



Understanding Type 2 Diabetes

What is Diabetes?

Diabetes is a condition that causes blood sugar (blood glucose) levels to rise higher than normal. Hyperglycemia is the term doctors use to describe high blood sugar.

When you eat, your body breaks food down into glucose and sends it into the blood. Insulin, a hormone made in your pancreas, helps move the glucose from your blood into your blood cells as fuel for energy. Your pancreas is an organ in your abdomen (stomach).

There are three types of diabetes: type 1, type 2, and gestational diabetes (diabetes you have when you're pregnant).

What is type 2 diabetes?

In type 2 diabetes, your body has trouble using the insulin it's making. This is called insulin resistance and it causes your blood sugar to rise higher than normal. At first, your pancreas makes more insulin to make up for this. But over time, it isn't able to keep your blood sugar levels in a normal range. When blood sugar levels stay high for long periods of time, it increases your risk of other medical problems like heart attacks, kidney disease, blindness, and nerve pain.

What treatments are used for type 2 diabetes?

The goal of treatment is to help you feel good and prevent long term problems caused by diabetes. To meet these goals, your health care team will work with you to create a care plan that includes lifestyle changes and medications. Your care plan will help you reach your treatment goals. The best way to reach these goals is to:

- Have an eating plan that meets your needs and helps you reach your goals. What you eat, how much you eat, and when you eat are all important.
- Stay physically active and get regular exercise.
- Take your medications (both pills and injected medications) as prescribed by your doctor.

Type 2 diabetes changes over time. At first, healthy eating and physical activity may be enough to reach your targets. But most people end up needing medications, including insulin, at some point to manage their blood sugar, no matter how hard they work to reach their targets.

Needing to take medication, including insulin, to manage your type 2 diabetes does not mean you failed.

Taking medication is simply part of good diabetes management. The most important thing you can do to stay healthy with diabetes is manage your blood sugar well—and that means taking medication on schedule and making healthy lifestyle choices.

What causes type 2 diabetes?

Scientists do not know the exact cause of type 2 diabetes. However, developing type 2 diabetes has been linked with several risk factors. These include:

- A history of hyperglycemia (high blood sugar), such as prediabetes and/or gestational diabetes
- Are 45 or older
- Are Black, Hispanic/Latino, American Indian, Asian American, or Pacific Islander
- Have a parent, brother, or sister with diabetes
- Are overweight
- Are physically inactive
- Have high blood pressure or take medicine for high blood pressure
- Have low HDL cholesterol and/or high triglycerides
- Have been diagnosed with polycystic ovary syndrome

How will I know if my diabetes treatment is working?

Get an A1C blood test at least two times a year. This helps you and your health care team know how well you are managing your blood sugar levels. The A1C test is part of your “ABCs of diabetes”—an easy way to check how well your diabetes treatment is working. The ABCs of diabetes are:

A is for A1C or estimated average glucose (eAG)

Your A1C test tells you your average blood sugar for the past two to three months. Your health care provider may call this your estimated average glucose, also called your eAG. The eAG shows your A1C results in the same units (mg/dL) as the glucose meter you use at home.

B is for blood pressure

Your blood pressure numbers tell you the force of blood inside your blood vessels. When your blood pressure is high, your heart has to work harder.

C is for cholesterol

Your cholesterol numbers tell you about the amount of fats in your blood. Some kinds of cholesterol can raise your risk for heart attack and stroke.

The Emotional Side of Diabetes

Having type 2 diabetes can be scary and tough. But with good medical care and the right treatment plan, you can live a long and healthy life. Reaching your personal diabetes goals early in your treatment and learning how to manage diabetes can prevent many of the long-term complications associated with diabetes.

Your diabetes management journey involves being emotionally strong and taking charge of your physical and emotional health. It is never simple, but these tips can help you gain the strength and skills you need:

Don't do diabetes alone.

Support is crucial to success.

