

# Your Guide to Diabetes: Type 1 and Type 2



National Institute of  
Diabetes and Digestive  
and Kidney Diseases

National Diabetes Information  
Clearinghouse



# Your Guide to Diabetes: Type 1 and Type 2



## Contents

Learn about Diabetes .....	1
What is diabetes? .....	2
What is prediabetes?.....	3
What are the signs and symptoms of diabetes?.....	4
What kind of diabetes do you have? .....	5
Why do you need to take care of your diabetes?.....	7
Who is part of your health care team?.....	8
Take Care of Your Diabetes Each Day .....	10
Follow Your Healthy Eating Plan .....	10
Be Physically Active .....	12
Take Your Medicines as Prescribed.....	16
Monitor Your Diabetes .....	21
Keep Daily Records.....	25
Learn about High and Low Blood Glucose Levels .....	26
Prevent Diabetes Problems .....	33

Take Care of Your Diabetes during Special Times or Events.....	36
When You're Sick.....	36
When You're at School or Work.....	39
When You're Away from Home.....	41
When You're Flying on a Plane.....	42
When an Emergency or a Natural Disaster Happens.....	45
If You're a Woman and Planning a Pregnancy.....	46
Your Diabetes Care Records.....	48
Points to Remember.....	56
Hope through Research.....	61
Pronunciation Guide.....	63
For More Information.....	65
Acknowledgments.....	66

## Learn about Diabetes

You can learn how to take care of your diabetes and prevent some of the serious problems diabetes can cause. The more you know, the better you can manage your diabetes.

Share this booklet with your family and friends so they will understand more about diabetes. Also make sure to ask your health care team any questions you might have.



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You can learn how to take care of your diabetes.

## What is diabetes?

Diabetes is when your blood **glucose\***, also called blood sugar, is too high. Blood glucose is the main type of sugar found in your blood and your main source of energy. Glucose comes from the food you eat and is also made in your liver and muscles. Your blood carries glucose to all of your body's cells to use for energy.

Your **pancreas**—an organ, located between your stomach and spine, that helps with digestion—releases a hormone it makes, called **insulin**, into your blood. Insulin helps your blood carry glucose to all your body's cells. Sometimes your body doesn't make enough insulin or the insulin doesn't work the way it should. Glucose then stays in your blood and doesn't reach your cells. Your blood glucose levels get too high and can cause diabetes or **prediabetes**.

Over time, having too much glucose in your blood can cause health problems.

\*See the Pronunciation Guide for tips on how to say the words in **bold** type.



## What is prediabetes?

Prediabetes is when the amount of glucose in your blood is above normal yet not high enough to be called diabetes. With prediabetes, your chances of getting type 2 diabetes, heart disease, and stroke are higher. With some weight loss and moderate physical activity, you can delay or prevent type 2 diabetes. You can even return to normal glucose levels, possibly without taking any medicines.



## What are the signs and symptoms of diabetes?

The signs and symptoms of diabetes are

- being very thirsty
- urinating often
- feeling very hungry
- feeling very tired
- losing weight without trying
- sores that heal slowly
- dry, itchy skin
- feelings of pins and needles in your feet
- losing feeling in your feet
- blurry eyesight

Some people with diabetes don't have any of these signs or symptoms. The only way to know if you have diabetes is to have your doctor do a blood test.

## What kind of diabetes do you have?

The three main types of diabetes are type 1, type 2, and **gestational** diabetes. People can develop diabetes at any age. Both women and men can develop diabetes.

### Type 1 Diabetes

Type 1 diabetes, which used to be called juvenile diabetes, develops most often in young people; however, type 1 diabetes can also develop in adults. In type 1 diabetes, your body no longer makes insulin or enough insulin because the body's **immune** system, which normally protects you from infection by getting rid of bacteria, viruses, and other harmful substances, has attacked and destroyed the cells that make insulin.

Treatment for type 1 diabetes includes

- taking shots, also called **injections**, of insulin.
- sometimes taking medicines by mouth.
- making healthy food choices.
- being physically active.
- controlling your blood pressure levels. Blood pressure is the force of blood flow inside your blood vessels.
- controlling your **cholesterol** levels. Cholesterol is a type of fat in your body's cells, in your blood, and in many foods.

## **Type 2 Diabetes**

Type 2 diabetes, which used to be called adult-onset diabetes, can affect people at any age, even children. However, type 2 diabetes develops most often in middle-aged and older people. People who are overweight and inactive are also more likely to develop type 2 diabetes.

Type 2 diabetes usually begins with insulin resistance—a condition that occurs when fat, muscle, and liver cells do not use insulin to carry glucose into the body’s cells to use for energy. As a result, the body needs more insulin to help glucose enter cells. At first, the pancreas keeps up with the added demand by making more insulin. Over time, the pancreas doesn’t make enough insulin when blood sugar levels increase, such as after meals. If your pancreas can no longer make enough insulin, you will need to treat your type 2 diabetes.

Treatment for type 2 diabetes includes

- using diabetes medicines
- making healthy food choices
- being physically active
- controlling your blood pressure levels
- controlling your cholesterol levels

## **Gestational Diabetes**

Gestational diabetes can develop when a woman is pregnant. Pregnant women make hormones that can lead to insulin resistance. All women have insulin resistance late in their pregnancy. If the pancreas doesn't make enough insulin during pregnancy, a woman develops gestational diabetes.

Overweight or obese women have a higher chance of gestational diabetes. Also, gaining too much weight during pregnancy may increase your likelihood of developing gestational diabetes.

Gestational diabetes most often goes away after the baby is born. However, a woman who has had gestational diabetes is more likely to develop type 2 diabetes later in life. Babies born to mothers who had gestational diabetes are also more likely to develop obesity and type 2 diabetes.

Read more about diabetes and pregnancy in *What I need to know about Gestational Diabetes* at [www.diabetes.niddk.nih.gov](http://www.diabetes.niddk.nih.gov).

## **Why do you need to take care of your diabetes?**

Over time, diabetes can lead to serious problems with your blood vessels, heart, nerves, kidneys, mouth, eyes, and feet. These problems can lead to an **amputation**, which is surgery to remove a damaged toe, foot, or leg, for example.

The most serious problem caused by diabetes is heart disease. When you have diabetes, you are more than twice as likely as people without diabetes to have heart disease or a stroke. With diabetes, you may not have the usual signs or symptoms of a heart attack. The best way to take care of your health is to work with your health care team to keep your blood glucose, blood pressure, and cholesterol levels in your target range. Targets are numbers you aim for.

