

Fox 8 House Calls:

Type 1 Diabetes – Info and Fact Sheetⁱ

Type 1 diabetes can occur at any age, although it is most often diagnosed in children, adolescents, or young adults.

Insulin is a hormone produced by special cells, called beta cells, in the pancreas. The pancreas is found behind your stomach. Insulin is needed to move blood sugar (glucose) into cells, where it is stored and later used for energy. In type 1 diabetes, beta cells produce little or no insulin.

Without enough insulin, glucose builds up in the bloodstream instead of going into the cells. The body is unable to use this glucose for energy. This leads to the symptoms of type 1 diabetes.

The exact cause of type 1 diabetes is unknown. Most likely it is an autoimmune disorder. An infection or some other trigger causes the body to mistakenly attack the cells in the pancreas that make insulin. This kind of disorder can be passed down through families.

Symptoms

These symptoms may be the first signs of type 1 diabetes, or may occur when the blood sugar is high:

- Being very thirsty
- Feeling hungry
- Feeling tired or fatigued
- Having blurry eyesight
- Losing the feeling or feeling tingling in your feet
- Losing weight without trying
- Urinating more often

For other people, these warning symptoms may be the first signs of type 1 diabetes, or they may happen when the blood sugar is very high (see: diabetic ketoacidosis):

- Deep, rapid breathing
- Dry skin and mouth
- Flushed face
- Fruity breath odor
- Nausea or vomiting, inability to keep down fluids
- Stomach pain

Low blood sugar (hypoglycemia) can develop quickly in people with diabetes who are taking insulin. Symptoms usually appear when the blood sugar level falls below 70 mg/dL. Watch for:

- Headache
- Hunger
- Nervousness
- Rapid heartbeat (palpitations)
- Shaking
- Sweating
- Weakness

Signs and tests

Diabetes is diagnosed with the following blood tests:

- Fasting blood glucose level -- diabetes is diagnosed if it is higher than 126 mg/dL two times
- Random (nonfasting) blood glucose level -- you may have diabetes if it is higher than 200 mg/dL, and you have symptoms such as increased thirst, urination, and fatigue (this must be confirmed with a fasting test)
- Oral glucose tolerance test -- diabetes is diagnosed if the glucose level is higher than 200 mg/dL after 2 hours
- Hemoglobin A1c test
 - o Normal: Less than 5.7%
 - o Pre-diabetes: Between 5.7% and 6.4%
 - o Diabetes: 6.5% or higher
- Ketone testing is also sometimes used. The ketone test is done using a urine sample or blood sample. Ketone testing may be done:
 - o When the blood sugar is higher than 240 mg/dL
 - o During an illness such as pneumonia, heart attack, or stroke
 - o When nausea or vomiting occur
 - o During pregnancy

The following tests or exams will help you and your doctor monitor your diabetes and prevent problems caused by diabetes:

- Check the skin and bones on your feet and legs.
- Check to see if your feet are getting numb.
- Have your blood pressure checked at least every year (blood pressure goal should be 130/80 mm/Hg or lower).
- Have your hemoglobin A1c test (HbA1c) done every 6 months if your diabetes is well controlled; otherwise, every 3 months.
- Have your cholesterol and triglyceride levels checked yearly (aim for LDL cholesterol levels below 70-100 mg/dL).
- Get yearly tests to make sure your kidneys are working well (microalbuminuria and serum creatinine).
- Visit your eye doctor at least once a year, or more often if you have signs of diabetic eye disease.

- See the dentist every 6 months for a thorough dental cleaning and exam. Make sure your dentist and hygienist know that you have diabetes.

Treatment

Because type 1 diabetes can start quickly and the symptoms can be severe, people who have just been diagnosed may need to stay in the hospital.

If you have just been diagnosed with type 1 diabetes, you should probably have a check-up each week until you have good control over your blood sugar. Your health care provider will review the results of your home blood sugar monitoring and urine testing. Your provider will also look at your diary of meals, snacks, and insulin injections.

As the disease gets more stable, you will have fewer follow-up visits. Visiting your health care provider is very important so you can monitor any long-term problems from diabetes.

You are the most important person in managing your diabetes. You should know the basic steps to diabetes management:

- How to recognize and treat low blood sugar (hypoglycemia)
- How to recognize and treat high blood sugar (hyperglycemia)
- Diabetes meal planning
- How to give insulin
- How to check blood glucose and urine ketones
- How to adjust insulin and food when you exercise
- How to handle sick days
- Where to buy diabetes supplies and how to store them

Insulin

Insulin lowers blood sugar by allowing it to leave the bloodstream and enter cells. Everyone with type 1 diabetes must take insulin every day.

Insulin is usually injected under the skin. In some cases, a pump delivers the insulin all the time. Insulin does not come in pill form.

Insulin types differ in how fast they start to work and how long they last. The health care provider will choose the best type of insulin for you and will tell you at what time of day to use it. More than one type of insulin may be mixed together in an injection to get the best blood glucose control. You may need insulin shots from one to four times a day.

Your health care provider or diabetes nurse educator will teach you how to give insulin injections. At first, a child's injections may be given by a parent or other adult. By age 14, most children can give their own injections.

People with diabetes need to know how to adjust the amount of insulin they are taking:

- When they exercise
- When they are sick
- When they will be eating more or less food and calories
- When they are traveling

Diet and Exercise

People with type 1 diabetes should eat at about the same times each day and try to eat the same kinds of foods. This helps to prevent blood sugar from becoming too high or low. See also:

The American Diabetes Association and the American Dietetic Association have information for planning healthy, balanced meals. It can help to talk with a registered dietitian or nutrition counselor.

Regular exercise helps control the amount of sugar in the blood. It also helps burn extra calories and fat to reach a healthy weight.

Ask your health care provider before starting any exercise program. People with type 1 diabetes must take special steps before, during, and after intense physical activity or exercise. See also: Diabetes and exercise

Managing Blood Sugar

Checking your blood sugar levels at home and writing down the results will tell you how well you are managing your diabetes. Talk to your doctor and diabetes educator about how often to check.

A device called a glucometer can read blood sugar levels. There are different types of devices. Usually, you prick your finger with a small needle called a lancet to get a tiny drop of blood. You place the blood on a test strip and put the strip into the device. You should have results in 30 - 45 seconds.

Keep a record of your blood sugar for yourself and your doctor or nurse. This will help if you have problems managing your diabetes. You and your doctor should set a target goal for your blood sugar levels at different times during the day. You should also plan what to do when your blood sugar is too low or high.

Low blood sugar is called hypoglycemia. Blood sugar levels below 70 mg/dL are too low and can harm you.

To learn more about Type 2 Diabetes and the services offered at Cone Health visit www.conehealth.com, or call 336-832-7000.

ⁱ U.S. National Library of Medicine, *Type 1 diabetes*, <http://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0001350/>