

What is Diabetes?

Question: What is Diabetes?

Diabetes is a chronic (long-lasting) health condition that affects how your body turns food into energy.

Your body breaks down most of the food you eat into sugar (glucose) and releases it into your bloodstream. When your blood sugar goes up, it signals your pancreas to release insulin. Insulin acts like a key to let the blood sugar into your body's cells for use as energy.

With diabetes, your body doesn't make enough insulin or can't use it as well as it should. When there isn't enough insulin or cells stop responding to insulin, too much blood sugar stays in your bloodstream. Over time, that can cause serious health problems, such as heart disease, vision loss, and kidney disease.

There isn't a cure yet for diabetes, but losing weight, eating healthy food, and being active can really help. Other things you can do to help:

- Take medicine as prescribed.
- Get diabetes self-management education and support.
- Make and keep health care appointments.

Question: What are the types of diabetes?

There are three main types of diabetes: type 1, type 2, and gestational diabetes (diabetes while pregnant).

Question: What is Type 1 Diabetes?

Type 1 diabetes is thought to be caused by an autoimmune reaction (the body attacks itself by mistake). This reaction stops your body from making insulin. Approximately 5-10% of the people who have diabetes have type 1. Type 1 diabetes can be diagnosed at any age, and symptoms often develop quickly. If you have type 1 diabetes, you'll need to take insulin every day to survive. Currently, no one knows how to prevent type 1 diabetes.

Question: What is Type 2 Diabetes?

With type 2 diabetes, your body doesn't use insulin well and can't keep blood sugar at normal levels. About 90-95% of people with diabetes have type 2. It develops over many years and is usually diagnosed in adults (but more and more in children, teens, and young adults). You may

not notice any symptoms, so it's important to get your blood sugar tested if you're at risk. Type 2 diabetes can be prevented or delayed with healthy lifestyle changes, such as:

- Losing weight.
- Eating healthy food.
- Being active.

Question: What is Gestational Diabetes?

Gestational diabetes develops in pregnant women who have never had diabetes. If you have gestational diabetes, your baby could be at higher risk for health problems. Gestational diabetes usually goes away after your baby is born. However, it increases your risk for type 2 diabetes later in life. Your baby is more likely to have obesity as a child or teen and develop type 2 diabetes later in life.

Question: What is Prediabetes?

In the United States, about 98 million adults—more than 1 in 3—have prediabetes. More than 8 in 10 of them don't know they have it. With prediabetes, blood sugar levels are higher than normal, but not high enough for a type 2 diabetes diagnosis. Prediabetes raises your risk for type 2 diabetes, heart disease, and stroke. But there's good news. If you have prediabetes, a CDC-recognized lifestyle change program can help you take healthy steps to reverse it.

Type 2 Diabetes

Question: What Causes Type 2 Diabetes?

Insulin is a hormone made by your pancreas that acts like a key to let blood sugar into the cells in your body for use as energy. If you have type 2 diabetes, cells don't respond normally to insulin; this is called insulin resistance. Your pancreas makes more insulin to try to get cells to respond. Eventually your pancreas can't keep up, and your blood sugar rises, setting the stage for prediabetes and type 2 diabetes. High blood sugar is damaging to the body and can cause other serious health problems, such as heart disease, vision loss, and kidney disease.

Question: What are the symptoms and risk factors of Type 2 Diabetes?

Type 2 diabetes symptoms often develop over several years and can go on for a long time without being noticed (sometimes there aren't any noticeable symptoms at all). Because symptoms can be hard to spot, it's important to know the risk factors and to see your doctor to get your blood sugar tested if you have any of them.

Question: How to test for Type 2 Diabetes?

A [simple blood test](#) will let you know if you have diabetes. If you've gotten your blood sugar tested at a health fair or pharmacy, follow up at a clinic or doctor's office to make sure the results are accurate.

Question: How to manage Type 2 Diabetes?

Unlike many health conditions, diabetes is managed mostly by you, with support from your health care team (including your primary care doctor, foot doctor, dentist, eye doctor, registered dietitian nutritionist, diabetes educator, and pharmacist), family, and other important people in your life. Managing diabetes can be challenging, but everything you do to improve your health is worth it!

You may be able to [manage your diabetes](#) with healthy eating and being active, or your doctor may prescribe insulin, other injectable medications, or oral diabetes medicines to help manage your blood sugar and avoid [complications](#). You'll still need to eat healthy and be active if you take insulin or other medicines. It's also important to keep your [blood pressure](#) and [cholesterol](#) close to the targets your doctor sets for you and get necessary screening tests.

You'll need to [check your blood sugar](#) regularly. Ask your doctor how often you should check it and what your target blood sugar levels should be. Keeping your blood sugar levels as close to target as possible will help you prevent or delay diabetes-related complications.