### **Who is part of your health care team?**

Most people with diabetes get care from primary care providers, such as internists, family physicians, or pediatricians. A team of health care providers can also improve your diabetes care.

In addition to a primary care provider, your health care team may include

- an **endocrinologist** for more specialized diabetes care
- a dietitian, a nurse, or a certified diabetes educator—experts who can provide information about managing diabetes
- a counselor or mental health professional
- a pharmacist
- a dentist
- an **ophthalmologist** or an optometrist for eye care
- a podiatrist for foot care

If diabetes makes you feel sad or angry, or if you have other problems that worry you, you should talk with a counselor or mental health professional. Your doctor or certified diabetes educator can help you find a counselor.

Talk with your doctor about what vaccines and immunizations, or shots, you should get to keep from getting sick. Preventing illness is an important part of taking care of your diabetes.

When you see members of your health care team, ask lots of questions. Prepare a list of questions before your visit. Be sure you understand everything you need to know about taking care of your diabetes.



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When you see members of your health care team, ask lots of questions. Prepare a list of questions before your visit.

## Take Care of Your Diabetes Each Day

Do four things each day to help your blood glucose levels stay in your target range:

- Follow your healthy eating plan.
- Be physically active.
- Take your medicines as prescribed.
- Monitor your diabetes.

These things may seem like a lot to do at first. Just make small changes until these steps become a normal part of your day.

### Follow Your Healthy Eating Plan

Ask your doctor to give you the name of someone trained to help you create a healthy eating plan, such as a dietitian. This plan, often called medical nutrition therapy, will include regular monitoring by your dietitian and education about how to adjust your eating habits as the need occurs. Medical nutrition therapy is usually covered by insurance or Medicare as long as your doctor refers you. Your dietitian can help you plan meals that include foods that you and your family like and that are good for you.



Your healthy eating plan will include

- breads, cereals, rice, and whole grains
- fruits and vegetables
- meat and meat substitutes
- dairy products
- healthy fats

Your plan will also help you learn how to eat the right amount, or portions, of food. Making good food choices will

- help you reach and stay at a healthy weight
- keep your blood glucose, blood pressure, and cholesterol levels under control
- prevent heart and blood vessel disease

If you take insulin, look at the white boxes like this one for “Action Steps.”

**Action Steps**  
**If You Take Insulin**

- Follow your healthy eating plan.
- Don't skip meals, especially if you've already taken your insulin, because your blood glucose levels may drop too low.
- Learn more about how to handle low blood glucose, also called **hypoglycemia**, in the section “Learn about High and Low Blood Glucose Levels.”

If you don't take insulin, look at the blue boxes like this one for "Action Steps."

<b>Action Steps If You Don't Take Insulin</b>
<ul style="list-style-type: none"><li>• Follow your healthy eating plan.</li><li>• Don't skip meals, especially if you take diabetes medicines, because your blood glucose levels may drop too low.</li><li>• Read more about how to handle low blood glucose, also called <b>hypoglycemia</b>, in the section "Learn about High and Low Blood Glucose Levels."</li><li>• Eat several small meals during the day instead of big meals.</li></ul>

Read more about healthy eating plans in *What I need to know about Eating and Diabetes* at [www.diabetes.niddk.nih.gov](http://www.diabetes.niddk.nih.gov).

## **Be Physically Active**

Physical activity helps you stay healthy. Physical activity is especially good if you have diabetes because it

- helps you reach or stay at a healthy weight
- helps insulin work better to lower your blood glucose levels
- is good for your heart and lungs
- gives you more energy

Even small amounts of physical activity help manage diabetes, such as when you are physically active at work or home. People with diabetes should aim for 30 to 60 minutes of activity most days of the week. Children and adolescents with type 2 diabetes who are 10 to 17 years old should aim for 60 minutes of activity every day. Not all physical activity has to take place at the same time.

Increase daily activity by decreasing time spent watching TV or at the computer. Children and adolescents should limit screen time not related to school to less than 2 hours a day. Limiting screen time can help you meet your physical activity goal.

People with diabetes should

- always talk with a doctor before starting a new physical activity program.
- do **aerobic** activities, such as brisk walking, which use the body's large muscles to make the heart beat faster. The large muscles are those of the upper and lower arms and legs and those that control head, shoulder, and hip movements.
- do activities to strengthen muscles and bone, such as sit-ups or lifting weights. Aim for two times a week.
- stretch to increase flexibility, lower stress, and help prevent muscle soreness after physical activity.

Many activities can help your child and your family stay active and have fun. Consider activities that they might enjoy and can stick with, such as

- playing basketball
- dancing to music with friends
- taking a walk or a bike ride



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Physical activity helps you stay healthy.

**Action Steps  
If You Take Insulin**

- See your doctor before becoming physically active.
- Check your blood glucose levels before, during, and after physical activity. Don't start a physical activity program when your blood glucose levels are high or if you have **ketones** in your blood or urine. Read more about ketones in the section "Monitor Your Diabetes."
- Don't be physically active right before you go to bed because it could cause low blood glucose while you sleep.

**Action Steps  
If You Don't Take Insulin**

- See your doctor before becoming physically active.
- Ask your doctor about whether you need to eat before you are physically active.

When you are being physically active, carry glucose tablets or a **carbohydrate**-rich snack or drink with you, such as fruit or juice, in case your blood glucose levels go too low.

Read more about increasing your physical activity in *What I need to know about Physical Activity and Diabetes* at [www.diabetes.niddk.nih.gov](http://www.diabetes.niddk.nih.gov).

## Take Your Medicines as Prescribed

If you have type 2 diabetes and are unable to reach your target blood glucose levels with a healthy eating plan and physical activity, diabetes medicines may help. Your doctor may prescribe you diabetes medicines that work best for you and your lifestyle.

If you have type 1 diabetes, you need insulin shots if your body has stopped making insulin or if it doesn't make enough. Some people with type 2 diabetes or gestational diabetes also need to take insulin shots.



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If you have type 2 diabetes and are unable to reach your target blood glucose levels with a healthy eating plan and physical activity, diabetes medicines may help.

## **Diabetes Medicines**

Most people with type 2 diabetes use medicines other than insulin shots. People with type 2 diabetes use medicine to help their blood glucose levels stay in their target range. If your body makes insulin and the insulin doesn't lower your blood glucose levels enough, you may need to take one or more medicines.

