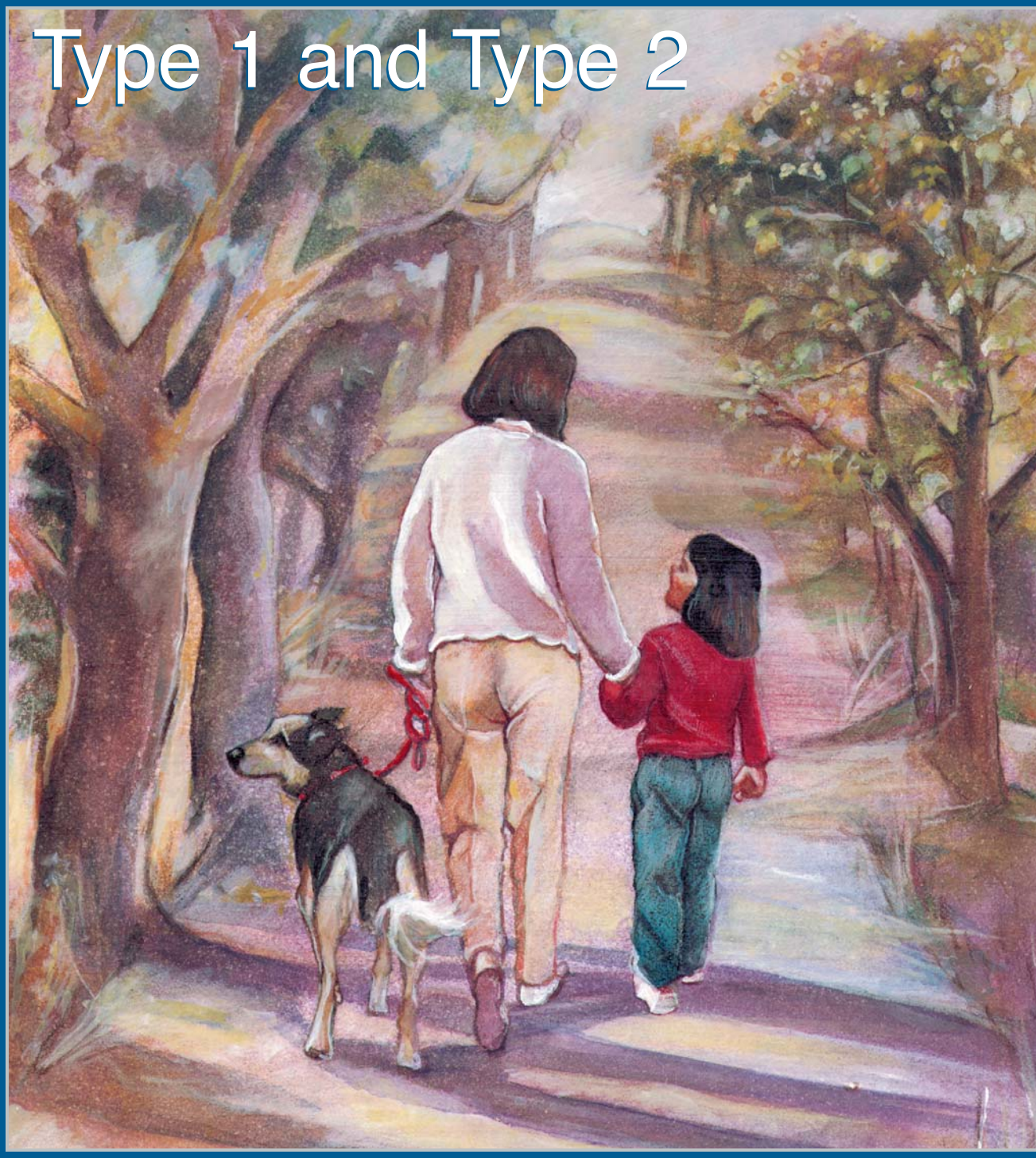
Your Guide to Diabetes:

Type 1 and Type 2



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Introduction

Your doctor says you have diabetes. This booklet will help you learn how to take care of your diabetes and how to prevent some of the serious problems that diabetes can cause. We wrote this booklet with help from people like you, people who have diabetes and wanted more information about it. We hope ***Your Guide to Diabetes: Type 1 and Type 2*** will answer many of your questions. You may want to share this booklet with your family and friends so they too will understand more about diabetes and how they can help you live a healthy life. And remember, you can always ask your health care team any questions you might have.

What Diabetes Is

Diabetes means your blood glucose (often called blood sugar) is too high. Your blood always has some glucose in it because your body needs glucose for energy to keep you going. But too much glucose in the blood isn't good for your health.

How do you get high blood glucose?

Glucose comes from the food you eat and is also made in your liver and muscles. Your blood carries the glucose to all the cells in your body. Insulin is a chemical (a hormone) made by the pancreas. The pancreas releases insulin into the blood. Insulin helps the glucose from food get into your cells. If your body doesn't make enough insulin, or if the insulin doesn't work the way it should, glucose can't get into your cells. It stays in your blood instead. Your blood glucose level then gets too high, causing pre-diabetes or diabetes.

What is pre-diabetes?

Pre-diabetes is a condition in which blood glucose levels are higher than normal but not high enough for a diagnosis of diabetes. People with pre-diabetes are at increased risk for developing type 2 diabetes and for heart disease and stroke. The good news is, if you have pre-diabetes, you can reduce your risk of getting diabetes. With modest weight loss and moderate physical activity, you can delay or prevent type 2 diabetes and even return to normal glucose levels.

What are the signs of diabetes?

The signs of diabetes are

- being very thirsty
- urinating often
- feeling very hungry or tired
- losing weight without trying
- having sores that heal slowly
- having dry, itchy skin
- losing the feeling in your feet or having tingling in your feet
- having blurry eyesight

You may have had one or more of these signs before you found out you had diabetes. Or you may have had no signs at all. A blood test to check your glucose levels will show if you have pre-diabetes or diabetes.

What kind of diabetes do you have?

People can get diabetes at any age. There are three main kinds. **Type 1 diabetes**, formerly called juvenile diabetes or insulin-dependent diabetes, is usually first diagnosed in children, teenagers, or young adults. With this form of diabetes, the beta cells of the pancreas no longer make insulin because the body's immune system has attacked and destroyed them. Treatment for type 1 diabetes includes taking insulin, making wise food choices, being physically active, taking aspirin daily (for some), and controlling blood pressure and cholesterol.

Type 2 diabetes, formerly called adult-onset diabetes or noninsulin-dependent diabetes, is the most common form of diabetes. People can develop type 2 diabetes at any age—even during childhood. This form of diabetes usually begins with insulin resistance, a condition in which fat, muscle, and liver cells do not use insulin properly. At first, the pancreas keeps up with the added demand by producing more insulin. In time, however, it loses the ability to secrete enough insulin in response to meals. Being overweight and inactive increases the chances of developing type 2 diabetes. Treatment includes using diabetes medicines, making wise food choices, being physically active, taking aspirin daily, and controlling blood pressure and cholesterol.

Some women develop **gestational diabetes** during the late stages of pregnancy. Although this form of diabetes usually goes away after the baby is born, a woman who has had it is more likely to develop type 2 diabetes later in life. Gestational diabetes is caused by the hormones of pregnancy or a shortage of insulin.

This booklet is for people who have either type 1 diabetes or type 2 diabetes.

☛ If you use insulin, look at the white boxes for "Action Steps."

☛ If you don't use insulin, look at the blue boxes for "Action Steps."

Why do you need to take care of your diabetes?

After many years, diabetes can lead to serious problems with your eyes, kidneys, nerves, and gums and teeth. But 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.

If you have diabetes, your risk of a heart attack is the same as someone who has already had a heart attack. Both women and men with diabetes are at risk. You may not even have the typical signs of a heart attack.

You can reduce your risk of developing heart disease by controlling your blood pressure and blood fat levels. If you smoke, talk with your doctor about quitting. Remember that every step toward your goals helps!

Later in this booklet, we'll tell you how you can try to prevent or delay long-term problems. 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 in your target range.

What's a desirable blood glucose level?

Everyone's blood has some glucose in it. In people who don't have diabetes, the normal range is about 70 to 120. Blood glucose goes up after eating but 1 or 2 hours later returns to the normal range.

Ask your health care team when you should check your blood glucose with a meter. Talk about whether the blood glucose targets listed below are best for you. Then write in your own targets.

