

Type 1 Diabetes (Insulin Dependent Diabetes Mellitus; Juvenile-onset Diabetes)

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Definition

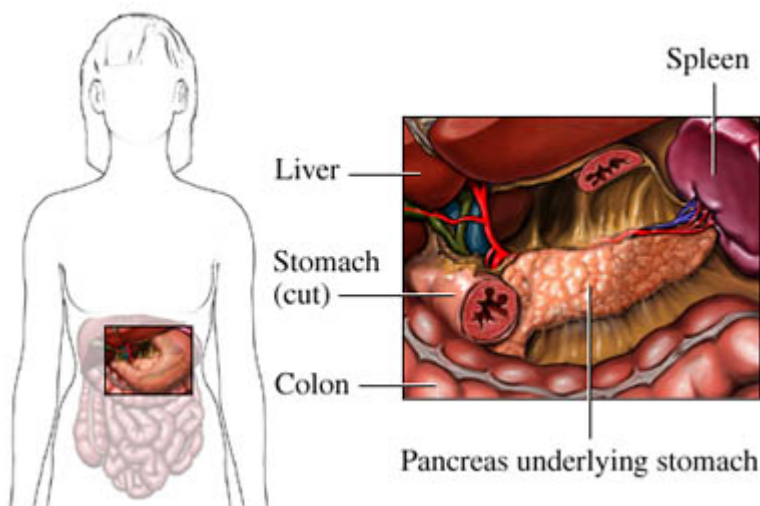
Type 1 diabetes is a disorder in which the body does not make enough insulin to meet daily needs. Insulin is a hormone that helps the body convert food into energy. Without insulin, glucose (sugar) from the food you eat cannot enter cells and glucose builds up in the blood. Your body tissues become starved for energy.

Type 1 diabetes usually begins in children and young adults. If type 1 diabetes is not treated effectively, long-term, high blood sugar levels can damage the kidneys, eyes, nerves, and other tissues.

Causes

Most cases of type 1 diabetes are caused by the body's immune system attacking and destroying insulin-producing cells in the pancreas. The current theory is that people whose genes make them prone to this disease are exposed to something in the environment that triggers an immune system attack on the pancreas. The trigger may be a virus, a food, a chemical, or a drug.

Current evidence suggest that enterovirus infection (enteroviruses are common and usually cause diarrhea and fever with or without rash) may contribute to the development of diabetes in some children. Children with relatively high birth weights are more likely to get diabetes than are those with lower weights.



Risk Factors

A risk factor is something that increases your chance of getting a disease or condition. Studies show that the following may be risk factors for developing type 1 diabetes:

- Family history (parent, sibling) of type 1 diabetes
- Bottle-feeding or short duration of breastfeeding
- Birth weight above 4500 grams
- Other autoimmune illness, including:
 - Hashimoto's disease
 - Graves' disease
 - Addison's disease
 - Pernicious anemia
 - Ethnicity: Northern European or Mediterranean
 - Celiac disease
 - Vitiligo
 - Hypogonadism

Symptoms

- Weight loss
- Increased urination
- Extreme thirst
- Hunger
- Fatigue, weakness
- Blurry vision
- Irritability
- Poor wound healing
- Headaches
- Weight loss
- Reduced or no appetite
- Impotence

Insulin-producing cell destruction may occur so quickly that ketoacidosis is the first sign of a problem. **Symptoms of ketoacidosis include:**

- Vomiting and nausea
- Abdominal pain
- Dehydration (not enough fluid in the body)
- Drowsiness
- Abnormally deep and fast breathing
- Coma
- Dry skin and mouth
- Fruity breath odor
- Rapid pulse
- Low blood pressure
- Flushed face

Diagnosis

The doctor will ask about your symptoms and medical/family history, and perform a physical exam.

Type 1 diabetes is diagnosed based on the results of blood tests and other criteria, including:

- Symptoms of diabetes and a random blood test revealing a blood sugar level greater than or equal to 200 milligrams per deciliter (mg/dl)
- Blood sugar tests after you have not eaten for eight or more hours that reveal blood sugar levels greater than or equal to 126 mg/dl on two different days
- A glucose tolerance test measuring blood sugar two hours after you consume glucose is rarely necessary to diagnose type 1 diabetes
- Some children receive testing for insulin levels or anti-pancreas antibodies to confirm the diagnosis of type 1 diabetes

Treatment

Diabetes treatment aims to maintain blood sugar at levels as close to normal as possible. Regular medical care is essential for preventing or delaying complications.

Insulin

Insulin by injection or inhalation replaces what the pancreas would have produced and is essential for life. Insulin doses may be adjusted based on results of blood-sugar tests conducted prior to meals and at bedtime. You will need to administer insulin two, three, or more times daily or wear an insulin pump that continually supplies a small amount of insulin. The pump connects to tubing and a small needle or catheter under the skin.

Diet

- Follow a balanced meal plan, eating consistent and moderate amounts of food at regular times each day.
- Do not skip meals.
- Eat plenty of fruits, vegetables, and fiber.
- Eat limited amounts of fat.
- Eat moderate amounts of protein and low-fat dairy products.
- Avoid foods high in sugar.
- Eat a bedtime snack with protein and a starchy food.
- Keep a record of the food you eat to help a dietitian or doctor revise your nutritional needs.

Exercise

Exercise is encouraged when blood sugar levels are under control and there are no complications. Follow your doctor's recommendations for activity levels and restrictions. You may need to adjust your insulin regimen or diet to compensate for low glucose levels associated with exercise.

Blood Sugar Testing

Checking blood sugar levels during the day helps you track the amount of glucose in your blood. Testing is easy with a blood glucose monitor. Keep a record of the results to show the doctor. Your treatment plan may change based on your test results.

Pancreatic Transplantation

This procedure is recommended in the following setting:

- Severe kidney disease
- Acute diabetic complications or emergencies not preventable by insulin
- Severe emotional problems from injecting self with insulin
- Severe diabetic complications

Prevention

Researchers are studying different immunosuppressive treatments to prevent type 2 diabetes in high-risk patients with antibodies for pancreatic beta cells.

RESOURCES:

American Diabetes Association
<http://www.diabetes.org>

Canadian Diabetes Association
<http://www.diabetes.ca>