Diabetes medicines come in pill and shot form. Some people take diabetes medicines once a day and other medicines more often. Ask your health care team when you should take your diabetes medicines. Sometimes, people who take diabetes medicines may also need insulin shots for a while.

Be sure to tell your doctor if your medicines make you feel sick or if you have any other problems. If you get sick or have surgery, your diabetes medicines may no longer work to lower your blood glucose levels. Always check with your doctor before you stop taking your diabetes medicines.

## **Insulin Shots**

Only a doctor can prescribe insulin. Your doctor can tell you how much insulin you should take and which of the following ways to take insulin is best for you:

- **Insulin shot.** You'll use a needle attached to a **syringe**—a hollow tube with a plunger—that you fill with a dose of insulin. Some people use an insulin pen, a penlike device with a needle and a cartridge of insulin. Never share insulin needles or insulin pens, even with family.
- **Insulin pump.** An insulin pump is a small device filled with insulin that you wear on your belt or keep in your pocket. The pump connects to a small, plastic tube and a small needle. You or your doctor inserts the needle under your skin. The needle can stay in for several days.
- **Insulin jet injector.** This device sends a fine spray of insulin through your skin with high-pressure air instead of a needle.



- **Insulin injection port.** You or your doctor inserts a small tube just beneath your skin, where it remains in place for several days. You can inject insulin into the end of the tube instead of through your skin.

Read more about ways to take insulin in *Alternative Devices for Taking Insulin* at [www.diabetes.niddk.nih.gov](http://www.diabetes.niddk.nih.gov).



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Only a doctor can prescribe insulin. Your doctor can tell you how much insulin you should take.

## **Other Medicines**

Your doctor may prescribe other medicines to help with problems related to diabetes, such as

- aspirin for heart health
- cholesterol-lowering medicines
- medicines for high blood pressure

Remembering to take your medicines at the correct times each day can be challenging. Many people find that keeping a weekly pill box with separate boxes for each day, and even separate boxes for morning and evening, can help. Also ask your health care team to update your list of medicines at each visit so you always have an accurate list of what medicines to take and when.

Read more about diabetes and medicines in *What I need to know about Diabetes Medicines* at [www.diabetes.niddk.nih.gov](http://www.diabetes.niddk.nih.gov).

## Monitor Your Diabetes

### Check Your Blood Glucose Levels

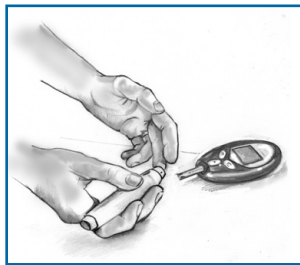
Checking and recording your blood glucose levels can help you monitor and better manage your diabetes. If your blood has too much or too little glucose, you may need a change in your healthy eating plan, physical activity plan, or medicines.

A member of your health care team will show you how to check your blood glucose levels using a blood glucose meter. Your health care team can teach you how to

- prick your finger to get a drop of blood for testing
- use your meter to find out your blood glucose level from your drop of blood

Read more in *Continuous Glucose Monitoring* at [www.diabetes.niddk.nih.gov](http://www.diabetes.niddk.nih.gov).

Your health insurance or Medicare may pay for the blood glucose meter and test strips you need.



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Checking and recording your blood glucose levels can help you better manage your diabetes.

Ask your doctor how often you should check your blood glucose levels. You may need to check before and after eating, before and after physical activity, before bed, and sometimes in the middle of the night. Make sure to keep a record of your blood glucose self-checks.

### **Target Range for Blood Glucose Levels**

Most people with diabetes should try to keep their blood glucose levels as close as possible to the level of someone who doesn't have diabetes. This normal target range is about 70 to 130. The closer to normal your blood glucose levels are, the lower your chance of developing serious health problems.

Ask your doctor what your target levels are and when you should check your blood glucose levels with a meter. Make copies of the chart in the section “Your Diabetes Care Records” to take with you when you visit your doctor.

Reaching your target range all of the time can be hard. Remember, the closer you get to your target range, the better you will feel.

### **The A1C Test**

Another test for blood glucose, the **A1C**—also called the **hemoglobin A1C** test, **HbA1C**, or **glycohemoglobin** test—is a blood test that reflects the average level of glucose in your blood during the past 2 to 3 months.

You should have the A1C test at least twice a year. If your result is not on target, your doctor may have you take the test more often to see if your A1C improves.

For the test, your doctor will draw a sample of your blood during an office visit or send you to a lab to have your blood drawn. Your A1C test result is given as a percentage. Your A1C result plus the record of your blood glucose numbers show whether your blood glucose levels are under control.

- If your A1C result is too high, you may need to change your diabetes treatment plan. Your health care team can help you decide what part of your plan to change.
- If your A1C result is on target, then your diabetes treatment plan is working. The lower your A1C result, the lower your chance of having diabetes problems.

Talk with your doctor about what your A1C target should be. Your personal target may be above or below the target shown in the chart.

<b>A1C Targets</b>	
Target for most people with diabetes	Below 7 percent
Time to change my diabetes care plan	8 percent or above

A1C targets can also depend on

- how long you have had diabetes
- whether or not you have other health problems

Read more about A1C targets at [www.ndep.nih.gov](http://www.ndep.nih.gov).

### **Tests for Ketones**

You may need to check your blood or urine for ketones if you're sick or if your blood glucose levels are above 240. Your body makes ketones when you burn fat instead of glucose for energy. If you have too many ketones, you are more likely to have a serious condition called **ketoacidosis**. If not treated, ketoacidosis can cause death.

Signs of ketoacidosis are

- vomiting
- weakness
- fast breathing
- sweet-smelling breath

Ketoacidosis is more likely in people with type 1 diabetes.

Your doctor or diabetes educator will show you how to test for ketones.

## Keep Daily Records

Make copies of the daily diabetes record at the end of this booklet. Then, write down the results of your blood glucose checks each day. You may also want to record what you ate, how you felt, and whether you were physically active.

Bring your blood glucose records to all visits with your health care team. They can use your records to see whether you need changes in your diabetes medicines or in your healthy eating plan.

