

THE EVERETT FOOT
CLINIC

GENERAL INFORMATION ON
DIABETES

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Information gathered in this handout was obtained through the American Diabetes Association website. You may obtain more information regarding Diabetes at www.diabetes.org/default.asp

This handout was created to improve the lives of our patients affected by diabetes.



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DIAGNOSIS: DIABETES

How Lab Tests Show You Have Diabetes

You just found out you have diabetes. If you're like many people, the news makes your head spin. How does the doctor know? How do blood tests help diagnose the disease? Could the test results be wrong? Is more than one test needed? Should your family members have tests, too?

To understand how doctors diagnose diabetes, read on.

High Blood Glucose Levels

Doctors diagnose diabetes on the basis of too-high levels of glucose in the blood. If you have diabetes, your blood glucose levels rise because of the foods you eat. Foods have little effect on blood glucose in people without diabetes. Normally, insulin, a hormone that is made in the pancreas, allows glucose to enter your body's cells and be used as fuel. Insulin is the main tool your body uses to lower your blood glucose level.

People with diabetes can have insulin deficiency which means (they make too little insulin) or insulin resistance, which means they don't respond well to insulin. In people with diabetes, insulin is not doing its job, so their body's glucose can't get into their cells and be used for energy. Instead, their unused glucose builds up in their blood and passes through the kidneys if the glucose level becomes high enough. The extra glucose causes frequent urination, which in turn leads to thirst (this is the body's way of making up for the fluid lost in urination).

What Urine Tests Measure

High urine glucose levels give doctors a clue that something is wrong. But urine tests are not a good way to diagnose diabetes. Urine tests are not as accurate as blood tests. And the level of blood glucose needed to make glucose appear in the urine is different for each person. Your glucose level could be high, yet high levels of glucose may not appear in the urine. So in diagnosing diabetes, doctors measure glucose in the blood.

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Urine tests are a very useful way to measure ketones, substances that build up when blood glucose is very high.

Blood Tests

The goal of blood glucose tests is to find out whether you have a very large amount of glucose in your blood. There are two types of tests: screening tests and diagnostic tests. Screening tests are performed on people who have no symptoms of diabetes. On the other hand, diagnostic tests are done to confirm a diagnosis that is already suspected from the patient's symptoms.

Screening tests are fast, easy to perform, and cheap. (Health fairs often offer screening tests, for example.) Screening tests require as little as a drop of blood from your fingertip and take only a minute or two to complete.

Most doctors don't screen everyone for diabetes during regular checkups. The chance of finding the disease in most people is just too low. But screening tests are useful for people who may be at risk for developing diabetes. People at risk include:

- blood relatives of people with diabetes
- women who have had gestational diabetes or who have had babies weighing 9 pounds or more at birth
- African Americans, Hispanic Americans, Asian Americans, Native Americans, and Pacific Islanders
- people with a condition known as impaired glucose tolerance or impaired fasting glucose (see below)
- people with high blood pressure or very high blood cholesterol or triglyceride levels
- people who are obese
- people 45 years or older

Pregnant women should be screened for gestational diabetes (diabetes that starts during pregnancy) between the 24th and 28th weeks if they are 25 years of age or older, less than 25 years of age and obese, if they have a family history of diabetes (parent or sibling), or if they are a member of an ethnic/racial group at high risk for diabetes (Hispanic-American, Native American, Asian-American, African-American, or Pacific Islander).



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If you are 45 years or older, have your blood glucose level checked every 3 years. If you have risk factors, you may need to be tested more often.

For diagnostic tests, the doctor's office draws samples of blood from a vein and sends them to a laboratory for analysis. Different types of diagnostic tests are used to diagnose diabetes—fasting plasma glucose, random plasma glucose, and oral glucose tolerance tests. When you get your test results, ask your doctor to explain them to you. Comparing your test results with those of family or friends may confuse or alarm you. You may not have had the same type of test, so your results could have a completely different meaning.

Fasting Plasma Glucose Test

The fasting plasma glucose test is the preferred way to diagnose diabetes. It is easy to perform and convenient. After you have fasted overnight (at least 8 hours), a single sample of your blood is drawn at the doctor's office and sent to the laboratory for analysis.

Normal fasting plasma glucose levels are less than 110 milligrams per deciliter (mg/dl). Fasting plasma glucose levels of more than 126 mg/dl on two or more tests on different days indicate diabetes.

