

Type 1 Diabetes

Our bodies need fuel for proper function. **Glucose** (sugar) is the fuel that our cells use to produce energy. In order to process the sugar we eat in various foods, our bodies produce **insulin**. Insulin is a hormone made by **beta cells**, clusters of cells in the pancreas (an organ located in the upper abdomen).

In **type 1 diabetes**, the beta cells in the pancreas are unable to make insulin because of **autoimmune** disease. This means that the body's immune system makes **autoantibodies** that attack and destroy the pancreatic beta cells. **Type 2 diabetes** is the result of the body's inability to properly use the insulin made by the pancreas and almost always occurs in adults and children who are overweight. Because type 1 diabetes usually starts in childhood, it is sometimes called **juvenile diabetes**. Type 1 diabetes is a serious illness that cannot be cured, but it can be treated and controlled. The September 26, 2007, issue of *JAMA* includes an article about children at risk for type 1 diabetes. This Patient Page is based on one previously published in the October 22/29, 2003, issue of *JAMA*.

CHARACTERISTICS OF UNTREATED TYPE 1 DIABETES

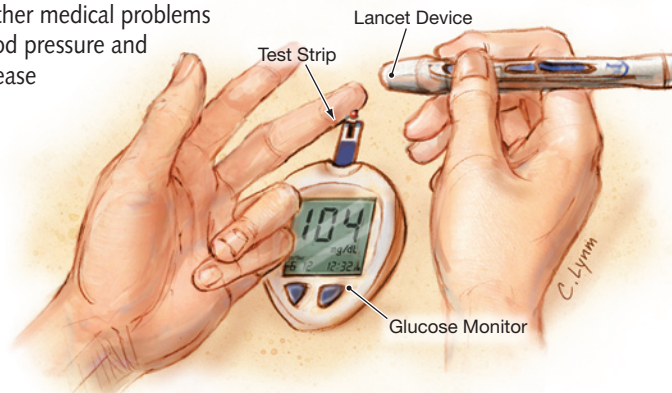
- Thirst
- Frequent urination
- Weight loss
- Poor infant growth
- High blood glucose level

COMPLICATIONS OF TYPE 1 DIABETES

- **Diabetic ketoacidosis**—a life-threatening medical condition, also known as diabetic coma, caused by the body's need to break down fats for energy instead of using sugars
- Kidney failure
- Diabetic **retinopathy**—damage to the retina of the eye
- **Gastroparesis**—the stomach does not empty properly, allowing partially digested food to accumulate
- Diabetic **neuropathy**—loss of sensation and nerve control of body functions
- Increased occurrence of infections
- Poor circulation, especially in the feet and legs
- Coronary heart disease

MANAGEMENT OF TYPE 1 DIABETES

- Insulin injections or an insulin pump—oral medications do not work
- Diet
- Exercise
- Frequent checks of blood glucose levels
- Management of other medical problems including high blood pressure and coronary heart disease
- Screening for and early recognition of diabetes complications
- Kidney dialysis or transplantation for kidney failure



FOR MORE INFORMATION

- National Institute of Diabetes and Digestive and Kidney Diseases
www.niddk.nih.gov
- American Diabetes Association
www.diabetes.org

INFORM YOURSELF

To find this and previous JAMA Patient Pages, go to the Patient Page link on JAMA's Web site at www.jama.com. Many are available in English and Spanish. A Patient Page on diabetes and the kidney was published in the June 25, 2003, issue; one on insulin was published in the May 7, 2003, issue; one on diabetes was published in the May 15, 2002, issue; one on type 2 diabetes in children was published in the September 26, 2001, issue; and one on managing type 2 diabetes was published in the January 12, 2000, issue.

Sources: National Institute of Diabetes and Digestive and Kidney Diseases, American Diabetes Association

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