<b>Action Steps If You Take Insulin</b>
Keep a daily record of <ul style="list-style-type: none"><li>• your blood glucose levels</li><li>• the times of day you take insulin</li><li>• the amount and type of insulin you take</li><li>• what types of physical activity you do and for how long</li><li>• when and what you eat</li><li>• whether you have ketones in your blood or urine</li><li>• when you are sick</li></ul>



<b>Action Steps If You Don't Take Insulin</b>
Keep a daily record of <ul style="list-style-type: none"><li>• your blood glucose levels</li><li>• the times of day you take your medicines</li><li>• what types of physical activity you do and for how long</li></ul>

## Learn about High and Low Blood Glucose Levels

Sometimes, no matter how hard you try to keep your blood glucose levels in your target range, they will be too high or too low. Blood glucose that's too high or too low can make you feel sick. If you try to control your high or low blood glucose and can't, you may become even sicker and need help. Talk with your doctor to learn how to handle these emergencies.

### Learn about High Blood Glucose Levels

If your blood glucose levels stay above 180 for more than 1 to 2 hours, they may be too high. See the chart on page 54. High blood glucose, also called **hyperglycemia**, means you don't have enough insulin in your body. High blood glucose can happen if you

- miss taking your diabetes medicines
- eat too much
- don't get enough physical activity
- have an infection
- get sick
- are stressed
- take medicines that can cause high blood glucose



Be sure to tell your doctor about other medicines you take. When you're sick, be sure to check your blood glucose levels and keep taking your diabetes medicines. Read more about how to take care of yourself when you're sick in the section "Take Care of Your Diabetes during Special Times or Events."

Signs that your blood glucose levels may be too high are the following:

- feeling thirsty
- feeling weak or tired
- headaches
- urinating often
- having trouble paying attention
- blurry vision
- yeast infections

Very high blood glucose may also make you feel sick to your stomach.

If your blood glucose levels are high much of the time, or if you have symptoms of high blood glucose, call your doctor. You may need a change in your healthy eating plan, physical activity plan, or medicines.

## **Learn about Low Blood Glucose Levels**

If your blood glucose levels drop below 70, you have low blood glucose, also called hypoglycemia. Low blood glucose can come on fast and can be caused by

- taking too much diabetes medicine
- missing or delaying a meal
- being more physically active than usual
- drinking alcoholic beverages

Sometimes, medicines you take for other health problems can cause your blood glucose levels to drop.

Signs your blood glucose levels may be too low are the following:

- hunger
- dizziness or shakiness
- confusion
- being pale
- sweating more
- weakness
- anxiety or moodiness
- headaches
- a fast heartbeat

If your blood glucose levels drop lower, you could have severe hypoglycemia, where you pass out or have a **seizure**. A seizure occurs when cells in the brain release a rush of energy that can cause changes in behavior or muscle contractions. Some seizures are life threatening.

If you have any of these symptoms, check your blood glucose levels. If your blood glucose levels are less than 70, have one of the following right away:

- three or four glucose tablets
- one serving of glucose gel—the amount equal to 15 grams of carbohydrates
- 1/2 cup, or 4 ounces, of fruit juice
- 1/2 cup, or 4 ounces, of a regular—nondiet—soft drink
- 1 cup, or 8 ounces, of milk
- five or six pieces of hard candy
- 1 tablespoon of sugar, syrup, or honey



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Have one of these foods or drinks when your blood glucose levels are low.

After 15 minutes, check your blood glucose levels again. Repeat these steps until your blood glucose levels are 70 or above. If it will be at least 1 hour before your next meal, eat a snack.

If you take diabetes medicines that can cause low blood glucose, always carry food for emergencies. You should also wear a medical identification bracelet or necklace that says you have diabetes.

If you take insulin, keep a prescription **glucagon** kit at home and at other places where you often go. A glucagon kit has a vial of glucagon, a syringe, and a needle to inject the glucagon. Given as a shot, the glucagon quickly raises blood glucose. If you have severe hypoglycemia, you'll need someone to help bring your blood glucose levels back to normal by giving you a glucagon shot. Show your family, friends, and coworkers how to give you a glucagon shot when you have severe hypoglycemia. **Someone should call 911 for help if a glucagon kit is not available.**

**Action Steps  
If You Take Insulin**

- Tell your doctor if you have low blood glucose, especially at the same time of the day or night, several times in a row.
- Tell your doctor if you've passed out from low blood glucose.
- Ask your doctor about glucagon. Glucagon is a medicine that raises blood glucose.
- Show your family, friends, and coworkers how to give you a glucagon shot when you have severe hypoglycemia.
- When you have severe hypoglycemia, someone should call 911 for help if a glucagon shot is not available.

### **Action Steps** **If You Don't Take Insulin**

- Tell your doctor if you have low blood glucose, especially at the same time of the day or night, several times in a row.
- Tell your doctor about other medicines you are taking.
- Ask your doctor whether your diabetes medicines might cause low blood glucose.

Read more about low blood glucose in *Hypoglycemia* at [www.diabetes.niddk.nih.gov](http://www.diabetes.niddk.nih.gov).



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Tell your doctor if you have low blood glucose, especially at the same time of day or night, several times in a row.

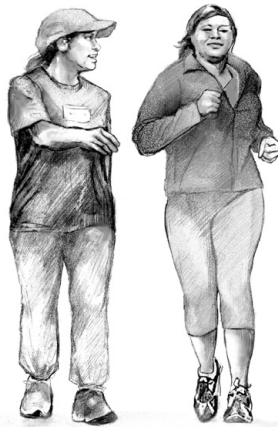
## Prevent Diabetes Problems

Taking care of your diabetes every day will help your blood glucose, blood pressure, and cholesterol levels stay in your target ranges. Caring for your diabetes can also help prevent other health problems over the years. You can do a lot to prevent diabetes problems:

- Follow your healthy eating plan every day.



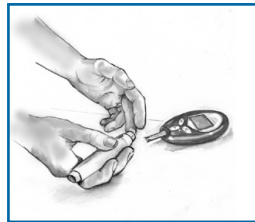
- Be physically active every day.



- Take your medicines every day.



- Check your blood glucose levels every day.





## Types of Diabetes Problems

Diabetes problems can damage parts of the body such as the

- heart
- blood vessels
- eyes
- kidneys
- nerves

Heart and blood vessel disease can lead to heart attacks and strokes. Nerve damage can lead to a loss of feeling in the feet, which may lead to an amputation. You will want to take steps to prevent these diabetes problems.

