in:

- Managing his or her disease
- Getting tuned in to how best to control it.

Tailor testing to individual needs

How often to test depends on two things: whether you have type 1 or type 2 diabetes; whether you are on insulin or pills. The American Diabetes Association (ADA) recommends:

- If you take insulin, test each day or more often.

- If you do not take insulin, test enough to know if you are at your target levels; the ADA does not say how often to test.

Your health care provider will tell you how often you should test.

"I may encourage more frequent testing if there are problems with low and high glucose levels, specific concerns about the effects of exercise and diet, or if there has been a recent change in medication," says McKinney.

It is a good idea to test at certain times. Take a test both before and after you exercise. Take a test 2 hours after any meal that is out of your routine. This might be times such as a party or a wedding reception. Your health care team might tell you to test more often if you are sick. Being sick can affect blood sugar. And, when you are sick, it can get in the way of your eating and how active you are.

Learn your trends

If you have just been diagnosed, here is what McKinney suggests for you. Use a month-long schedule of testing. This will allow you to evaluate trends in your blood sugar. (We define a trend as 3 high or 2 low blood sugar readings in a row.) Here is an example. Let's say you had these blood sugar readings:

- Monday, before lunch, 170 mg/dL
- Tuesday, before lunch, 198 mg/dL
- Wednesday, before lunch, 164 mg/dL

We would consider this a trend of high blood sugar levels. "We would then explore why this person's blood glucose is generally high before lunch," she explains.

Here is how McKinney's schedule works.

- Week 1: Test before breakfast and two hours after the meal.
- Week 2: Test before lunch and two hours after the meal.
- Week 3: Test before dinner and two hours after.
- Week 4: Test before bed and on waking up (the fasting test).

What if you are only willing or able to test 1 time a day? Then, only do the tests on the schedule that are before meals. "Seven numbers taken at the same time of day over a week mean a whole lot more than random glucose levels obtained at various times," McKinney says.

Establish a long-term testing schedule

Brown says that after your blood sugar patterns are established, the testing schedule depends on:

- Whether you are taking insulin
- How well your blood sugar is controlled.

It may help to know an interesting fact. There is a link between how often people test and their A1C levels. Brown says that a lower A1C does not come just from testing more often. But, you will know about a high or low blood sugar. Then, you are more likely to do something about it.

Helpful tips for blood sugar testing

- **Keep a log of your blood sugars and bring it to each appointment.** There are many meters that you can use with a computer. They let you download your numbers to a computer.
- **If you test high or low, determine the cause.** Have you been more active than usual? Have you eaten too little or too much? Watch for and report any trends to your doctor.
- **You can minimize pain during testing: use a fresh lancet; test on the sides of your fingertips; rotate fingers.** Some meters now let you use other sites, such as the palm, forearm, thigh or calf.
- **Make sure the meter and strips are working properly.** Use the directions to code your meter (if it uses a code). Be sure to use the *Control Solution* for your meter. This lets you check that the meter and the test strips are working together. Pay attention to the dates on the bottle. Use the dates they give for when it expires and when it should be discarded.

****Authored by Johns Hopkins University and Johns Hopkins Health System****