



# *Know Your*<sup>TM</sup> Numbers



A Personal Approach to Diabetes Management

*Participant Guide*



# Know Your<sup>TM</sup> Numbers

## Did You Know?

Diabetes is a growing global health concern. The Centers for Disease Control and Prevention reports that almost 29 million people are affected by diabetes in the United States.<sup>1</sup> Diabetes can affect many parts of the body, and if left uncontrolled, it may lead to complications. However, people with diabetes, together with their healthcare team, family, and support network, can reduce the risk of complications by getting their blood sugar into a healthy range. Blood pressure and lipids (such as cholesterol and triglycerides) should also be monitored frequently as suggested by your healthcare provider (HCP).<sup>2</sup>



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## You Are in Charge

Living with diabetes may seem complicated, but understanding it can help you take control. Pay attention to:

- Eating healthy food in healthy amounts
- Staying active
- Taking your medications (if needed) as prescribed by your HCP
- Visiting your HCP and healthcare team members regularly
- Getting all necessary laboratory tests done
- Learning to cope with stress

To help you understand how you are doing along the way and figure out what you need to talk to your healthcare team about, think about these things:

- What is my blood sugar at different times of the day?
- How is my blood sugar control over time?
- What tests do I need to find out if I am developing any complications?



**This booklet is a helpful tool that can assist you in taking control of your diabetes by learning about your numbers.**

Be sure to check with your healthcare team before you make changes to your diabetes management.



# Tips for Healthy Nutrition

## Consult Your Healthcare Team to Develop Your Meal Plan

The American Diabetes Association (ADA) recommends nutrition therapy for all people with type 1 and type 2 diabetes. Consult with your healthcare team to find a Registered Dietician Nutritionist (RDN - an expert in nutrition) or other qualified HCP, who can personalize your meal plan to fit your individual needs. Within the first 6 months of your diabetes diagnosis, you should meet with your RDN 3 to 4 times. After 6 months, you should continue to visit with your RDN once a year.<sup>3</sup>

Don't hesitate to ask for help with your meal plan. Many health insurance plans cover nutrition and diabetes education sessions.<sup>3</sup>



## What You Need To Know About Nutrition Therapy

- The United States Department of Agriculture's (USDA's) MyPlate provides many options to help people make healthy food choices every day. For more information visit [www.ChooseMyPlate.gov](http://www.ChooseMyPlate.gov).<sup>4</sup>
- For specific nutrition guidelines for managing your diabetes, meet with your RDN. Your RDN will teach you how the food you eat affects your blood sugar and how you can make better food choices to control your diabetes.
- For instance, in nutrition therapy you may learn about carb counting, which helps you figure out how much sugar is in your meal, and if you are on insulin, how much insulin you need at mealtime to keep your blood sugar within your target range.<sup>3</sup>
- There is not a one-size-fits-all approach! Nutrition therapy will be tailored to YOUR individual needs, including your cultural background, traditions, lifestyle, financial means, and availability of food where you live.<sup>3</sup>
- Your RDN will not make you give up all the foods you enjoy eating. Instead, your RDN will help you to adopt a healthy lifestyle, which includes “everything in moderation.”



**The *Know Your™ Nutrition* brochure from Bayer has more information on healthy meal planning, including healthy food choices, portion control, carbohydrate counting, and understanding food labels.**

**Ask your HCP to share it with you when discussing your nutrition plan.**



# Important Tests

## Numbers and Tests You Should Know About

To stay as healthy as possible there are recommended tests that show you and your healthcare team how things are shaping up. Some tests you can do at home and some must be done in your HCP's office or laboratory.

- **Blood Sugar**—this will tell you immediately what your blood sugar level is at any point in time<sup>2</sup>
- **A1C, also called hemoglobin A1C**, measures blood sugar control, but over a much longer period of time<sup>2</sup>
- **Lipids**—these are blood fats, such as cholesterol and triglycerides, and are measured by a laboratory test<sup>2</sup>
- **Blood Pressure**—measures the amount of force of your blood against the blood vessel walls when your heart is pumping and at rest. This is generally checked at every healthcare visit<sup>2</sup>
- **Microalbumin**—this measures the amount of protein in the urine to learn how well your kidneys are working<sup>2</sup>
- **Dilated Eye Exam**—this test should be done at least once a year by an eye specialist starting 5 years after a diagnosis of type 1 diabetes and shortly after a diagnosis of type 2 diabetes<sup>2</sup>
- **Foot Exam**—you should examine your feet daily and receive a comprehensive foot exam at each visit with your HCP<sup>2</sup>
- **Dental Exam**—you should have your teeth cleaned and examined at least twice each year<sup>2</sup>