Random Plasma Glucose Test

Sometimes, random blood samples (if taken shortly after eating or drinking) may be used to test for diabetes when symptoms are present. A blood glucose level of 200 mg/dl or higher indicates diabetes, but it must be reconfirmed on another day with a fasting plasma glucose or an oral glucose test.

Oral Glucose Tolerance Test

With the oral glucose tolerance test, you must fast overnight (at least 8 but not more than 16 hours) and go to your doctor's office or the laboratory in the morning. First, your fasting plasma glucose is tested. After this test, you receive 75 grams of glucose (100 grams for pregnant women). Usually, the glucose is in a sweet-tasting liquid that you drink. Blood samples are taken up to four times to measure your blood glucose.

For the test to give reliable results, you must be in good health (not have any other (illnesses, not even a cold). Also, you should be normally active (for example, not lying down as an inpatient in a hospital) and taking no medicines that



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could affect your blood glucose. For 3 days before the test, you should have eaten a diet high in carbohydrates (150–200 grams per day). The morning of the test, you should not smoke or drink coffee.

The oral glucose tolerance test measures blood glucose levels five times over a period of 3 hours. In a person without diabetes, the glucose levels rise and then fall quickly. In someone with diabetes, glucose levels rise higher than normal and fail to come back down as fast.

People with glucose levels between normal and diabetic have impaired glucose tolerance (IGT). People with IGT do not have diabetes. Each year, only 1–5% of people whose test results show IGT actually develop diabetes. And with retesting, as many as half of the people with IGT have normal oral glucose tolerance test results. Weight loss and exercise may help people with IGT return their glucose levels to normal.

If your values are abnormal, you will need to have another test—preferably the fasting plasma glucose test.

Glucose tolerance tests may lead to one of the following diagnoses.

Normal response. A person is said to have a normal response when the 2-hour glucose level is less than 140 mg/dl, and all values between 0 and 2 hours are less than 200 mg/dl.

Impaired glucose tolerance. A person is said to have IGT when the fasting plasma glucose is less than 126 mg/dl and the 2-hour glucose level is between 140 and 199 mg/dl.

Diabetes. A person has diabetes when two diagnostic tests done on different days show that the blood glucose level is high.

Gestational diabetes. A woman has gestational diabetes when she has any two of the following: a fasting plasma glucose of more than 95 mg/dl, a 1-hour glucose level of more than 180 mg/dl, a 2-hour glucose level of more than 155 mg/dl, or a 3-hour glucose level of more than 140 mg/dl.

In diagnosing your diabetes, your doctor needed test results. But test results are just part of the information that goes into the diagnosis of diabetes. Your doctor also took into account your physical examination, symptoms, and medical history to

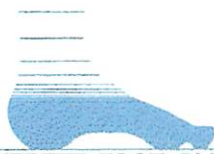


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DIABETES SELF-TESTING

Simple tests you do yourself can help you care for your diabetes and feel better.

All people with diabetes have to work to keep the amount of glucose (sugar) in their blood as near to normal as possible. This is called being in control. You want diabetes control because you will feel better. Also, keeping blood sugar levels near the normal range can help prevent or delay the start of such diabetes side effects as nerve, eye, kidney, and blood vessel damage.

When you learned you had diabetes, you and your health care team worked out a diabetes care plan. The plan aims to balance the foods you eat with your exercise and, possibly, diabetes pills or insulin. You can do two types of tests to help keep track of how your plan is working. These are blood glucose tests and urine ketone tests.

Blood Sugar Monitoring Tests

Blood sugar monitoring is the main tool you have to check your diabetes control. This test tells you your blood sugar level at any one time. Keeping a log of your results is vital. When you bring this record to your health care provider, you have a good picture of your body's response to your diabetes care plan. Blood sugar checks let you see what works and what doesn't. This allows you and your doctor, dietitian, or nurse educator to make needed changes.

Who Should Test?

Experts feel that anyone with diabetes can benefit from self-monitoring of blood sugar. The American Diabetes Association recommends blood glucose testing if you have diabetes and are:

- taking insulin or diabetes pills

decide to test.

The Blood Test With a Memory

When you've been diagnosed with diabetes, your doctor may order another type of blood test called glycated hemoglobin. This test is easy to do during routine office visits. GHb lets the doctor take a backward look at your diabetes control.

