

Nutrition Fact Sheet

An information update for WIC staff

■ TYPE 1 DIABETES

Type 1 diabetes is known as insulin-dependent diabetes mellitus or juvenile diabetes. It usually begins during childhood or adolescence, although some adults develop type 1 diabetes. Five to 10 percent of all people with diabetes have type 1. In type 1 diabetes, the pancreas stops making insulin. Insulin is a hormone that allows the cells to use glucose, a sugar. Without insulin, the body cannot use glucose for energy. Blood-sugar levels rise as the unused sugar builds up. People with type 1 diabetes must take insulin to control blood sugar.

TREATMENT GOALS

The most important treatment goal is to keep blood-glucose values as close to normal as possible. By doing this, the health problems that can occur more frequently in people with diabetes can be delayed or avoided. Some problems can be very serious. They include kidney failure, blindness, and heart disease. Doctors and nurses usually teach each individual how to look for early signs of complications during regular medical visits.

Another treatment goal is to allow people with diabetes to continue their normal activities. This is not an easy task when part of the daily routine must include glucose monitoring, eating certain foods at certain times and giving insulin shots several times each day.

Managing diabetes while participating in normal activities can be especially difficult for children, but participation in the activities of growing up is vital to them. With glucose monitoring, blood-sugar values can remain better regulated during sports, parties and outings. And the new approach to diabetic diets, along with the new insulins, allows for greater flexibility, which makes it easier for people with diabetes to continue their usual lifestyles.

THE MANAGEMENT OF TYPE 1 DIABETES

Keeping blood sugar under control and preventing complications requires the cooperation of the individual with diabetes and that person's health-care team.

There are several facets to diabetes management:

Meal Patterns

A registered dietitian (R.D.) works with clients to individualize meal patterns. Individual food preferences are included in meal plans, which makes following a meal plan easier over a long period of time.

The dietary management of diabetes has become much more flexible in recent years. Previously forbidden food, such as ice cream or candy, can now be eaten in limited amounts within the context of the meal plan. There is also more flexibility in the meal pattern, making it easier for many people to control blood sugar. There are now several choices for diabetic food plans:

The Food Guide Pyramid — The Food Guide Pyramid offers a great deal of flexibility and is easy to learn. People with type 1 diabetes can use the Food Guide Pyramid as they make daily food choices.

Carbohydrate Counting — With carbohydrate counting, only the carbohydrate intake is limited. While protein and fat intake are important for overall health, only carbohydrate intake affects blood sugar. A specified amount of carbohydrate is eaten at each meal and snack. The amount of carbohydrate and insulin are balanced to control blood sugar.

The American Diabetes Association Exchange List — With this plan, the individual calculates the exact amount of carbohydrate, fat, and protein needed at each meal and snack. All the foods must be eaten as listed on the meal plan. Typically, each of the food groups is included at every meal. Insulin balances the food intake to keep blood sugar under control.

People with type 1 diabetes need to eat meals and snacks at the times indicated on their meal plan. Meals should not be more than 4½ or 5 hours apart. Portion sizes and second helpings should be controlled.

People with type 1 diabetes also need to:

- Limit fruits to one small piece for lunch and supper, avoiding fruit juices and fruits at breakfast.
- Limit milk to two cups of skim or fat-free milk per day.
- Avoid foods high in fats.
- Increase the use of high-fiber foods.
- Use sugar substitutes and avoid the use of sugar and sweets.
- Avoid alcoholic drinks.

Glucose Monitoring — Keeping blood sugar levels under control is vital to the long-term health of people with diabetes. An important part of controlling blood sugar is the balance of daily insulin injections with food intake. Glucose monitoring throughout the day helps people decide how much insulin to take before

eating. For glucose monitoring, people test a drop of their blood using a glucometer. Glucose monitoring is usually done before meals.

Physical Activity — Physical activity is an important part of the management of type 1 diabetes. It helps to control both blood sugar and weight. If a person with type 1 diabetes has her blood sugar under control and sufficient insulin, exercise will promote more efficient utilization of glucose. Activity also helps to increase the production of high-density lipoprotein (the beneficial cholesterol) and decrease the chance of developing cardiovascular disease.

Medical Care — Regular medical care is important for people with type 1 diabetes. Physicians help manage each person's diabetes. Insulin and dietary patterns are adjusted to keep blood-sugar levels as close to normal as possible. Despite doing everything exactly as prescribed, a person's blood sugar can sometimes go "out of control." When this happens, it is especially important that a person with diabetes see professionals with expertise in the disease. Blood sugar fluctuates for different reasons in different people. An R.D. or physician with training in diabetes is best able to regulate insulin and give diet advice to control each individual's blood sugar. The doctor will also check to see that the diabetes is not causing other health problems.

THE ROLE OF WIC

WIC staff can help people with type 1 diabetes by providing referrals and information. Specifically, staff can:

Help clients get regular medical care

Women or children with type 1 diabetes who are not receiving regular medical care require referral to a local clinic or physician. Encourage all clients with diabetes to keep their medical appointments and remind all postpartum women with type 1 diabetes to see their doctor

before becoming pregnant again. Birth defects can occur within the first trimester of pregnancy if blood sugar is out of control.

