

Complications of Diabetes

Complications are health problems that result when your blood sugar stays high over a long time. Usually you have Diabetes for several years before it is diagnosed. During this time, your blood sugars may have been high and started to cause long-term complications.

Acute Complications:

High or low blood sugars that you treat on a day-to-day basis.

Long-term Complications:

Happen over time and are a result of high blood sugars. It is not known why high blood sugars causes long-term complications.

High blood sugar causes damage to the following body systems:

✚ Nerves

✚ Heart & Blood Vessels

✚ Eyes

✚ Feet

✚ Teeth & Gums

✚ Skin

✚ Kidneys

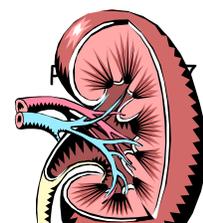
High blood sugar also makes it hard to treat infections.

In the space below, list the body systems and complications you have.

Body System	Problem

Kidney Problems

CHAP Take Action - Complications
Cass, Tiernan Revised 11/04



- ✚ Kidney Failure
- ✚ End Stage Renal Disease

Kidneys are made up of many blood vessels that act as filters. They take the waste products out of the blood. Diabetes can hurt your kidneys by making them work too hard. Then the kidneys cannot filter the waste from the blood and the waste products stay in the blood.

When the kidneys stop working it is called **end stage renal disease**. When this happens the person needs a **kidney transplant** or dialysis (when a machine takes the waste products from the blood). If kidney damage is found early there are treatments that may keep it from getting worse.



Your provider may order a medicine called an ACE inhibitor, it is a blood pressure medicine that can also protect the kidneys from more damage.

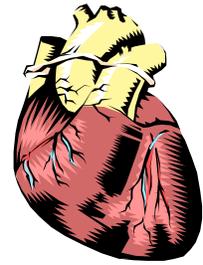
Controlling blood sugar can reduce kidney damage by up to 84%

Prevent Kidney Damage!



- ✚ Keep your blood sugar levels under control.
- ✚ Control high blood pressure.
- ✚ See your provider regularly so he can test for protein in the urine and check your blood pressure.
- ✚ Take an ACE Inhibitor if prescribed by your provider.

Heart and Blood Vessel Problems



- ✚ High Blood Pressure
- ✚ Heart Attack
- ✚ Stroke
- ✚ Blood vessel problems

People with Diabetes have a higher risk for heart and blood vessel problems. High blood sugar can cause damage to the blood vessels. Over time, high cholesterol and fat levels in the blood vessels can slowly reduce or block blood flow to the heart and other organs.

Signs of Health Problems are:

Stroke warning signs or symptoms:

- ✚ Feeling dizzy or sudden severe headache with no known cause
- ✚ Sudden trouble walking
- ✚ Loss of balance or coordination
- ✚ Sudden loss of sight or trouble seeing with one or both eyes
- ✚ Slurring of speech, confusion or trouble speaking or understanding
- ✚ Numbness or weakness in face, arm or leg especially one side of the body

Heart attack warning sign or symptoms:

- ✚ Chest pain or pressure
- ✚ Trouble breathing
- ✚ Discomfort or pain in one or both arms, the back, the neck, the jaw and the stomach (indigestion with no known cause).
- ✚ A cold sweat, stomach sickness or feeling lightheaded

Things that can increase the risk of problems:

- ✚ High blood sugar
- ✚ High blood pressure
- ✚ High blood fat (cholesterol)
- ✚ Tobacco use /Smoking
- ✚ Over weight
- ✚ Lack of physical activity
- ✚ Family history of heart disease

If you have any of these signs or symptoms go to the emergency room. At the emergency room they may be able to give you medicine to reduce the effects of a heart attack or stroke.



Tell your provider if you have pain in the buttocks, thighs or calf of the leg with exercise.

See your provider regularly so he/she can watch for problems and treat them early.

Blood vessel problems and feet

Poor circulation caused by Diabetes can make sores and cuts slow to heal.