- Find a diabetes health care team that you trust. They can provide the information, guidance, and support you need to manage diabetes.
- Talk to your care team about things that are getting in the way of you following your treatment plan. Sometimes transportation or trouble paying for medications can be a challenge. Other times food or housing can be a problem. Your team can help you with these problems and can make referrals to community resources.
- Talk to friends and family about how they can help and support you.

Learn as much as you can about how to manage diabetes—knowledge is power.

- Get diabetes self-management education. After all, 99% of your diabetes care is in your hands.
- Communicate honestly with your health care providers on a regular basis.
- Ask questions and make sure you get answers you understand. After all, it is your health.

Defeat Denial

- Set goals for things like blood sugar (blood glucose) and stay informed of your health status.
- Use technology, like a continuous glucose monitor (CGM) to track your daily blood sugar levels. Keep in mind that the readings are just information to be used—they don't mean you have been good or bad.
- Know your results on tests like A1C, cholesterol, and blood pressure. And make sure you also know what these results mean for you.

Give up the Guilt

- You didn't give yourself diabetes. Being overweight and sedentary can contribute to development of type 2 diabetes, but only if you have the genes too.
- Don't beat yourself up if you eat more than you planned or couldn't exercise. You don't have to be perfect to keep blood sugar levels in your target range.
- Taking one, two, or even three medications to manage diabetes doesn't mean you failed. Your body may gradually stop making insulin and using it the way it should. The important thing is to take your medications as prescribed.

Overcome Depression and Distress

- Diabetes can make you feel down. Concerns like sticking to a schedule may make you feel overly stressed. If you feel down, talk with your health care team about what's bothering you and what to do about it.
- Look for warning signs of depression. This can include feeling hopeless about your life.
- Schedule fun with people you like in your life.
- Your health care professional can refer you for help if needed. Counseling can often help. Use ADA's mental health director to find a provider.

Adapted from *The Emotional Side of Diabetes*, by Dr. William Polonsky and Dr. Susan Guzman. More information can be obtained by downloading a free copy of this booklet at behavioraldiabetes.org.

Factors Affecting Blood Sugar

If you don't have diabetes, no matter what you eat or how active you are, your blood sugar (blood glucose) levels will stay in a normal range on their own. If you have diabetes, your blood sugar levels can rise or fall based on many factors. The amount your levels change can be different from day to day. This can be very frustrating and confusing.

Many factors can make your blood sugar levels go higher and lower. Learning about them can help you reach your target levels and feel more confident about your health.

Knowing what your blood sugar levels are and what affects them can help you make decisions about what to eat and how to be active during the day to reach your target blood sugar levels. This will help you delay or prevent diabetes complications.

“Many factors can make your blood sugar levels go higher and lower.”

What can make your blood sugar go up?

- Too much food, like a meal or snack high in carbohydrates (starches), or eating more carbohydrates than usual
- Not enough physical activity
- Not taking enough insulin or other diabetes medications
- Side effects from other medications, such as steroids
- Getting sick—your body releases hormones to get better and those hormones can raise blood sugar levels
- Stress or pain, which can produce hormones that also raise blood sugar levels
- Menstrual periods, which also cause changes in hormone levels
- Dehydration

What can make your blood sugar go down?

- Not eating enough food. This could be eating a meal or snack with fewer carbohydrates than usual or missing a meal or snack
- Alcohol, especially on an empty stomach. Alcohol use can cause dangerously low blood sugar. Low blood sugar can also happen many hours after alcohol use
- Too much insulin or other diabetes medications
- Side effects from other medications
- More physical activity or exercise than usual—physical activity makes your body more sensitive to insulin and can lower blood sugar

How can you track your blood sugar?

There are two ways to keep track of your blood sugar levels:

- Using a blood sugar meter or continuous glucose monitor (CGM) to measure your blood sugar level at that moment
- Getting an A1C blood test at least twice a year to find out your average blood sugar for the past two to three months

Understanding Your A1C Test

What is the A1C test?

