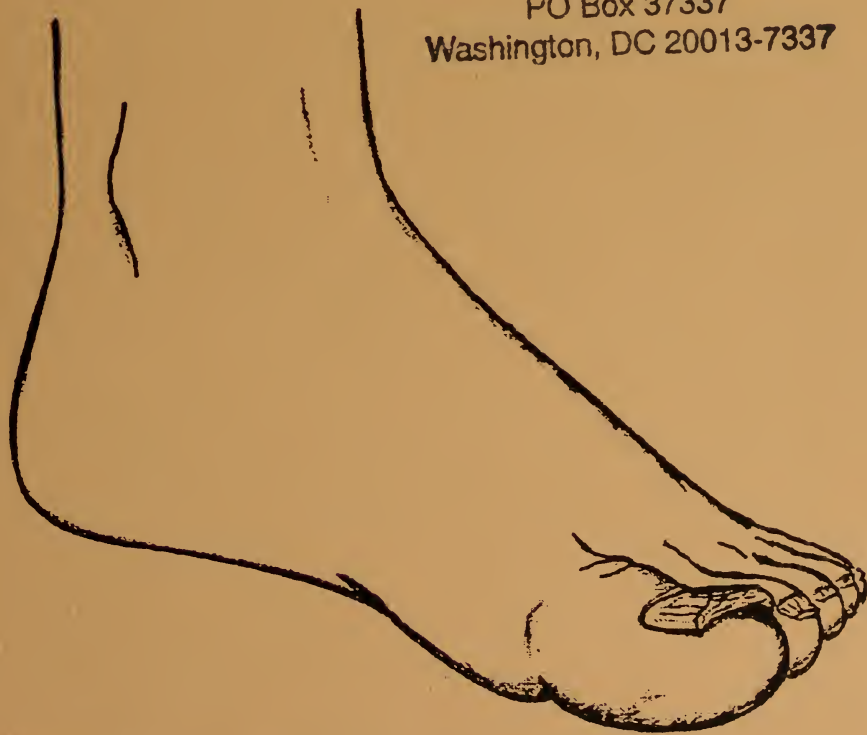


# A Basic Approach to the Diabetic Foot

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Resource Center  
PO Box 37337  
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MH95DD2159

DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service





## Foreword

This booklet is intended for use by Community Health Representatives and other professionals within the Indian Health Service. Health care professionals may also find it a useful tool in the care of the diabetic foot. It has been written in such a way that it can also be used by health care providers who serve people with diabetes outside the IHS.

## Acknowledgments

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Produced in cooperation with the Indian Health Service Diabetes Program, Headquarters West, Albuquerque, New Mexico, and the University of Montana.

The author gratefully acknowledges the significant contributions of Roger Pecoraro, M.D., Seattle V.A. Medical Center, and Gwen Hosey, R.N., M.S., Nurse Consultant, Portland Area Diabetes Program. Inspiration for this booklet came from the outstanding Community Health Representative (CHR) Foot Care Programs of the Northern Cheyenne and Flathead Tribal Health Departments.

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## Introduction

A person with diabetes may have foot problems. Foot problems can lead to the loss of a toe, a foot, or a leg. Loss of a toe, foot, or leg is called an amputation. Good foot care can prevent most amputations.

This manual tells you about diabetes foot care.

You will learn how to:

- give good foot care,
- help people prevent foot problems.

## What Do We Know about Native Americans and Amputation?

- People with diabetes for 10 or more years have a higher risk for amputations.
- Men with diabetes have more amputations than women with diabetes.
- People with poor blood sugar control have more amputations.
- People with eye or kidney problems caused by high blood sugar have more amputations.
- People who have lost the knee jerk reflex and/or cannot feel vibration in the great toe have more amputations.
- People who have had a previous amputation are at high risk for another amputation.



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## Chapter One: Foot Problems

This chapter gives you some general facts about foot problems.