Read more about preventing diabetes problems in the following booklets at [www.diabetes.niddk.nih.gov](http://www.diabetes.niddk.nih.gov). These booklets are also available in Spanish and large-print versions:

- *Prevent diabetes problems: Keep your diabetes under control*
- *Prevent diabetes problems: Keep your eyes healthy*
- *Prevent diabetes problems: Keep your feet healthy*
- *Prevent diabetes problems: Keep your heart and blood vessels healthy*
- *Prevent diabetes problems: Keep your kidneys healthy*
- *Prevent diabetes problems: Keep your mouth healthy*
- *Prevent diabetes problems: Keep your nervous system healthy*

## Take Care of Your Diabetes during Special Times or Events

Diabetes is part of your life. You can learn how to take care of yourself and your diabetes when you're sick, when you're at school or work, when you're away from home, when an emergency or a natural disaster happens, or when you're thinking about having a baby or are pregnant.

### When You're Sick

Having a cold, the flu, or an infection can raise your blood glucose levels. Being sick puts stress on your body. Your body releases hormones to deal with the stress and to fight the sickness. Higher hormone levels can also cause high blood glucose levels. You should have a plan for managing your diabetes when you're sick. The first step is to talk with your health care team and write down

- how often to check your blood glucose levels
- whether you should check for ketones in your blood or urine
- whether you should change your usual dose of your diabetes medicines
- what to eat and drink
- when to call your doctor

**Action Steps**  
**If You Take Insulin**

- Take your insulin, even if you are sick and have been throwing up.
- Ask your health care team about how to adjust your insulin dose based on your blood glucose test results.

**Action Steps**  
**If You Don't Take Insulin**

- Take your diabetes medicines, even if you are sick and have been throwing up.

People who are sick sometimes feel as though they can't eat as much or can't keep food down, which can cause low blood glucose levels. Consuming carbohydrate-rich drinks or snacks can help prevent low blood glucose.

If you are sick, your health care team may recommend the following:

- Check your blood glucose levels at least four times a day and write down the results in your record book. Keep your results handy so you can report the results to your health care team.
- Keep taking your diabetes medicines, even if you can't eat.

- Drink at least 1 cup, or 8 ounces, of water or other calorie-free, caffeine-free liquid every hour while you're awake.
- If you can't eat your usual food, try eating or drinking any of the following to prevent low blood glucose levels:
  - juice
  - saltine crackers
  - dry toast
  - soup
  - broth or bouillon
  - ice pops or sherbet
  - gelatin that isn't sugar-free
  - milk
  - yogurt
  - soda that isn't sugar-free

Your doctor may ask that you call right away if

- your blood glucose levels are above 240 even though you've taken your diabetes medicines
- your urine or blood ketone levels are above normal
- you vomit more than once
- you have diarrhea for more than 6 hours
- you have trouble breathing
- you have a high fever
- you can't think clearly or you feel more drowsy than usual

You should call your doctor if you have questions about taking care of yourself.

### **When You're at School or Work**

Take care of your diabetes when you're at school or at work:

- Follow your healthy eating plan.
- Take your medicines and check your blood glucose levels as usual.
- Tell your teachers, friends, or close coworkers that you have diabetes and teach them about the signs of low blood glucose. You may need their help if your blood glucose levels drop too low.

- Keep snacks nearby and carry some with you at all times to treat low blood glucose.
- If you have trained diabetes staff at your school or work, tell them that you have diabetes.
- Wear or carry an identification tag or card that says you have diabetes.



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Tell your teachers, friends, or close coworkers about the signs of low blood glucose. You may need their help if your blood glucose levels drop too low.

## When You're Away from Home

These tips can help you when you're away from home:

- Get all your vaccines and immunizations, or shots, before you travel. Find out what shot you need for where you're going, and make sure you get the right shots on time.
- Follow your healthy eating plan as much as possible when you eat out. Always carry a snack with you in case you have to wait for a waiter to serve you.
- Limit alcoholic beverages. Ask your health care team how many alcoholic beverages you can safely drink. Eat something when you drink to prevent low blood glucose.
- If you're taking a long trip by car, check your blood glucose levels before driving. Stop and check your blood glucose levels every 2 hours.
- Always carry your diabetes medicines and supplies in the car where you can reach them in case your blood glucose levels drop too low.
- In case you can't leave for home on time, bring twice the amount of diabetes supplies and medicines you normally need.
- Take comfortable, well-fitting shoes on vacation. You'll probably be walking more than usual. Keep your medical insurance card, emergency phone numbers, and a first aid kit handy.

- Wear or carry an identification tag or card that says you have diabetes.
- If you're going to be away for a long time, ask your doctor for a written prescription for your diabetes medicines and the name of a doctor in the place you're going to visit.
- Don't count on buying extra supplies when you're traveling, especially if you're going to another country. Different countries use different kinds of diabetes medicines.

## When You're Flying on a Plane

These tips can help you when you're flying on a plane:

- Ask your health care team in advance how to adjust your medicines, especially your insulin, if you're traveling across time zones.
- Take a letter from your doctor stating you have diabetes. The letter should include a list of all the medical supplies and medicines you need on the plane. In the letter, the doctor should also include a list of any devices that shouldn't go through an x-ray machine.
- Carry your diabetes medicines and your blood testing supplies with you on the plane. Never put these items in your checked baggage.



- Bring food for meals and snacks on the plane.
- If you use an insulin pump, ask airport security to check the device by hand. X-ray machines can damage insulin pumps, whether the pump is on your body or in your luggage.
- When on a plane, get up from your seat and walk around when possible.

Read more about planning for travel and travel safety if you have diabetes in *Have Diabetes. Will Travel.* at [www.ndep.nih.gov](http://www.ndep.nih.gov).



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Bring food for meals and snacks on the plane.

**Action Steps**  
**If You Take Insulin**

When you travel,

- take a special insulated bag to carry your insulin to keep it from freezing or getting too hot
- bring extra supplies for taking insulin and testing your blood glucose levels in case of loss or breakage
- ask your doctor for a letter saying you have diabetes and need to carry supplies for taking insulin and testing blood glucose

**Action Steps**  
**If You Don't Take Insulin**

When you travel,

- ask your health care team in advance how to adjust your medicines if you're traveling across time zones
- carry your diabetes medicines and your blood testing supplies with you on the plane
- ask your doctor for a letter saying you have diabetes and need to carry supplies for testing blood glucose

## When an Emergency or a Natural Disaster Happens

Everyone with diabetes should be prepared for emergencies and natural disasters, such as power outages or hurricanes. Always have a disaster kit ready. Include everything you need to take care of your diabetes, such as

- a blood glucose meter, lancets, and testing strips
- your diabetes medicines
- insulin, syringes, and an insulated bag to keep insulin cool, if you take insulin
- a glucagon kit if you take insulin or if recommended by your doctor
- glucose tablets and other food or drinks to treat low blood glucose
- antibiotic cream or ointment
- a copy of your medical information, including a list of your conditions, medicines, and recent lab test results
- a list of your prescription names with dosage information and prescription numbers from your pharmacy
- phone numbers for the American Red Cross and other disaster relief groups

You also might want to include some food that doesn't spoil, such as canned or dried food, along with bottled water. Read more about preparing for an emergency at the Centers for Disease Control and Prevention Emergency Preparedness and You website at [www.emergency.cdc.gov/preparedness](http://www.emergency.cdc.gov/preparedness).