Signs and symptoms caused by damage to blood vessels:

- ✚ Color or temperature change in your feet
- ✚ Loss of hair on toes, feet and lower legs
- ✚ Dry, cracked skin on your feet
- ✚ Numbness in one arm or leg
- ✚ Thick or yellow toenails
- ✚ Trouble breathing
- ✚ Sudden loss of sight

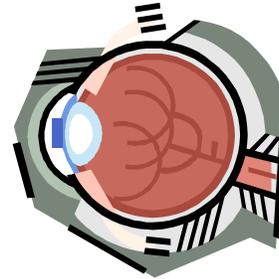
Behaviors to prevent heart and blood vessel problems:

- ✚ Control your blood sugar
- ✚ Control high blood pressure
- ✚ Lose weight if over weight
- ✚ Quit smoking
- ✚ See your provider every three months
- ✚ Exercise

*** Controlling blood sugar can reduce the risk of heart attack and stroke by 16%***

Problems of the EYE

- ✚ Glaucoma
- ✚ Cataracts
- ✚ Retinopathy
- ✚ Detached Retina



People with Diabetes are twice as likely to have:

- ✚ **Glaucoma** - a build up of pressure in the eye. The pressure pinches the blood vessels and sight is slowly lost.
- ✚ **Cataracts** - cloudy lens in the eye

Diabetic Retinopathy happens when blood vessels grow over the inside of the eye. They leak blood or cause scars, resulting in loss of sight.

Behaviors to Prevent Eye Problems

- ✚ Keep your blood sugar levels under control
- ✚ Control High Blood Pressure
- ✚ Quit Smoking
- ✚ See an eye doctor once a year for a dilated eye exam



Never get new glasses while your blood sugar is high!



Call your provider if:

- ✚ Your eyes hurt
- ✚ You feel pressure in your eye
- ✚ You see spots or floaters
- ✚ If you can't see to the side
- ✚ If you have double vision or blurry vision.

*** Good blood sugar control may reduce the risk of eye problems by 21%***

Mouth, Teeth and Gum Problems

- ✚ Plaque
- ✚ Gingivitis
- ✚ Periodontitis



Plaque is a sticky film made up of food, saliva and germs. Good brushing of teeth can remove plaque. If plaque is not removed it hardens into tartar. Tartar can only be removed by a dentist. If the tartar is not removed it can cause gum disease and sometimes destroy the bone.

Gingivitis is the first sign of gum disease; it causes your gums to bleed when you brush them.

Periodontitis is more severe; the gums pull away from the teeth, and there may be pus around the teeth. There may be bone damage and the teeth may be loose. Often gum disease does not cause pain until it is very serious.

Signs and Symptoms of Gum Disease

- ✚ Plaque on teeth
- ✚ Gums that bleed when you floss and brush your teeth
- ✚ Red, swollen or tender gums
- ✚ Gums that are pulled away from the teeth
- ✚ Loose or sensitive teeth
- ✚ Pus around your teeth
- ✚ Bad breath

Behaviors to Prevent Gum Disease

- ✚ Brush teeth after every meal and snack
- ✚ Use a soft toothbrush
- ✚ Get a new tooth brush every three to four months
- ✚ Brush your gums and tongue
- ✚ Floss once a day
- ✚ See the dentist at least two time a year
- ✚ Tell your dentist you have diabetes
- ✚ Ask the dentist to show you the best way to brush and floss
- ✚ Call the dentist if you have any signs of infection or gum disease
- ✚ If you wear dentures or a partial plate make sure they fit well and are clean
- ✚ Control your blood sugar

Important things to know:



-  If your mouth is sore after a dental visit use the list of foods in "Sick Days" until you can eat your regular foods
-  If you smoke talk to your provider about quitting
-  High levels of sugar in the saliva can cause tooth decay
-  Infections in the mouth are hard to treat

Take your medicine and eat before going to the dentist.

Dry mouth:

Dry mouth may be a problem for people with diabetes. This may be caused by the medicine you take. You may also notice a dry mouth when your blood sugar is high. Less saliva can cause cavities because the saliva washes away germs and acid.