Stress is a part of life, but it can make managing diabetes harder, including managing your blood sugar levels and dealing with daily diabetes care. Regular physical activity, getting enough sleep, and relaxation exercises can help. Talk to your doctor and diabetes educator about these and other ways you can manage stress.

Make regular appointments with your health care team to be sure you're on track with your treatment plan and to get help with new ideas and strategies if needed.

Whether you were just diagnosed with diabetes or have had it for some time, meeting with a diabetes educator is a great way to get support and guidance, including how to:

- Develop a healthy eating and activity plan
- Test your blood sugar and keep a record of the results
- Recognize the signs of high or low blood sugar and what to do about it
- If needed, give yourself insulin by syringe, pen, or pump
- Monitor your feet, skin, and eyes to catch problems early
- Buy diabetes supplies and store them properly
- Manage stress and deal with daily diabetes care

Ask your doctor about [diabetes self-management education and support services](#) and to recommend a diabetes educator, or search the Association of Diabetes Care & Education Specialists' (ADCES) [nationwide directory](#)

for a list of programs in your community.

Question: How to prevent Type 2 Diabetes in children and teens?

Childhood obesity rates are rising, and so are the rates of type 2 diabetes in youth. More than 75% of children with type 2 diabetes have a close relative who has it, too. But it's not always because family members are related; it can also be because they share certain habits that can increase their risk. Parents can help prevent or delay type 2 diabetes by developing a plan for the whole family:

- Drinking more water and fewer sugary drinks
- Eating more fruits and vegetables
- Making favorite foods healthier
- Making physical activity more fun

Healthy changes become habits more easily when everyone makes them together. Find out how to take charge family style with these [healthy tips](#).

Insulin Resistance and Diabetes

Question: What is the relation of insulin, blood sugar and Type 2 Diabetes?

Insulin is a key player in developing type 2 diabetes. This vital hormone—you can't survive without it—regulates blood sugar (glucose) in the body, a very complicated process. Here are the high points:

- The food you eat is broken down into blood sugar.
- Blood sugar enters your bloodstream, which signals the pancreas to release insulin.
- Insulin helps blood sugar enter the body's cells so it can be used for energy.
- Insulin also signals the liver to store blood sugar for later use.
- Blood sugar enters cells, and levels in the bloodstream decrease, signaling insulin to decrease too.
- Lower insulin levels alert the liver to release stored blood sugar so energy is always available, even if you haven't eaten for a while.

That's when everything works smoothly. But this finely tuned system can quickly get out of whack, as follows:

- A *lot* of blood sugar enters the bloodstream.
- The pancreas pumps out more insulin to get blood sugar into cells.
- Over time, cells stop responding to all that insulin—they've become insulin resistant.
- The pancreas keeps making more insulin to try to make cells respond.
- Eventually, the pancreas can't keep up, and blood sugar keeps rising.

Lots of blood sugar in the bloodstream is very damaging to the body and needs to be moved into cells as soon as possible. There's lots of insulin, too, telling the liver and muscles to store blood sugar. When they're full, the liver sends the excess blood sugar to fat cells to be stored as body fat. Yep, weight gain. And what's more serious, the stage is set for [prediabetes](#) and [type 2 diabetes](#).

Question: How to find out if I have insulin resistance?

How do you find out if you're insulin resistant? No one test will tell you, but if you have high blood sugar levels, high triglycerides (a kind of blood fat), high LDL ("bad") cholesterol, and low HDL ("good") cholesterol, your health care provider may determine you have insulin resistance.

Important note: [Type 1 diabetes](#) is different; it's thought to be caused by an autoimmune reaction (the body attacks itself by mistake). People with type 1 diabetes don't make enough insulin and need to take it to survive.

Question: What causes insulin resistance?

It isn't clear exactly what causes insulin resistance, but a family history of type 2 diabetes, being overweight (especially around the waist), and being inactive all can raise the risk.

You do *not* have to be overweight to have insulin resistance. You can't tell if someone has insulin resistance by looking at them.

Question: How to reverse insulin resistance?

If you have insulin resistance, you want to become the opposite—more insulin sensitive (cells are more effective at absorbing blood sugar so less insulin is needed).

Physical activity makes you more sensitive to insulin, one reason why it's a cornerstone of diabetes management (and good health in general!). Don't wait until you're diagnosed with diabetes to start moving more. The earlier you take action (literally), the better off you'll be.

Weight loss is important too, as is avoiding high blood sugar, reducing stress, and getting enough sleep (physical activity can help you get more zzz's too).

These lifestyle changes really work. Talk with your health care provider about how to get started.

Gestational Diabetes

Question: What Causes Gestational Diabetes?

Gestational diabetes occurs when your body can't make enough insulin during your pregnancy. Insulin is a hormone made by your pancreas that acts like a key to let blood sugar into the cells in your body for use as energy.