### **If You're a Woman and Planning a Pregnancy**

Keeping your blood glucose levels near normal before and during pregnancy helps protect both you and your baby. Even before you become pregnant, your blood glucose levels should be close to the normal range.

Your health care team can work with you to get your blood glucose levels under control before you try to get pregnant. If you're already pregnant and you have diabetes, see your doctor right away. You can take steps to bring your blood glucose levels close to normal.

Your insulin needs may change when you're pregnant. Your doctor may want you to take more insulin and check your blood glucose levels more often.

If you plan to have a baby,

- work with your health care team to get your blood glucose levels as close to the normal range as possible
- see a doctor who has experience taking care of pregnant women with diabetes

- don't smoke, drink alcoholic beverages, or use harmful drugs
- follow your healthy eating plan

Be sure to have your eyes, heart and blood vessels, blood pressure, and kidneys checked. Your doctor should also check for nerve damage. Pregnancy can make some health problems worse.

Read more about diabetes and pregnancy in *What I need to know about Preparing for Pregnancy if I Have Diabetes* at [www.diabetes.niddk.nih.gov](http://www.diabetes.niddk.nih.gov).



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Your health care team can work with you to get your blood glucose levels under control before you try to get pregnant. If you're already pregnant, see your doctor right away.

## Your Diabetes Care Records

Make copies of the charts in this section. These charts list important things you should discuss with your doctor at each visit.

### Things to Discuss with Your Health Care Team at Each Visit

Date: \_\_\_\_\_

Whom you visited: \_\_\_\_\_

Your information	Things to remember	Check off what you covered, or write the result of your visit.
<b>Your blood glucose levels</b>	<ul style="list-style-type: none"> <li>• Share your blood glucose records. Your doctor will ask how you are checking your blood glucose levels to make sure you are doing it right.</li> <li>• Mention if you often have low or high blood glucose.</li> </ul>	<input type="checkbox"/> Shared blood glucose records? <input type="checkbox"/> Checked meter? <input type="checkbox"/> Practiced blood glucose reading? <input type="checkbox"/> Shared high or low blood glucose?
<b>Your weight</b>	<ul style="list-style-type: none"> <li>• Talk about how much you should weigh.</li> <li>• Talk about ways to reach your target weight that will work for you.</li> </ul>	<input type="checkbox"/> My weight now is _____. <input type="checkbox"/> My target weight is _____. <input type="checkbox"/> Steps to take:

<b>Your information</b>	<b>Things to remember</b>	<b>Check off what you covered, or write the result of your visit.</b>
<b>Your blood pressure</b>	<ul style="list-style-type: none"> <li>• Ask about ways to reach your target.</li> <li>• The target for most people with diabetes is below 140/80 unless your doctor helps you set a different target.</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> My blood pressure now is _____.</li> <li><input type="checkbox"/> My target blood pressure is _____.</li> <li><input type="checkbox"/> Steps to take:</li> </ul>
<b>Your medicines</b>	<ul style="list-style-type: none"> <li>• Talk about any problems you have had with your medicines.</li> <li>• Ask if you should take a low-dose aspirin every day to lower your chance of getting heart disease.</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Shared medicine problems?</li> <li><input type="checkbox"/> Take aspirin? Yes ____ No ____</li> <li><input type="checkbox"/> Steps to take:</li> </ul>
<b>Your feet</b>	<ul style="list-style-type: none"> <li>• Ask to have your feet checked for problems.</li> <li>• Talk about any problems you are having with your feet, such as numbness, tingling, or sores that heal slowly.</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Checked feet?</li> <li><input type="checkbox"/> Shared problems?</li> <li><input type="checkbox"/> Steps to help with my feet:</li> </ul>
<b>Your physical activity plan</b>	<ul style="list-style-type: none"> <li>• Talk about how often you are physically active, the type of physical activity you do, and any problems you have when being physically active.</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Shared activities?</li> <li><input type="checkbox"/> Steps to take:</li> </ul>

<b>Your information</b>	<b>Things to remember</b>	<b>Check off what you covered, or write the result of your visit.</b>
<b>Your healthy eating plan</b>	<ul style="list-style-type: none"> <li>• Talk about what you eat, how much you eat, and when you eat.</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Shared eating habits?</li> <li><input type="checkbox"/> Steps to take:</li> </ul>
<b>Your feelings</b>	<ul style="list-style-type: none"> <li>• If you feel stressed, ask about ways to cope.</li> <li>• Talk about whether you are feeling sad.</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Shared stress and problems?</li> <li><input type="checkbox"/> Steps to take:</li> </ul>
<b>Your smoking</b>	<ul style="list-style-type: none"> <li>• If you smoke, ask for help with quitting.</li> </ul>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Shared smoking habits?</li> <li><input type="checkbox"/> Steps to take:</li> </ul>



This chart lists important tests, exams, and vaccines to get at least once or twice a year.