If dry mouth is a problem try drinking more fluids, chewing sugar-free gum or sugar free hard candy. These help to increase the saliva in the mouth

See the dentist if you have:

-  Swelling or pus around your gums and teeth or anywhere in your mouth. Swelling can be as small as the size of a pimple.
-  Pain in your mouth and face that does not go away
-  White or red patches on your gums, tongue, cheeks or the roof of your mouth. This may be a fungus infection called thrush.
-  Teeth that hurt when you eat something hot, cold or sweet.
-  Pain when chewing
-  Dark spots or holes in your teeth



Skin Problems

- ✚ Poor healing
- ✚ Dry itchy skin



Skin should be:

- ✚ Warm and soft
- ✚ Free of red areas, scrapes and lumps and cracks
- ✚ Moist but not too oily
- ✚ Free of irritation and disease
- ✚ Able to feel a pinprick, cold, hot and touch

Behaviors to Care for Your Skin:

Prevention:

- ✚ Keep your skin clean
- ✚ Use lanolin-based lotion to keep your skin moist. Over drying may cause cracks. This is a good place for infection to start.
- ✚ Drink plenty of water to prevent dehydration.
- ✚ Mucus membranes of mouth or nose should be pink, moist and warm (Use Chap Stick® or petroleum jelly as needed)

Treatment of skin problems:

- ✚ Wash cuts or scrapes with warm water and non-irritating soap.
- ✚ Apply an antibacterial ointment to the wound and cover it loosely.
- ✚ Change bandages when they get moist, dirty or as instructed by your provider.
- ✚ Do not use any sharp objects to take care of the wound.
- ✚ Do not use harsh chemicals like alcohol, vinegar, gasoline, onion, garlic or iodine on wounds.



- ✚ Call your provider if after two days there is more pain, swelling, redness, pus or heat.
- ✚ Call anytime the cut is severe.
- ✚ Report any unusual drainage or odor from a wound.

Infections

People with diabetes are at risk of getting infections.

High Blood Sugar makes infections hard to heal!

Behaviors that Can lead to Infections:

- ✚ Poor nutrition
- ✚ Not taking medications as ordered
- ✚ Lack of exercise
- ✚ Poor hygiene
- ✚ Bad foot care (shoes that don't fit or protect, not checking feet daily)

Some types of infections include:

- ✚ Mouth infections, thrush and gum disease
- ✚ Fungal infections, like athlete's foot
- ✚ Bladder and kidney infections
- ✚ Yeast Infections
- ✚ Wound infections
- ✚ Ulcers of the feet
- ✚ Boils

Why are infections a complication of diabetes?

Poorly controlled diabetes can cause the white blood cells to have less ability to fight infections.

What can you do if you think you have an infection?



- ✚ See a provider for any discharge from the vagina or penis.
- ✚ Tell your provider about burning when you pass your urine, or a change in the color or odor of your urine.
- ✚ See your provider if you have a cut or sore that is not healing or if a cut or sore becomes swollen, red, painful or has pus.

Foot Ulcers and Infections

When you have diabetes it is harder for your body to fight infections. Damage to the blood vessels can cause poor circulation in your feet. Any sore or cut on your feet can become serious. A small cut can quickly become a big problem.



Preventing foot infections is one of the most important thing you can do! **CHECK YOUR FEET EVERY DAY!**

Diabetics are 20 times more likely to have gangrene

Life cycle of a foot problem:

- ✚ Pressure on the foot may cause a blister
- ✚ Poor blood flow to the area can lead to infection at the blister site
- ✚ High levels of sugar in the blood feed the infection and makes it worse

Early symptoms of infection:

- ✚ Swelling
- ✚ Redness
- ✚ Pain (if you have nerve damage you may not feel pain)

If the sores are not treated or do not heal they can become ulcers. The skin around the sore or ulcer may die and turn black.

Treatment

- ✚ The provider may order antibiotics or medicines to treat the infection. Be sure to take all your medicine, even if the sore looks better. These medicines help remove the dead tissue and help new, healthy tissue grow. You may need to go to a wound care center if the sore does not heal. The dead tissue may need to be surgically removed. If you have gangrene you may have all or part of your foot amputated. Keep all your visits to your provider.