The A1C is a blood test that tells you what your average blood sugar (blood glucose) levels have been for the past two to three months. It measures how much sugar is attached to your red blood cells. If your blood sugar is frequently high, more will be attached to your blood cells. Because you are always making new red blood cells to replace old ones, your A1C changes over time as your blood sugar levels change.

What is eAG?

eAG stands for estimated average glucose and is your estimated average blood sugar. This number translates an A1C test result into a number like the one you see when you test your blood sugar at home. For example, an A1C of 7% means that your average sugar for the last two to three months was about 154 mg/dL.

What does an A1C/eAG result mean?

Usually, your A1C gives you general trend in your blood sugar that matches what you see with your day-to-day blood sugar checks. Sometimes, however, your A1C result may seem higher or lower than you expected. That may be because you aren't checking your blood sugar at times when it's very high or very low.

Use the chart below to understand how your A1C result translates to eAG. First find your A1C number on the left. Then read across to learn your average blood sugar for the past two to three months.

A1C	Average Blood Glucose (eAG)
6%	126 mg/dL
6.5%	140 mg/dL
7%	154 mg/dL
7.5%	169 mg/dL
8%	183 mg/dL
8.5%	197 mg/dL
9%	212 mg/dL
9.5%	226 mg/dL
10%	240 mg/dL
10.5%	255 mg/dL

“Because you are always making new red blood cells to replace old ones, your A1C changes over time as your blood sugar levels change.”

How often should I have an A1C?

Usually your doctor will measure your A1C at least twice a year. If your medication is changing, you are making other changes in how you take care of yourself, or other things might be affecting your blood sugar, you may have it checked more often.

What is a good target for A1C?

The American Diabetes Association® (ADA) recommends a target for A1C of less than 7% for most adults. You and your doctor may decide on a higher or lower target depending on your treatment goals and other factors. The closer you get to your target, the better your chances of preventing or delaying problems from diabetes that can develop over time. Studies have shown that for every one-point decrease in A1C levels, you reduce your risk of long-term diabetes complications by up to 40%.

What if my A1C is different from what I expected?

If your A1C is different from what you expect, talk to your doctor. You may need to check your blood sugar more often or use a continuous glucose monitor (CGM) to get a better idea of how your blood sugar is changing throughout the day.

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Do I still need to check my blood sugar with a meter if I get the A1C test regularly?

Yes. Both kinds of checking are important. You'll use your meter results to make day-to-day decisions. The A1C gives you an overall idea of what's going on and how your treatment plan is working at the times you aren't checking with your blood sugar.

Getting the Most out of Health Care Visits

Working with your diabetes care team.

You are the most important member of your diabetes care team. You do the day-to-day things to manage diabetes, like choosing healthy foods, being physically active, taking your medication, and checking your blood sugar (blood glucose) to help stay on track.

The other members of your diabetes care team are there to answer your questions and provide insights. They can tell you about your treatment options and help you stay up to date with your physical exams and lab tests.

You and your diabetes care team can work together to make a plan that helps you manage your diabetes.

Other people that may be part of your care team include:

- Doctor (primary care or endocrinologist)
- Nurse
- Registered dietitian nutritionist (RDN)
- Diabetes care and education specialist (DCES)
- Eye doctor (optometrist or ophthalmologist)
- Foot doctor (podiatrist)
- Pharmacist
- Dentist
- Social worker
- Therapist
- Personal trainer

What to expect at your visits?

At every office visit you should discuss the following:

- Talk about your blood glucose meter readings.
- Discuss changes in your blood sugar levels, especially high or low trends that may be happening at the same time of the day or days of the week.
- Check your blood pressure.
- Check your weight.
- Talk about what you eat.
- Discuss any recent changes in your day-to-day life or work.
- Discuss your physical activity.
- If you use nicotine, talk about ways to quit. This includes cigarettes and e-cigarettes and other forms of tobacco (call 1-800-QUIT-NOW for other resources).
- Discuss your prescribed medications and over the counter pills, herbs, vitamins, or supplements.
- Bring up any physical or emotional issues you are having such as trouble sleeping or feeling stress.
- Ask your questions and have them answered.