During pregnancy, your body makes more hormones and goes through other changes, such as weight gain. These changes cause your body's cells to use insulin less effectively, a condition called insulin resistance. Insulin resistance increases your body's need for insulin.

All pregnant women have some insulin resistance during late pregnancy. However, some women have insulin resistance even before they get pregnant. They start pregnancy with an increased need for insulin and are more likely to have gestational diabetes.

Question: What are the symptoms and risk factors of gestational diabetes?

Gestational diabetes typically doesn't have any symptoms. Your medical history and whether you have any risk factors may suggest to your doctor that you could have gestational diabetes, but you'll need to be tested to know for sure.

Question: What are the related health problems in gestational diabetes ?

Having gestational diabetes can increase your risk of high blood pressure during pregnancy. It can also increase your risk of having a large baby that needs to be delivered by cesarean section (C-section).

If you have gestational diabetes, your baby is at higher risk of:

- Being very large (9 pounds or more), which can make delivery more difficult
- Being born early, which can cause breathing and other problems
- Having low blood sugar
- Developing type 2 diabetes later in life

Your blood sugar levels will usually return to normal after your baby is born. However, about 50% of women with gestational diabetes go on to develop type 2 diabetes. You can lower your risk by reaching a healthy body weight after delivery. Visit your doctor to have your blood sugar tested 6 to 12 weeks after your baby is born and then every 1 to 3 years to make sure your levels are on target.

Question: What is the testing for gestational diabetes?

It's important to be tested for gestational diabetes so you can begin treatment to protect your health and your baby's health.

Gestational diabetes usually develops around the 24th week of pregnancy, so you'll probably be tested between 24 and 28 weeks.

If you're at higher risk for gestational diabetes, your doctor may test you earlier. Blood sugar that's higher than normal early in your pregnancy may indicate you have type 1 or type 2 diabetes rather than gestational diabetes.

Question: What is the prevention for gestational diabetes?

Before you get pregnant, you may be able to prevent gestational diabetes by losing weight if you're overweight and getting regular physical activity.

Don't try to lose weight if you're already pregnant. You'll need to gain some weight—but not too quickly—for your baby to be healthy. Talk to your doctor about how much weight you should gain for a healthy pregnancy.

Question: What is the treatment for gestational diabetes?

You can do a lot to manage your gestational diabetes. Go to all your prenatal appointments and follow your treatment plan, including:

- Checking your blood sugar to make sure your levels stay in a healthy range.
- Eating healthy food in the right amounts at the right times. Follow a healthy eating plan created by your doctor or dietitian.
- Being active. Regular physical activity that's moderately intense (such as brisk walking) lowers your blood sugar and makes you more sensitive to insulin so your body won't need as much. Make sure to check with your doctor about what kind of physical activity you can do and if there are any kinds you should avoid.
- Monitoring your baby. Your doctor will check your baby's growth and development.

If healthy eating and being active aren't enough to manage your blood sugar, your doctor may prescribe insulin, metformin, or other medication.

Type 1 Diabetes

Question: What is Type 1 Diabetes?

If you have type 1 diabetes, your pancreas doesn't make insulin or makes very little insulin. Insulin helps blood sugar enter the cells in your body for use as energy. Without insulin, blood sugar can't get into cells and builds up in the bloodstream. High blood sugar is damaging to the body and causes many of the symptoms and complications of diabetes.

Type 1 diabetes was once called insulin-dependent or juvenile diabetes, but it can develop at any age.

Type 1 diabetes is less common than type 2—about 5-10% of people with diabetes have type 1. Currently, no one knows how to prevent type 1 diabetes, but it can be treated successfully by:

- Following your doctor's recommendations for living a healthy lifestyle.
- Managing your blood sugar.
- Getting regular health checkups.
- Getting diabetes self-management education and support.

Question: What Causes Type 1 Diabetes?

Type 1 diabetes is thought to be caused by an autoimmune reaction (the body attacks itself by mistake). This reaction destroys the cells in the pancreas that make insulin, called beta cells. This process can go on for months or years before any symptoms appear.

Some people have certain genes (traits passed on from parent to child) that make them more likely to develop type 1 diabetes. However, many of them won't go on to have type 1 diabetes even if they have the genes. A trigger in the environment, such as a virus, may also play a part in developing type 1 diabetes. Diet and lifestyle habits don't cause type 1 diabetes.

Question: What are the Symptoms and Risk Factors of Diabetes

It can take months or years before [symptoms](#) of type 1 diabetes are noticed. Type 1 diabetes symptoms can develop in just a few weeks or months. Once symptoms appear, they can be severe.

Some type 1 diabetes symptoms are similar to symptoms of other health conditions. Don't guess! If you think you could have type 1 diabetes, see your doctor to get your blood sugar tested. Untreated diabetes can lead to very serious—even fatal—health problems.