## Tests, Exams, and Vaccines to Get at Least Once or Twice a Year

Test	Instructions	Results or Dates
<b>A1C test</b>	<ul style="list-style-type: none"> <li>• Have this blood test at least twice a year. Your result will tell you what your average blood glucose level was for the past 2 to 3 months.</li> </ul>	Date: _____ A1C: _____ Next test: _____
<b>Blood lipid (fats) lab tests</b>	<ul style="list-style-type: none"> <li>• Get a blood test to check your               <ul style="list-style-type: none"> <li>– total cholesterol—aim for below 200</li> <li>– LDL, or bad, cholesterol—aim for below 100</li> <li>– HDL, or good, cholesterol—men: aim for above 40; women: aim for above 50</li> <li>– <b>triglycerides</b>—aim for below 150</li> </ul> </li> </ul>	Date: _____ Total cholesterol: _____ LDL: _____ HDL: _____ Triglycerides: _____ Next test: _____
<b>Kidney function tests</b>	<ul style="list-style-type: none"> <li>• Once a year, get a urine test to check for protein.</li> <li>• At least once a year, get a blood test to check for <b>creatinine</b>.</li> </ul>	Date: _____ Urine protein: _____ Creatinine: _____ Next test: _____

Test	Instructions	Results or Dates
<b>Dilated eye exam</b>	<ul style="list-style-type: none"> <li>• See an eye doctor once a year for a complete eye exam that includes using drops in your eyes to dilate your pupils.</li> <li>• If you are pregnant, have a complete eye exam in your first 3 months of pregnancy. Have another complete eye exam 1 year after your baby is born.</li> </ul>	Date: _____ Result: _____ Next test: _____
<b>Dental exam</b>	<ul style="list-style-type: none"> <li>• See your dentist twice a year for a cleaning and checkup.</li> </ul>	Date: _____ Result: _____ Next test: _____
<b>Pneumonia vaccine (recommended by the Centers for Disease Control and Prevention [CDC])</b>	<ul style="list-style-type: none"> <li>• Get the vaccine if you are younger than 64.</li> <li>• If you're older than 64 and your shot was more than 5 years ago, get another vaccine.</li> </ul>	Date received: _____

Test	Instructions	Results or Dates
<b>Flu vaccine (recommended by the CDC)</b>	<ul style="list-style-type: none"> <li>• Get a flu shot each year.</li> </ul>	Date received: _____
<b>Hepatitis B vaccine (recommended by the CDC)</b>	<ul style="list-style-type: none"> <li>• Get this vaccine if you are age 19 to 59 and have not had this vaccine.</li> <li>• Consider getting this vaccine if you are 60 or older and have not had this vaccine.</li> </ul>	Date of 1st dose: _____ Date of 2nd dose: _____ Date of 3rd dose: _____

Daily Diabetes Record Page					Week Starting _____					
	Other blood glucose	Breakfast blood glucose	Medicine	Lunch blood glucose	Medicine	Dinner blood glucose	Medicine	Bedtime blood glucose	Medicine	Notes: (Special events, sick days, exercise)
Monday										
Tuesday										
Wednesday										
Thursday										
Friday										
Saturday										
Sunday										

You can also find a food and activity tracker at [www.ndep.nih.gov](http://www.ndep.nih.gov).

## Points to Remember

- Diabetes is when your blood glucose, also called blood sugar, is too high. Blood glucose is the main type of sugar found in your blood and your main source of energy.
- Prediabetes is when the amount of glucose in your blood is above normal yet not high enough to be called diabetes.
- In type 1 diabetes, your body no longer makes insulin or enough insulin.
- Type 2 diabetes develops when, over time, the pancreas doesn't make enough insulin when blood sugar levels increase, such as after meals.
- People who are overweight and inactive are more likely to develop type 2 diabetes.
- Gestational diabetes can develop when a woman is pregnant. Pregnant women make hormones that can lead to insulin resistance.
- Gestational diabetes most often goes away after the baby is born.

- The best way to take care of your health is to work with your health care team to keep your blood glucose, blood pressure, and cholesterol levels in your target range. Targets are numbers you aim for.
- When you see members of your health care team, ask lots of questions. Prepare a list of questions before your visit.
- Do four things each day to help your blood glucose levels stay in your target range:
  - Follow your healthy eating plan.
  - Be physically active.
  - Take your medicines as prescribed.
  - Monitor your diabetes.
- Ask your doctor to give you the name of someone trained to help you create a healthy eating plan, such as a dietitian.
- People with diabetes should aim for 30 to 60 minutes of activity most days of the week. Children and adolescents with type 2 diabetes who are 10 to 17 years old should aim for 60 minutes of activity every day.
- See your doctor before becoming physically active.

- Check your blood glucose levels before, during, and after physical activity.
- Your doctor may prescribe you diabetes medicines that work best for you and your lifestyle.
- If you have type 1 diabetes, you need insulin shots if your body has stopped making insulin or if it doesn't make enough. Some people with type 2 diabetes or gestational diabetes also need to take insulin shots.
- Ask your health care team when you should take your diabetes medicines.
- Be sure to tell your doctor if your medicines make you feel sick or if you have any other problems.
- Checking and recording your blood glucose levels can help you monitor and better manage your diabetes. Ask your doctor how often you should check your blood glucose levels.
- You may need to check your blood or urine for ketones if you're sick or if your blood glucose levels are above 240.
- Bring your blood glucose records to all visits with your health care team.

- If your blood glucose levels stay above 180 for more than 1 to 2 hours, they may be too high. High blood glucose, also called hyperglycemia, means you don't have enough insulin in your body.
- If your blood glucose levels drop below 70, you have low blood glucose, also called hypoglycemia.
- If you take diabetes medicines that can cause low blood glucose, always carry food for emergencies. You should also wear a medical identification bracelet or necklace that says you have diabetes.
- If you take insulin, keep a prescription glucagon kit at home and at other places where you often go. If you have severe hypoglycemia, you'll need someone to help bring your blood glucose levels back to normal by giving you a glucagon shot.
- You can do a lot to prevent diabetes problems:
  - Follow your healthy eating plan every day.
  - Be physically active every day.
  - Take your medicines every day.
  - Check your blood glucose levels every day.
- You should have a plan for managing your diabetes when you're sick. You should call your doctor if you have questions about taking care of yourself.



- Tell your teachers, friends, or close coworkers that you have diabetes and teach them about the signs of low blood glucose. You may need their help if your blood glucose levels drop too low.
- Get all your vaccines and immunizations, or shots, before you travel. Find out what shot you need for where you're going, and make sure you get the right shots on time.
- When traveling, carry your diabetes medicines and your blood testing supplies with you on the plane. Never put these items in your checked baggage.
- Always have a disaster kit ready. Include everything you need to take care of your diabetes in the disaster kit.
- Keeping your blood glucose levels near normal before and during pregnancy helps protect both you and your baby.
- If you're already pregnant and you have diabetes, see your doctor right away.

## Hope through Research

The National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) conducts research in its own labs and supports a great deal of basic and clinical research in medical centers and hospitals throughout the United States. The NIDDK also gathers and analyzes statistics about diabetes. Other Institutes at the National Institutes of Health (NIH) conduct and support research on diabetes-related eye diseases, heart and vascular complications, autoimmunity, pregnancy complications, and dental problems.