After reading this chapter you will be able to:

- give the reasons why foot problems happen,
- identify the major cause of amputations,
- give examples of foot injuries,
- tell how infections occur,
- list the signs of an infection.

### How Do Foot Problems Happen in People with Diabetes?

Having high blood sugar for long periods of time causes foot problems. High blood sugar can lead to:

- loss of nerve function in feet,
- poor blood flow to legs and feet,
- infection,
- poor wound healing.



**Loss of nerve function.** The nerves in the body allow one to feel discomfort and pain. Pain signals the body to protect itself. If you cannot feel pain, you may not protect yourself from injury.

**Here is an example:** You step on a sharp object. It hurts. You take your foot away. Think of the person with an insensitive foot. He steps on a sharp object. He does not feel pain. He does not protect his foot from injury. He continues walking. The injury becomes worse. You will learn more about insensitive feet in Chapter Two.



**Poor blood supply.** High blood sugar can cause changes in the blood vessels below the knee. Changes in blood vessels can reduce or block the supply of blood. Poor circulation means poor blood flow. Poor circulation occurs in blood vessels below the knee. People with poor circulation may have problems with wound healing. Poor blood supply problems do not happen to everyone.

Poor blood supply is a greater problem with:

- older people,
- smokers,
- people with diabetes for 10 or more years,
- people with high blood pressure,
- people with high cholesterol.

**Infection.** Germs cause infections. Infection most often happens through a break in the skin. Some infections can happen without a skin break. Any infection that develops in a diabetic foot is serious. You will learn more about recognizing and treating infections on pages 10 and 11.

**Poor wound healing.** People with high blood sugar, poor blood supply, or infections will have poor wound healing. Poor wound healing can lead to amputations.

- ▶ **Review:** Having high blood sugar levels for long periods of time causes foot problems. Nerves become damaged. Blood vessels become damaged. Infections spread. Wounds heal poorly. High blood sugar leads to loss of nerve function and poor blood supply. People may not feel a foot injury. A wound may develop. People with poor blood supply may have problems with wound healing. The injury may heal poorly. Good foot care can prevent foot problems.



## What Does the Term Insensitive Foot Mean?

The term insensitive foot means the foot has lost nerve function. The person with insensitive feet does not feel pain easily. People with insensitive feet are at risk for foot injury. You will learn more about insensitive feet on pages 24-25, 32-34.

## How Do Foot Injuries Happen?

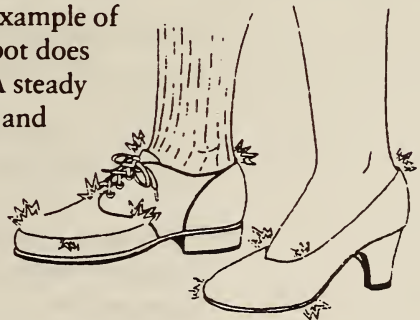
Injuries happen in one of three ways:

PRESSURE  
POINT



**Repeated small pressures.** This is the most frequent cause of foot injury. The skin breaks down when small pressures happen repeatedly on the same part of the foot. This pressure also occurs in healthy feet. The person with healthy feet will shift weight and change the pattern of pressure because his feet begin to feel sore. A person with insensitive feet will not feel the pressure. He will not shift his weight or adjust for comfort. He does not feel any problem. Injury occurs when the skin breaks down from the repeated pressure.

**Steady pressure.** This is a less-frequent cause of foot injury. A tight shoe is an example of steady pressure. The insensitive foot does not feel the pain of a tight shoe. A steady pressure can cut off blood supply and cause skin to break down. Infection can follow.





**Sharp objects.** A few problems happen when a person steps on a sharp object. A person with an insensitive foot will not feel the injury. The injury goes unnoticed. Infection can follow.