[Risk factors](#) for type 1 diabetes are not as clear as for prediabetes and type 2 diabetes. However, studies show that family history plays a part.

Question: How do I test for Type 1 Diabetes?

A simple blood test will let you know if you have diabetes. If you were tested at a health fair or pharmacy, follow up at a clinic or doctor's office. That way you'll be sure the results are accurate.

If your doctor thinks you have type 1 diabetes, your blood may also be tested for autoantibodies. These substances indicate your body is attacking itself and are often found with type 1 diabetes but not with type 2. You may have your urine tested for ketones too. Ketones are produced when your body burns fat for energy. Having ketones in your urine indicates you have type 1 diabetes instead of type 2.

Question: How do I manage Diabetes Type 1?

Unlike many health conditions, diabetes is [managed](#) mostly by you, with support from your health care team:

- Primary care doctor
- Foot doctor
- Dentist
- Eye doctor
- Registered dietitian nutritionist

- Diabetes educator
- Pharmacist

Also ask your family, teachers, and other important people in your life for help and support. Managing diabetes can be challenging, but everything you do to improve your health is worth it!

If you have type 1 diabetes, you'll need to take insulin shots (or wear an insulin pump) every day. Insulin is needed to manage your blood sugar levels and give your body energy. You can't take insulin as a pill. That's because the acid in your stomach would destroy it before it could get into your bloodstream. Your doctor will work with you to figure out the most effective type and dosage of insulin for you.

You'll also need to [do regular blood sugar checks](#). Ask your doctor how often you should check it and what your target blood sugar levels should be. Keeping your blood sugar levels as close to target as possible will help you prevent or delay diabetes-related [complications](#).

Stress is a part of life, but it can make managing diabetes harder. Both managing your blood sugar levels and dealing with daily diabetes care can be tougher to do. Regular physical activity, getting enough sleep, and exercises to relax can help. Talk to your doctor and diabetes educator about these and other ways you can manage stress.

Healthy lifestyle habits are really important too:

- Making [healthy food choices](#)
- Being [physically active](#)
- Controlling your [blood pressure](#)
- Controlling your [cholesterol](#)

Make regular appointments with your health care team. They'll help you stay on track with your treatment plan and offer new ideas and strategies if needed.

Question: What is Hypoglycemia and Diabetic Ketoacidosis

These 2 conditions are common complications of diabetes, and you'll need to know how to handle them. Meet with your doctor for step-by-step instructions. You may want to bring a family member with you to the appointment so they learn the steps too.

[Hypoglycemia](#) (low blood sugar) can happen quickly and needs to be [treated](#) quickly. It's most often caused by:

- Too much insulin.
- Waiting too long for a meal or snack.
- Not eating enough.
- Getting extra physical activity.

Talk to your doctor if you have low blood sugar several times a week. Your treatment plan may need to be changed.

[Diabetic ketoacidosis](#) (DKA) is a serious complication of diabetes that can be life-threatening. DKA develops when you don't have enough insulin to let blood sugar into your cells. Very high blood sugar and low insulin levels lead to DKA. The two most common causes are illness and missing insulin shots. Talk with your doctor and make sure you understand how you can prevent and treat DKA.

Question: How to get educated on Diabetes?

Meeting with a diabetes educator is a great way to get support and guidance, including how to:

- Develop and stick to a healthy eating and activity plan
- Test your blood sugar and keep a record of the results
- Recognize the signs of high or low blood sugar and what to do about it
- Give yourself insulin by syringe, pen, or pump
- Monitor your feet, skin, and eyes to catch problems early
- Buy diabetes supplies and store them properly
- Manage stress and deal with daily diabetes care

Ask your doctor about [diabetes self-management education and support services](#) and to recommend a diabetes educator. You can also search this [nationwide directory](#) for a list of programs in your community.

Question: What is Low Blood Sugar? (Hypoglycemia)

[Blood sugar levels](#) change often during the day. When they drop below 70 mg/dL, this is called having low blood sugar. At this level, you need to take action to bring it back up. Low blood sugar is especially common in people with type 1 diabetes.

Knowing how to identify low blood sugar is important because it can be dangerous if left untreated. Read more about what causes low blood sugar and common symptoms.

Question: What are the causes of having low blood sugar?

There are many reasons why you may have low blood sugar, including:

- Taking too much [insulin](#).
- Not eating enough carbs for how much insulin you take.
- Timing of when you take your insulin.
- The amount and timing of physical activity.
- Drinking alcohol.
- How much fat, protein, and fiber are in your meal.
- Hot and humid weather.
- Unexpected changes in your schedule.
- Spending time at a high altitude.
- Going through puberty.
- Menstruation.