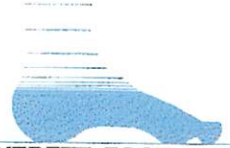
Hemoglobin is the protein in red blood cells that carries oxygen. GHb forms when glucose in the blood attaches to the hemoglobin. Because blood cells stay in circulation for 2-3 months, GHb level is a good measure of a person's average blood glucose level over the previous 2-3 months.

The GHb test requires only one sample of blood, which can be taken at any time of the day, even right after a meal.

Although a high GHb almost always means IGT or diabetes, people with IGT or diabetes can have normal GHb levels. So the GHb test is not used to diagnose diabetes. Doctors use it to monitor blood glucose control.

Type 1 or Type 2?

After the diagnosis of diabetes, the doctor will take many factors into account to determine which type of diabetes you have. In general, people with *type 1* are diagnosed before they are 30 years old, are lean, and have had diabetic ketoacidosis (which sometimes leads to a coma) or have high levels of ketones in their urine. People with *type 2* are most often diagnosed when they are over 30 and obese. They usually do not have urine ketones. Of course, there are exceptions to these categories. Whatever type you have, the goal of treatment is to get your blood glucose levels as close to normal as possible.



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On Intensive Insulin therapy

- pregnant
 - having a hard time controlling your blood sugar levels
 - having severe low blood sugar levels or ketones from high blood sugar levels
 - having low blood sugar levels without the usual warning signs
- Urine Tests

Urine tests for sugar are not as accurate as blood tests. Urine testing for sugar should not be done unless blood testing is impossible.

A urine test for ketones is another matter. This is an easy test that is very important when your diabetes is out of control or when you are sick. You can find moderate or large amounts of ketones in urine when your body is burning fat instead of glucose for fuel. This happens when there is too little insulin at work. Everyone with diabetes needs to know how to test their urine for ketones.

How Blood Tests Work

You prick your finger with a special needle, called a lancet, to get a drop of blood. There are spring-loaded lancing devices that make sticking your finger less painful. Before sticking your finger, wash your hands with soap and water. Prick the side of your finger by your fingernail to avoid having sore spots on the parts of your finger you use the most.

Blood glucose meters are small computerized machines that "read" your blood sugar. In all types of meters, your blood sugar level shows up as a number on a screen (like that on your pocket calculator). Be sure your doctor or nurse educator shows you the correct way to use your meter. With all the advances in blood sugar meters, use of a meter is better than visual checking.

How to Pick a Meter

There are many meters to choose from. Some meters are made for those with poor eyesight. Others come with memory so you can store your test results in the meter itself. The American Diabetes Association does not endorse any products or recommend one meter over another. If you plan to buy a meter, here are some questions to think about:

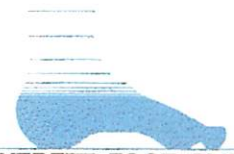
- What meter does your doctor or diabetes educator suggest? They may have meters that they use often and know best.



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- What will it cost? Don't assume that your health insurance will cover the cost of a meter. Also consider the cost of testing supplies, such as test strips, when you think about which meter to buy. Once you choose a meter, you'll also have to buy the matching test strips. Shop around. Rebates are often offered.
- How easy is the meter to use? Methods vary. Some have fewer steps than others.
- How simple is the meter to maintain? Is it easy to clean? How is the meter calibrated (set correctly for the batch of test strips you are using)?

Are Meters Accurate?

Experts testing meters in the lab setting found them accurate and precise. That's the good news. The bad: meter mistakes most often come from the person doing the blood checks. For good results you need to do each step correctly. But there is an easy way to check your skill. Bring your meter to your doctor's office. Do a blood sugar check minutes before or after your blood is drawn from your vein. Compare your results with the doctor's blood results. Your meter results should not be off by more than 10 or 15 percent.

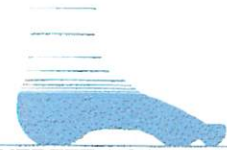
Here are other things that can cause your meter to give a poor reading:

- a dirty meter
- a meter that's not at room temperature
- an outdated test strip
- a meter not calibrated (set up for) the current box of test strips
- a blood drop that is too small

Ask your health care team to check your testing skills at least once a year. Error can creep in over time.

Logging Your Results

When you finish the blood sugar check, write down your results. There is more to testing than finding out a number. That's why keeping a log of your results and related events (like exercise, unusual excitement, and special meals) is so important. You and your doctor or diabetes educator can use your records to learn what your test results mean for you. This



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takes time. Ask your doctor or nurse if you should report test results out of a certain range at once by phone.

