

UNICITY

# TYPE 1 DIABETES 101

What You Need to Know

# Type 1 Diabetes 101 – What You Need to Know

Learning that you, your child, or another family member has type 1 diabetes is a frightening and confusing experience. You may be wondering why it happened, or what you can do to help manage it. While learning that one has type 1 diabetes is never good news, know that you're not alone. Over a million Americans are estimated to be living with type 1 diabetes. With the right information and care, you or your family member can manage this condition and live a long, healthy, and happy life.

## Understanding Type 1 Diabetes

There are two major types of diabetes: type 1 diabetes and type 2 diabetes. According to the National Diabetes Statistics Report by the Center for Disease Control in 2014, of the 29.1 million people with diabetes, approximately 5% have type 1 diabetes. You might have heard about type 2 diabetes on the news or on the internet. It's a much more common form of diabetes in which the body is no longer able to effectively use a hormone called insulin. Type 1 diabetes is very different. Instead of becoming resistant to insulin, your body stops making it altogether or in such minimal amounts it is not effective. If you don't do anything about it, this lack of insulin will lead to death as no one can live without it. However, there are effective treatment methods to give yourself or your family member insulin and learn other important information and tools that make it possible to control the blood sugar and live a healthy life.

So what is insulin, anyway? Well, it's a chemical that helps your cells absorb a substance called glucose. Whenever you eat something, your digestive system breaks that food down. Any sugar the body finds is released into the blood stream in the form of glucose. Normally, your pancreas reacts to an increase of sugar in the blood by releasing insulin. The insulin then tells your body's cells to open up and let the sugar in. Your cells might use the sugar for immediate energy, or they might store it away for later use. Either way, the insulin helps move the glucose out of your blood stream and into your cells.

When you have type 1 diabetes, though, this system skips an important step. Your pancreas doesn't make insulin in response to high levels of blood sugar. Instead of being tucked away safely in your cells, the glucose from your food builds up in your blood stream. If you don't do anything to manage this extra sugar, it rapidly leads to major problems for your body. Since your pancreas no longer secretes the insulin needed to break down food, you or your family member will be taught how to "think like a pancreas". That means administering just the right amount of insulin one's

body needs every time food or caloric beverages are taken in and also whenever the glucose is above the target set by your doctor for your glucose level. That's why it's so important for you or your family member to be diligent in managing type 1 diabetes.

## What Causes Type 1 Diabetes?

We don't know for sure what causes type 1 diabetes, but it is believed to most likely be an autoimmune disorder. This is a condition that occurs when the immune system mistakenly attacks and destroys healthy body tissue, in this case the cells in the pancreas that produce insulin. There are some risk factors that tend to lead to a higher chance of type 1 diabetes.

### **Family History:**

There is a genetic component that impacts whether a person develops type 1 diabetes. If you have an immediate relative (parent, sibling or offspring) who has or had type 1 diabetes, your risk is 10-20 times the risk of the general population. If a parent has (or had), type 1 diabetes, you have a higher risk if the father has it than if the mother does. If there is a first degree relative who was diagnosed with type 1 diabetes, be diligent about monitoring your child if they begin to show diabetes symptoms.

### **Age:**

You can develop type 1 diabetes at any age, but it most commonly occurs during childhood, adolescence or young adulthood. When people develop type 1 as adults, if it is discovered at an early stage, it may be initially misdiagnosed as type 2 diabetes, since that type is much more common in adults. In this case, treatment with diabetes pills is ineffective and lab tests are done that lead to the diagnosis of type 1.

## What Symptoms Does Type 1 Diabetes Cause?

Undiagnosed Type 1 diabetes can cause many symptoms that will leave you feeling ill. These symptoms come on rapidly and can imitate the "stomach flu" because the symptoms are similar. If symptoms persist over a day or two, especially with vomiting, go to your doctor. Ketoacidosis and dehydration can occur very rapidly and both are life threatening.

### **Increased Urination:**

As your blood sugar levels go too high, your body has a trick to get rid of the extra glucose: increased urination. Your kidneys will start working harder to get rid of your extra blood sugar, leaving you running to the bathroom much more often than you did before.

**Bedwetting:**

While an increase in urination is simply an inconvenience for adults, small children might not always be able to make it to the bathroom in time. This can lead to bedwetting, especially in very young children. There are many reasons why a child might wet the bed, but if your child starts doing so without any apparent cause, and has the other symptoms listed, it's time to check in with their doctor.

**Increased thirst:**

All of that extra urination quickly leads to dehydration. As a result, you'll feel very thirsty and remain so even when drinking large amounts of water.