Blood glucose targets for most people with diabetes

When	Target levels	My target levels
Before meals	90 to 130	_____ to _____
1 to 2 hours after the start of a meal	less than 180	less than_____

It may be hard to reach your target range all of the time. But the closer you get to your goal, the more you will reduce your risk of diabetes-related problems and the better you will feel. Every step helps.

Taking Care of Your Diabetes Every Day

Do four things ***every day*** to take care of your diabetes:

- Follow your meal plan.
- Be physically active.
- Take your diabetes medicine.
- Check your blood glucose.

Experts say most people with diabetes should try to keep their blood glucose level as close as possible to the level of someone who doesn't have diabetes. The closer to normal your blood glucose is, the lower your chances are of developing serious health problems.

Check with your doctor about the right range for you. The chart on page 11 shows target blood glucose ranges.

Your health care team will help you learn how to reach your target blood glucose range. Your main health care providers are your doctor, nurse, diabetes educator, and dietitian.

When you see your health care provider, ask lots of questions. Before you leave, be sure you understand everything you need to know about taking care of your diabetes.

A **diabetes educator** is a health care worker who teaches people how to manage their diabetes. Your educator may be a nurse, a dietitian, or other kind of health care worker.

A **dietitian** is someone who's specially trained to help people plan their meals. For more information about these health care providers, and for help in finding them, see pages 58–60.

The next sections of this booklet will tell you more about the four main ways you take care of your diabetes: Follow your meal plan, be physically active, take your diabetes medicine, and check your blood glucose.

Follow Your Meal Plan

People with diabetes should have their own meal plan. Ask your doctor to give you the name of a dietitian who can work with you to develop a meal plan. Your dietitian can help you plan meals that include foods that you and your family like to eat and that are good for you too. Ask your dietitian to include foods that are heart-healthy to reduce your risk of heart disease.

Your diabetes meal plan will include breads, cereals, rice, and grains; fruits and vegetables; meat and meat substitutes; dairy products; and fats. People with diabetes don't need to eat special foods. The foods on your meal plan are good for everyone in your family! Making wise food choices will help you

- reach and stay at a weight that's good for your body
- keep your blood glucose, blood pressure, and cholesterol under control
- prevent heart and blood vessel disease

ACTION STEPS...

IF YOU USE INSULIN

☛ Follow your meal plan.

☛ Don't skip meals, especially if you've already taken your insulin, because your blood glucose may go too low. (See page 32 for information on how to handle hypoglycemia, also called low blood glucose.)

Diabetes can start at any age.

ACTION STEPS...

IF YOU DON'T USE INSULIN

☛ Follow your meal plan.

☛ Don't skip meals, especially if you take diabetes medicine, because your blood glucose may go too low. It may be better to eat several small meals during the day instead of one or two big meals.

Be Physically Active

Physical activity is good for your diabetes. Walking, swimming, dancing, riding a bicycle, playing baseball, and bowling are all good ways to be active. You can even get exercise when you clean house or work in your garden. Physical activity is especially good for people with diabetes because

- physical activity helps keep weight down
- physical activity helps insulin work better to lower blood glucose
- physical activity is good for your heart and lungs
- physical activity gives you more energy

Before you begin exercising, talk with your doctor. Your doctor may check your heart and your feet to be sure you have no special problems. If you have high blood pressure or eye problems, some exercises like weightlifting may not be safe. Your health care team can help you find safe exercises.

Try to be active almost every day for a total of about 30 minutes. If you haven't been very active lately, begin slowly. Start with 5 to 10 minutes, and then add more time. Or exercise for 10 minutes, three times a day.

If your blood glucose is less than 100 to 120, have a snack before you exercise.

ACTION STEPS...

IF YOU USE INSULIN

☛ See your doctor before starting a physical activity program.

☛ Check your blood glucose before, during, and after exercising. Don't exercise when your blood glucose is over 240 or if you have ketones in your urine (see page 24).

☛ Don't exercise right before you go to sleep because it could cause hypoglycemia during the night.

Being active helps you feel better.

When you exercise, carry glucose tablets or a carbohydrate snack with you in case you get hypoglycemia. Wear or carry an identification tag or card saying that you have diabetes.

The groups listed on page 61 have more information about diabetes and exercise.

ACTION STEPS...

IF YOU DON'T USE INSULIN

☛ See your doctor before starting a physical activity program.

Take Your Diabetes Medicine Every Day

Insulin and diabetes pills are the two kinds of medicines used to lower blood glucose.

If you use insulin

You need insulin if your body has stopped making insulin or if it doesn't make enough. Everyone with type 1 diabetes needs insulin, and many people with type 2 diabetes do too. Some women with gestational diabetes also need to take insulin.

There are five ways to take insulin.

- **Taking shots, also called injections.** 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 pen-like device with a needle and a cartridge of insulin.

- **Using an insulin pump.** A pump is a small device, worn on a belt or in a pocket, that holds insulin. The pump connects to a small plastic tube and a very small needle. The needle is inserted under the skin and stays in for several days.

- **Using an insulin jet injector.** This device sends a fine spray of insulin through the skin with high-pressure air instead of a needle.

You may need insulin to control your blood glucose.

- **Using an insulin infuser.** A small tube is inserted just beneath the skin and remains in place for several days. Insulin is injected into the end of the tube instead of through the skin.

- **Using inhaled insulin.** You'll use a special device to breathe in powdered insulin through the mouth.

If you take diabetes pills

If your body makes insulin, but the insulin doesn't lower your blood glucose enough, you may need diabetes pills. Some pills are taken once a day, and others are taken more often. Ask your health care team when you should take your pills.

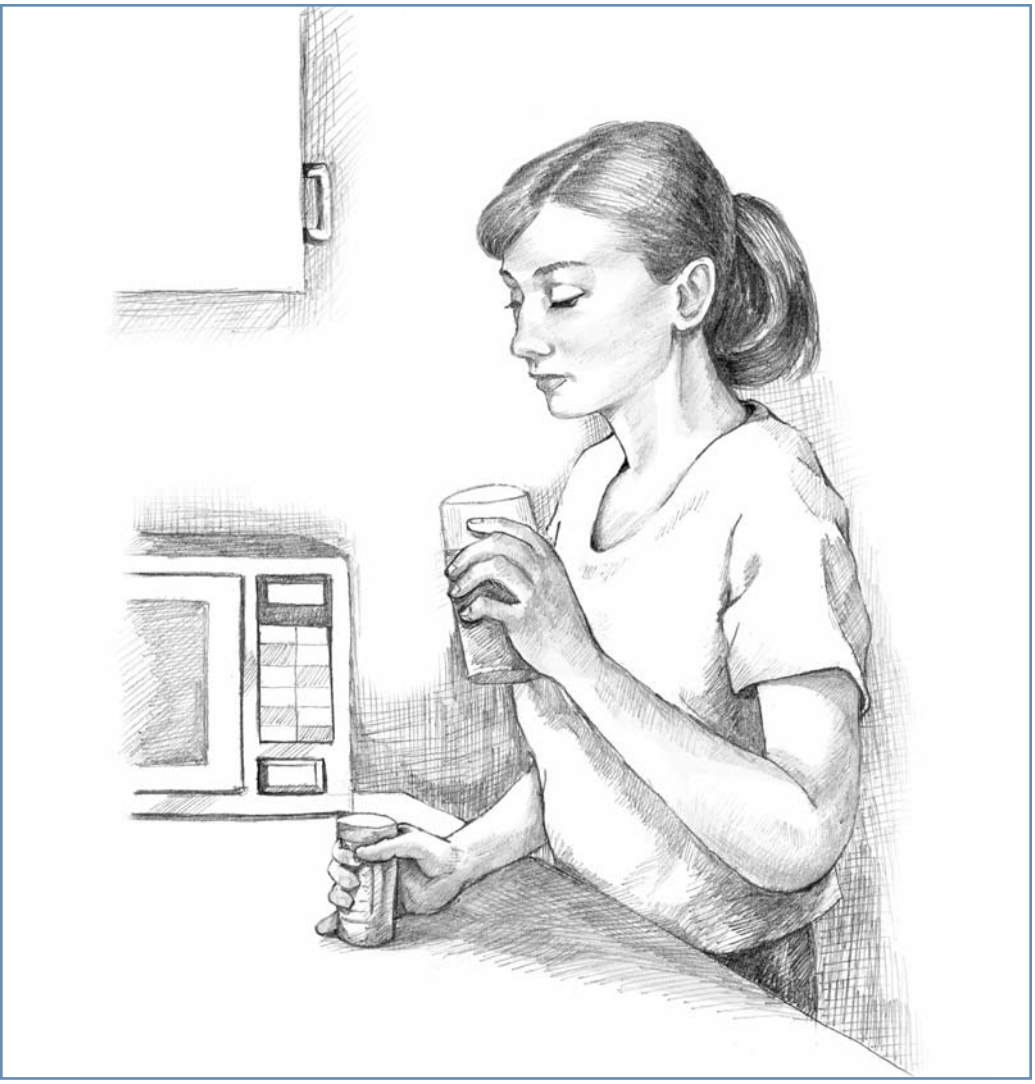
Be sure to tell your doctor if your pills make you feel sick or if you have any other problems. Remember, diabetes pills don't lower blood glucose by themselves. You'll still want to follow a meal plan and be active to help lower your blood glucose.