Help clients get nutritional counseling

Clients who are having trouble following their diets or keeping their blood sugar controlled need referral to an R.D. Check with the participant at her next WIC visit to ensure she received the care that she needed.

Provide appropriate group classes

Clients with diabetes will benefit from attending WIC classes on the Food Guide Pyramid, 5 a Day, low-fat food choices and high-fiber foods. People with type 1 diabetes are more susceptible to infection, so classes on food safety or formula mixing can help them prevent food-borne illness.

Encourage clients

Diabetes is a time consuming disease, and there are no vacations from its routine. WIC staff can help by providing people with encouragement to continue the important aspects of their daily care.

Help prevent hospitalizations

Hypoglycemia or low blood sugar can cause poor functioning or even coma. Remind clients to carry hard candies or a fruit roll-up. Eating either can help raise blood sugar quickly and prevent hospitalization if the person becomes hypoglycemic.

Weight Control

Obesity is not a factor in the development of type 1 diabetes. If someone with type 1 diabetes is obese, both diet and insulin will have to be adjusted for weight loss. Refer overweight type 1 diabetics to their physician or R.D. to discuss how to lose weight.

Diabetes Warning Signs

- Frequent urination
- Increased thirst
- Increased hunger
- Unexplained weight loss
- Extreme tiredness

GLOSSARY OF DIABETES TERMS

Diabetic Coma — A severe emergency in which a person is not conscious because the blood glucose (sugar) is too low or too high. If the glucose level is too low, the person has hypoglycemia; if the level is too high, the person has hyperglycemia and may develop ketoacidosis.

Gestational Diabetes — A type of diabetes mellitus that can occur when a woman is pregnant. In the second half of the pregnancy, the woman may have glucose (sugar) in the blood at a higher than normal level. However, when the pregnancy ends, the blood-glucose levels return to normal in about 95 percent of all cases. Women who had gestational diabetes are at an increased risk for developing type 2 diabetes.

Glucose — A simple sugar found in the blood. It is the body's main source of energy; also known as dextrose.

Glucometer — A machine that tests how much glucose (sugar) is in the blood. A drop of blood, usually taken from the fingertip, is placed on the end of a specially coated strip, called a testing strip. The strip is inserted into the glucometer, which reads it and shows the level of blood glucose in a digital window display.

Blood testing is more accurate than urine testing in monitoring blood-glucose levels because it shows what the current level of glucose is at that moment, rather than what the level was an hour or so previously.

Hyperglycemia — Too high a level of glucose in the blood; a sign that diabetes is out of control. Many things can cause hyperglycemia. It occurs when the body does not have enough in-

ulin or cannot use the insulin it does have to turn glucose into energy. Signs of hyperglycemia are a great thirst, a dry mouth, and a need to urinate often. For people with type 1 diabetes, hyperglycemia may lead to diabetic ketoacidosis.

Hyperinsulinemia — Too high a level of insulin in the blood. This term most often refers to a condition in which the body produces too much insulin. Researchers believe that this condition may play a role in the development of type 2 diabetes and in hypertension.

Hypoglycemia — Too low a level of glucose in the blood. This occurs when a person with diabetes has injected too much insulin, eaten too little food, or has exercised without extra food. A person with hypoglycemia may feel nervous, shaky, weak; become excessively sweaty; and have a headache, blurred vision, and hunger. Taking small amounts of sugar, sweet juice, or food with sugar will usually help the person feel better within 10–15 minutes.

Insulin — A hormone that helps the body use glucose for energy. The beta cells of the pancreas (in areas called the *islets of Langerhans*) make the insulin. When the body cannot make enough insulin on its own, a person with diabetes must inject insulin made from other sources, e.g., beef, pork or human insulin (recombinant DNA origin or pork-derived, semisynthetic).

Ketoacidosis — Severe, out-of-control diabetes (high blood sugar) that needs emergency treatment. Ketoacidosis happens when blood sugar levels get too high. This may happen because of illness, taking too little insulin, or getting too little exercise. The body starts using stored fat for energy, and ketone bodies (acids) build up in the blood.

Ketoacidosis starts slowly and builds up. The signs include nausea and vomiting, which can lead to loss of water from the body, stomach pain, and deep and rapid breathing. Other signs are a flushed face, dry skin and mouth, a fruity breath odor, a rapid and weak pulse, and low blood pressure. If the person is not given fluids and insulin right away, ketoacidosis can lead to coma and even death.

Pancreas — An organ behind the lower part of the stomach that is about the size of a hand. It makes insulin so that the body can use glucose for energy. It also makes enzymes that help the body digest food. Spread all over the pancreas are areas called the *islets of Langerhans*. The cells in these areas each have a special purpose. The alpha cells make glucagon, which raises the level of glucose in the blood; the beta cells make insulin; and the delta cells make somatostatin.

References

The Diabetes Dictionary: <http://www.niddk.nih.gov/health/diabetes/diabetes.htm>.



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