- ▶ **Review:** Repeated small pressures are often the cause of foot injury. The pressure happens over and over again. The person does not feel any pressure. The skin may break down. You will learn how to look for pressure areas on page 18. Steady pressure and sharp objects can also cause foot problems for the insensitive foot. Infection can follow.

## How Do Amputations Happen in Diabetes?

Amputations are usually caused by a foot injury. The injury becomes infected. The infection does not heal. Gangrene sets in. The infection spreads. An amputation stops the infection from spreading to the rest of the body.

Amputations can be prevented. The best prevention is good foot care by the patient and clinic staff.

## What Are the Signs of an Infection?

An infection may show any of these signs:

- redness or a black spot,
  - swelling,
  - warm or hot to the touch,
  - pus or drainage.
- ▶ If you see any of these signs, ask the patient to go to the clinic. Treatment needs to be started. Untreated infections can lead to amputation.

# Are Foot Infections a Serious Problem for People with Diabetes?



Yes. Infections may not heal. Infections may enlarge and spread to other parts of the foot. Severe spreading infections destroy the foot. The person with a severe spreading infection will need an amputation. The amputation prevents the infection from spreading to other parts of the body.

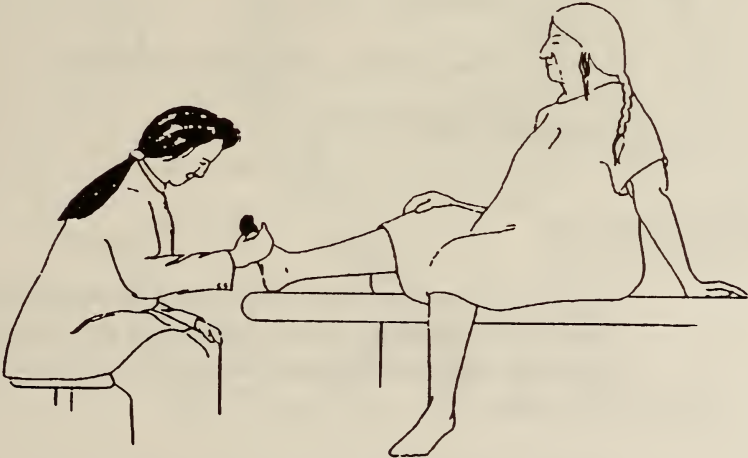


Infections start with a break in the skin. Germs enter. They grow and spread. The infection may go to the bones. Treating a bone infection is difficult.



If a person continues to walk on an infected foot, the infection will spread quickly to the leg.

Prompt treatment of all infections may help to prevent the loss of a foot, toe, or leg. All treatment should be started by a doctor.



THE DOCTOR WILL GIVE THE PATIENT MEDICINE TO TAKE FOR THE INFECTION.

---

## Chapter Two: The Foot Exam

This section will tell you how to do a complete foot exam. You will be able to:

- name the tools needed to do a foot exam,
- take a diabetes foot care history,
- describe how to examine a foot,
- inspect shoes and socks,
- demonstrate the use of monofilaments,
- assign a foot care risk level for your patients' feet.

You should examine the feet every time you see a patient with diabetes, even if you don't think there is a problem. It shows the patient that you think foot care is important. It is also a good chance to teach the patient how to care for diabetic feet.

Tools you will need:

- a pencil,
- diabetes foot care form to record your findings,
- good light,
- monofilaments.

### Taking the History.

The history gives you information about the person's feet. The patient tells you about how he cares for his feet. You ask questions to find out any foot problems. The answers will guide the rest of your exam.

Ask these questions:

- Tell me how you take care of your feet?
- How often do you wash your feet? Apply lotion?
- Have you ever had sores on the ankles or feet?

