

# Diabetes

## BIRTH DEFECT RESEARCH FOR CHILDREN



### What is Type 1 Diabetes?

Diabetes is a life-long disease of high blood sugar. When we eat most of the food is broken down into glucose, the form of sugar in the blood. Normally, the pancreas, a large gland located behind the stomach, produces insulin (a hormone) which moves the glucose from the bloodstream to the body's cells to be used as fuel. In Type 1 Diabetes, the pancreas produces little or no insulin. Without adequate insulin, sugar builds up in the blood instead of going to the cells. Therefore, the body isn't able to convert nutrients into necessary energy. Over time, high blood sugar levels have the potential to damage various organs of the body. Type 1 Diabetes is usually diagnosed in children and young adults and is sometimes called Juvenile Diabetes. There are two other types of Diabetes, Type 2 and Gestational Diabetes. In Type 2 Diabetes, the pancreas usually produces enough insulin, but the body does not use it effectively. Gestational Diabetes develops only during pregnancy and usually disappears after childbirth.



# Type 1 Diabetes



How many children have Type 1 Diabetes?

Type 1 Diabetes occurs in approximately one out of every 600 children under the age of 15. More than one million Americans have Type 1 Diabetes.

Approximately 30,000 Americans are diagnosed each year, of which 13,000 are children. That equates to 35 children each day. It affects boys and girls equally, and is more common in white children than in nonwhite children. Type 1 Diabetes accounts for 5-10% of all diagnosed diabetes in the United States.

How do you know if your child has Type 1 Diabetes?

Although the cell destruction of Type 1 Diabetes takes place over a long period of time, the symptoms usually develop over a short period of time, often quite suddenly. The warning signs include: extreme thirst, frequent urination, sudden vision changes, weight loss in spite of increased appetite, fruity odor on breath, heavy or labored breathing, sugar in urine, drowsiness or lethargy, and unconsciousness. Doctors diagnose diabetes on the basis of high levels of glucose in the blood. Different types of diagnostic tests are used, but the preferred method is the fasting plasma glucose test which requires an overnight fast and drawing of a single blood sample which is then analyzed at a laboratory. A diagnosis of Diabetes is made after two positive tests on different days.

What causes Type 1 Diabetes?

The exact cause of Type 1 Diabetes is not known, but genetic and environmental factors seem to play a role. Scientists believe that the body's immune system attacks and destroys the insulin-producing cells of the pancreas, called islets. Type 1 Diabetes is not caused by obesity or eating excessive amounts of sugar, two common myths about Type 1 Diabetes. There is no known prevention for Type 1 Diabetes.

How can you help a child with Type 1 Diabetes?

The goal of treatment is to keep your child's blood sugar levels as close to normal as possible to help him/her feel better now and to stay healthy in the

future. Specialists such as an endocrinologist, dietician, and diabetes educator can help teach the necessary skills for diabetes management. You will need to help your child make wise food choices, properly time his or her meals, get regular exercise, receive proper insulin administration, and control blood pressure and cholesterol. Your child must receive the proper amount of insulin daily. Determining the amount of insulin to be administered requires testing your child's blood sugar several times per day. This involves pricking your child's fingers for blood. Support in behavioral and social areas is also essential for successful management. It is important to encourage the independence your child needs to manage Type 1 Diabetes and feel like s/he has control over her/his environment.

What's in the future for a child with Type 1 Diabetes?

Although there is no cure, many people with Type 1 Diabetes live long, healthy lives. Your child, however, will continue to need daily insulin. Many factors can affect your child's blood-sugar control including an unhealthy diet, periods of extra physical activity, periods of growth, hormonal changes, illness, infection, medications, and fatigue. Diabetes management, including blood glucose monitoring, proper insulin administration, healthy eating, and physical exercise, is important in preventing complications of Type 1 Diabetes. These can include kidney failure, eye problems, nerve damage, amputations, blindness, stroke, and heart attack. Type 1 Diabetes usually results in some reduction in quality of life and shortens the average life span by 15 years.

Recent research advances are encouraging for individuals with Type 1 Diabetes. Progress is being made in insulin administration that includes an external pump to deliver insulin and replace daily injections. Another new method of insulin delivery is an insulin pen which is a more convenient way to carry insulin. Other approaches under development include an inhaled insulin delivery

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system, an insulin patch, and an implantable insulin pump. Also, a noninvasive blood glucose monitoring device is now available for adults with diabetes. Researchers are currently working on a new antibody drug designed to prevent the immune system from destroying insulin-producing cells. Although not designed as a prevention or cure, researchers hope it will enable patients to continue producing their own insulin for longer periods. Researchers are also conducting clinical trials of an artificial pancreas which continuously delivers insulin under the skin and maintains blood sugar at a constant level. Other research is focusing on pancreas transplantation and islet cell transplantation.

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