Question: What are the symptoms of low blood sugar?

How you react to low blood sugar may not be the same as how someone else with low blood sugar reacts. It's important to know your signs. Common symptoms may include:

- Fast heartbeat
- Shaking
- Sweating
- Nervousness or anxiety
- Irritability or confusion
- Dizziness
- Hunger

You may not have any symptoms when your blood sugar is low (hypoglycemia unawareness). If you don't have symptoms, it will be harder to treat your low

blood sugar early. This increases your risk of having severe lows and can be dangerous. This is more likely to happen if you:

- Have had diabetes for more than 5-10 years.
- Frequently have low blood sugar.
- Take certain medicines, such as beta blockers for high blood pressure.

If you meet one or more of the above and you have hypoglycemia unawareness, you may need to check your blood sugar more often to see if it's low. This is very important to do before driving or being physically active.

Question: What are the types of low blood sugar?

Nighttime low blood sugar and severe low blood sugar.

Question: What is nighttime low blood sugar?

While low blood sugar can happen at any time during the day, some people may experience low blood sugar while they sleep. Reasons this may happen include:

- Having an active day.
- Being physically active close to bedtime.
- Taking too much insulin.
- Drinking alcohol at night.

Eating [regular meals](#) and not skipping them can help you avoid nighttime low blood sugar. Eating when you drink alcohol can also help. If you think you're at risk for low blood sugar overnight, have a snack before bed.

You may wake up when you have low blood sugar, but you shouldn't rely on that. A continuous glucose monitor (CGM) can alert you with an alarm if your blood sugar gets low while you're sleeping.

Question: What is severe low blood sugar?

As your low blood sugar gets worse, you may experience more serious symptoms, including:

- Feeling weak.
- Having difficulty walking or seeing clearly.
- Acting strange or feeling confused.
- Having seizures.

Severe low blood sugar is below 54 mg/dL. Blood sugar this low may make you faint (pass out). Often, you'll need someone to help you treat severe low blood sugar.

People with diabetes may experience low blood sugar as often as once or twice a week, even when managing their blood sugar closely. Knowing how to identify and treat it is important for your health. Learn how to [treat low blood sugar](#).

Question: How to treat low blood sugar?

Keeping your [blood sugar](#) levels on target as much as possible can help prevent or delay long-term, serious health problems. While this is important, closely managing your blood sugar levels also increases your chance for [low blood sugar](#) (hypoglycemia). Blood sugar below 70 mg/dL is considered low. If you think you have low blood sugar, check it. If you aren't able to check it, go ahead and treat it.

Untreated low blood sugar can be dangerous, so it's important to know what to do about it and to treat it immediately.

Question: What is the 15-15 rule on how to treat low blood sugar?

For low blood sugar between 55-69 mg/dL, raise it by following the 15-15 rule: have 15 grams of carbs and check your blood sugar after 15 minutes. If it's still below your target range, have another serving. Repeat these steps until it's in your target range. Once it's in range, eat a nutritious meal or snack to ensure it doesn't get too low again.

These items have about 15 grams of carbs:

- 4 ounces (½ cup) of juice or regular soda.
- 1 tablespoon of sugar, honey, or syrup.
- Hard candies, jellybeans, or gumdrops (see food label for how much to eat).
- 3-4 glucose tablets (follow instructions).
- 1 dose of glucose gel (usually 1 tube; follow instructions).

Tips to keep in mind:

- It takes time for blood sugar to rise after eating. Give some time for treatment to work. Following the 15-15 rule helps.
- Young children usually need less than 15 grams of carbs, especially infants and toddlers. Ask your doctor how much your child needs.
- You should avoid eating a carb with lots of fiber, such as beans or lentils, or a carb that also has fat, such as chocolate. Fiber and fat slow down how fast you absorb sugar.
- Check your blood sugar often when lows are more likely, such as when the weather is hot or when you travel.

Question: How to treat severely low blood sugar?

Blood sugar below 55 mg/dL is considered severely low. You won't be able to treat it using the 15-15 rule. You also may not be able to check your own blood sugar or treat it by yourself, depending on your symptoms. Make sure your family members, friends, and caregivers know your signs of low blood sugar so they can help treat it if needed.

Injectable glucagon is the best way to treat severely low blood sugar. A glucagon kit is available by prescription. Speak with your doctor to see if you should have a kit. Be sure to learn how and when to use it. Let family members and others close to you know where you keep the glucagon kit and make sure they've been trained in how to use it too.

It's important to contact a doctor for emergency medical treatment immediately after receiving a glucagon injection. If a person faints (passes out) due to

severely low blood sugar, they'll usually wake up within 15 minutes after a glucagon injection. If they don't wake up within 15 minutes after the injection, they should receive one more dose. When the person is awake and able to swallow:

- Feed the person a fast-acting source of sugar (regular soft drink or fruit juice).
- Then, have them eat a long-acting source of sugar (crackers and cheese or a sandwich with meat).