# Why Tests Are Important

## Blood Sugar

Testing your blood sugar can help you and your HCP assess the effectiveness of your management plan. Testing is an important part of helping you maintain control of your blood sugar.<sup>2</sup>

## A1C

Your A1C is another important measure to help you and your HCP evaluate the effectiveness of your management plan. It will help you and your HCP monitor your overall control over several months.<sup>2</sup>

## Lipids (such as cholesterol and triglycerides)

High levels of lipids in your blood can cause heart disease, heart attack, and stroke. It is important to keep your lipids at a healthy level. Check your lipid levels at least once a year and speak with your HCP if any action needs to be taken.<sup>2</sup>

## Blood Pressure

High blood pressure can lead to kidney disease, heart attack, and stroke. You can take steps to control your blood pressure and help prevent these problems. To start, discuss this with your HCP.<sup>2</sup>

## Microalbumin

Measuring microalbumin (urine protein) is important for spotting kidney disease in its early stages. Early detection lets you and your HCP take action that may prevent or slow down kidney damage.<sup>2</sup>

## Dilated Eye Exam

Regular eye exams can detect changes in the blood vessels in your eye. There are often no symptoms to warn you that blood vessel damage is happening. It is important to have your eyes checked once a year by a qualified eye doctor who can dilate your pupil in order to get a good look at the back of the eye (blood vessel and retina).<sup>2</sup>

## Foot Exam

Diabetes can damage the nerves in your feet. This makes it hard to feel pain and injury. If you have lost feeling in your feet, you may not know if you have a cut or sore. This makes it difficult to heal any injury or infection you may have.<sup>2</sup>

It is important to check your feet every day for any cuts, blisters, or other injuries that may get infected. Your HCP should check your feet at every visit. Remove your shoes and socks as soon as you get into the exam room (as a reminder to your HCP).<sup>2</sup>

## Dental Exam

It is important to have your teeth cleaned and examined regularly. Diabetes is associated with a much higher risk for periodontitis, or gum disease.<sup>2</sup>



# Getting in the Rhythm

## When to Check Your Numbers

Talk to your healthcare team about the plan to check these standard tests and ask to review your results.

### Daily at home

- **Blood sugar:** Blood sugar testing may be useful as a guide to how successful your diet, exercise, and medications (if any) are working. Testing your blood sugar before and 2 hours after the start of a meal helps you learn from your food choices. Speak to your HCP about how often you should test.<sup>2,5</sup>
- **Feet:** Check every day to see if there are cuts, blisters, sores, or other injuries that are not healing. Call your HCP for any foot problems.<sup>2</sup>

### At regular healthcare visits<sup>2</sup>

- Blood pressure
- Feet examination (to screen for loss of feeling, an early sign that may lead to amputation if left untreated)
- A1C test
  - At least 2 times a year if you are meeting your treatment goals (stable glycemic control)
  - Every 3 months if your treatment has changed or you are not meeting treatment goals

### Once-a-year tests<sup>2</sup>

- Fasting lipid profile (blood fats after no food or drink for 8 or more hours)
- Urine microalbumin/serum creatinine
  - People with type 1 diabetes after 5 years
- Dilated eye exam by an eye doctor

**Be sure to check with your HCP before making any changes to your current routine.**

# Tools to Help You

## Blood Sugar Testing

Testing your blood sugar at different times of the day is an important part of managing your diabetes.<sup>5</sup> Testing tells you if your blood sugar is too high or too low. Testing can help you understand how food, exercise, or your medicines work and how these things affect your blood sugar.<sup>5</sup> For example, if you test your blood sugar before and then 2 hours after the start of a meal, you can see the effect of that meal on your blood sugar. This can help you make healthy food choices and learn how to plan meals. The same can be true for exercise. If you test before and after a brisk walk, you may see the effect of exercise on your blood sugar results.



