

# What is Diabetes and How Is It Treated?

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**Target Audience:** People with diabetes

**Objectives:** Participants will:

1. Be able to state the three types of diabetes and the basic cause of each.
2. Be able to explain the basic treatment required for each type, including general medication requirements, basic food guidelines, blood glucose monitoring and activity recommendations.

**Time Required:** Approximately 30 minutes; for a 15-minute presentation, only present on type 2 diabetes

**Props:**

**For type 1 diabetes:** Baseball cap; large-size sports-theme T-shirt; small rubber football or other sports equipment; oversized syringe made of heavy paper; box of cereal; blood glucose monitor

**For type 2 diabetes:** Paper banner that is pinned or paper-clipped across the body that says, “Lordy, Lordy, Look Who’s 40;” walking shoes; oversized syringe made of heavy paper; a prescription pill bottle; empty margarine container; large potato

**For gestational diabetes:** Large-sized baby-theme (if possible) T-shirt; small pillow; swim suit; oversized syringe made of heavy paper; large, empty juice bottle

**Handouts:** “Diabetes: What Is It?”

## Lesson Plan

*Recruit three volunteers before the presentation to represent each type of diabetes. Have each volunteer put on the outfit appropriate for each type and introduce them:*

1. *Jason, 10 years old—baseball cap and sports-theme T-shirt.*
2. *Ann or David, 45 years old—banner across body.*
3. *Sue, 30 years old—baby-theme T-shirt with pillow underneath to represent pregnancy.*

There are three main types of diabetes. Can anyone tell me what they are?  
(Participants try to name the three types of diabetes.)

Yes, the three types are type 1 diabetes (once called juvenile-onset or insulin-dependent diabetes), type 2 diabetes (once called maturity-onset or noninsulin-dependent diabetes), and gestational diabetes. Looking at the three volunteers up here,

can you tell me which person has which kind of diabetes? (*Participants try to identify which person has each type of diabetes.*)

**1. Let's begin with Jason.** As we said, he is 10 years old and has type 1 diabetes. While type 1 diabetes is diagnosed more often in children and young adults, it can occur at any age. Can anyone tell me what caused his diabetes? (*Participants try to explain cause.*)

Jason has diabetes because his body produced antibodies that destroyed the cells in his pancreas that make insulin. We are not sure why this happens, but some experts believe that Jason may have inherited the tendency for getting diabetes. A virus may have triggered the disease.

The pancreas is an organ near the stomach needed for digestion. Without insulin, Jason's body cannot use the food he eats for energy. Because his cells cannot use the blood glucose (sugar), which is the digested form of his food that his body uses for energy, he basically begins to starve. But there is a medication he can use that allows his cells to use the glucose circulating in his blood for energy. What is this medication? (*Participants answer.*)

Yes, it's insulin. (*Give "Jason" one of the paper syringes.*) Insulin is a hormone that helps get the glucose into the cell so it can be used for energy. Without it, Jason would eventually die. Currently, it must be injected with a syringe or pumped into the body by an insulin pump. It can't be taken by mouth.

Since Jason is on insulin, does he need any special meal plan to control his diabetes? (*Participants answer.*)

Yes, Jason needs to eat according to a controlled carbohydrate meal plan so his blood glucose level will not get too high. (*Give "Jason" the box of cereal.*) When we talk about carbohydrates, we are talking about starches and sugars in all of his food and drink, including natural sugars, such as fructose and lactose from fruit and milk. It's not just table sugar that Jason needs to control. Most people with type 1 diabetes now count carbohydrate grams to control their blood glucose levels after meals. This carbohydrate can be from starches or sugars. They try to eat the same amount of carbohydrate at each meal. If they eat more or less carbohydrate, they need either to increase or lower their insulin amount or they will become hypo- or hyperglycemic (too low or too high of a blood glucose level). Both hypo- and hyperglycemia are dangerous to Jason's health.

Is physical activity good for Jason? (*Hand "Jason" the football.*) Yes, Jason's heart will benefit if he is active, but he will need to balance his food and insulin so his activity doesn't lower his blood glucose too much. More activity can cause hypoglycemia if insulin is not reduced and/or food is not increased correctly. Jason also should not exercise if his blood glucose level is too high, because he will not have enough insulin to help his cells get the energy they need during the activity.

How will Jason know if his blood glucose is under control? The only way to truly know how medication, food, or activity affects the blood glucose level is to test a small sample of blood with a blood glucose monitor. (*Give "Jason" the monitor.*) This monitor shows a

person's blood glucose reading in just a few seconds. By monitoring several times a day and keeping records of his insulin doses, food, activity, and blood glucose readings, Jason can adjust his lifestyle so his blood glucose stays close to the range that his doctor recommends.