**Hunger:**

Without insulin, your body won't be able to convert food into energy. Because you're not getting the energy you need through your food, you'll start to feel very persistently hungry in spite of increased food intake.

**Weight Loss:**

No matter how much you eat, if your body isn't converting your food into energy it has to look elsewhere. For most people, this means burning off excess fat and muscle. You'll start to notice this when you step on the scale. If you lose a significant amount of weight and are experiencing the other symptoms noted here, see your doctor.

**Fatigue:**

High glucose can easily leave you feeling run down. Not only will increased urination keep you up and down throughout the night, high glucose levels in your blood means your body is being deprived of glucose and other nutrients from your food. As a result, you are left feeling even more worn out.

**Irritability and Mood Changes:**

Feeling tired, hungry, and worn out all of the time would leave anyone feeling miserable. High glucose is likely to leave you feeling short tempered and unhappy.

No matter how severe your symptoms at the time of diagnosis, carefully managing your type 1 diabetes will help keep them from interrupting your day to day life.

## Danger Section: Type 1 Diabetes Complications

Later on in this guide we'll tell you more about how to manage type 1 diabetes. For now, though, it's important to understand that if you don't take steps to control your blood sugar, you could find yourself with serious (and potentially life-threatening) complications. Some of these complications need immediate medical care, while others build up more slowly over time. No matter what the time frame, however, these issues can all seriously impact your health and lifestyle.

## Immediate Complications

### **Hyperglycemia (high blood sugar):**

When you have type 1 diabetes, it's not uncommon for too much glucose to build up in your blood system. This can happen if you're not taking steps to control your blood sugar, but it can also occur due to interactions with non-diabetes medications, incorrect dosing or type of insulins, illness, stress, or from too many carbohydrates. At first, hyperglycemia can cause an increased amount of urination and a higher level of thirst. You might also have a headache, feel tired, or find that your vision is blurry. If you don't do anything and allow your blood sugar levels to keep going up, over a period of hours or days harmful acids can build up in your blood. As a result, your breath might start to smell fruity. You might also feel short of breath, confused, or nauseous, or have dry mouth, abdominal pain, or a feeling of weakness. If you still don't make any changes, high levels of blood sugar can lead to diabetic ketoacidosis.

### **Diabetic Ketoacidosis:**

If your blood sugar remains high, your body will start to break down fat for energy. This can create toxic acids called ketones. High ketone levels lead to diabetic ketoacidosis. This condition is life threatening. You can check for ketones by using an over the counter ketones urine test. Tell your doctor right away if you have moderate or high ketone levels, or if you have nausea, vomiting, abdominal pain, or sweet smelling breath.

### **Hypoglycemia (low blood sugar):**

Sometimes your blood sugar can dip too low. This can happen if you take too much insulin, you do not eat enough carbohydrates for the amount of insulin taken or by having an increase in physical activity. Hypoglycemia symptoms can include any or all of the following which occur very suddenly: shakiness, cold sweats, extreme hunger, feelings of tiredness and irritability, difficulty concentrating, and slurred speech or unsteady gait. Low blood sugar must be treated immediately or it can result in convulsions, loss of consciousness, or even death. The treatment is to eat or drink 15 grams of glucose or sugar. Examples include glucose tablets, glucose gel, regular soda, fruit juice, honey or sugar. In the event a person with type 1 diabetes should become unconscious from untreated low blood sugar, a family member, school personnel (in the case of a child), or roommate is to be instructed in how to administer an injection of glucagon to bring the glucose up.

## Long Term Complications



### **Heart Disease:**

High blood sugar levels can cause fatty deposits and cause inflammation on the walls of your blood vessels. This buildup and

inflammation can make it difficult for your blood to flow through the blood vessels and increases the risk of heart disease or stroke. You'll be more likely to have these issues at a younger age than someone who does not have diabetes.



### **Kidney Damage:**

Type 1 diabetes can damage small blood vessels all over your body, even the ones in your kidneys. As a result, your kidneys might not work properly, which might make you gain weight from fluid retention, have swollen ankles, or have a build-up of waste materials in your blood. Long term kidney damage might lead you to need dialysis or a kidney transplant.



### **Nerve Damage:**

Nerve damage is very common in people with uncontrolled glucose. In fact, the American Diabetes Association's Data and Statistics about Diabetes for 2015 indicates that 60-70% of people with diabetes have some kind of damage to their nerves. If you're part of this majority, you might feel tingling, numbness, or pain in your hands, feet, legs, or arms. The nerves that allow normal digestion and control bowel and bladder function can also be affected.