Sometimes, people who take diabetes pills may need insulin for a while. If you get sick or have surgery, the diabetes pills may no longer work to lower your blood glucose.

You may be able to stop taking diabetes pills if you lose weight. (Always check with your doctor before you stop taking your diabetes pills.) Losing 10 or 15 pounds can sometimes help you reach your target blood glucose level.

If you don't use insulin or take diabetes pills

Many people with type 2 diabetes don't need insulin or diabetes pills. They can take care of their diabetes by using a meal plan and exercising regularly.



Many people with type 2 diabetes take pills to help keep blood glucose in their target range.

Check Your Blood Glucose as Recommended

You'll want to know how well you're taking care of your diabetes. The best way to find out is to check your blood to see how much glucose is in it. If your blood has too much or too little glucose, you may need a change in your meal plan, physical activity plan, or medicine.

Ask your doctor how often you should check your blood glucose. Some people check their blood glucose once a day. Others do it three or four times a day. You may check before and after eating, before bed, and sometimes in the middle of the night.

Your doctor or diabetes educator will show you how to check your blood using a blood glucose meter. Your health insurance or Medicare may pay for the supplies and equipment you need.

Checking your blood glucose will help you see if your diabetes treatment plan is working.

Take Other Tests for Your Diabetes

Urine tests

You may need to check your urine if you're sick or if your blood glucose is over 240. A urine test will tell you if you have ketones in your urine. Your body makes ketones when there isn't enough insulin in your blood. Ketones can make you very sick. Call your doctor right away if you find moderate or large amounts of ketones, along with high blood glucose levels, when you do a urine test. You may have a serious condition called ketoacidosis. If it isn't treated, it can cause death. Signs of ketoacidosis are vomiting, weakness, fast breathing, and a sweet smell on the breath. Ketoacidosis is more likely to develop in people with type 1 diabetes.

You can buy strips for testing ketones at a drug store. Your doctor or diabetes educator will show you how to use them.

The A1C test

Another test for blood glucose, the A1C, also called the hemoglobin A1C test, shows what your overall blood glucose was for the past 3 months. It shows how much glucose is sticking to your red blood cells. The doctor does this test to see what your blood glucose is most of the time. Have this test done at least twice a year.

Ask your doctor what your A1C test showed. A result of under 7 usually means that your diabetes treatment is working well and your blood glucose is under control. If your A1C is 8 or above, your blood glucose may be too high. You'll then have a greater risk of having diabetes problems, like kidney damage. You may need a change in your meal plan, physical activity plan, or diabetes medicine.

A1C results	
Target for most people	under 7
Time to change my diabetes care plan	8 or above
My last result	_____
My target	_____

Talk with your doctor about what your target should be. Even if your A1C is higher than your target, remember that every step toward your goal helps reduce your risk of diabetes problems.

Keep Daily Records

Make copies of the daily diabetes record on page 29. Then write down the results of your blood glucose checks every day. You may also want to write down what you ate, how you felt, and whether you exercised.

By keeping daily records of your blood glucose checks, you can tell how well you're taking care of your diabetes. Show your blood glucose records to your health care team. They can use your records to see whether you need changes in your diabetes medicines or your meal plan. If you don't know what your results mean, ask your health care team.

ACTION STEPS...

IF YOU USE INSULIN

Keep a daily record of

- ☛ your blood glucose numbers
- ☛ the times of the day you took insulin
- ☛ the amount and type of insulin you took
- ☛ whether you had ketones in your urine

Things to write down every day in your record book are

- results of your blood glucose checks
- your diabetes medicines: times and amounts taken
- if your blood glucose was very low (see page 32)
- if you ate more or less food than you usually do
- if you were sick
- if you found ketones in your urine
- what kind of physical activity you did and for how long

ACTION STEPS...

IF YOU DON'T USE INSULIN

Keep a daily record of

☛ your blood glucose numbers

☛ the times of the day you took your diabetes pills

☛ your physical activity

Daily Diabetes Record Page

Week Starting April 20, 2009

	Other blood glucose	Breakfast blood glucose	Medicine	Lunch blood glucose	Medicine	Dinner blood glucose	Medicine	Bedtime blood glucose	Medicine	Notes: (Special events, sick days, physical activity)
Monday		109				122		115		
Tuesday				106				152*		*Missed evening walk.
Wednesday		126		121		131		120		
Thursday		113		128		179		244*		*Sick with flu
Friday		159		147		162		150		
Saturday		127				152*				*Had extra-big snack in afternoon.
Sunday		119		121				140		

SAMPLE

Sample of a record page for a person who doesn't use insulin or diabetes pills.

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, physical activity)
Monday										
Tuesday										
Wednesday										
Thursday										
Friday										
Saturday										
Sunday										

When Your Blood Glucose Is Too High or Too Low

Sometimes, no matter how hard you try to keep your blood glucose in your target range, it's too high or too low. Blood glucose that's too high or too low can make you very sick. Here's how to handle these emergencies.

What You Need To Know About Hyperglycemia

If your blood glucose stays over **180,** it may be too high. (See the chart on page 11.) High blood glucose means you don't have enough insulin in your body. High blood glucose, or "hyperglycemia," can happen if you miss taking your diabetes medicine, eat too much, or don't get enough exercise. Sometimes, the medicines you take for other problems cause high blood glucose. Be sure to tell your doctor about other medicines you take.

Having an infection, being sick, or under stress can also make your blood glucose too high. That's why it's very important to check your blood glucose and keep taking your insulin or diabetes pills when you're sick. (For more about how to take care of yourself when you're sick, see page 50.)

If you're very thirsty and tired, have blurry vision, and have to go to the bathroom often, your blood glucose may be too high. Very high blood glucose may also make you feel sick to your stomach.

If your blood glucose is high much of the time, or if you have symptoms of high blood glucose, call your doctor. You may need a change in your insulin or diabetes pills, or a change in your meal plan.

What You Need To Know About Hypoglycemia

Hypoglycemia happens if your blood glucose drops too low. It can come on fast. It's caused by taking too much diabetes medicine, missing a meal, delaying a meal, exercising more than usual, or drinking alcoholic beverages. Sometimes, medicines you take for other health problems can cause blood glucose to drop.

Hypoglycemia can make you feel weak, confused, irritable, hungry, or tired. You may sweat a lot or get a headache. You may feel shaky. If your blood glucose drops lower, you could pass out or have a seizure.