**2. Now let's talk about Ann (or David).** We said that Ann has type 2 diabetes. Does anyone know why Ann has diabetes? (*Participants try to guess.*)

Ann's diabetes is different from Jason's. When Ann got diabetes her pancreas was still making insulin. In fact, Ann may have been making a lot of insulin, but for some reason it either was not enough or her body was unable to use it. We call this inability to use insulin "insulin resistance."

Most people who get type 2 diabetes have what I call the three O's. They are Over 40, Overweight, and Out-of-shape. Unfortunately, because more and more people are overweight and out-of-shape at younger ages, we are seeing type 2 diabetes in people who are much younger than 40—even in children and teenagers.

Fat cells do not use insulin well, so overweight people tend to be insulin resistant. Also, physical activity makes our cells more sensitive to insulin. So when we are inactive we become insulin resistant.

So, guess what Ann needs to do to control her diabetes? That's right. She needs to eat fewer calories, with controlled amounts of carbohydrate and fat, so she can lose some weight. (*Give Ann the potato and the empty margarine container.*) She also needs to start exercising at least 30 minutes a day most days of the week, so she can develop more muscle, which uses insulin better than fat. (*Give Ann the walking shoes.*)

Will Ann need to monitor her blood glucose level? Yes! (*Take the monitor from Jason and give it to Ann.*) It's just as important for Ann to keep records of her blood glucose levels, food intake, and activity as it is for Jason. Both may get diabetic complications if they do not try to keep their blood glucose levels near the target ranges their doctors suggest. These complications include blindness, nerve damage, increased risk for heart disease and stroke, kidney failure, and amputation of the feet or legs. These complications can be prevented or delayed if the blood glucose level is kept as near to normal as possible.

If Ann pays close attention to her eating and exercise habits, she may not need medicine for her diabetes. However, many people with type 2 diabetes do need help in controlling their blood glucose levels. At first, Ann may take a pill or several different pills to control her diabetes (*give her the prescription bottle*), but eventually she may need insulin injections as well (*hand her the paper syringe*).

**3. Finally, let's talk about Sue.** Because she was over 25 when she became pregnant, and diabetes is in her family, her doctor screened her for gestational diabetes when she was about 24 weeks pregnant. That blood test result was high, so she had more blood tests done over several hours. When those blood test results were also high, she was diagnosed with gestational diabetes. Does this mean that Sue will have diabetes forever? (*Participant answer.*)

No, Sue has a special type of diabetes that occurs only during pregnancy. Once she delivers, she will be tested again to be sure she doesn't really have type 2 diabetes. Even if she doesn't have diabetes after her pregnancy, she is more likely to develop type 2 diabetes as she gets older, especially if she is overweight and inactive. It is almost as if gestational diabetes is a warning sign telling a woman to change her lifestyle in order to decrease her risk for type 2 diabetes.

Why does Sue have gestational diabetes? Gestational diabetes occurs because of the hormonal changes that occur in some women during pregnancy, which has affected her ability to regulate the metabolism of sugars. Again, she is insulin resistant. By watching her carbohydrates very carefully (*give Sue the empty juice bottle*), and by becoming active (*give her the bathing suit*), she may be able to control her blood glucose levels without medicine. However, if that is not enough, she may also need some insulin. (*Hand her a paper syringe.*) Women who are pregnant can't take diabetes pills because the pills can harm the baby.

Why is diabetes a concern during pregnancy? If the blood glucose levels aren't kept as near to normal as possible, Sue's baby may get too large and either be born too early or have difficulty during delivery. The baby may even be stillborn. How will Sue know if her blood glucose levels are in control? Like Jason and Ann, she will need to check her blood glucose levels often. (*Give Sue the blood glucose monitor.*)

So, now you know about the three types of diabetes. Let's review each type to see what you have learned. (*Point to each of the three volunteers as you ask the following questions.*)

What caused Jason's type 1 diabetes?

What medication will he need for the rest of his life?

How will he know what his blood glucose levels are?

What changes in his eating and exercise habits will he need?

What probably caused Ann's (or David's) type 2 diabetes?

What eating and activity changes will Ann or David need to make?

How will Ann or David know if his or her diabetes is under control?

What medication(s) might she or he need?

What caused Sue's gestational diabetes?

What eating and exercise recommendations will she need to follow?

How will she know if her blood glucose is in a safe range?

Will she be able to take diabetes medication?

What can Sue do to reduce her risk for type 2 diabetes later in life?

*(Distribute “Diabetes: What Is It?” handout.)*

You have all been excellent students today. Please give our volunteers a hand.

“Your Guide to diabetes: Type 1 and 2”

[www.niddk.nih.gov/health/diabetes/pubs/type1-2/index.htm](http://www.niddk.nih.gov/health/diabetes/pubs/type1-2/index.htm)

“Are You At Risk for Gestational Diabetes”

[www.nichd.nih.gov/publications/pubs/gest-diabetes.htm](http://www.nichd.nih.gov/publications/pubs/gest-diabetes.htm)