It's also important that friends, family, co-workers, teachers, coaches, and other people you may be around often know how to test your blood sugar and treat severely low blood sugar *before* it happens.

A medical ID, usually a bracelet or necklace, can be critical in keeping you safe and healthy. Emergency medical technicians are trained to look for a medical ID when caring for someone who can't speak for themselves.

Question: How can anyone can get type 1 diabetes?

It isn't completely clear [what causes type 1 diabetes](#), but we know that diet and lifestyle habits don't. Type 1 is thought to be the result of an autoimmune response, where your body attacks the cells in your pancreas that make insulin. Insulin is a hormone that acts like a key to let blood sugar into your body's cells for use as energy. Sometimes infection with a virus seems to trigger the autoimmune response. Many people with type 1 diabetes have family members with type 1, but most don't.

Question: How is life with type 1 diabetes?

You need insulin to live, so you'll need to take it every day by injecting it or using an insulin pump. You'll also check your [blood sugar levels](#) throughout the day to make sure you're staying in your target range as much as possible. Your health care team will help you understand what your target range is and how to stay within it.

Question: How to get diabetes education for type 1 diabetes?

Type 1 diabetes requires your attention every day. To learn what you need to know, ask your doctor to refer you to [diabetes self-management education and support](#) (DSMES) services. There you'll find out how to balance insulin, food, and physical activity and get tips on how to cope with the emotional side of living with diabetes. All these things can affect your blood sugar levels.

Over time, having high blood sugar can cause serious [health problems](#), such as heart disease, vision loss, and kidney failure. But you can lower your risk for those health complications and others. You'll need to understand how food, activity, and other factors in your life affect your blood sugar and make changes to improve your blood sugar levels.

Be an experimenter. See what works best for you by trying different things. Prepare a healthier version of a favorite dish or take a walk after you eat, and keep track of your blood sugar results. This information can help you take charge of your diabetes instead of feeling like it's in charge of *you*. Your diabetes educator can suggest ideas for you to try that have worked for other people with type 1.

Question: How to manage your blood sugar regarding time in range?

Time in range is how long your blood sugar stays in your target range throughout the day. Most people with diabetes aim for 70% time in range, or between 16 and 17 hours out of 24.

Question: How to manage high and low blood sugar?

Blood sugar levels change often during the day. You'll need to notice if your blood sugar drops too low ([hypoglycemia](#)) and be prepared to [treat](#) it right away.

If your blood sugar spikes very high and your insulin is low, you can develop [diabetic ketoacidosis](#) (DKA), a serious complication of diabetes that can be life-threatening. You'll need medical care immediately if you develop DKA.

Your health care team will let you know how to identify and treat high and low blood sugar and related health problems. Be sure to get in touch with your doctor or diabetes educator if you have any questions.

Question: How managing blood sugar helps now?

Keeping your blood sugar levels on target can help you avoid serious health problems like heart disease and nerve damage down the road. But did you know avoiding ups and downs in blood sugar can help you feel better right away?

Steady blood sugar levels can help you have more energy, better sleep, an easier-to-manage appetite, better focus, and stable moods. If you're having trouble meeting your target, talk to your doctor or diabetes educator about making changes to your treatment plan so you can stay in range longer and feel better.

Question: How to manage diabetes?

It takes a health care team to help you manage diabetes. And you're the most important member of the team because you're the one managing diabetes every day. And it really is a team—a group of dedicated, focused health care experts to assist you in feeling good and living a long, healthy life.

Your team will include your primary care doctor, endocrinologist (a doctor who treats diabetes and other hormone problems), foot doctor, eye doctor, dentist, pharmacist, nurse, dietitian, and diabetes educator. They specialize in helping you manage every aspect of diabetes, and you'll [schedule regular visits](#) with them to ensure your treatment plan is on track. Ask your primary care doctor for referrals to these specialists to begin building your team.

Question: how to get support from family members?

With [support from your family](#), you can feel more empowered and less overwhelmed by this new life with diabetes. Ask your loved ones for the help you need to make diabetes more manageable, such as going to doctor appointments with you or making healthy food together

Question: What is DSMES?

[Diabetes self-management education and support](#) (DSMES) can help you learn to solve problems, cope with the emotional side of diabetes, and lower your risk for other health problems. And not just when you're first diagnosed. Have your doctor refer you to DSMES if you're feeling stressed or if a life change such as a job loss or a new health condition is affecting your diabetes self-care. You can also find out about the latest treatment options and get answers to any questions you have.

Question: Can type 1 diabetes be cured?