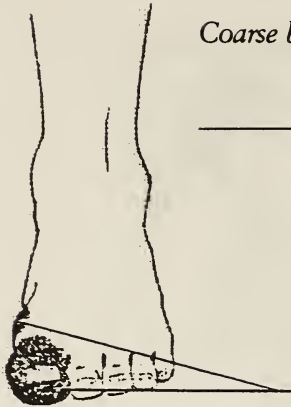
- Have you ever had a wound, ulcer, or hole or break in the skin on your foot? Where was it? When did you have it?
- Has your doctor ever told you to wear a special kind of shoe? Has the doctor told you to wear insoles in your shoes?
- Do you smoke? How long have you smoked? How many cigarettes a day?
- Do you use alcohol?

Examine the lower leg and foot. Look at the lower leg, the ankle, the top and bottom of the feet, between the toes, and the heel. Make sure there is enough light to examine the feet and legs. Sunshine is a good source of light.



Look at:

Skin Color	Possible Reasons for this Finding
<i>Pink</i>	normal.
<i>Dusty red-bluish</i> <i>Pale-bluish</i>	poor blood flow (poor circulation).
<i>Reddened</i>	if warm, may be infection or irritation.
<i>Brown patches</i>	many older patients have these spots, especially if they have diabetes. These are not harmful.
<i>Coarse black spots</i>	this area of skin may have died because of poor circulation or infection. This may be an emergency.



BLACK SPOTS MAY MEAN SKIN HAS DIED.  
THIS COULD BE AN EMERGENCY.

## Feel for:

<b>Skin Texture</b>	<b>Possible Reasons for this Finding</b>
<i>Rough, reddened</i>	
<i>Rash</i>	
<i>Dry, flaky</i>	nerves that control sweating may be damaged.
<i>Scaly, cracks</i>	nerves that control sweating may be damaged.
<i>Smooth, shiny</i>	damage to nerves and circulation that nourish the skin and hair for growth.
<i>No hair</i>	damage to nerves and circulation that nourish the skin and hair for growth.

## Feel For:

Skin Temperature	Possible Reasons for this Finding
<i>Warm or cool</i>	normal in a warm room or when feet are exposed to air.
<i>Hot</i>	this may be a sign of infection, stress, or a fracture, especially if the other foot feels different and is not as warm.
<i>Cold</i>	may be normal if the environment is cold. Can be a sign of poor circulation in a warm environment.

*Test skin temperature by placing the back of your hand against the person's skin.*



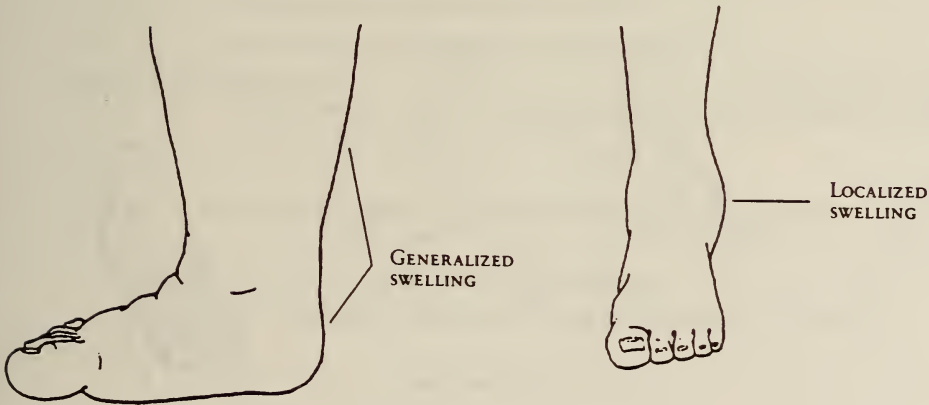
## Look for Swelling.

There are two types of swelling to look for:

- Generalized swelling in both legs or feet. This is also called edema. Edema can be due to many diseases and is made worse by too much salt in the diet. It is not an emergency. Swelling will cause poor wound healing. Show the patient how to elevate the legs. Ask the patient about wearing elastic stockings.
- Localized swelling in the foot or ankle. This may mean a new injury has occurred, such as a fracture. The patient should not walk on that leg again until he has been seen at the clinic.