Keep in mind that blood sugar results often trigger strong feelings. Blood sugar numbers can leave you upset, confused, frustrated, angry, or down. It's easy to use the numbers to judge yourself. Remind yourself that your blood sugar level is a way to track how well your diabetes care plan is working. It is not a judgment of you as a person. The results may show you need a change in your diabetes plan.

Checking for Ketones

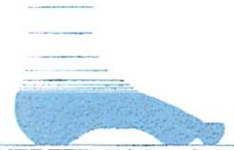
You may need to check your urine for ketones once in a while. Ketones build up in your blood and then "spill" over into your urine. It is much more common for ketones to build up if you have type 1 diabetes than type 2 diabetes.

Urine tests are simple, but to get good results, you have to follow directions carefully. Check to be sure that the test strip is not outdated. Read the insert that comes with your test strips. Go over the correct way to test with your doctor or nurse.

Here's how most urine tests go: 1) Get a sample of your urine in a clean container. 2) Place the test strip in the sample (you can also pass the strip through the urine stream). 3) Gently shake excess urine off the strip. 4) Wait for the test strip pad to change color. The directions will tell you how long to wait. 5) Compare the strip pad to the color chart on the test strip bottle. This gives you a range of the amount of ketones in your urine. 6) Record your results.

What do your test results mean? Small or trace amounts of ketones may mean that ketone buildup is starting. You should test again in a few hours. Moderate or large amounts are a danger sign. They upset the chemical balance of your blood and can poison the body. Never exercise when your urine tests show moderate or large amounts of ketones and your blood sugar is high. These are signs that your diabetes is out of control. Talk to your doctor at once if your urine tests show moderate or large amounts of ketones.

Keeping track of your results and related events is important. Your log gives you the data you and your doctor and diabetes educator need to adjust your diabetes care plan.



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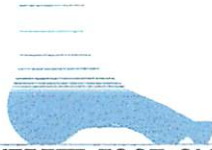
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When to Test

Ask your doctor or nurse when you should check for ketones.
You may be advised to test for ketones when:

- your blood glucose is more than 300 mg/dl
- you feel nauseated, are vomiting, or have abdominal pain
- you are sick (for example, with a cold or flu)
- you feel tired all the time
- you are thirsty or have a very dry mouth
- your skin is flushed
- you have a hard time breathing
- your breath smells "fruity"
- you feel confused or "in a fog"

These can be signs of high ketone levels that need your doctor's help.



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Exercise And Diabetes

Exercise, along with good nutrition and medications (insulin or oral diabetes pills), is important for good diabetes control. Good diabetes control means keeping your blood sugar level as close to normal (90-126 milligrams per deciliter [mg/dl]) as possible. Exercise is especially good for people with diabetes.

Why Is Exercise Important?

Exercise usually lowers blood sugar. That helps your body use its food supply better. Also, exercise may help insulin work better. If you are overweight, exercise, plus careful attention to diet, can help take off extra pounds.

Exercise is important in many other ways. It improves the flow of blood through the small blood vessels and increases your heart's pumping power. The right exercise program may make you look and feel better.

What Kinds Of Exercise Are Best?

Your health care provider can help you decide what kinds of exercise, and how much exercise, are best suited to your needs. If your blood sugar control is poor, do not exercise. Get medical advice first.

If you have retinopathy (diabetic eye disease) or blood vessel problems, you need your doctor's advice about which activities are safe.

Exercise has value only if it's done regularly. People with diabetes should exercise at least several days a week.

What do people with type 1 diabetes need to know about exercising?

Before starting any exercise program, check with your doctor. Your activity must be planned to fit in with your meal plan and with the action times and amounts of your insulin.



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If you're exercising more than 1 hour after eating, it's a good idea to eat before your start. As a rule, a high-carbohydrate snack is good before or during mild to moderate exercise (walking, biking, or golf) Such a snack could be 6 ounces of fruit juice or one half of a plain bagel.

If you plan on doing heavier exercise (aerobics, running, squash, or handball), you may need to eat a little more, such as half of a meat sandwich and a cup of low-fat milk.

It's always a good idea to check your blood sugar level before you start exercising. If you are low (under 70 mg/dl), you will need a snack to avoid having low blood sugar while you exercise. This would cause an insulin reaction.

A reaction might make you feel faint, sweaty, dizzy, or confused. An insulin reaction can occur while you exercise or several hours, even up to 12 hours, later.