### **Foot Damage:**

You're most likely to have nerve damage in your feet. Over time, you might lose all feeling in this part of your body. While you might think numbness would be better than pain, it makes it very easy to injure yourself without realizing it. If you end up having cuts, scrapes, or blisters on your feet, you might not take good care of them if you can't feel them. This puts you at a higher risk of infection. In some extreme cases, diabetic nerve damage, poor circulation, or infection makes it necessary to amputate a foot or toes completely.



### **Skin Problems:**

Anyone with any type of diabetes has a higher risk of skin issues, especially dry, cracked skin due to high glucose over time. It is very important to keep skin well lubricated to avoid cracking which can allow bacteria to penetrate the skin and cause infection.



### **Eye Damage:**

Type 1 diabetes puts you at risk of diabetic retinopathy, a condition in which tiny blood vessels in the back of your eyes can become fragile, rupture and hemorrhage. Often one doesn't have any symptoms, until there is a hemorrhage and you can't see out of the eye. Regular eye exams by an eye specialist can identify this problem early and provide treatment before it becomes dangerous. Retinopathy that is undetected and untreated is the leading cause of blindness.



### **Pregnancy Complications:**

Uncontrolled type 1 diabetes puts pregnant mothers at risk for complications, including miscarriage, still birth, and birth defects. As a mother you'll also have a higher risk for pregnancy-induced high blood pressure, preeclampsia, ketoacidosis, and retinopathy. It is extremely important to keep your blood sugar under control while pregnant. During pregnancy, people with type 1 diabetes are cared for by a team including an obstetrician, endocrinologist, nutritionist, and diabetes educator.



### **Bladder and Vaginal Infections:**

Type 1 diabetes that is uncontrolled and results in high blood glucose can negatively affect your body's ability to fight off infections of all kinds. As a result, women with uncontrolled blood sugar have a higher risk of bladder infections and vaginal yeast infections.



### **Erectile Dysfunction:**

This is a strong indicator of impending heart disease

## How Did My Doctor Reach a Type 1 Diabetes Diagnosis?

Your doctor has several different tests that can help to diagnose someone with diabetes.

While examining a person's symptoms can help doctors come to a diagnosis of type 1 diabetes, it's likely that you or your family member also underwent a random or fasting blood glucose test as well as an A1c blood test. The A1c is also known as a glycated hemoglobin test. This test takes a measurement of how much sugar is attached to your blood cells. If your blood cells have a high amount of sugar, you have had above normal blood sugar levels for the past 2-3 months. If the A1c is 6.5% or greater, a diagnosis of diabetes is made. The diagnosis is also made when a random glucose is 200 or greater along with the symptoms of high glucose or when a fasting glucose is 126 or greater. To confirm the diagnosis, one of these tests will be repeated.

## Managing Your Diabetes

Keeping your blood sugar under control can help reduce your symptoms and protect you from complications. There are many different things you can do to help yourself or your family member keep blood sugar at a healthy level. Your doctor,

diabetes educator, and nutritionist will give you advice that is more specific to your needs, but there are a few general areas that will help keep you at your best.

### **EATING WELL:**

Few things have as much influence over your blood sugar levels as your diet. Be mindful of what you eat, especially the amount of carbohydrates in your food. Work with your doctor and diabetes team to better understand how the level of carbohydrates in your food interacts with your particular insulin regimen, body weight, activity level, and nutritional goals. In general, though, a diet centered around foods that are high in fiber, low in sodium, and full of nutrients will help keep you satisfied, better control your glucose, and prevent weight gain.

### **EXERCISE:**

Did you know that exercise helps make your cells more sensitive to insulin? That's why regular exercise is such an important part of managing Type 1 diabetes. If your child has diabetes, engaging in fun activities with him or her can help build habits that will keep them healthier throughout their life. It is important to learn from your diabetes team how to adjust your insulin and carbohydrate intake according to your blood sugar level and the type of exercise you will be doing. Exercise can lead to hypoglycemia several hours later, so extra glucose testing in the hours after exercise is important.

### **MONITOR YOUR BLOOD SUGAR:**

Your doctor will talk with you about a healthy target range for your blood sugar levels. The best way to make sure you're staying in this target is to monitor your blood sugar on a regular basis. Most people with type 1 diabetes need to check their blood sugar at least four times a day. Don't worry if this sounds overwhelming: there are tools that will help make blood sugar monitoring easy and as pain-free as possible. Look to your doctor and diabetes team for specific guidance on your blood sugar monitoring needs. You may be asked to use a continuous glucose sensor to better understand what your specific needs are related to food, exercise and insulin to maintain safe glucose levels.