You can help the person reduce the swelling by:

- showing how to elevate the legs above the heart,
- asking about the use of elastic stockings,
- suggesting that salty foods be decreased in the diet.



## Look for Pressure Points.

What is a pressure point? A pressure point occurs whenever something rubs against the same spot on the skin over and over. This repeated pressure to the skin causes damage. Usually it is a minor stress, one that wouldn't cause damage if it happened only one time.

The skin at a pressure point may be red and rough. It is always hot. Each pressure point needs to be evaluated. Why is it happening? How can we change things to relieve the pressure? Are the shoes too tight? Is there an object in the shoe?

- ▶ **DANGER!** Pressure points can lead to ulcers if the shoes are not changed or the harmful object not removed. The change must be made immediately. Wearing the harmful shoes for even one more day could cause an ulcer.

## Where pressure points often form

THE EDGE OF A TOENAIL RUBBING AGAINST THE TOE NEXT TO IT.



A FOREIGN OBJECT INSIDE THE SHOE.



SHOES THAT ARE TOO TIGHT.



## Look for Calluses and Corns.

What is a callus? A callus (or corn) happens when the skin tries to protect itself from constant pressure. The skin grows thicker and becomes hard. Examples of constant pressure or friction:

- deformed bones of the feet,
- toenail pressing on the toe next to it,
- tight shoes,
- a problem in the shoe (torn lining, shoe with narrow, pointed toe).



If you see a callus, you should ask:

- Why did the callus develop?
- What can be done to reduce the pressure?
- Rub the callus with rubbing alcohol to make it transparent. Do you see a group of dark brown or red dots through the callus? This means the callus is starting to break down. The callus needs to be treated.
- Do you see a blister next to the callus?
- Does fluid leak around the callus?
- Is there pus or blood coming from it?

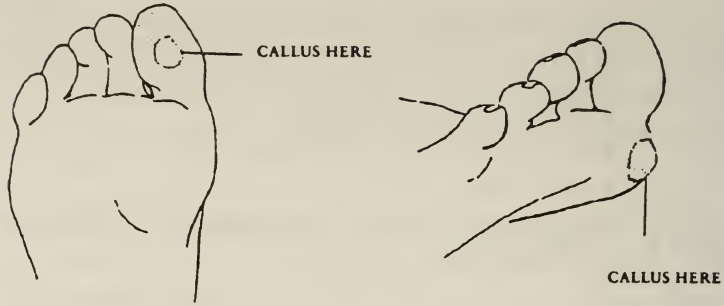
If the answer to any of these is yes, the patient should be taken to the clinic right away.

► **DANGER!** An ulcer can hide beneath a callus or corn.

You will learn about ulcers on pages 35-39.

You will learn about care of a callus on pages 30 and 31.

Where calluses commonly form in diabetic patients:



## Look for Deformities.

What is a deformity of the foot? A deformity is a change in the shape of the muscles or bones of the foot. A deformity causes the foot to look and work in a different way. This may cause stress and pressure in certain places on the foot, leading to a callus and/or ulcers.

Look for these types of deformities:

**Hammer toes:** These are “cocked up” toes. You will often see corns or calluses on top of these hammer toes. These calluses are due to pressure from the shoes.



**Clawed toes:** These are hammer toes that curl under at the end. A callus can occur at the tip or bottom of these toes because of extra pressure from walking on them. Clawed toes can also cause a callus on the bottom of the foot. This occurs because of extra pressure in this area.



► **Remember:** An ulcer can hide beneath a callus.



**Bunion:** This occurs when the big toe turns outward and the joint of the big toe bulges inward. This bulge develops a painful swelling from shoe pressure.

**Amputation:** Where part of the foot or leg has been removed. Amputation may occur at different levels. The levels of amputation are: toe, great toe, mid-foot, below knee (BK), and above knee (AK).



