

# Diabetes Type 2

Each person has specific toxic exposures along with dietary and genetic weaknesses that are causing their symptoms. Toxic exposures can be inorganic like heavy metals, DDT, VOC's, Radio-active waste and any other chemical-like food additives or pesticides and fertilizers sprayed on the foods. They can also be organic or living organisms like parasites, bacteria, viruses, or fungi. All the different possible combinations make it difficult to accurately address issues unless you have experienced medical professionals mapping through all your different clinical symptoms.

Dr. Marilyn Tucker founded The Vibrant Health Community to do Symptom Mapping to be able to bring a completely personalized plan for each person. When you join the Vibrant Health Community you have your own medical team of doctor, pharmacist and health coach. This Team specializes in Integrative-Complementary Medicine. They will work with your personal physician to bring you to a place of as much natural healing as your body will allow. For those of you that have health issues that require prescription medications, your Team can help introduce natural measures that can reduce the imbalances and complications that inevitably come with prescription medication. This can reduce side effects and possible additional drugs having to be introduced.

## Definition

Type 2 diabetes is a life-long disease marked by high levels of sugar in the blood. It occurs when the body does not respond correctly to insulin, a hormone released by the pancreas. Type 2 diabetes is the most common form of diabetes.

## Alternative Names

Noninsulin-dependent diabetes; Diabetes - type 2

## Causes, incidence, and risk factors

Diabetes is caused by a problem in the way your body makes or uses insulin. Insulin is needed to move glucose (blood sugar) into cells, where it is used for energy.

If glucose does not get into the cells, the body cannot use it for energy. Too much glucose will then remain in the blood, causing the symptoms of diabetes.

There are several types of diabetes. This article focuses on type 2, which is usually accompanied by obesity and insulin resistance.

Insulin resistance means that insulin produced by your pancreas cannot get inside fat and muscle cells to produce energy. Since the cells are not getting the insulin they need, the pancreas produces more and more. Over time, abnormally high levels of sugar build up in the blood. This is called hyperglycemia. Many people with insulin resistance have hyperglycemia and high blood insulin levels at the same time. People who are overweight have a higher risk of insulin resistance, because fat interferes with the body's ability to use insulin.

Type 2 diabetes usually occurs gradually. Most people with the disease are overweight at the time of diagnosis. However, type 2 diabetes can also develop in those who are thin, especially the elderly.

Family history and genetics play a large role in type 2 diabetes. Low activity level, poor diet, and excess body weight (especially around the waist) significantly increase your risk for type 2 diabetes.

Other risk factors include:

- Race/ethnicity (African-Americans, Hispanic-Americans, and Native Americans all have high rates of diabetes)

- Age greater than 45 years
- Previously identified impaired glucose tolerance by your doctor
- High blood pressure
- HDL cholesterol of less than 35 mg/dL or triglyceride level of greater than 250 mg/dL
- History of gestational diabetes

## Symptoms

Often, people with type 2 diabetes have no symptoms at all. If you do have symptoms, they may include:

- Increased thirst
- Increased urination
- Increased appetite
- Fatigue
- Blurred vision
- Frequent or slow-healing infections
- Erectile dysfunction

## Signs and tests

Type 2 diabetes is diagnosed with the following blood tests:

- Fasting blood glucose level -- diabetes is diagnosed if higher than 126 mg/dL on 2 occasions.
- Random (non-fasting) blood glucose level -- diabetes is suspected if higher than 200 mg/dL and accompanied by the classic symptoms of increased thirst, urination, and fatigue (this test must be confirmed with a fasting blood glucose test).
- Oral glucose tolerance test -- diabetes is diagnosed if glucose level is higher than 200 mg/dL after 2 hours.

## Treatment

The first goals are to eliminate the symptoms and stabilize your blood glucose levels. The ongoing goals are to prevent long-term complications and prolong your life. The primary treatment for type 2 diabetes is exercise and diet.

### LEARN THESE SKILLS

You should learn basic diabetes management skills. They will help prevent complications and the need for medical care. These skills include:

- How to test and record your blood glucose (see blood glucose monitoring)
- What to eat and when
- How to take medications, if indicated
- How to recognize and treat low and high blood sugar
- How to handle sick days
- Where to buy diabetes supplies and how to store them

It may take several months to learn the basic skills. Always continue to educate yourself about the disease and its complications, as well as how to control and live with diabetes. Over time, stay current on new research and treatment.

## SELF-TESTING

Regular self-testing of your blood sugar tells you how well your combination of diet, exercise, and medication are working. Tests are usually done before meals and at bedtime. More frequent testing may be needed when you are sick or under stress.

A device called a glucometer can provide an exact blood sugar reading. There are different types of devices. Usually, you prick your finger with a small needle called a lancet, which gives you a tiny drop of blood. You place the blood on a test strip, and put the strip into the device. Results are available within 30 to 45 seconds.

A health care provider or diabetes educator will help set up an appropriate testing schedule for you. You will also be taught how to respond to different ranges of glucose values obtained when you self-test.

The results of the test can be used to adjust meals, activity, or medications to keep blood sugar levels in an appropriate range. Testing provides valuable information for the health care provider and identifies high and low blood sugar levels before serious problems develop.

Accurate record keeping of test results will help you and your health care provide plan how to best control your diabetes.

## DIET AND WEIGHT CONTROL

Meal planning includes choosing healthy foods, eating the right amount of food, and eating meals at the right time. You should work closely with your health care provider to learn how much fat, protein, and carbohydrates you need in your diet. Your specific meal plans need to be tailored to your food habits and preferences.