If you have any of these symptoms, check your blood glucose. If the level is 70 or below, have one of the following right away:

- 2 or 3 glucose tablets
- 1/2 cup (4 ounces) of any fruit juice
- a piece of fruit or a small box of raisins
- 1 cup (8 ounces) of milk
- 1/2 cup (4 ounces) of a regular (not diet) soft drink
- 5 or 6 pieces of hard candy
- 1 or 2 teaspoons of sugar or honey

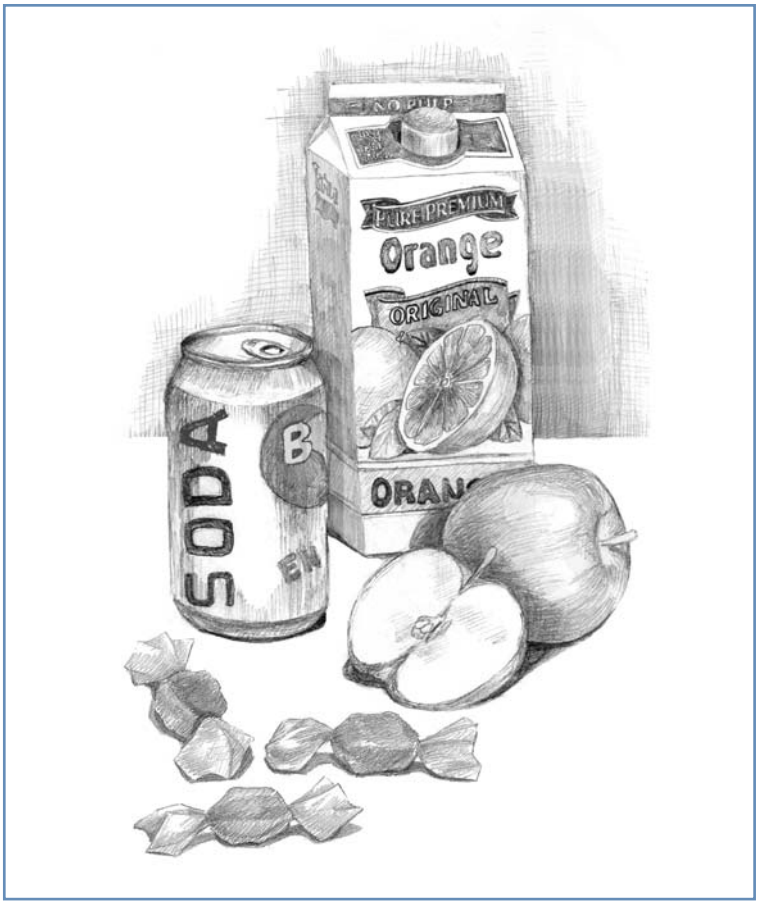
ACTION STEPS...

IF YOU USE INSULIN

☛ Tell your doctor if you have hypoglycemia often, especially at the same time of the day or night several times in a row.

☛ Tell your doctor if you've passed out from hypoglycemia.

☛ Ask your doctor about glucagon. Glucagon is a medicine that raises blood glucose. If you pass out from hypoglycemia, someone should call 911 and give you a glucagon shot.



Have one of these "quick fix" foods when your blood glucose is low.

After 15 minutes, check your blood glucose again to make sure your level is 70 or above. Repeat these steps as needed. Once your blood glucose is stable, if it will be at least an hour before your next meal, have a snack.

ACTION STEPS...

IF YOU DON'T USE INSULIN

☛ Tell your doctor if you have hypoglycemia often, especially at the same time of the day or night several times in a row.

☛ Be sure to tell your doctor about other medicines you are taking.

☛ Some diabetes pills can cause hypoglycemia. Ask your doctor whether your pills can cause hypoglycemia.

If you take insulin or diabetes pills that can cause hypoglycemia, always carry food for emergencies. It's a good idea also to wear a medical identification bracelet or necklace.

If you take insulin, keep a glucagon kit at home and at a few other places where you go often. Glucagon is given as an injection with a syringe and quickly raises blood glucose. Show your family, friends, and co-workers how to give you a glucagon injection if you pass out because of hypoglycemia.

You can prevent hypoglycemia by eating regular meals, taking your diabetes medicine, and checking your blood glucose often. Checking will tell you whether your glucose level is going down. You can then take steps, like drinking fruit juice, to raise your blood glucose.

When you have hypoglycemia, have a snack to bring your blood glucose back to normal.

Why Taking Care of Your Diabetes Is Important

Taking care of your diabetes every day will help keep your blood glucose in your target range and help prevent other health problems that diabetes can cause over the years. This part of the booklet describes those problems. We tell you about them not to scare you, but to help you understand what you can do to keep them from happening.

Do what you can every day to keep your blood glucose in the range that's best for you.

- Follow your meal plan every day.

- Be physically active every day.

- Take your diabetes medicine every day.

- Check your blood glucose as recommended.

Diabetes and Your Heart and Blood Vessels

The biggest problem for people with diabetes is heart and blood vessel disease. Heart and blood vessel disease can lead to heart attacks and strokes. It also causes poor blood flow (circulation) in the legs and feet.

To check for heart and blood vessel disease, your health care team will do some tests. At least once a year, have a blood test to see how much cholesterol is in your blood. Your health care provider should take your blood pressure at every visit. Your provider may also check the circulation in your legs, feet, and neck.

The best way to prevent heart and blood vessel disease is to take good care of yourself and your diabetes.

- Eat foods that are low in fat and salt.
- Keep your blood glucose on track. Know your A1C. The target for most people is under 7.
- If you smoke, quit.
- Be physically active.
- Lose weight if you need to.
- Ask your health care team whether you should take an aspirin every day.
- Keep your blood pressure on track. The target for most people is under 130/80. If needed, take medicine to control your blood pressure.
- Keep your cholesterol level on track. The target for LDL cholesterol for most people is under 100. If needed, take medicine to control your blood fat levels.

What's a desirable blood pressure level?

Blood pressure levels tell how hard your blood is pushing against the walls of your blood vessels. Your pressure is given as two numbers: The first is the pressure as your heart beats and the second is the pressure as your heart relaxes. If your blood pressure is higher than your target, talk with your health care team about changing your meal plan, exercising, or taking medicine.

Blood pressure results

Target for most people with diabetes	under 130/80
My last result	_____
My target	_____

What are desirable blood fat levels?

Cholesterol, a fat found in the body, appears in different forms. If your LDL cholesterol ("bad" cholesterol) is 100 or above, you are at increased risk of heart disease and may need treatment. A high level of total cholesterol also means a greater risk of heart disease. But HDL cholesterol ("good" cholesterol) protects you from heart disease, so the higher it is, the better. It's best to keep triglyceride (another type of fat) levels under 150. **All of these target numbers are important for preventing heart disease.**

Target blood fat levels for people with diabetes

Total cholesterol	under 200	My last result _____	My target _____
LDL cholesterol	under 100	My last result _____	My target _____
HDL cholesterol	above 40 (men)	My last result _____	My target _____
	above 50 (women)	My last result _____	My target _____
Triglycerides	under 150	My last result _____	My target _____

Rose is 55 years old and teaches at a high school on an American Indian reservation in New Mexico. Rose has had type 2 diabetes for almost 10 years. When she first found out she had diabetes, she weighed too much and didn't get much exercise. After talking it over with her doctor, Rose began an exercise program. She lost weight, and her blood glucose began to come down. She felt better too. Now Rose teaches an exercise class in her spare time.

Diabetes and Your Eyes

Have your eyes checked once a year. You could have eye problems that you haven't noticed yet. It is important to catch eye problems early when they can be treated. Treating eye problems early can help prevent blindness.

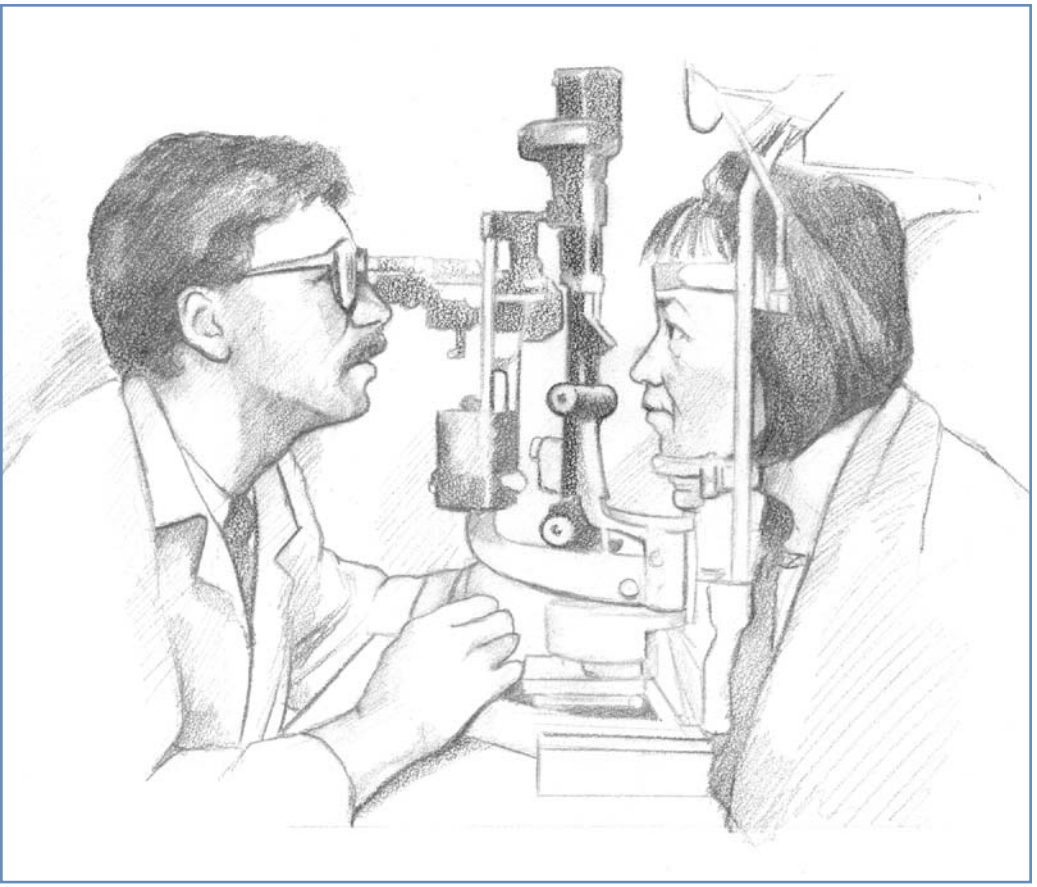
High blood glucose can make the blood vessels in the eyes bleed. This bleeding can lead to blindness. You can help prevent eye damage by keeping your blood glucose as close to normal as possible. If your eyes are already damaged, an eye doctor may be able to save your sight with laser treatments or surgery.