If you feel an insulin reaction coming on while exercising, STOP. IMMEDIATELY have one-half cup of orange juice or nondiet soft drink or 3 glucose tablets.

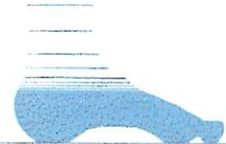
You need to treat an insulin reaction as soon as you feel it. Don't wait, otherwise it could become worse. Whenever you exercise, you should bring along some raisins or Lifesavers' candy to eat just in case. They will raise your blood sugar level.

If you play a team sport such as baseball or basketball, you should let someone know you have diabetes and teach them how to help you, if needed. If you like running or cycling, do them with a friend or family member. If you can't find anyone to go with you, let someone know where you are going and when you will be back.

With regular exercise, you will need to test your blood sugar more often.

What do people with type 2 diabetes need to know?

- Almost 9 of 10 people with type 2 diabetes are overweight. Most often, they are also past 40. In many people, type 2 diabetes can be controlled through diet and exercise. For these reasons, exercise is a very important part of the diabetes control plan for those with type 2 diabetes.
- Exercise burns calories that your body would otherwise store as extra weight. And because exercise also helps lower blood sugar levels, exercise can help your diabetes control.
- If you use insulin or oral diabetes pills to control your type 2 diabetes, you should know your blood sugar level before you



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start exercising. If you are low, you may need a snack.

How Do You Begin Exercising?

The first step is to check with your doctor. Together, you can decide how much and what kinds of exercise are right for you. The right exercise, in the right amount, can do wonders. When balanced with your meal plan and medications, exercise will help you feel healthier and happier.



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Standards of CARE

But what is good care?

What You Should Expect From Your Health Care Providers

When you have diabetes, it is important that you get good medical care. Now that it's clear that high blood sugar (glucose) levels play a role in many complications, your doctor's skill is more vital than ever. Good

care helps you live a full life with as few complications as possible.

But what is good care? The American Diabetes Association provides standards of medical care for people with diabetes. These guidelines give the most up-to-date information on taking care of your diabetes. Also, the guidelines let you know what to expect from your doctor and health care team.

The Team Approach

You should be receiving your diabetes care from a team put together by your doctor. Diabetes is complicated. Your doctor alone cannot be an expert in every area. For this reason, your diabetes care team may include an eye doctor, nurses, and a dietitian. Depending on what complications you have, your doctor may send you to other specialists as well, such as a foot doctor.

The Goal

Too-high levels of sugar in the blood are a feature of all forms of diabetes. The main goal of diabetes treatment is to bring sugar levels down to as close to normal as is safely possible. How far down? Suggested goals are 80–120 milligrams per deciliter (mg/dl) before meals and 100–140 mg/dl at bedtime. Your doctor may set different targets for you, depending on other factors, such as how often you have low blood sugar reactions. Most aspects of your treatment plan—measuring your sugar levels, taking diabetes pills or insulin shots, exercising, losing weight, planning meals—are aimed at helping you reach your target sugar level.

High sugar levels can affect many parts of the body. They can lead to eye, nerve, and kidney diseases. High sugar levels also make it easier to get infections. They can blur your vision or make you feel tired or thirsty all the time. People with diabetes also are more likely to develop other health problems, including high blood pressure, high cholesterol and fat levels, and heart disease.



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As you can see, keeping your sugar levels under control is vital to your future health and happiness. Your team can advise you on ways to reach this goal. But much rests on your shoulders. For this reason, your treatment team should spend a lot of time teaching you about diabetes and how to make diabetes care part of your life.

The First Visit

Your first visit to a doctor who will treat your diabetes should have four parts. 1) The doctor should take a medical history (ask questions about your life, complications, and previous diabetes treatment plan). 2) The doctor should give you a complete physical examination. 3) The doctor should run tests on your blood and urine to find out your blood sugar level, your glycated hemoglobin level (a measure of average blood glucose levels over the past 2–3 months), your cholesterol and fat levels, and your urine protein level. Your age, complications, and symptoms dictate which other laboratory tests your doctor does. 4) Your health care team should work with you to make a plan for managing your diabetes.