The Molecular and Clinical Profile of Diabetes Mellitus and Its Complications study is funded under NIH clinical trial number NCT01105858.

The Diabetes Prevention Program (DPP), a large clinical trial, studied people at increased chance of developing type 2 diabetes. Some of the DPP participants were assigned to an intensive lifestyle change group. After 3 years, people in this group lost about 5 to 7 percent of their body weight by eating a diet low in fat and calories and getting more physical activity. This modest weight loss cut their chances of getting type 2 diabetes by 58 percent compared with people in the placebo group, which received information only. People ages 60 and older reduced their chance by 70 percent. A follow-up study called the Diabetes Prevention Program Outcomes Study (DPPOS) found that 10 years after the DPP began,

people in the lifestyle change group continued to have a reduced chance of developing type 2 diabetes. Read more about the DPPOS, funded under NIH clinical trial number NCT00038727, in *Diabetes Prevention Program* at [www.diabetes.niddk.nih.gov](http://www.diabetes.niddk.nih.gov).

Clinical trials are research studies involving people. Clinical trials look at safe and effective new ways to prevent, detect, or treat disease. Researchers also use clinical trials to look at other aspects of care, such as improving the quality of life for people with chronic illnesses. To learn more about clinical trials, why they matter, and how to participate, visit the NIH Clinical Research Trials and You website at [www.nih.gov/health/clinicaltrials](http://www.nih.gov/health/clinicaltrials). For information about current studies, visit [www.ClinicalTrials.gov](http://www.ClinicalTrials.gov).

Read more about the NIDDK's research on diabetes and related topics at [www.diabetes.niddk.nih.gov/diabetesresearch/dm\\_research.aspx](http://www.diabetes.niddk.nih.gov/diabetesresearch/dm_research.aspx).

## Pronunciation Guide

**A1C** (AY-WUHN-SEE)

**aerobic** (air-OH-bik)

**amputation** (AM-pyoo-TAY-shuhn)

**carbohydrate** (KAR-boh-HY-drayt)

**cholesterol** (koh-LESS-tur-ol)

**creatinine** (kree-AT-ih-noon)

**endocrinologist** (EN-doh-krih-NOL-uh-jist)

**gestational** (jess-TAY-shuhn-uhl)

**glucagon** (GLOO-kuh-gon)

**glucose** (GLOO-kohss)

**glycohemoglobin** (GLY-koh-HEE-moh-GLOH-bin)

**hemoglobin** (HEE-moh-GLOH-bin)

**hyperglycemia** (HY-pur-gly-SEE-mee-uh)

**hypoglycemia** (HY-poh-gly-SEE-mee-uh)

**immune** (ih-MYOON)

**injections** (in-JEK-shuhnz)

**insulin** (IN-suh-lin)

**ketoacidosis** (KEE-toh-ASS-ih-DOH-siss)

**ketones** (KEE-tohnz)

**ophthalmologist** (AHF-thal-MOL-uh-jist)

**pancreas** (PAN-kree-uhss)

**prediabetes** (PREE-dy-uh-BEE-teez)

**seizure** (SEE-zhur)

**syringe** (suh-RINJ)

**triglycerides** (try-GLISS-ur-eyedz)

## For More Information

To find a dietitian near you, go to the Academy of Nutrition and Dietetics' website at [www.eatright.org](http://www.eatright.org) and click on "Find a Registered Dietitian."

To find a diabetes educator near you, call

**American Association of Diabetes Educators**

200 West Madison Street, Suite 800

Chicago, IL 60606

Phone: 1-800-338-3633

Internet: [www.diabeteseducator.org](http://www.diabeteseducator.org)

For additional information about diabetes, contact

**American Diabetes Association**

1701 North Beauregard Street

Alexandria, VA 22311

Phone: 1-800-DIABETES (1-800-342-2383)

Email: [askADA@diabetes.org](mailto:askADA@diabetes.org)

Internet: [www.diabetes.org](http://www.diabetes.org)

**JDRF**

26 Broadway, 14th Floor

New York, NY 10004

Phone: 1-800-533-CURE (1-800-533-2873)

Fax: 212-785-9595

Email: [info@jdrf.org](mailto:info@jdrf.org)

Internet: [www.jdrf.org](http://www.jdrf.org)

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## National Diabetes Education Program

1 Diabetes Way

Bethesda, MD 20814-9692

Phone: 1-888-693-NDEP (1-888-693-6337)

TTY: 1-866-569-1162

Fax: 703-738-4929

Email: [ndep@mail.nih.gov](mailto:ndep@mail.nih.gov)

Internet: [www.ndep.nih.gov](http://www.ndep.nih.gov)

[www.yourdiabetesinfo.org](http://www.yourdiabetesinfo.org)

The National Diabetes Education Program is a federally funded program sponsored by the U.S. Department of Health and Human Services' National Institutes of Health and the Centers for Disease Control and Prevention and includes over 200 partners at the federal, state, and local levels, working together to reduce the morbidity and mortality associated with diabetes.





## National Diabetes Information Clearinghouse

1 Information Way  
Bethesda, MD 20892-3560  
Phone: 1-800-860-8747  
TTY: 1-866-569-1162  
Fax: 703-738-4929  
Email: [ndic@info.niddk.nih.gov](mailto:ndic@info.niddk.nih.gov)  
Internet: [www.diabetes.niddk.nih.gov](http://www.diabetes.niddk.nih.gov)

The National Diabetes Information Clearinghouse (NDIC) is a service of the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK). The NIDDK is part of the National Institutes of Health of the U.S. Department of Health and Human Services. Established in 1978, the Clearinghouse provides information about diabetes to people with diabetes and to their families, health care professionals, and the public. The NDIC answers inquiries, develops and distributes publications, and works closely with professional and patient organizations and Government agencies to coordinate resources about diabetes.

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This publication is available at [www.diabetes.niddk.nih.gov](http://www.diabetes.niddk.nih.gov).

This publication may contain information about medications and, when taken as prescribed, the conditions they treat. When prepared, this publication included the most current information available. For updates or for questions about any medications, contact the U.S. Food and Drug Administration toll-free at 1-888-INFO-FDA (1-888-463-6332) or visit [www.fda.gov](http://www.fda.gov). Consult your health care provider for more information.



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