The best way to prevent eye disease is to have a yearly eye exam. In this exam, the eye doctor puts drops in your eyes to dilate your pupils. When the pupils are dilated, or big, the doctor can see into the back of the eye. This is called a dilated eye exam and it doesn't hurt. If you've never had this kind of eye exam before, you should have one now, even if you haven't had any trouble with your eyes. Be sure to tell your eye doctor that you have diabetes.

Here are some tips for taking care of your eyes:

- For adults and adolescents (10 years old and older) with type 1 diabetes: Have your eyes examined within 3 to 5 years of being diagnosed with diabetes. Then have an exam every year.

- For people with type 2 diabetes: Have an eye exam every year.



See your eye doctor for an eye exam with dilated pupils every year. Early treatment of eye problems can help save your sight.

- For women planning to have a baby: Have an eye exam before becoming pregnant.
- If you smoke, quit.
- Keep your blood glucose and blood pressure as close to normal as possible.

Tell your eye doctor right away if you have any problems like blurry vision or seeing dark spots, flashing lights, or rings around lights.

Diabetes and Your Kidneys

Your kidneys help clean waste products from your blood. They also work to keep the right balance of salt and fluid in your body.

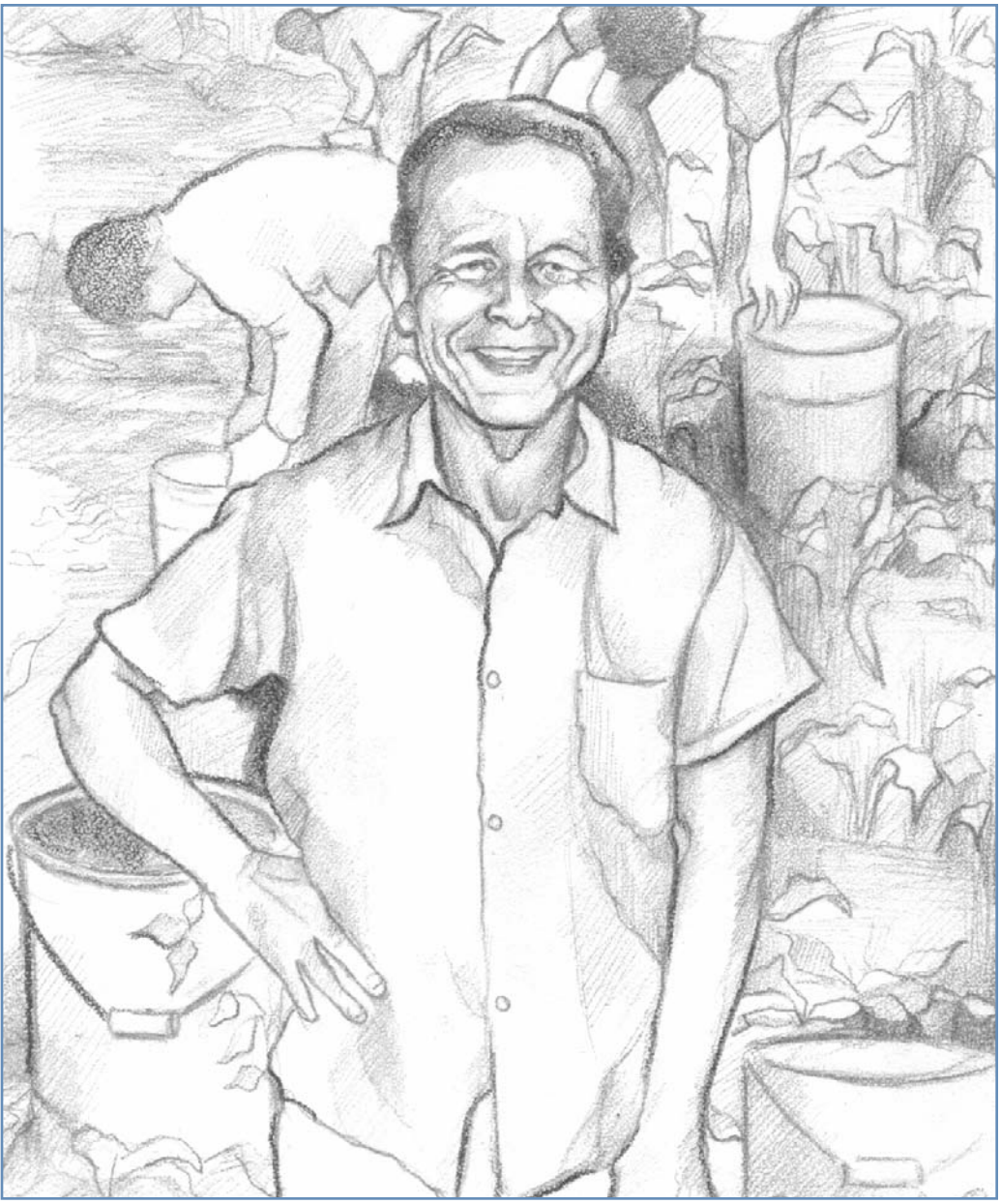
Too much glucose in your blood is very hard on your kidneys. After a number of years, high blood glucose can cause the kidneys to stop working. This condition is called kidney failure. If your kidneys stop working, you'll need dialysis (using a machine or special fluids to clean your blood) or a kidney transplant.

Make sure you have the following tests at least once a year to make sure your kidneys are working well:

- a urine test for protein, called the microalbumin test
- a blood test for creatinine

Some types of blood pressure medicines can help prevent kidney damage. Ask your doctor whether these medicines could help you. You can also help prevent kidney problems by doing the following:

- Take your medicine if you have high blood pressure.
- Ask your doctor or your dietitian whether you should eat less protein (meat, poultry, cheese, milk, fish, and eggs).
- See your doctor right away if you get a bladder or kidney infection. Signs of bladder or kidney infections are cloudy or bloody urine, pain or burning when you urinate, and having to urinate often or in a hurry. Back pain, chills, and fever are also signs of kidney infection.



Mike is a migrant farm worker with type 2 diabetes and high blood pressure. Mike, 47, is married, and he and his wife have three children. The family is often on the move, depending on where the work is. Mike has his blood pressure and kidneys checked at clinics in migrant worker camps. Some of the clinics also offer diabetes classes. Whenever they can, Mike and his wife attend these classes. They especially like the cooking classes because they learn how to prepare low-cost, healthy meals for the whole family.

- Keep your blood glucose and blood pressure as close to normal as possible.
- If you smoke, quit.