This checklist will help you make sure your health care team is thorough at your first visit. They should

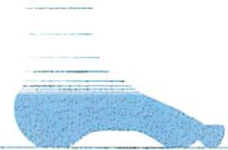
- measure your height and weight
- measure your blood pressure
- look in your eyes, ask you about any problems you have seeing, and refer you to an eye doctor for a dilated eye exam
- look in your mouth, and ask about your dental health
- feel your neck to check your thyroid gland, and do tests if necessary
- feel your abdomen to check your liver and other organs
- take your pulse

- look at your hands and fingers
- listen to your heart and lungs through a stethoscope
- look at your bare feet, and check the sensation and pulses in your feet
- check your skin, especially the places where you inject insulin
- test your reflexes
- take blood and urine samples for tests
- ask how and when you were diagnosed with diabetes
- ask for results of laboratory tests you had in the past
- ask about your eating habits and weight history
- ask about your current

diabetes treatment plan

- ask how often and how hard you exercise
- ask about times you've had ketoacidosis as well as low blood sugar reactions
- ask about infections you've had
- ask what complications you've had and what treatments you've received for them
- ask what medicines you are taking
- ask about factors that make you more likely to get heart disease, such as smoking, high blood pressure, eating and exercise habits, cholesterol levels, and family history
- ask what other medical problems you've had
- ask who else in your family has diabetes
- ask about problems you may have had while pregnant

Putting together a diabetes care plan is an important part of your first visit. Your diabetes care plan will not be the same as everyone else's. To work well, the plan must be adapted to your own life. For example, it needs to take account of your work or



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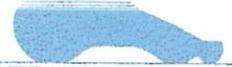
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School Schedule, how active you are, what and when you like to eat, your cultural background, and other medical problems you have.



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You need to be involved in devising your diabetes care plan. Otherwise, it's unlikely that the plan will fit into your life or that you will understand what you need to do.

Is your diabetes care plan complete? If so, it should include

- a list of goals (both short term and long term)
- a list of the medicines that you will use to control your diabetes
- advice from a dietitian on eating
- a list of changes you have agreed to make in your life, such as getting more exercise or stopping smoking
- teaching sessions for you and your family on how and when to measure your blood sugar levels and urine ketones, how to keep records of these, and how to treat low blood sugar reactions
- a plan for seeing an eye doctor
- a plan for seeing a foot doctor, if you need to
- a plan for seeing other specialists, if you need to
- instructions on when to come back and when you should call
- a birth-control and pre-pregnancy plan
- a plan for caring for your teeth and seeing the dentist
- a plan for sick days

Future Visits

How often you should return to your diabetes doctor depends on many things. If you take insulin for your diabetes or if you're having trouble controlling your sugar levels, you should see your doctor at least 4 times a year. Otherwise, you should see your doctor 2–4 times a year. You may need to visit your doctor more often if you have complications or if you are starting a new medicine or insulin program. Your doctor will advise you about when to return. He or she should also tell you other times to call or come back. For example, your doctor may want you to

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call if you've had nausea or vomiting that make you unable to eat or if you've had a fever for more than a day. You will need to stay in touch with your doctor by phone every week or even every day if you are making big changes in your diabetes care plan.



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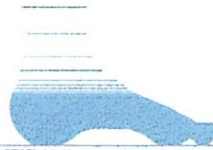
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When you return, expect the doctor and other members of your health care team to give you a physical examination, take a medical history, run laboratory tests, and fine-tune your treatment program. These later visits are not as in-depth as your first visit, although you should get a complete physical examination once a year. Also, your doctor may order new tests, do other examinations, or refer you to a specialist depending on test results and your needs.

This checklist will help you make sure your health care team does a good job at your follow-up visits. They should

- ask about times you've had high or low blood sugar levels
- ask to see your blood sugar records
- ask what adjustments you've made to your diabetes care plan
- ask what problems you've had in following your diabetes care plan
- ask about symptoms that might indicate you are getting a diabetes complication
- ask what other illnesses you had since your last visit
- ask what medicines you are taking now
- ask if your life has changed in any way
- measure your weight and blood pressure
- look in your eyes
- look at your feet
- take blood for glycated hemoglobin measurement
- once a year, take a urine sample to look for protein and take blood for cholesterol and blood fat tests
- review your treatment plan to measure your progress in meeting goals and see where you are having problems



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Am. Boards of Podiatric
Surgery & Podiatric
Orthopedics

Board Certified:

In Foot Surgery
and Foot & Ankle
Orthopedics

Member:

Am. Podiatric Medical
Assn., Am. College of
Foot Surgeons

**A tradition
or caring:**

Heel & arch pain

Bunions

Infected toenails

Crooked toes

Sprains & sports injuries

Diabetic foot care

Tendonitis & arthritis

Pediatric & geriatric
foot problems

Skin infections

**Convenient &
affordable**

In-office surgery for
minor procedures

Custom shoe inserts

Most major insurance
accepted & filed

Many HMO/PPO plans

Visa & MasterCard

Lunchtime appointments

Emergency care

FOOT CARE

About one in five people with diabetes enters the hospital for foot problems.