### **FOLLOW YOUR DOCTOR'S INSTRUCTIONS FOR MEDICATION:**

If you have type 1 diabetes, you will need insulin therapy to keep your blood sugar levels in their target range. Because insulin is broken down by the stomach if taken in pill form, you will need to use a fine needle and syringe, an insulin pen, or an insulin pump to administer insulin. There are several different types of insulin:





**Rapid-acting insulin:**

This type of insulin starts to work as quickly as a few minutes after you inject it. It reaches its peak performance in about 1 hour, and will keep working for 2 to 4 hours.



**Short-acting insulin:**

Also called “regular” insulin, this type of hormone starts to work after about 30 minutes, peaks about 2 to 3 hours after injection, and then keeps working for about 3 to 6 hours.



**Intermediate-acting insulin:**

This insulin type takes about 2 to 4 hours to reach the blood stream. It peaks between 4 and 12 hours after injection, and will remain effective for 12 to 18 hours.



**Long-acting insulin:**

Long-acting insulin takes several hours to reach the blood stream, but will help to regulate glucose levels evenly over a period of 24 hours.

Knowing the best type of insulin to keep your blood sugar steady depends on many factors, including how your blood sugar levels change throughout the day. Your doctor may prescribe different types of insulin for different times of day, or he or she might recommend a mixture of two or three insulin types. Carefully monitoring and recording your glucose levels throughout the day can give your doctor the information he or she needs to create an accurate and effective insulin regimen.

## Helping Your Child or Teenager Manage Type 1 Diabetes

It can be heartbreaking to watch your child struggle with type 1 diabetes. While you can't get rid of diabetes for your child, you can be invaluable in helping them manage it. Being sensitive to your child's physical and emotional needs and providing support and encouragement can help your child better manage their blood sugar and feel happier and healthier.

## Type 1 Diabetes in Young Children

When young children are diagnosed with Type 1 diabetes, they often have difficulty understanding what is happening in their body. All of the sudden changes that come after their diagnosis (like monitoring their glucose, injecting insulin, and making changes to their diet) can be overwhelming. As a result, they might act out or even become hostile towards you. Understand that these reactions come from confusion and a feeling of powerlessness, not from anything you've done wrong.

The best way to help young kids manage their diabetes is to empower them to take care of themselves at age appropriate times. It can be tempting to become overprotective when your child has type 1 diabetes. Fight this urge! Your child will be managing their diabetes for the rest of their life: supervising, encouraging, and supporting them now will help them gain control over their condition. Helping your child become involved in self-care and guiding them to independence in their diabetes management will give them a sense of confidence and control.

## Type 1 Diabetes in Teenagers

The teenage years are difficult for anyone, but if your teen has type 1 diabetes they can be even more stressful. This is especially true as they go through puberty and the changing hormones result in extreme insulin resistance for a period of time, especially during growth spurts. This requires frequent increases in insulin doses which will eventually need to be lowered again when this period is over. Needing to manage their diabetes might make your teen feel 'different' and excluded from his peer group. The pressure to be like everyone else might lead him or her to become less precise in self-care, putting him at risk of complications. Some teens might find the responsibility of taking charge of their diabetes management routine overwhelming, leading to anxiety and frustration. In response, they might make poor choices, like skipping their insulin or going on food binges.

When you see your teenager making poor choices in how he manages his diabetes, you might want to swoop in and take over. While you should never turn your back and allow your teen to ignore the self-care routine, it's important to remember that at this point he/she's craving spontaneity and control.

Talk to your teen openly about what choices are being made, and ask what he/she thinks the consequences might be. Be open in your discussions, and listen to the answers. Consider connecting your teen with type 1 diabetes support groups, where he/she can meet peers dealing with the same issues. Above all, accept that you can't watch over your teen every minute of every day. While you can and should offer support and guidance, in the end it is his/her type 1 diabetes, not yours.

# Type 1 Diabetes Leads to Many Changes

No matter how much your life changes due to your diagnosis, one thing will remain true: type 1 diabetes can be managed. By staying committed to your self-care and open with your doctor and diabetes team, you can create a routine that will limit the impact diabetes has on your life. As a result, you'll feel better and avoid dangerous complications, leaving you to live a life that is long, happy, and healthy.

If you have abnormal cholesterol, want to lose weight or have a hard time controlling your blood glucose levels, we encourage you to try Glucose Balance. Glucose Balance is clinically proven to lower blood glucose, LDL cholesterol and triglyceride levels. It also helps reduce cravings and body fat.

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