Managing your weight and eating a well-balanced diet are important. Some people with type 2 diabetes can stop medications after intentional weight loss, although the diabetes is still present. A registered dietitian can be helpful in determining your specific, individual dietary needs. (See diabetes diet.)

## REGULAR PHYSICAL ACTIVITY

Regular exercise is important for everyone, but especially if you have diabetes. Regular exercise helps control the amount of glucose in the blood. It also helps burn excess calories and fat so you can manage your weight.

Exercise improves overall health by improving blood flow and blood pressure. It decreases insulin resistance even without weight loss. Exercise also increases the body's energy level, lowers tension, and improves your ability to handle stress.

The following should be considered when starting an exercise routine:

- Check with your health care provider before starting an exercise program.
- Choose an enjoyable physical activity that is appropriate for the current fitness level.
- Exercise every day, and at the same time of day, if possible.
- Monitor blood glucose levels at home before and after exercise.
- Carry food that contains a fast-acting carbohydrate in case blood glucose levels get too low during or after exercise.
- Wear a diabetes identification bracelet and carry change or a cell phone for a phone call in case of emergency.
- Drink extra fluids that do not contain sugar before, during, and after exercise.
- Changes in exercise intensity or duration may require modification of your diet or medication to keep blood glucose levels in an appropriate range.

## MEDICATION

When diet and exercise do not help maintain normal or near-normal blood glucose levels, your doctor may prescribe medication. Some of the most common types are listed below. They are taken by mouth.

- Oral sulfonylureas (like glimepiride, glyburide, and tolazamide) trigger the pancreas to make more insulin.
- Biguanides (Metformin) tell the liver to decrease its production of glucose, which increases glucose levels in the blood stream.
- Alpha-glucosidase inhibitors (such as acarbose) decrease the absorption of carbohydrates from the digestive tract, thereby lowering the after-meal glucose levels.
- Thiazolidinediones (such as rosiglitazone) help insulin work better at the cell site. In essence, they increase the cell's sensitivity (responsiveness) to insulin. Rosiglitazone may increase the risk of heart problems. Talk to your doctor.
- Meglitinides (including repaglinide and nateglinide) trigger the pancreas to make more insulin in response to how much glucose is in the blood.

If you continue to have poor blood glucose control despite lifestyle changes and taking medicines by mouth, your doctor will prescribe insulin. Insulin may also be prescribed if you have had a bad reaction to other medicines. Insulin must be injected under the skin using a syringe and cannot be taken by mouth.

Insulin preparations differ in how fast they start to work and how long they work. Your healthcare provider will determine the appropriate type of insulin to use and will tell you what time of day to use it.

More than one type may be mixed together in an injection to achieve the best control of blood glucose. Usually injections are needed one to four times a day. Your doctor or diabetes educator will show you how to give yourself an injection.

## FOOT CARE

People with diabetes are prone to foot problems. Diabetes can cause damage to nerves, which means you may not feel an injury to the foot until a large sore or infection develops. Diabetes can also damage blood vessels, which makes it harder for the body to fight infection.

To prevent injury to the feet, a person with diabetes should adopt a daily routine of checking and caring for the feet as follows:

- Check your feet every day, and report sores or changes and signs of infection.
- Wash feet every day with lukewarm water and mild soap, and dry them thoroughly.
- Soften dry skin with lotion or petroleum jelly.
- Protect feet with comfortable, well-fitting shoes.
- Exercise daily to promote good circulation.
- See a podiatrist for foot problems, or to have corns or calluses removed.
- Remove shoes and socks during a visit to the health care provider to remind them to examine your feet.
- Stop smoking because it worsens blood flow to the feet.

## CONTINUING CARE

A person with type 2 diabetes should have a visit with a diabetes care provider every 3 months. A complete examination includes:

- Glycosylated hemoglobin (HbA1c) is a 3-month average of your blood glucose level. This test measures how much glucose has been sticking to red blood cells and other cells. A high HbA1c is an indicator of risk for long-term complications. Currently, the ADA recommends an HbA1c of less than 7% to protect oneself from complications.
- Blood pressure check
- Foot and skin examination
- Ophthalmoscopy examination
- Neurological examination

The following evaluations should be done at least once a year:

- Random microalbumin (urine test for protein)
- BUN and serum creatinine
- Serum cholesterol, HDL, and triglycerides
- ECG
- Dilated retinal exam

## Expectations (prognosis)

The risk of long-term complications from diabetes can be reduced. If you control your blood glucose and blood pressure, you can reduce your risk of death, stroke, heart failure, and other complications. Reduction of HbA1c by even 1% can decrease your risk for complications by 25%.

## Complications

Emergency complications include diabetic coma.

Long-term complications include:

- Diabetic retinopathy (eye disease)

- Diabetic nephropathy (kidney disease)
- Diabetic neuropathy (nerve damage)
- Peripheral vascular disease (damage to blood vessels/circulation)
- High cholesterol, high blood pressure, atherosclerosis, and coronary artery disease

## Calling your health care provider

Call your health care provider immediately if you have:

- Trembling
- Weakness
- Drowsiness
- Headache
- Confusion
- Dizziness
- Double vision
- Lack of coordination

These symptoms can rapidly progress to emergency conditions (such as convulsions, unconsciousness, or hypoglycemic coma).

## Prevention

Everyone over 45 should have blood glucose checked at least every 3 years. Regular testing of random blood glucose should begin at a younger age and be performed more often if you are at particular risk for diabetes.

Maintain a healthy body weight and keep an active lifestyle to help prevent the onset of type 2 diabetes.

## References

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