People with diabetes can develop many different foot problems. Even ordinary problems can quickly get worse and lead to serious complications. Foot problems most often happen when there is nerve damage in the feet or when blood flow is poor.

Of people with diabetes who enter the hospital, about one in five do so for foot problems. But you can protect your feet by following some basic guidelines.

Inspect your feet every day, and seek care early if you do get a foot injury. Make sure your health care provider checks your feet at least once a year—more often if you have foot problems. Your health care provider should also give you a list and explain the dos and don'ts of foot care.

Skin Changes

Diabetes can cause changes in the skin of your foot. At times your foot may become very dry. The skin may peel and crack. The problem is that the nerves that control sweating in your foot no longer work.

After bathing, dry your feet, and seal in the moisture that remains with a thin coat of a lubricant. You can use plain petroleum jelly, unscented hand creams, or other such products.

Do not put oils or creams between your toes. The extra moisture can lead to infection. Also, most health care providers believe you should not soak your feet.



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Calluses

Calluses occur more often and build up faster on the feet of people with diabetes. Using a pumice stone every day will help keep calluses under control. It is best to use the pumice stone on wet skin. Put on lotion right after you use the pumice stone.

Calluses, if not trimmed, get very thick, break down, and turn into ulcers (open sores). Never try to cut calluses or corns yourself—this can lead to ulcers and infection. Let your health care provider cut your calluses. Also, do not try to remove calluses and corns with chemical agents. These products can burn your skin.

Foot Ulcers

Ulcers occur most often over the ball of the foot or on the bottom of the big toe. Ulcers on the sides of the foot are usually due to poorly fitting shoes. Remember, even though some ulcers do not hurt, every ulcer should be seen by your health care provider right away. Neglecting ulcers can result in infections, which in turn can lead to loss of a limb.

What your health care provider will do varies with your ulcer. Your health care provider should take X rays of your foot to make sure the bone is not infected. The health care provider will cut out any dead and infected tissue. You may need to go into the hospital for this. Also, the health care provider will culture the wound to find out what type of infection you have and which antibiotic will work best.

Keeping off your feet is very important. Walking on an ulcer can make it get larger and force the infection deeper into your foot. Your health care provider may put a special cast on your foot to protect it.

Good diabetes control is important. High blood sugar levels make it hard to fight infection.

If your ulcer is not healing and your circulation is poor, your health care provider may need to refer you to a vascular surgeon.

After the foot ulcer heals, you should still treat your foot carefully. Scar tissue under the healed wound will break down easily. You may need to wear special shoes after the ulcer is healed to protect this area and to prevent the ulcer from coming back.

Several things make some people more likely to get foot ulcers. You are more prone to foot ulcers if you are more than 40 years old, have had a foot ulcer before, have had diabetes-related changes in your eyes, or have kidney disease, nerve damage, or poor blood flow, especially to your feet.



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Neuropathy

Although it can hurt, diabetic nerve damage (neuropathy) also can lessen your ability to feel pain, heat, and cold. Loss of feeling often means you may not feel a foot injury. You could have a tack or stone in your shoe and walk on it all day without knowing. You might not notice a foot injury until the skin breaks down and becomes infected.

Nerve damage can also lead to deformities of the feet and toes. Your toes may curl up. People with deformed feet and toes should not force them into regular shoes. Ask your health care provider about special therapeutic shoes.

Poor Circulation

Poor circulation (blood flow) can make your foot less able to fight infection and to heal. Diabetes causes blood vessels of the foot and leg to narrow and harden. You can control some of the things that cause poor blood flow. Don't smoke—smoking makes arteries harden faster. Also, follow your health care provider's advice for keeping your blood pressure and cholesterol under control.

If your feet are cold, you may be tempted to warm them. Unfortunately, if your feet cannot feel heat, it is easy for you to burn them with hot water, hot water bottles, or heating pads. The best way to help cold feet is to wear warm socks.