Diabetes and Your Nerves

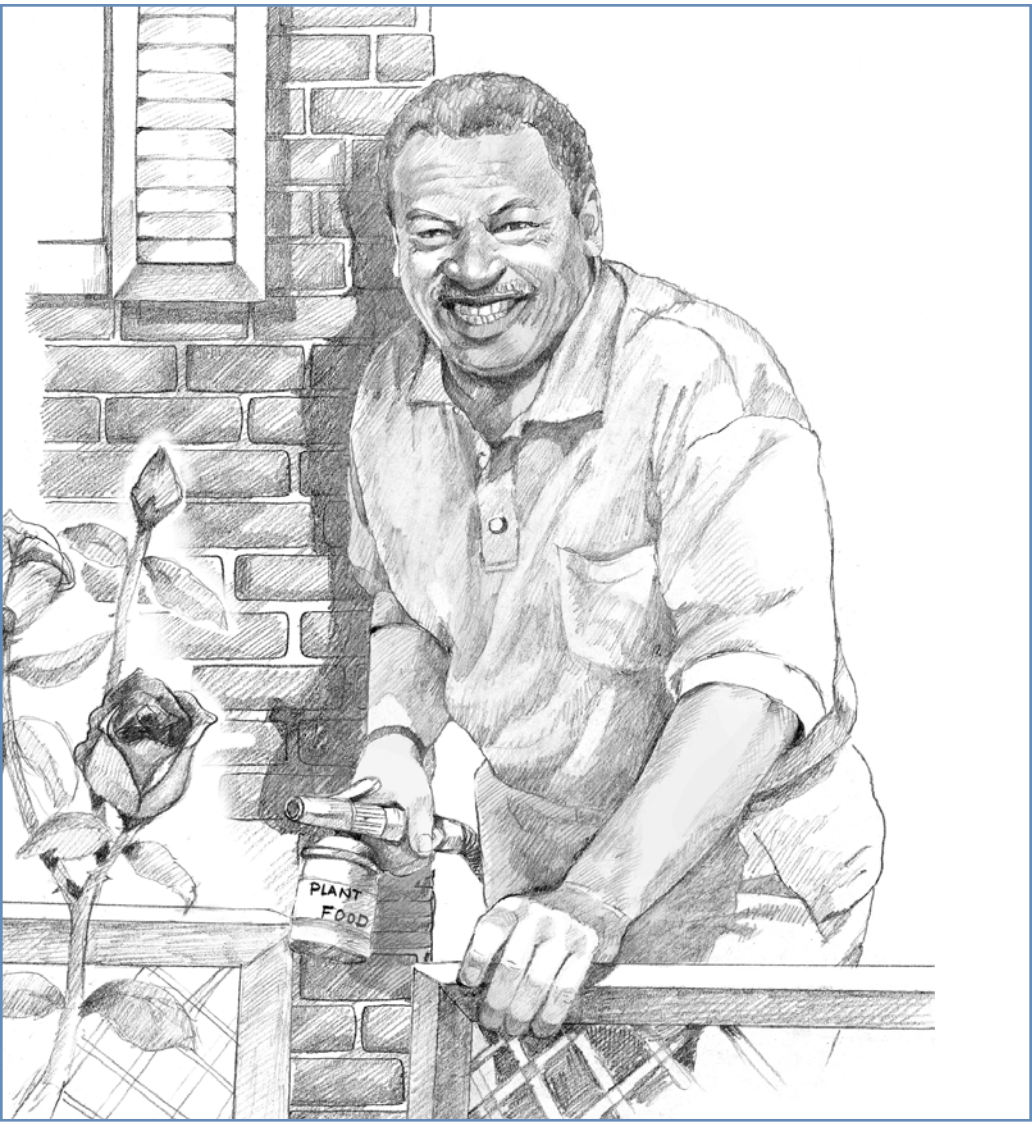
Over time, high blood glucose can harm the nerves in your body. Nerve damage can cause you to lose the feeling in your feet or to have painful, burning feet. It can also cause pain in your legs, arms, or hands or cause problems with digesting food, going to the bathroom, or having sex.

Nerve damage can happen slowly. You may not even realize you have nerve problems. Your doctor should check your nerves at least once a year. Part of this exam should include tests to check your sense of feeling and the pulses in your feet.

Tell the doctor about any problems with your feet, legs, hands, or arms. Also, tell the doctor if you have trouble digesting food, going to the bathroom, or having sex, or if you feel dizzy sometimes.

Nerve damage to the feet can lead to amputations. You may not feel pain from injuries or sore spots on your feet. If you have poor circulation because of blood vessel problems in your legs, the sores on your feet can't heal and might become infected. If the infection isn't treated, it could lead to amputation.

Ask your doctor whether you already have nerve damage in your feet. If you do, it is especially important to take good care of your feet. To help prevent complications from nerve damage, check your feet every day (see *Foot Care Tips* on page 46).



Joe is a 65-year-old retired letter carrier with type 2 diabetes. Every time he visits his doctor, he takes his shoes and socks off so the doctor can check his feet for sores, ulcers, and wounds. The doctor also checks the sense of feeling in Joe's feet. Joe and his doctor talk about ways to prevent foot and nerve problems. Since Joe has lost some feeling in his toes, the doctor also talks to him about the importance of good foot care and keeping his blood glucose in a good range.

Here are some ways to take care of your nerves:

- Keep your blood glucose and blood pressure as close to normal as possible.
- Limit the amount of alcohol you drink.
- Check your feet every day.
- If you smoke, quit.

Foot Care Tips

You can do a lot to prevent problems with your feet. Keeping your blood glucose in your target range and taking care of your feet can help protect them.

- Check your bare feet every day. Look for cuts, sores, bumps, or red spots. Use a mirror or ask a family member for help if you have trouble seeing the bottoms of your feet.
- Wash your feet in warm—not hot—water every day, but don't soak them. Use mild soap. Dry your feet with a soft towel, and dry carefully between your toes.
- After washing your feet, cover them with lotion before putting your shoes and socks on. Don't put lotion or cream between your toes.
- File your toenails straight across with an emery board. Don't leave sharp edges that could cut the next toe.
- Don't try to cut calluses or corns off with a razor blade or knife, and don't use wart removers on your feet. If you have warts or painful corns or calluses, see a podiatrist, a doctor who treats foot problems.

- Wear thick, soft socks. Don't wear mended stockings or stockings with holes or seams that might rub against your feet.
- Check your shoes before you put them on to be sure they have no sharp edges or objects in them.
- Wear shoes that fit well and let your toes move. Break new shoes in slowly. Don't wear flip-flops, shoes with pointed toes, or plastic shoes. Never go barefoot.
- Wear socks if your feet get cold at night. Don't use heating pads or hot water bottles on your feet.
- Have your doctor check your feet at every visit. Take your shoes and socks off when you go into the examining room. This will remind the doctor to check your feet.
- See a podiatrist for help if you can't take care of your feet yourself.

Diabetes and Your Gums and Teeth

Diabetes can lead to infections in your gums and the bones that hold your teeth in place. Like all infections, gum infections can cause blood glucose to rise. Without treatment, teeth may become loose and fall out.

Help prevent damage to your gums and teeth by doing the following:

- See your dentist twice a year. Tell your dentist that you have diabetes.
- Brush and floss your teeth at least twice a day.
- If you smoke, quit.
- Keep your blood glucose as close to normal as possible.

Keeping your blood glucose in your target range, brushing and flossing your teeth every day, and having regular dental checkups are the best ways to prevent gum and teeth problems when you have diabetes.

James runs a bookstore in California. He's 35 years old and has had type 1 diabetes for 15 years. James takes good care of his teeth and sees his dentist twice a year. He makes his appointments in the morning, after breakfast, so he won't get hypoglycemia while at the dentist. He also carries glucose tablets and wears an identification bracelet that has the name and the telephone number of his doctor on it.

Taking Care of Your Diabetes at Special Times

Diabetes is part of your life. It's very important to take care of it when you're sick, when you're at school or work, when you travel, or when you're pregnant or thinking about having a baby. Here are some tips to help you take care of your diabetes at these times.

ACTION STEPS...

IF YOU USE INSULIN

☛ Take your insulin, even if you've been throwing up. Ask your doctor about how to adjust your insulin dose based on your blood glucose test results.

When You're Sick

Take good care of yourself when you have a cold, the flu, an infection, or other illnesses. Being sick can raise your blood glucose. When you're sick, do the following:

- Check your blood glucose every 4 hours. Write down the results.
- Keep taking your insulin and your diabetes pills. Even if you can't keep food down, you still need your diabetes medicine. Ask your doctor or diabetes educator whether to change the amount of insulin or pills you take.

- Drink at least a cup (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 drinking juice or eating crackers, popsicles, or soup.
- If you can't eat at all, drink clear liquids such as ginger ale. Eat or drink something with sugar in it if you have trouble keeping food down.
- Test your urine for ketones if
  - your blood glucose is over 240
  - you can't keep food or liquids down
- Call your health care provider **right away** if
  - your blood glucose has been over 240 for longer than a day
  - you have moderate to large amounts of ketones in your urine
  - you feel sleepier than usual
  - you have trouble breathing
  - you can't think clearly
  - you throw up more than once
  - you've had diarrhea for more than 6 hours

ACTION STEPS...

