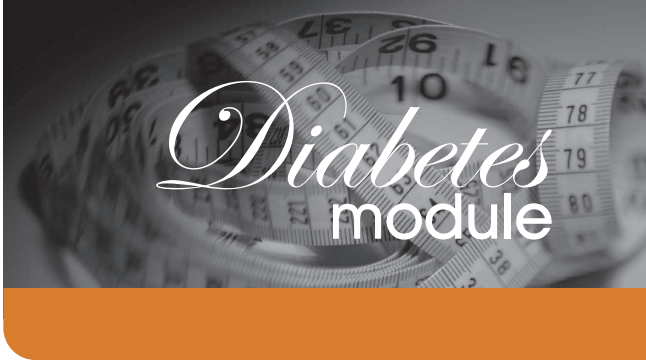
numetra™
WEIGHT MANAGEMENT SYSTEM

Blood Glucose Monitoring: Control by the Record



Patients with type 2 diabetes hear a lot of talk about control, particularly control of blood glucose levels. Control is the key to a healthy way of living with diabetes. Fortunately, you have the tools—the information and skills—to get control, but you must decide to take charge and do what needs to be done.

What is Meant by Control of Blood Glucose?

Everyone's blood glucose values vary throughout the day. Many factors influence glucose levels—food, exercise, and stress, to name a few. The body of a person without diabetes is able to adjust to these factors and control blood glucose levels automatically. The body of a person with diabetes is unable to do so, and the person must consciously take action to adjust the factors. Good control means balancing these factors to keep blood glucose levels as close to normal as possible to prevent complications.

A normal fasting blood glucose is under 100 mg/dL. For people with diabetes, it's important to look at the values before meals and one to two hours after meals. The goal before meals is 80 to 130 mg/dL. The goal two hours after a meal is 180 mg/dL or less.

Ideally, your blood glucose levels would be at these goals; however, these values may not be realistic. Ask your doctor or health care professional to help you find a goal range that's right and realistic for you.

Blood Glucose Monitoring: A Mirror of Control

Blood glucose monitoring is a marvelous way to see what is happening with your blood glucose levels. Testing your blood glucose yourself is a quick, convenient way to get immediate feedback on your diabetes control. And the test is easy: It entails pricking your finger to obtain a drop of blood, and placing the drop on a chemically treated test strip or pad. In addition to the traditional finger-stick test, people with diabetes can also use supplemental alternate-site, multi-site, or non-invasive monitors that allow for continuous or real-time monitoring of blood glucose trends. Talk with your diabetes educator to determine the best monitoring solution for you.

Monitoring means testing and keeping track of your test results. Some people who like technology leverage diabetes websites that provide a virtual blood glucose record keeper; However, a simple record book will do just fine.

Blood glucose monitoring is particularly valuable to you for managing your diabetes while you are in the Numetra System because so much is changing: your diet, probably your diabetes medication, and, of course, your weight. Your healthcare provider will use your blood glucose data to monitor your diabetes and to make decisions regarding medication adjustments as you lose weight, and then again as you achieve your weight goal and begin to add table food back to your diet.

You also can use the blood glucose information in making important decisions—decisions, for instance, about when to contact your doctor about blood glucose levels, when and how long to exercise, and how to manage stress. The only way to know if what you're doing is working is to test your blood and record the results. As you record each blood test result, you'll soon begin to see that your blood glucose levels follow patterns. This information can help you plan your schedule of meals, exercise, and medication to keep blood glucose levels as near normal as possible.

How often do I need to test?

Two weeks before you begin the Numetra System, the staff may request that you begin to test your blood glucose regularly, if you're not already doing this, and to record and share your test results. This information is important to you and the staff even before you begin to participate in the Numetra System. You may need to discuss with your primary care physician, who prescribes strips based on your testing needs, or the director of your Numetra program to determine whether you will need additional strips.

During the Reducing Phase of the program, you may need test your blood one to four (1-4) times per day:

- After fasting (before your morning Numetra nutritional product)
- Before your noon Numetra nutritional product
- Before your evening Numetra nutritional product
- Before you go to bed, whether or not a Numetra nutritional product is used as an evening snack.

Ideally, your blood glucose should be between 80 and 130 mg/dL before nutritional product meals.

During the Adapting Phase, blood glucose monitoring is important for maintaining good diabetes control. As you add food to your diet again, you may experience some blood glucose elevations. Close monitoring will alert you and your Numetra staff to the need to change, increase, or resume diabetes medication.

During the Adapting Phase, you may be asked to test one to four (1-4) times per day:

- After fasting (before your morning meal)
- Before your largest meal of the day
- 120 minutes after your largest meal.