Exercise is good for poor circulation. It stimulates blood flow in the legs and feet. Walk in sturdy, good-fitting, comfortable shoes. Don't walk when you have open sores.

Some people feel pain in their calves when walking fast, up a hill, or on a hard surface. This condition is called intermittent claudication. Stopping to rest for a few moments should end the pain. If you have these symptoms, you must stop smoking. You should also see your health care provider to get started on a walking program. Some people can be helped with the medication pentoxifylline (Trental), as prescribed by their health care provider.

Amputation

People with diabetes are far more likely to have a foot or leg amputated than other people. The problem? Many people with diabetes have artery disease, which reduces blood flow to the feet. Also, many people with diabetes have nerve disease, which reduces sensation. Together, these problems make it easy to get ulcers and infections that may lead to amputation.

For these reasons, you should take good care of your feet and see your health care provider right away about foot problems. Always follow your health care provider's advice exactly when caring for ulcers or other foot problems.

One of the biggest threats to your feet is smoking. Smoking affects small blood vessels. It can cause decreased blood flow to the feet and make wounds heal slowly. A lot of people with diabetes who need amputations are smokers.

Often, your health care provider can prevent loss of a limb with an operation that improves blood flow in your feet.

Your Health Care Provider's Role

Because people with diabetes are more prone to foot problems, a podiatrist may be on your health care team.

Your health care provider should perform a complete foot exam at least annually—more often if you have foot problems.

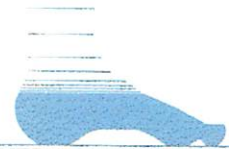
Remember to take off your socks and shoes while you wait for your physical examination.

You should call or see your health care provider if you have cuts or breaks in the skin or have an ingrown nail. Also, tell your health care provider if the foot changes color, shape, or just feels different (for example, becomes less sensitive or hurts).

If you have corns or calluses, your health care provider can trim them for you. Your health care provider can also trim your toenails if you cannot do so safely.

Caring for Your Feet

There are many things you can do to keep your feet healthy.



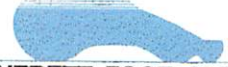
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- Keep your blood sugar in control.
- Wash your feet every day. Dry them carefully, especially between the toes.
- Check your feet every day for sores, calluses, red spots, cuts, swelling, and blisters. If you cannot see the bottoms of your feet, use a mirror or ask someone for help.
- Don't put your feet into hot water. Test water before putting your feet in it just as you would before bathing a baby.
- If your feet are cold, wear socks. Never use hot water bottles, heating pads, or electric blankets. You can burn your feet without realizing it.
- Don't cut off blood flow to your feet. Don't wear garters.
- Do not use chemicals on corns, calluses, or warts. Over-the-counter products are often too strong for use by people with diabetes. They can burn your feet. Also, do not cut corns or calluses yourself.
- Cut your toenails straight across and file the edges. Do not rip off hangnails.
- Wear flat shoes that fit your feet. They should be comfortable when you buy them. Break in your new shoes slowly.
- If you have lost feeling in your feet, ask your health care provider for advice on proper shoes.
- Consider wearing comfortable walking shoes every day.
- Check inside your shoes before wearing them. Make sure there are no pebbles, nails, or other sharp objects in them and that the shoe itself is not rough and the lining is not torn.
- Choose socks carefully. They should not have seams or other bumpy areas. Do not wear mended socks. Pull your socks on gently to prevent ripping a toenail. Choose padded athletic socks to protect your feet and make walking more comfortable.
- Never walk barefoot. You could burn or cut your feet and not notice it. Keep slippers by your bed to use when you get up at night.
- Don't smoke.
- See your health care provider at the first sign of infection or inflammation.



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Diabetes Management Plan

Summary Page

Fill in the following charts with the help of your doctor or diabetes educator.

Medicine

Time	Type	Dose/Units

Blood Sugar Goal Range

Between _____ mg/dL and _____ mg/dL

HbA_{1c} - Glycosylated Hemoglobin Test

Date: _____

Lab Normal: _____ % _____ % _____ %

Value: _____ % _____ % _____ %

Please transfer final value to your next diary.

Blood Glucose Testing Schedule

Record your planned test times by putting a check in the time slot or by filling in the actual time of the test.

	Breakfast Before	Lunch Before	Dinner Before	Bedtime	Night
Monday					
Tuesday					
Wednesday					
Thursday					
Friday					
Saturday					
Sunday					