Take good care of your Feet

Socks

- ✚ Always wear socks or stockings to help avoid blisters and sores
- ✚ Make sure the top of the sock is not tight around your leg. If the top of the socks or stockings leaves a dent in the skin, they are too tight!
- ✚ Avoid wrinkles in your socks
- ✚ Wear thick, white, cotton socks
- ✚ Wear socks to bed to keep your feet warm
- ✚ Wear clean socks every day
- ✚ Wear socks without seams



Shoe Don'ts!



- ✚ Pointed toes and high heels put pressure on your toes
- ✚ Check the inside of your shoes for rough spots or objects before you put your shoes on
- ✚ Do not wear vinyl or plastic shoes, they do not let your feet breathe
- ✚ Do not wear sandals with a thong between the toes

Shoes do's! Wear shoes that fit well!



- ✚ Canvas or soft leather shoes are best because they let your feet breathe and they give support
- ✚ Choose low shoes with wide toes.
- ✚ If you wear sandals make sure they have protection for your toes

Be Careful with your feet - Never go bare footed!

- ✚ Always wear shoes and socks even at the beach and in your house
- ✚ Put sunscreen on the tops of your feet
- ✚ Keep your feet warm and dry
- ✚ Keep your feet away from open fires and radiators
- ✚ Do not use hot water bottles, heating pads or electric blankets



Good Foot Care

- ✚ Check your feet at the end of every day for redness, swelling, corns, calluses, ingrown toenails, blisters or breaks in the skin
- ✚ Always check the bottoms of the feet and between the toes
- ✚ Use a mirror if necessary
- ✚ If you have trouble seeing have a family member check your feet

Keep your feet clean and dry

- ✚ Wash your feet every day with warm (not hot) water and soap
- ✚ Always check the water temperature before putting your feet in
- ✚ Make sure you dry your feet very well, especially between the toes
- ✚ Use talcum powder between the toes to keep the area dry
- ✚ Use lanolin, lotion or petroleum jelly on the tops and bottoms of your feet to keep the skin soft
- ✚ DO NOT SOAK YOUR FEET!



Toe Nail Care

- ✚ Do not cut cuticles
- ✚ Smooth the edges of the nails with an emery board
- ✚ Cut your nails after you wash your feet
- ✚ If you cannot see well or have thick, yellow nails or problems cutting your nails ask your provider for help
- ✚ Be careful not to cut the skin around the nail
- ✚ Do not have a professional pedicure - the instruments may not be sterile!



Exercise your feet

- ✚ Exercising your feet is good for blood flow
- ✚ Wiggle your toes for five minutes two to three times a day
- ✚ Move your ankles up and down and in and out
- ✚ Walking, dancing, swimming and bicycling are good exercises that are easy on your feet
- ✚ Avoid activities that are hard on your feet like running and jumping

Tips

- ✚ Do not cross your legs for long times
- ✚ Put your feet up when sitting
- ✚ Do not wear tight socks, elastic or rubber bands or garters around your legs
- ✚ Do not smoke, it decreases blood flow to your feet
- ✚ **Do not go barefoot you could step on something**
- ✚ Do NOT cut corns or calluses or use over the counter treatments on corns and calluses



Call your provider if you have:



- ✚ Blisters, sores, or ulcers on your feet
- ✚ Swelling, redness or pain in your feet
- ✚ Fungus infection between your toes
- ✚ Corns or calluses
- ✚ Thick yellow nails
- ✚ Nails you can't cut

Common Foot Problems

- ✚ **Corns and calluses** - Thick layers of skin that are caused by too much rubbing or pressure on the same spot.
- ✚ **Blisters** - Caused by shoes always rubbing the same spot, wearing shoes without socks, or wearing shoes that do not fit.
- ✚ **Ingrown toenails** - Caused by the edge of your nail growing into the skin. This can happen when shoes do not fit or if you cut into the corners of the nail.
- ✚ **Bunions** - Your big toe slants toward your little toe and the space between the bones at the base of the big toe grows large. This causes your shoes to rub and creates a red spot. Bunions can run in a family or can be caused by pointed -toe shoes. It may be necessary to have surgery to fix it.
- ✚ **Hammertoes** - Muscle weakness caused by diabetes that shortens the tendons in your foot, causes toes to curl under. Wearing shoes that are too short can also cause this problem. Hammertoes cause problems with walking and finding shoes that fit. They may result in sores on both the tops and bottoms of your foot.
- ✚ **Dry and Cracked Skin** - Nerves in the legs and feet can become damaged and you may not feel that the skin is dry. Dry skin can become cracked and infected.

