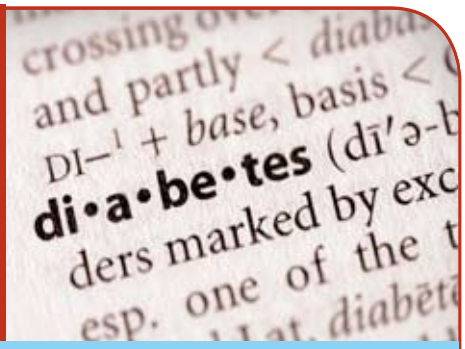
What you need to know about diabetes



What is diabetes?

Diabetes occurs when the human body fails to make insulin, a hormone produced in the pancreas that converts sugars and food into energy, or when the insulin that is produced is not properly used. There are two major types of diabetes:

- **Type I.** Usually diagnosed in young adults or children, Type I diabetes occurs when the body does not produce enough insulin.
- **Type 2.** By far the most common type of diabetes (90 percent of all patients with diabetes have Type 2), this disorder occurs when the body does not produce enough insulin or the body does not properly use the insulin that is produced. Type 2 diabetes typically appears in older patients, although the disease does appear in children as well.

Getting tested

If a doctor suspects diabetes, tests, including a fasting plasma glucose (FPG) test or an oral glucose tolerance test (OGTT), are available. The American Diabetes Association recommends the FPG to diagnose diabetes. When a FPG is conducted, patients with a fasting blood glucose level of 126mg/dL or higher have diabetes.

While some patients show no symptoms at all, Type 2 diabetes typically reveals itself in the following ways:

- increased frequency of urination
- increased thirst
- weight loss
- nausea and vomiting
- blurred vision

Even though a diagnosis of diabetes can seem overwhelming, treatment options exist. How advanced the disease is will affect how it is treated. First and foremost, though, those with diabetes should start with dramatic lifestyle changes incorporating a healthy diet and exercise.

Benefitting from good diet and exercise

Making sure the body is fueled with a well-balanced diet is a great first step to getting a handle on diabetes. In fact, in some cases the right combination of diet and exercise is enough to take the extra stress off of the pancreas and diabetes can be brought completely under control. But even if diet and exercise alone does not tame your diabetes, it still goes a long way to managing glucose levels.

As with any diet, consistency is the key to success. Skipping or delaying meals can have drastic effects on blood glucose levels. Overindulging can have similar effects. If careful, a diabetic can enjoy the same meals as the rest of his or her family.

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Get the facts about managing diabetes

Medications to manage diabetes

Drugs are available to help manage glucose levels. Some classes of drugs can aid insulin production and/or the cells responding to insulin, though eventually the body may require insulin injections. Some drug options, which are available in pills and taken by mouth, include:

- **Insulin secretagogues**, are a class of drugs, also known as sulfonylureas, that work by making the pancreas release more insulin. Taken before meals, they must be taken in proportion to the amount of food to be eaten. (Commonly used drugs in this class include glyburide and glipizide.)
- **Meglitinides**, are a class of drugs that signal the pancreas to produce more insulin. They act by a slightly different mechanism than sulfonylureas and are much faster acting. They are taken within a half hour of meals, usually three times a day and must always be taken with food. (Commonly used drugs in this class include Prandin and Starlix.)
- **Insulin sensitizers**, are a class of drugs, also known as thiazolidinediones. They act by making the body cells more sensitive to insulin. (Commonly used drugs in this class include Actos and Avandia.)
- **Biguanides**, are taken several times a day with meals. These drugs work to decrease the amount of glucose produced in the liver. (A commonly used drug in this class includes metformin.)
- **Glucose absorption inhibitors** (also know as alpha-glucosidase inhibitors), work in the digestive system, slowing the digestion and absorption of carbohydrates. This lowers the jump in glucose levels associated with meals. (A commonly used drug in this class includes acarbose.)

These classes of drugs can be used individually or in combination with one another. As with any drug, there is the risk of side effects. When diabetes reaches a level where treatment with these drugs is not strong enough to control sugar levels, insulin may be added to the treatment regimen.

Facts about insulin

Since insulin, which is normally produced in the pancreas, must be injected, it is delivered in one of three ways.

- Syringes deliver a needle injection, much like any other shot.
- Insulin pens are devices holding one or more pre-measured does of insulin. Shaped like a pen, they work much like a syringe.
- Insulin pumps, which are similar in size to a cell phone and worn on the body, can be programmed to inject a precise amount of insulin at certain times of day according to the patient's needs.

Every diabetic is different, and insulin comes in several varieties to meet the needs of patients:

- Rapid-acting insulin has a peak effect in one to two hours and lasts for four to six hours.
- Short-acting insulin has a peak effect from two to four hours and lasts for six to eight hours.
- Intermediate and long-acting insulins have an even longer effective time and can stabilize insulin levels for up to 24 hours.

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What you need to know about managing glucose levels

Managing blood glucose levels

It is important for diabetics to monitor blood sugar on a regular basis. Managing blood glucose levels and keeping them within normal limits may reduce or prevent diabetes-related complications. Monitoring blood glucose levels also helps determine whether the right amount of diabetes medication is being taken and the effect of meals on glucose levels.