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## A1C (Hemoglobin A1C) or eAG (Estimated Average Glucose)

The A1C test tells you your average blood sugar control over several months.<sup>2,6</sup> The A1C test looks at the amount of sugar that has attached to hemoglobin (red blood cells) in the blood.<sup>6,7</sup> As blood sugar levels rise, more and more sugar attaches to the hemoglobin (red blood cells). The A1C test result is shown as either a percentage or as eAG, which is a number more like your daily blood sugar test results.<sup>7</sup>

Matching A1C with eAG <sup>2</sup>	
A1C (%)	Blood sugar (mg/dL)
6	126
7	154
8	183
9	212
10	240
11	269
12	298



# Getting Started

## Making the Most of Your Blood Tests

There are many ways to design a blood sugar testing schedule. The important thing is that you and your healthcare team design your plan to help you answer questions, see a pattern, and help you better understand your diabetes treatment plan. Some people test before meals and at bedtime, others test 5 or 7 times a day for several days each week, and still others may test before and after a particular meal for several days and then before and after a different meal for several days. It all depends on your needs, your treatment plan, and what you and your healthcare team decide is most important for you.

Here are 2 examples of testing plans. Discuss with your HCP which testing plan works best for you.

### This Is an Example of a 7-Point Blood Sugar Testing Plan<sup>8</sup>

	Breakfast		Lunch		Dinner		Bedtime
	Just Before Meal	2 Hours After Start of Meal	Just Before Meal	2 Hours After Start of Meal	Just Before Meal	2 Hours After Start of Meal	
Sunday							
Monday							
Tuesday	X	X	X	X	X	X	X
Wednesday	X	X	X	X	X	X	X
Thursday	X	X	X	X	X	X	X
Friday							
Saturday							

### This Is an Example of a Staggered or Random Testing Plan<sup>8</sup>

	Breakfast		Lunch		Dinner		Bedtime
	Just Before Meal	2 Hours After Start of Meal	Just Before Meal	2 Hours After Start of Meal	Just Before Meal	2 Hours After Start of Meal	
Sunday	X	X					
Monday			X	X			
Tuesday					X	X	
Wednesday	X	X					
Thursday			X	X			
Friday					X	X	
Saturday	X	X					

# Observing Trends

## To Make the Most of Your Testing Results, Here Are Some Steps to Help You:

### Step 1: Have goals

Talk to your healthcare team to establish before- and after-meal blood sugar target ranges.

My before-meal blood sugar target is: \_\_\_\_\_

My after-meal blood sugar target is: \_\_\_\_\_

### Step 2: Gather information

Gather data: your blood sugar results, your carbohydrate intake, information about activity and stress, and your medication. Keeping a record book, including notes, your insulin dose, and other information can be useful.

The more blood sugar results you have, the better able you are to understand how things are going and if your blood sugar is in balance or not.

### Step 3: Look for patterns or trends

In your record book, circle the numbers that are above or below your target to help you find a pattern.

A pattern is generally defined as 3 blood sugars above your target range at the same time of day for 3 days in a row or low blood sugar for 2 days in a row.

### Step 4: Making notes

It is helpful to make notes if there is something different from your usual routine, such as, “not feeling well on Wednesday and spent most of the day on the couch”; or “eating more calories or larger portions than usual for breakfast this week.”

### Step 5: Take action!

Taking action is really what all the blood sugar testing is for.

- Blood sugar testing can help you figure out what effect your favorite restaurant meal has on your blood sugar, so next time you might order a bit differently
- Blood sugar testing can show you what happens to your blood sugar when you are feeling ill or stressed
- Blood sugar testing can show you what effect activity has on your blood sugar control, so you can plan snacks, timing of activity, or intensity of activity



# Staying Healthy

## Long-term Complications

Long-term complications are a major cause of death and disability in patients with diabetes.<sup>2</sup>

The risk of these complications can decrease with good control of blood sugar.<sup>2</sup>

Possible complications of diabetes include:

- **Retinopathy**—eye disease, which can progress over time and cause problems with the retina or back of the eye, which can eventually lead to blindness<sup>2</sup>
- **Nephropathy**—kidney disease, which can progress over time to kidney failure and may lead to dialysis or kidney transplantation<sup>2</sup>
- **Neuropathy**—nerve disease<sup>2</sup>
  - Peripheral neuropathy** can affect arms, hands, legs, feet, and toes and can cause numbness, tingling, or loss of feeling
  - Autonomic neuropathy** can affect the heart and blood vessels, digestive system, urinary tract, or sexual organs and can lead to issues such as problems with digestion
- **Cardiovascular disease**, which can lead to heart attack or coronary heart disease<sup>2</sup>
- **Peripheral vascular disease** relating to the large blood vessels of the arms, legs, and feet<sup>9</sup>
- **Cerebrovascular disease**, which can lead to problems with the brain, such as stroke<sup>2</sup>

High blood pressure and high blood fats can also contribute to these problems.<sup>2</sup>

# Keep Track of Your Test Results



## Review Results With Your HCP

This is a sample form for tracking your tests and test results. You can keep it with your other medical information so that you can review it and take it with you to your HCP.

