

Diabetes Overview

What is diabetes?

Diabetes is a condition where there is a problem in the natural process that keeps blood glucose (sugar) within a certain range. Diabetes means that you have too much **glucose** in your blood. Before you can understand diabetes, you must first understand the importance of glucose and the natural process of how the body uses it.

What is Glucose?

Everybody has glucose in their blood. The brain and cells use glucose in the body as energy or fuel. Glucose gets into the blood in two ways:

- 1) The body breaks down foods and beverages, especially those containing carbohydrates, into glucose.
- 2) The liver stores glucose and releases it when needed, such as when we are not eating, or if the body needs more glucose (like for exercise).

In order for the glucose to get out of the blood and into the cells for use as energy, it requires the help of **insulin**. The pancreas is the organ in your body that makes insulin.

What is the Pancreas?

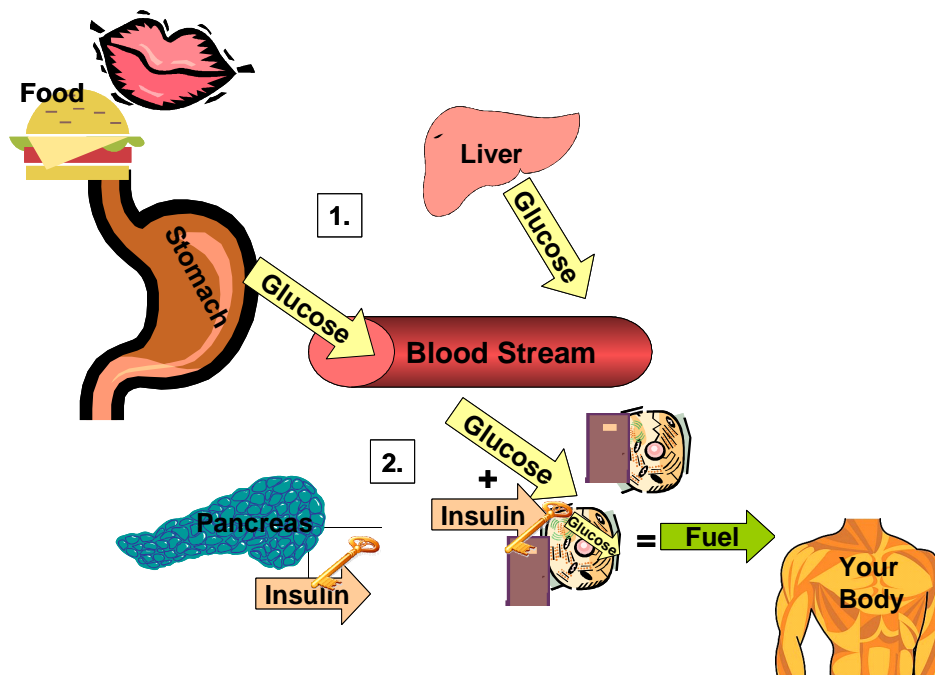
The pancreas is an organ located below and behind your stomach. It is the job of your pancreas to control glucose levels in the blood by increasing or decreasing certain hormones. Hormones are chemical messengers in the body. There are two main hormones that help regulate the amount of glucose in the blood:

- **Insulin** is a hormone made by beta cells inside the pancreas. Insulin is required for glucose to get into the cells. Insulin is like a **KEY** that unlocks the cell door so glucose can get in. When glucose levels in the blood get high (like after eating), the pancreas releases insulin. The insulin then takes the glucose out of the blood and into the cells. Insulin makes blood glucose levels lower.
- **Glucagon** is a hormone made by the alpha cells inside the pancreas. When glucose levels in the blood get low (like overnight when you are not eating or when you are exercising), the pancreas releases glucagon. Glucagon tells the liver to release stored glucose into the blood. Glucagon works opposite of insulin and makes blood glucose levels higher.



The constant balance between insulin and glucagon is what keeps blood glucose levels normal. Normal blood glucose levels throughout the day are about 80 to 120 mg/dL. Even after eating a meal, the body keeps blood glucose levels less than about 140 mg/dL. Before you had diabetes, your body regulated your blood glucose levels and you didn't have to think about it.

See the diagram on the next page which may help you understand the process better.



The figure above helps to describe the normal process of how the body uses glucose for energy.
 Part 1 - Glucose getting into the blood.
 Part 2 - Insulin's role in helping glucose into the cell in order to provide fuel.

When is diabetes diagnosed?

Diabetes is diagnosed if you have either of these blood results:

- Your fasting (no food for 8 or more hours) blood glucose level is above 125 mg/dL
- Your blood glucose level is over 200 mg/dl when checked at a lab.

How did I get diabetes?

There are two main types of diabetes:

Type 1 diabetes is an autoimmune disease. For reasons that are still unclear, the body's immune system attacks the beta cells in the pancreas. The body can no longer make insulin. Therefore, glucose cannot leave the blood and the cells cannot get the glucose they need to fuel the body properly. The only way to treat this kind of diabetes is with insulin.

Type 2 diabetes is the more common type of diabetes and usually develops over time. Risks for developing type 2 diabetes include a number of things:

- | | |
|--------------------------------------|---|
| √ family history of diabetes | √ being overweight |
| √ inactivity | √ unhealthy eating habits |
| √ having diabetes during a pregnancy | √ advanced age |
| √ ethnicity | √ giving birth to a baby that weighs more than 9 pounds |

With type 2 diabetes, there are several problems that cause high blood glucose levels:

1) Insulin Resistance

Even though insulin is in the blood, the cells in the body are **resistant** to its action. Insulin (the key) cannot unlock the doors on the outside of the cells so glucose can get in. Therefore, glucose stays in the blood longer.

2) Increased Glucose Production by the Liver

The liver is putting too much glucose into the blood even when it is not needed.

3) Insulin Deficiency

The body cannot make as much insulin as it needs.

Type 2 Diabetes can be treated with:

- changes in your diet
- increasing physical activity/exercise
- weight loss
- oral medications and/or insulin

You and your health care provider will decide on how to best control your blood glucose.

What are the signs and symptoms of diabetes?

- feeling thirsty
- peeing more than normal
- feeling tired
- having blurry vision
- having cuts or sores that take a long time to heal
- having frequent infections (yeast or urinary tract)
- losing weight even though you are not trying to

Many people do not have any signs or symptoms of diabetes. It is a good idea to have your blood glucose checked by your health care provider.

Why should I care about diabetes?

Regardless of the type of diabetes you have, it is very important to work with your health care team to improve your blood glucose levels. High glucose levels can lead to dangerous health issues and affect many other organs in the body. Long term complications of uncontrolled diabetes include heart disease, a stroke, kidney failure, dental problems, nerve damage, blindness, amputations, sexual problems, infections (urinary tract, yeast, blood, etc.). Many of these are difficult to treat.

When you have diabetes it is very important to work with your health care team to improve your blood glucose levels and to learn about your diabetes so that you can take care of yourself and live well.