Currently, there isn't a cure for type 1 diabetes. However, what we know about the condition is constantly evolving, new technologies and medicines are being developed, and researchers are making important breakthroughs. Right now, people of all ages are leading full, healthy lives with type 1 diabetes. You can too!

Types of Insulin

Question: What are types of Insulin?

Many types of insulin are used to treat diabetes. Although available choices may seem a bit overwhelming at first, this guide can help you discuss your treatment with your doctor.

Insulin is classified by how fast and how long it works in your body.

Important terms to know about insulin:

- **Onset** – How quickly insulin lowers your blood sugar.
- **Peak Time** – When insulin is at maximum strength.
- **Duration** – How long insulin works to lower your blood sugar.

Your doctor will prescribe the best insulin or insulins for you based on several factors:

- How active you are.
- The food you eat.
- How well you're able to [manage your blood sugar](#) levels.
- Your age.
- How long it takes your body to absorb insulin and how long it stays active. (This is different for different people.)

If you have type 1 diabetes, you'll likely take a combination of insulins. Some people with type 2 diabetes will also need to take insulin.

Different brands of insulin vary in onset, peak time, and duration, even if they're the same type, such as rapid acting. Be sure to check the dosing information that comes with your insulin and follow your doctor's instructions.

For more information about types of insulin and when to take them, talk to your doctor or diabetes educator.

Insulin Type	Onset	Peak Time	Duration	Method
Rapid acting	15 minutes	1 hour	2 to 4 hours	Usually taken right before a meal. Often used with longer-acting insulin.
Rapid-acting inhaled	10 to 15 minutes	30 minutes	3 hours	Usually taken right before a meal. Often used with injectable long-acting insulin.
Regular/short acting	30 minutes	2 to 3 hours	3 to 6 hours	Usually taken 30 to 60 minutes before a meal.

Intermediate acting	2 to 4 hours	4 to 12 hours	12 to 18 hours	Covers insulin needs for half a day or overnight. Often used with rapid- or short-acting insulin.
Long acting	2 hours	Does not peak	Up to 24 hours	Covers insulin needs for about a full day. Often used, when needed, with rapid- or short-acting insulin.
Ultra-long acting	6 hours	Does not peak	36 hours or longer	Provides steady insulin for long periods.
Premixed	5 to 60 minutes	Peaks vary	10 to 16 hours	Combines intermediate- and short-acting insulin. Usually taken 10 to 30 minutes before breakfast and dinner.

How and when to take insulin is different for each person and can change over time.

You may take just one type of insulin or different types throughout the day depending on your lifestyle, what you eat, and your blood sugar levels.

Ask your doctor to refer you to diabetes self-management education and support (DSMES) services when you start using insulin.

Your diabetes educator will make sure you feel comfortable managing your insulin routine, including how and where to inject and how to program an insulin pump if you're using one.

Ways to take Insulin

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Question: What is Bolus Insulin?

Diabetic Ketoacidosis

Question: What is Diabetic Ketoacidosis?

Diabetic ketoacidosis (DKA) is a serious complication of diabetes that can be life-threatening. DKA is most common among people with type 1 diabetes. People with type 2 diabetes can also develop DKA.

DKA develops when your body doesn't have enough insulin to allow blood sugar into your cells for use as energy. Instead, your liver breaks down fat for fuel, a process that produces acids called ketones. When too many ketones are produced too fast, they can build up to dangerous levels in your body.

Question: What are DKA Signs and Symptoms?

DKA usually develops slowly. Early symptoms include:

- Being very thirsty.
- Urinating a lot more than usual.

If untreated, more severe symptoms can appear quickly, such as:

- Fast, deep breathing.
- Dry skin and mouth.
- Flushed face.
- Fruity-smelling breath.
- Headache.
- Muscle stiffness or aches.
- Being very tired.
- Nausea and vomiting.
- Stomach pain.

Sometimes DKA is the first sign of diabetes in people who haven't yet been diagnosed.

Question: What are the causes of DKA?

Very high blood sugar and low insulin levels lead to DKA. The two most common causes are:

- Illness. When you get sick, you may not be able to eat or drink as much as usual, which can make blood sugar levels hard to manage.
- Missing insulin shots, a clogged insulin pump, or the wrong insulin dose.

Other causes of DKA include:

- Heart attack or stroke.
- Physical injury, such as from a car accident.
- Alcohol or drug use.
- Certain medicines, such as some diuretics (water pills) and corticosteroids (used to treat inflammation in the body).

Question: What is the treatment for DKA?

If you have DKA, you'll be treated in the emergency room or admitted to the hospital. Your treatment will likely include:

- Replacing fluids you lost through frequent urination and to help dilute excess sugar in your blood.
- Replacing electrolytes (minerals in your body that help your nerves, muscles, heart, and brain work the way they should). Too little insulin can lower your electrolyte levels.
- Receiving insulin. Insulin reverses the conditions that cause DKA.
- Taking medicines for any underlying illness that caused DKA, such as antibiotics for an infection.