Nerve Damage

High Blood Sugar can damage the covering of the nerves.

- Loss of feeling in feet and hands
- Bowel and Bladder Problems
- Impotence

Feet and Nerve Damage is the number one problem caused by diabetes

Behaviors to Prevent Nerve Damage

- Keep blood sugar levels under control.
- Stay active and exercise.

Does your provider do a monofilament test to check for nerve damage? Even if you have lost some sensitivity, **YOU** can **PREVENT IT** from getting worse by controlling your blood sugar!

Signs and symptoms of Nerve damage:

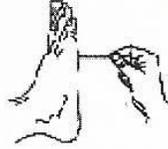
- Pain, burning, tingling and loss of feeling in your feet
- Problems swallowing
- Constipation and diarrhea
- Difficulty passing urine
- Impotence
- Neuropathy**-You may not be able to feel touch, heat or cold.
- Change in shape of foot- your shoes may no longer fit correctly causing pressure areas.



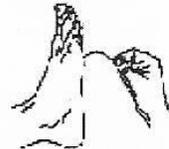
Lower Extremity Amputation Prevention Program (LEAP)

Self Testing Instructions

(You may screen your own feet or ask a relative, friend, or neighbor to do it for you).



Step 1

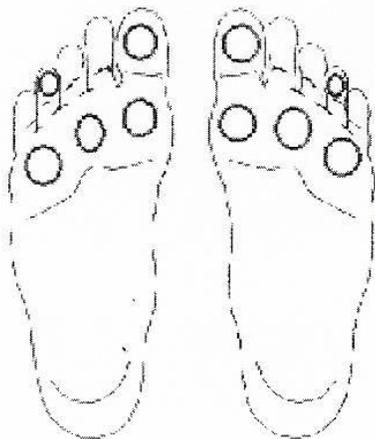


Step 2

1. Hold the red filament by the paper handle, as shown in Step 1.
2. Use a smooth motion to touch the filament to the skin on your foot. Touch the filament along the side of and NOT directly on an ulcer, callous, or scar. Touch the filament to your skin for 1-2 seconds. Push hard enough to make the filament bend as shown in Step 2.
3. Touch the filament to both of your feet in the sites circled on the drawing below.
4. Place a (+) in the circle if you can feel the filament at that site and a (-) if you cannot feel the filament at that site.
5. The filament is reusable. After use, wipe with alcohol swab.

Diabetic Foot Screen Test Sites

If you have a (-) in any circle, take this form to your health care provider as soon as possible.



Date _____



Date _____

Place
Filament
Here



Here are some ideas for your action plan. Pick things you are willing to try. Good luck and share with your educator and provider!

- **WHAT** you are going to do
- **HOW MUCH** you will do
- **WHEN** you will do it
- **HOW OFTEN** you will do it

Control Blood Pressure	I will (<i>what, example take my blood pressure medicine</i>) (<i>when</i>) starting (<i>when</i>) (<i>how often</i>)
Lowering Cholesterol	I will (<i>what, example, eat fat free salad dressing</i>) every day starting tomorrow.
	I will (<i>what example, eat a salad instead of french fries</i>) three days next week.
Weight Loss	I will (<i>what, example lose five pounds</i>) by eating one less tortilla with each meal starting tomorrow.
Eye Exam Dental Exam Podiatry Exam	I will call for an (<i>what kind</i>) appointment tomorrow.
Floss Teeth	I will floss my teeth every night before bedtime starting on next Monday.
Foot Checks	I will have my wife check my feet every night before we go to bed.
Properly Fitting Footwear	I will buy a pair of walking shoes that fit properly next Friday.
Monofilament Exam	I will call tomorrow to make an appointment with my provider to have the monofilament foot exam.