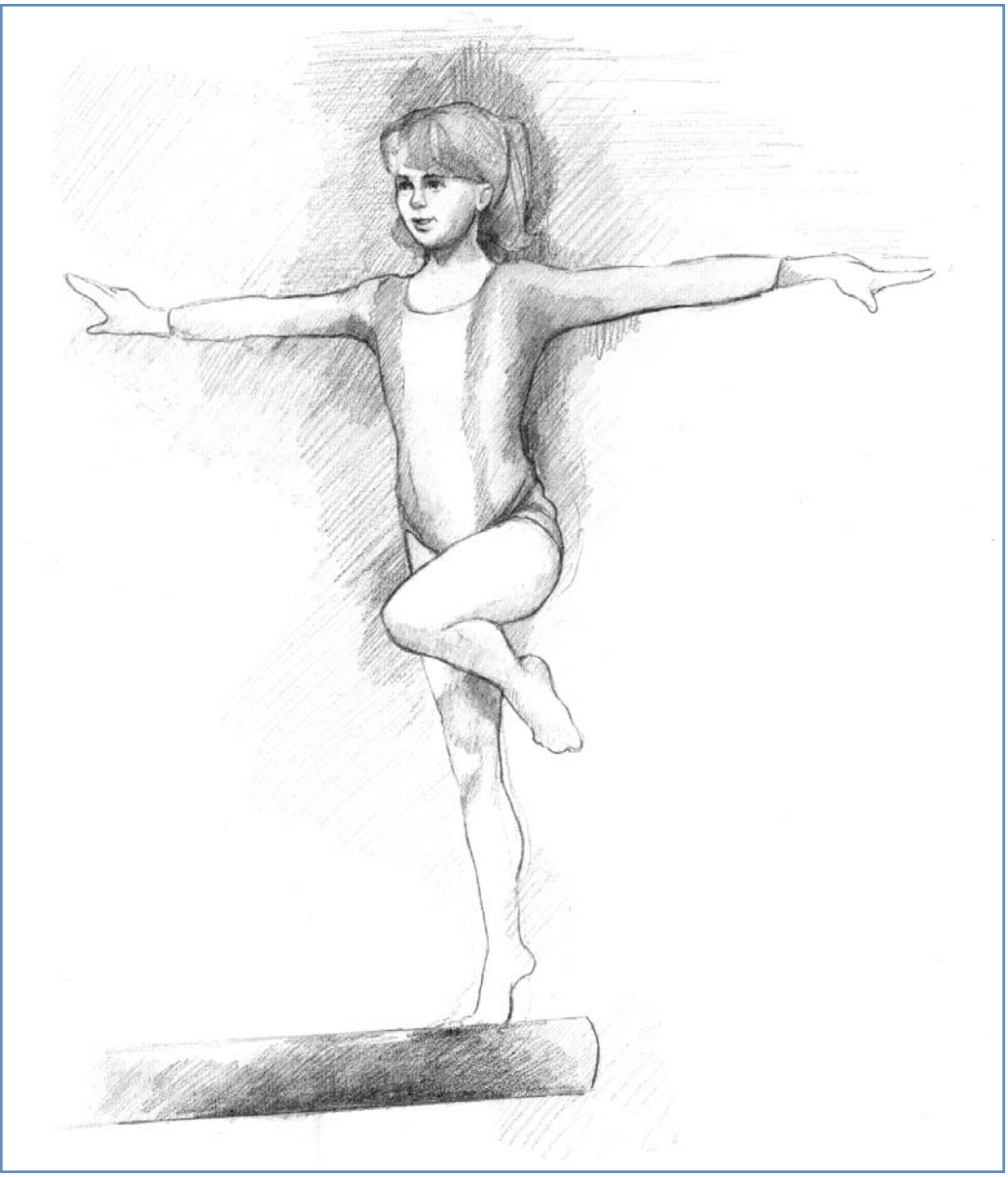
IF YOU DON'T USE INSULIN

☛ Take your diabetes pills, even if you've been throwing up.

When You're at School or Work

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

- Follow your meal plan.
- Take your medicine and check your blood glucose as usual.
- Tell your teachers, friends, or close co-workers about the signs of hypoglycemia. You may need their help if your blood glucose drops too low.
- Keep snacks nearby and carry some with you at all times to treat hypoglycemia.
- Tell your company nurse or school nurse that you have diabetes.



Sally, a 12-year-old girl with type 1 diabetes, loves her gymnastics class. She practices every day for an hour. Before Sally exercises, she checks her blood glucose to make sure it's okay to start her workout. If her blood glucose is too low, she eats a snack before beginning to practice. Sally has told her coach that she has diabetes. She knows that if she has a problem with hypo-glycemia, her coach will be there to help her.

When You're Away From Home

Taking care of your diabetes, even on vacation, is very important.

Here are some tips:

- Follow your meal plan as much as possible when you eat out. Always carry a snack with you in case you have to wait to be served.
- Limit your drinking of beer, wine, or other alcoholic beverages. Ask your diabetes educator how much alcohol you can safely drink. Eat something when you drink.
- If you're taking a long trip by car, check your blood glucose before driving. Stop and check your blood glucose every 2 hours. Always carry snacks like fruit, crackers, juice, or soft drinks in the car in case your blood glucose drops too low.
- Ask ahead of time for a diabetes meal if you're traveling by plane. Most airlines serve special meals for people with health needs. Carry food (like crackers or fruit) with you in case meals are late.
- Carry your medicines (insulin and diabetes pills) and your blood testing supplies with you. Never put them in your checked baggage.
- Ask your health care team how to adjust your medicines, especially your insulin, if you're traveling across time zones.

ACTION STEPS...

IF YOU USE 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 in case of loss or breakage

☛ ask your doctor for a letter saying that you have diabetes and need to carry supplies for taking insulin and testing blood glucose

When traveling by plane, find out if and when a meal will be served. Then decide when to take your insulin shot or diabetes pills. You may need to bring your own food for the trip.

- Take comfortable, well-fitting shoes on vacation. You'll probably be walking more than usual, so you should take extra care of your feet.
- If you're going to be away for a long time, ask your doctor for a written prescription for your diabetes medicine 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 insulin and pills.