	A1C	Blood Pressure	Urine Protein	Lipids		
				LDL	HDL	Triglycerides
<b>My Goal</b>						
January						
February						
March						
April						
May						
June						
July						
August						
September						
October						
November						
December						

Sample



# Keep Track of Your Blood Sugar Results

Breakfast				Comments
Day	Before 	Medication/insulin	After 	
M				
T				
W				
Th				
F				
S				
S				

  

Lunch				Comments
Day		Medication/insulin		
M				
T				
W				
Th				
F				
S				
S				

  

Dinner				Comments
Day		Medication/insulin		
M				
T				
W				
Th				
F				
S				
S				

  

Other Meals and Snacks				Comments
Day		Medication/insulin		
M				
T				
W				
Th				
F				
S				
S				

# Know Your Goals

## Goals for Control\*

Test	AACE <sup>6†</sup>	ADA <sup>2</sup>
Fasting/before-meal blood sugar	<110 mg/dL	70-130 mg/dL
After-meal blood sugar 2 hours after start of meal	<140 mg/dL	<180 mg/dL
A1C	≤6.5%‡	<7%‡
Blood pressure	<130/80 mm Hg	<140/80 mm Hg <sup>§</sup>
Microalbumin (urine protein)	<30 µg/mg creatinine on a spot sample	<30 µg/mg creatinine on a spot sample
<b>Lipids (fats)</b>		
LDL cholesterol	≤70 mg/dL for highest risk <100 mg/dL for high risk	<100 mg/dL
HDL cholesterol	>40 mg/dL for men >50 mg/dL for women	>40 mg/dL for men >50 mg/dL for women
Triglycerides	<150 mg/dL	<150 mg/dL

\* For non-pregnant adults.

† American Association of Clinical Endocrinologists.

‡ More or less strict goals may be appropriate for individual patients. Discuss your goal with your HCP.

§ Lower targets may be appropriate for some people.



**References:** 1. Centers for Disease Control and Prevention. *National Diabetes Fact Sheet, 2011*. Atlanta, GA: Centers for Disease Control and Prevention, US Dept of Health and Human Services; 2011. 2. American Diabetes Association. Standards of medical care in diabetes—2013. *Diabetes Care*. 2013;36(suppl 1):S11-S66. 3. Evert AB, Boucher JL, Cypress M, et al; for American Diabetes Association. Nutrition therapy recommendations for the management of adults with diabetes. *Diabetes Care*. 2013;36(11):3821-3842. 4. United States Department of Agriculture. <http://www.choosemyplate.gov>. Accessed December 12, 2013. 5. Benjamin EM. Self-monitoring of blood glucose: the basics. *Clin Diabetes*. 2002;20(1):45-47. 6. Handelsman Y, Mechanick JL, Blonde L, et al. American Association of Clinical Endocrinologists Medical Guidelines for Clinical Practice for developing a diabetes mellitus comprehensive care plan. *Endocr Pract*. 2011;17(suppl 2):1-53. 7. Peterson KP, Pavlovich JG, Goldstein D, Little R, England J, Peterson CM. What is hemoglobin A1c? An analysis of glycosylated hemoglobins by electrospray ionization mass spectrometry. *Clin Chem*. 1998;44(9):1951-1958. 8. International Diabetes Federation. *Self-Monitoring of Blood Glucose in Non-Insulin Treated Type 2 Diabetes*. Brussels, Belgium: International Diabetes Federation; 2009. 9. Stratton IM, Adler AI, Neil HAW, et al; UK Prospective Diabetes Study Group. Association of glycaemia with macrovascular and microvascular complications of type 2 diabetes (UKPDS 35): prospective observational study. *BMJ*. 2000;321(7258):405-412.

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