What to do before your visit?

- Make a list of your questions.
- Make a list of the medications (both prescribed and over-the-counter), vitamins, and supplements you take, or bring them with you in a bag.
- List when, why, and how much you take of each medication and if you need any refills.

What to bring with you?

- Your blood glucose meter, blood sugar log, and questions.
- Your lists of medications, vitamins, and anything else you are taking.
- Your food and exercise log if you keep one.

What else should you consider to stay healthy

At least twice per year:

- Get your A1C checked

At least once per year:

- Have a dilated eye exam.
- Get a flu shot.
- Have a complete foot exam.
- Check your kidney function.

At least once in a lifetime and again after turning 65:

- Get a pneumonia vaccine.

Other vaccinations you may need:

- Tdap vaccine: A booster shot for adults that immunizes against tetanus, diphtheria, and pertussis.
- Hepatitis B vaccine: Protects against hepatitis B, a highly contagious virus that causes lifelong illness.
- Zoster vaccine: Also known as the shingles vaccine, is recommended for anyone 50 or older.

Ask about meeting with a diabetes care and education specialist

Diabetes requires daily self-care. Figuring out how to make diabetes self-care fit into your daily routine can be overwhelming. A diabetes care and education specialist can help you manage all the daily tasks of caring for your diabetes, including:

- How to manage blood sugar day to day.
- How to make food choices that keep your blood sugar in your target range.
- What to do when your blood sugar is out of your target range (high or low).
- When you need to get more help.

Both the American Diabetes Association® (ADA) and the Association of Diabetes Care & Education Specialists certify high quality diabetes self-management education and support (DSMES) programs. These programs meet quality standards approved by Medicare and Medicaid services. To find a program near you, call the ADA at 1-800-DIABETES or go to diabetes.org/findaprogram for recognized programs across the country.

“A diabetes care and education specialist can help you manage all the daily tasks of caring for your diabetes.”

Your Type 2 Diabetes Treatment: Get Ready for Your Visit

Your diabetes care team can help you find a diabetes treatment plan that works for you. Take a few minutes to answer these questions so your care team will know how to make the most of your visit.

First, let's see where you are in your diabetes journey.

1 How long have you had diabetes?

- Less than 1 year
- 1 to 5 years
- 6 to 10 years
- More than 10 years

2 How do you think your diabetes treatment is going?

- Great—I'm totally on top of it
- Okay—but it could be better
- Not so good—something needs to change

Now let's find out how you're doing with specific parts of your care.

3 Many people take more than 1 medicine to treat their diabetes. Are you okay with the idea of taking more than 1 medicine?

- Yes
- No
- I'm not sure

4 Do you take your medicines on schedule and as prescribed?

- Yes
- No
- Sometimes

5 Do you check your blood sugar on schedule?

- Yes
- No
- Sometimes

6 The last time you got your A1C checked, were you meeting your goal?

- Yes, my A1C was where it needs to be
- No, my A1C was too high
- I'm not sure

7 What do you do when you need help managing your diabetes?

- I call someone on my care team, like my doctor, nurse, dietitian, or pharmacist
- I call my diabetes educator
- I ask friends and family
- I go to an organization in my community
- I look on the internet
- I don't know what to do—I feel like I'm in this alone
- Other: _____

8 What are the biggest challenges you have in managing your diabetes?

- My treatment plan
- Sticking to my treatment schedule
- Paying for my medicines, devices, or supplies
- Getting to my appointments
- Eating healthy
- Getting enough physical activity
- Feeling overwhelmed or depressed about my diabetes
- Other: _____

9 What other things would you like to talk about?

Great—now share your answers with your diabetes care team during your visits. That way, they can help you get the information and support you need to keep your diabetes treatment on track to meet your goals.