Talk to a healthcare provider. A doctor can advise diabetics on how to check glucose levels and how often with a blood glucose meter, a small computerized machine that "reads" blood glucose.

Check glucose levels. Glucose levels can be checked throughout the day, including in the morning, before/after meals and snacks, and at bedtime. The type of medication taken plays a significant role in how often glucose levels should be monitored.

Keep a log of results. Records of blood glucose checks reveal what works and what doesn't so diabetics can work with their health care team to tailor a treatment that's right for them.

Anyone with diabetes can benefit from checking their blood glucose, though the ADA recommends blood glucose checks if you have diabetes and are:

- taking insulin or diabetes pills;
- undergoing intensive insulin therapy;
- pregnant;
- having a hard time controlling blood glucose levels;
- having severe low blood glucose levels or ketones from high blood glucose levels;
- having low blood glucose levels without the usual warning signs.

Other testing

An A1C (also known as glycated hemoglobin or HbA1c) test gives a picture of average blood glucose control for the past two to three months. The results give a good idea of how well your diabetes treatment plan is working. Although the A1C test is an important tool, it can't replace daily self-testing of blood glucose.

Blood glucose goals

A1C	<7.0%
Preprandial plasma glucose (before a meal)	70–130 mg/dl (5.0–7.2 mmol/l)
Postprandial plasma glucose (after a meal)	<180 mg/dl (<10.0 mmol/l)

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Hyperglycemia and hypoglycemia: What to watch out for

Hyperglycemia (also referred to as “high blood sugar”)

Maintaining a healthy diet, exercising regularly and taking your medication can help you avoid hyperglycemia, which results from too much food, too little insulin or diabetes medicine, and illness or stress. The *onset is gradual,* but can progress to a diabetic coma. Symptoms include:

- extreme thirst
- frequent urination
- dry skin
- hunger
- blurred vision
- drowsiness
- nausea

What can you do?

Check your blood glucose levels. If they are higher than your goal levels for three days, call your health-care provider.

Hypoglycemia (also referred to as “low blood sugar”)

Patients should also be aware of the risk of hypoglycemia, which is caused by too little food, too much insulin or diabetes medicine, or extra exercise. The *onset is usually sudden* and may progress to insulin shock. Symptoms include:

- fast heartbeat or shaking
- sweating and/or anxiousness
- dizziness
- hunger
- impaired vision
- weakness and/or fatigue
- headache

What can you do?

Check your blood glucose levels immediately *and* eat hard candy, glucose tablets *or* drink fruit juice or soda. Wait 15 minutes and check blood glucose levels again. If needed, repeat above intake of sugar and call your healthcare provider if symptoms continue.

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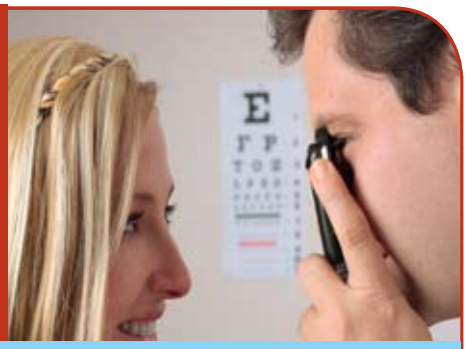
Educate yourself about possible complications of diabetes



Long-term complications, prevention, and treatment

Diabetes causes higher than normal blood sugar levels. Over time, this can damage blood vessels and nerves leading to diabetic complications and health problems.

Nerve damage

Nerve damage (also called diabetic neuropathy) makes it hard for nerves to send messages to the brain and other parts of the body. With nerve damage, patients may lose feeling in parts of their body or have a painful tingling feeling. Diabetics, in tandem with their health care team, should look out for warning signs, including:

- loss of feeling (numbness);
- sharp pain or tingling feeling;
- sores on feet;
- muscle weakness;
- burning feeling;
- inability to get an erection (in men).

Eye problems

Diabetes can damage the small blood vessels in the retina, which is the part of the eye sensitive to light. This damage is called diabetic retinopathy. Warning signs include:

- blurred vision for more than two days;
- sudden loss of vision in one or both eyes;
- black spots, cobwebs, or flashing lights;
- redness, pain, or pressure in one or both eyes.

Kidney damage

Diabetes can also damage the blood vessels in the kidneys so they can't filter out waste. This damage is called diabetic nephropathy. Some people who have nephropathy will eventually need dialysis (a treatment that eliminates waste from the blood) or a kidney transplant.

Heart disease and stroke

People with diabetes are at greater risk for heart disease, heart attack, and stroke. Since heart disease is easiest to treat when it is caught early, patients should see their healthcare provider on a regular basis.

Find out more about diabetes

Education is one of the most powerful weapons we possess to battle diabetes, a disease that, either directly or indirectly, impacts almost every American. 23.6 million people in the United States alone have diabetes. But since almost 25 percent of those with diabetes are unaware that they have the disease, spreading information about this disorder is that much more important.

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