Questions: How to Prevent DKA?

KA is a serious condition, but you can take steps to help prevent it:

- Check your blood sugar often, especially if you're sick.
- Keep your blood sugar levels in your target range as much as possible.
- Take medicines as prescribed, even if you feel fine.

- Talk to your doctor about how to adjust your insulin based on what you eat, how active you are, or if you're sick.

Question: What are the treatment for DKA

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-
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- Receiving insulin. Insulin reverses the conditions that cause DKA.
- Taking medicines for any underlying illness that caused DKA, such as antibiotics for an infection.

Diabetes Tests

Question: What are the tests for Type 1 Diabetes, Type 2 Diabetes, and Prediabetes?

Your doctor will have you take one or more of the following blood tests to confirm the diagnosis: A1C Test, Fasting Blood Sugar Test, Glucose Tolerance Test, Random Blood Sugar Test,

Question: What is A1C Test?

The [A1C test](#) measures your average blood sugar level over the past 2 or 3 months. An A1C below 5.7% is normal, between 5.7 and 6.4% indicates you have prediabetes, and 6.5% or higher indicates you have diabetes.

Question: What is Fasting Blood Sugar Test?

This measures your blood sugar after an overnight fast (not eating). A fasting blood sugar level of 99 mg/dL or lower is normal, 100 to 125 mg/dL indicates you have prediabetes, and 126 mg/dL or higher indicates you have diabetes.

Question: What is Glucose Tolerance Test?

This measures your blood sugar before and after you drink a liquid that contains glucose. You'll fast (not eat) overnight before the test and have your blood drawn to determine your fasting

blood sugar level. Then you'll drink the liquid and have your blood sugar level checked 1 hour, 2 hours, and possibly 3 hours afterward. At 2 hours, a blood sugar level of 140 mg/dL or lower is considered normal, 140 to 199 mg/dL indicates you have prediabetes, and 200 mg/dL or higher indicates you have diabetes.

Question: What is Random Blood Sugar Test?

This measures your blood sugar at the time you're tested. You can take this test at any time and don't need to fast (not eat) first. A blood sugar level of 200 mg/dL or higher indicates you have diabetes.

Result*	A1C Test	Fasting Blood Sugar Test	Glucose Tolerance Test	Random Blood Sugar Test
Diabetes	6.5% or above	126 mg/dL or above	200 mg/dL or above	200 mg/dL or above
Prediabetes	5.7 – 6.4%	100 – 125 mg/dL	140 – 199 mg/dL	N/A
Normal	Below 5.7%	99 mg/dL or below	140 mg/dL or below	N/A

If your doctor thinks you have type 1 diabetes, your blood may also be tested for autoantibodies (substances that indicate your body is attacking itself) that are often present in type 1 diabetes but not in type 2 diabetes. You may have your urine tested for ketones (produced when your body burns fat for energy), which also indicate type 1 diabetes instead of type 2 diabetes.

Question: What are the tests for gestational diabetes?

Gestational diabetes is diagnosed using blood tests. You'll probably be tested between 24 and 28 weeks of pregnancy. If your risk is higher for getting gestational diabetes (due to having more risk factors), your doctor may test you earlier. Blood sugar that's higher than normal early in your pregnancy may indicate you have type 1 or type 2 diabetes rather than gestational diabetes.

Question: What is Glucose Screening Test?

This measures your blood sugar at the time you're tested. You'll drink a liquid that contains glucose, and then 1 hour later your blood will be drawn to check your blood sugar level. A normal result is 140 mg/dL or lower. If your level is higher than 140 mg/dL, you'll need to take a glucose tolerance test.

Question: What is Glucose Tolerance Test?

This measures your blood sugar before and after you drink a liquid that contains glucose. You'll fast (not eat) overnight before the test and have your blood drawn to determine your fasting blood sugar level. Then you'll drink the liquid and have your blood sugar level checked 1 hour, 2 hours, and possibly 3 hours afterward. Results can differ depending on the size of the glucose drink and how often your blood sugar is tested. Ask your doctor what your test results mean.

Question: How to prevent Type 2 Diabetes?

If your test results show you have prediabetes, ask your doctor or nurse if the lifestyle change program offered through the CDC-led [National Diabetes Prevention Program](#) is available in your community. You can also [search for an online or in-person program](#). Having prediabetes puts you at greater risk for developing type 2 diabetes, but participating in the program can lower your risk by as much as 58% (71% if you're over age 60).

Question: What is the treatment plan for person with diabetes?

If your test results show you have type 1, type 2, or gestational diabetes, talk with your doctor or nurse about a detailed treatment plan—including [diabetes self-management education and support services](#)—and specific steps you can take to be your healthiest.