During the Sustaining Phase, blood glucose monitoring continues to be important, but it generally need not be done as frequently. It's still important to keep written or printed records so that medication adjustments can be made, when necessary. Testing your blood can also help motivate you to maintain both your weight loss and normal blood glucose levels.

Your Numetra staff may recommend that you initially test according to the same schedule you used during the Adapting Phase (three times per day). Ideally, your blood glucose should be 80 to 130 mg/dL after fasting (before your morning meal) and near 180 mg/dL or less 120 minutes after eating the largest meal of the day. Eventually, your Numetra staff may suggest that you can reduce blood testing to three times a day every three days.

Be sure to record the results of your tests so they can be reviewed during your Numetra meetings. Based on this daily information, the staff can determine if your medication or diet needs to be adjusted.

What factors affect the results of the tests?

The following are some of the factors that may cause blood glucose levels to rise:

- Food—type, amount, and timing of meals and snacks
- Lack of physical activity
- Some medications such as cortisone
- Emotional stress
- Physical stress from injury, illness, surgery, pain, or infection

These factors, on the other hand, may cause blood glucose levels to fall:

- Weight loss
- Limiting or avoiding foods with carbohydrate
- Increased physical activity
- Some medications, particularly insulin and oral diabetes medications.

Glucose Levels

As you can imagine, a number of these factors that raise or lower blood glucose levels will be changing as you go through the Numetra program. Only by regularly testing your blood will you know what their combined effect is on you.

Do I need to be concerned if the test numbers are high?

The answer is yes or maybe, depending on the situation. If diabetes is poorly controlled over many months to years, permanent damage to blood vessels and nerves can occur. That's why we urge you to take diabetes seriously and test your blood regularly. Treating hyperglycemia (high blood glucose) is a good reason to be part of the Numetra System.

How can I use the blood glucose records to help control my diabetes?

As you review your blood glucose records, look for patterns. Then consider the following questions:

1. Are there trends from week to week?
2. Are the results above, below, or within your recommended target range?
3. What factors may have influenced the results? Can you explain a high or a low blood glucose level? Did you skip or postpone a Numetra meal or eat some other kind of food?
4. From day to day, how do the results recorded at the same time of day compare?
5. How does your blood glucose level change during the day?
6. At what time of day does it tend to be the highest?
7. Is there a difference in results between weekdays and weekends?
8. Have you had any hypoglycemic (low blood glucose) reactions? What triggered them? What were the symptoms? What was the blood glucose level at that time? How did you treat the hypoglycemia?

Then consider the following:

1. What do you think you can do to improve your blood glucose levels? If your blood glucose levels are high at the same time of the day, such as before your evening meal, can you fit your exercise in during the afternoon? Or can you change the timing or amount of your lunch or afternoon snack? (If you're taking insulin, you should consult with the Numetra staff before cutting out a Numetra nutritional product or altering your schedule.) *If you can see—and explain—a pattern of high glucose levels, then you can change your behavior to avoid the situations that produce those high levels.*
2. How much has your weight changed? Have your blood glucose levels changed as well? *As your weight comes down, we hope to see your blood glucose levels come down, too.*
3. How carefully are you following the Numetra plan? Does it make a difference in your blood glucose results? Is there room for improvement? *Keep track of your blood glucose results on days you "blew it" to motivate you to stay on your plan.*
4. Are you exercising? *Test your brood glucose level before and one hour after exercise so you can see if exercise helps lower it.*

Now you can see why it is so important to monitor your blood glucose levels carefully and use that information to make the healthful behavior changes that will help you control your diabetes.

Developed in cooperation with the International Diabetes Center, Minneapolis, Minnesota.

The History of Diabetes

The first description of diabetes goes back about 1500 years BC. The name diabetes is from the Greek language and literally means to run through a siphon. Water seems to run right through people who have the disease. You may have experienced this yourself.

The Latin word mellitus, which means honey, was added many hundreds of years later when early scientists recognized high levels of glucose, one of the sugars in honey, in the urine of people with diabetes. Early historians reported that the condition they called sweet-water disease seemed to run in families.

About the 6th century AD, type 2 diabetes was first identified and recorded. It was called maturity-onset diabetes originally because it usually occurs in people over 40 years of age. In the 19th century, a man named Langerhans described groups of cells in the pancreas resembling little islands. These cells came to be called islet cells. Langerhans didn't know what the islet cells did, but his discoveries were critically important in events that followed. A few years later, two German scientists discovered that when the pancreas was removed from animals, the animals developed diabetes.

In 1921, two Canadian physicians put the puzzle together when they obtained purified, minced islet cells from the pancreas of normal animals and injected them into other animals with diabetes. When the blood glucose levels of the animals with diabetes fell, they realized they were onto something important. Their discovery—the hormone insulin—ushered in a new era of diabetes treatment and saved the lives of millions of people.