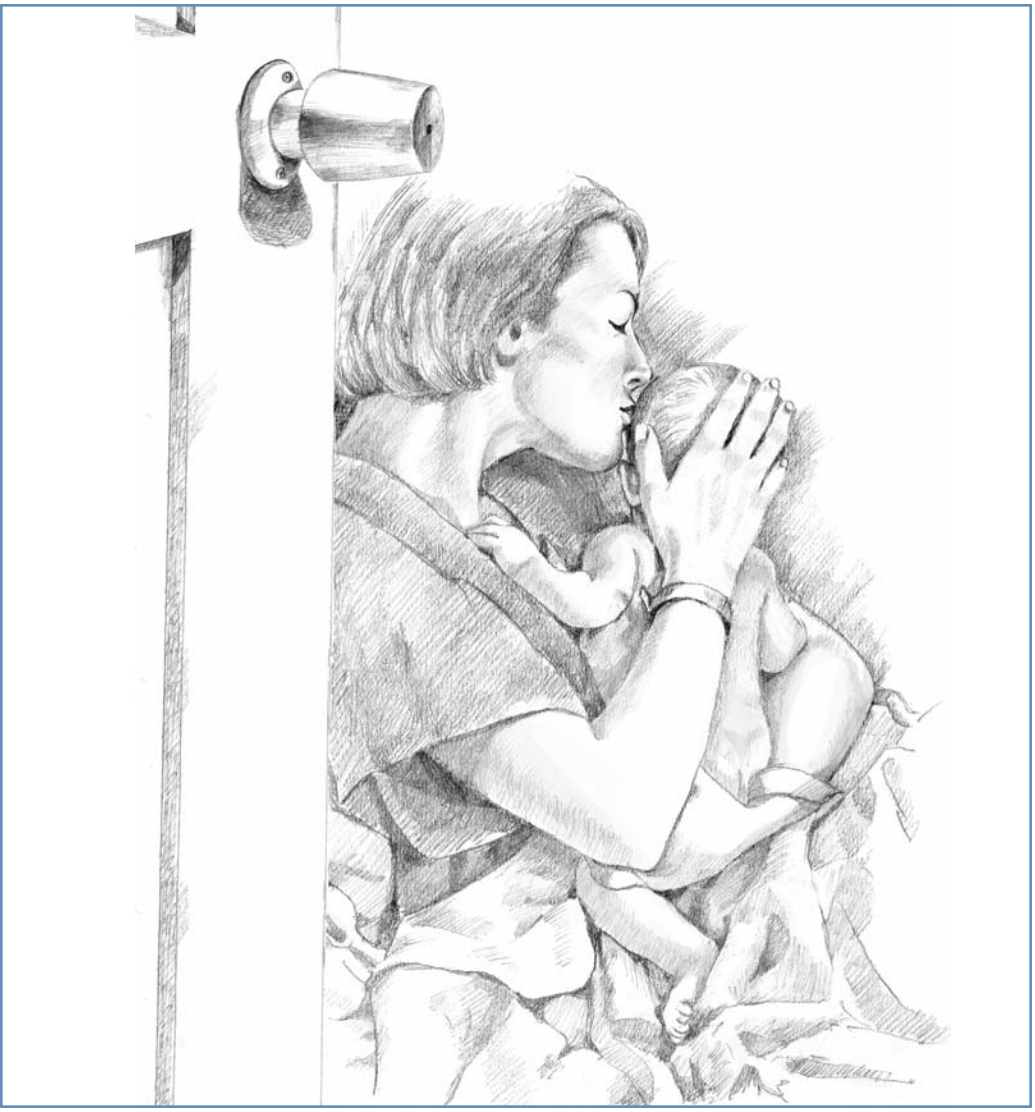
When You're Planning a Pregnancy

Planning ahead is very important if you want to have a baby. High blood glucose can be harmful to both a mother and her unborn baby. Even **before** you become pregnant, your blood glucose should be close to the normal range. Keeping blood glucose near normal **before** and **during** pregnancy helps protect both mother and baby.

Your insulin needs may change when you're pregnant. Your doctor may want you to take more insulin and check your blood glucose more often. If you take diabetes pills, you'll take insulin instead when you're pregnant.

If you plan to have a baby, do the following:

- Work with your health care team to get your blood glucose as close to the normal range as possible.
- See a doctor who has experience in taking care of pregnant women with diabetes.
- Have your eyes and kidneys checked. Pregnancy can make eye and kidney problems worse.
- Don't smoke, drink alcohol, or use harmful drugs.
- Follow the meal plan you get from your dietitian or diabetes educator to make sure you and your unborn baby have a healthy diet.



Maria, a 25-year-old woman with type 1 diabetes, wanted children. Her doctor told Maria and her husband that before she got pregnant, her blood glucose should be close to normal and her kidneys, eyes, and blood pressure should be checked. Maria began to watch her diabetes very carefully. She checked her blood glucose four times a day, ate healthy meals, began to walk a lot, and checked her blood and urine often to make sure that her body was healthy enough to carry a baby.

Once Maria became pregnant, she spent a lot of time taking care of her diabetes. Her hard work paid off. After 9 months, she gave birth to a healthy baby boy.

If you're already pregnant, see your doctor right away. It's not too late to bring your blood glucose close to normal so that you'll stay healthy during the rest of your pregnancy.

Where To Get More Help With Your Diabetes

People Who Can Help You

☛ **Your doctor.** He or she may be your doctor at the clinic where you go for health care, your family doctor, or someone who has special training in caring for people with diabetes. A doctor with that kind of special training is called an endocrinologist or diabetologist.

You'll talk with your doctor about what kind of medicine you need and how much you should take. You'll also agree on a target blood glucose range and blood pressure and cholesterol targets. Your doctor will do tests to be sure that your blood glucose, blood pressure, and cholesterol are staying on track and that you're staying healthy. Ask your doctor if you should take aspirin every day to help prevent heart disease.

☛ **Your diabetes educator.** A diabetes educator may be a nurse, a dietitian, or another kind of health care worker. Diabetes educators teach you about meal planning, diabetes medicines, physical activity, how to check your blood glucose, and how to fit diabetes care into your everyday life.

Don't be shy about asking your doctor or diabetes educator about the information in this booklet. Ask questions if you don't understand something. After all, it's your health!

☛ **Your family and friends.** Taking care of your diabetes is a daily job. You may need help or support from your family or friends. You may want to bring a family member or close friend with you when you visit your doctor or diabetes educator. Taking good care of your diabetes can be a family affair!

☛ **A counselor or mental health worker.** You might feel sad about having diabetes or get tired of taking care of yourself. Or you might be having problems because of work, school, or family. If diabetes makes you feel sad or angry, or if you have other problems that make you feel bad, you can talk to a counselor or mental health worker. Your doctor or diabetes educator can help you find a counselor if you need one.

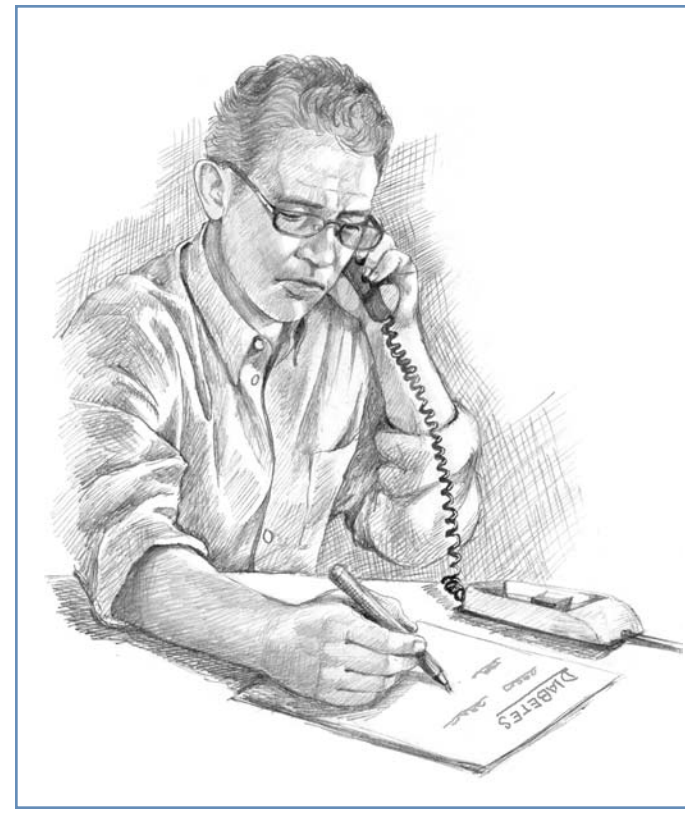
Organizations That Can Help You

☛ How to find a diabetes educator

To find a diabetes educator near you, call the American Association of Diabetes Educators toll-free at 1–800–832–6874, or look on the Internet at *www.diabeteseducator.org* and click on "Find an Educator."

☛ How to find a dietitian

To find a dietitian near you, call the American Dietetic Association toll-free at 1–800–366–1655, or look on the Internet at *www.eatright.org* and click on "Find a Nutrition Professional."



☛ How to find programs about diabetes

To find programs about diabetes or for additional information, contact

American Diabetes Association
1701 North Beauregard Street
Alexandria, VA 22311
Phone: 1–800–342–2383
Internet: www.diabetes.org

Juvenile Diabetes Research Foundation International
120 Wall Street
19th Floor
New York, NY 10005
Phone: 1–800–533–2873
Internet: www.jdrf.org

Both these organizations have magazines and other information for people with diabetes.

They also have local groups in many places where you can meet other people who have diabetes.

☛ How to get more information about diabetes

To get more information about taking care of diabetes, contact

National Diabetes Information Clearinghouse
1 Information Way
Bethesda, MD 20892–3560
Phone: 1–800–860–8747
Fax: 703–738–4929
Email: ndic@info.niddk.nih.gov
Internet: www.diabetes.niddk.nih.gov

National Diabetes Education Program
1 Diabetes Way
Bethesda, MD 20892–3600
Phone: 1–800–438–5383
Fax: 703–738–4929
Internet: www.ndep.nih.gov

National Diabetes Information Clearinghouse

1 Information Way
Bethesda, MD 20892–3560
Phone: 1–800–860–8747
Fax: 703–738–4929
Email: ndic@info.niddk.nih.gov
Internet: 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 under 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.

Publications produced by the Clearinghouse are carefully reviewed by both NIDDK scientists and outside experts.

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This booklet is also available at *www.diabetes.niddk.nih.gov.*

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National Institute of Diabetes and
Digestive and Kidney Diseases

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