BK AMPUTATION

GREAT TOE AMPUTATION

MID-FOOT AMPUTATION



## Look at Toenails.

Toenail problems are common in patients with diabetes. Look for these nail problems:

**Thickened toenail:** Fungus infections cause thickened nails. The toenail is usually yellowish-white and thick. It can be hard to cut.

This type of nail catches easily in bedding, socks, or furniture, causing the nail to be pulled off. Tight shoes can push on these nails hard enough to cause an ulcer underneath.

**Ingrown toenail:** This occurs at the edges of the toenails. It may be due to improper trimming. The edges of the nailbed grow into the surrounding skin and may cause inflammation or infection. It is red and hot and very painful. Treatment usually requires removal of a portion of the nail.



**Infected toewebs:** Toewebs are the spaces between the toes.

Infection can occur in the toewebs. This is usually due to poor foot care where moisture stays between the toes and cracks develop. Cracks allow bacteria to get into the body.

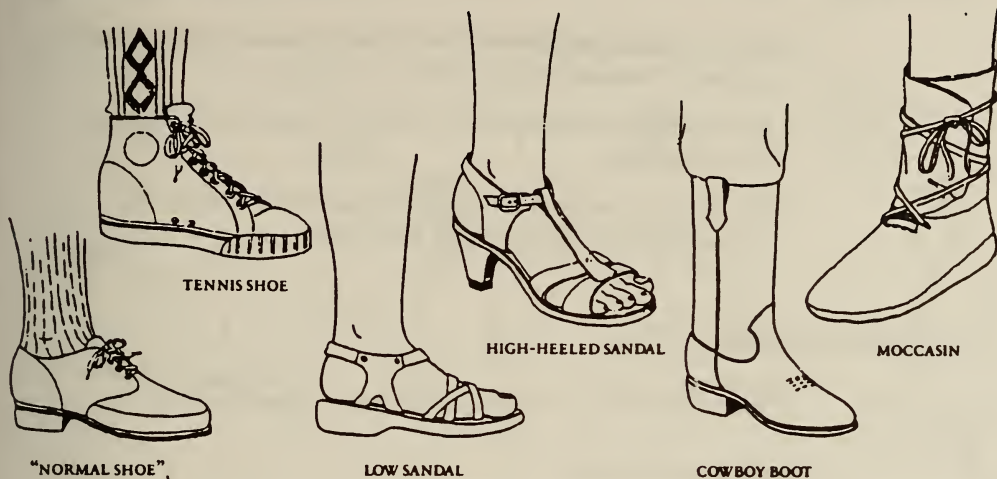
## Look at Shoes and Socks.

Ask the patient to show you the shoes he wears most of the time (this may be more than one pair).

Check for any objects in the shoes (tacks, nails, sand, rocks):

Check the lining of the shoe: Is it smooth, or rough and uneven?

## What type of shoe is it?



**What is the shoe made of?** Leather, canvas, plastic, rubber?

**Note:** Shoes made of leather or canvas are best because they can “breathe.” Plastic and rubber do not “breathe,” so moisture is trapped inside. Also, shoes made of leather will mold to the shape of the foot over time. Plastic and rubber do not mold.

Ask the patient to read the label inside the shoe. It should say “leather upper” or “canvas upper.”

Ask the patient to put on the shoes. Are there any pressure points around the tops of the shoes? How is the fit?

**Width:** Is there room for the toes? Room for the heel? If you pull your finger across the shoe, a small fold should be created.

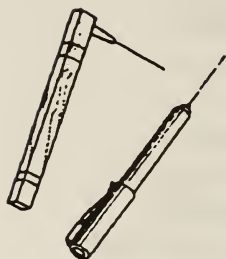
**Length:** Too long? Too short? The longest toe should be  $\frac{1}{2}$ -inch from the end of the shoe. Are the toes protected? Is the heel too high?

## Check the socks.

- What material are they made of? Cotton, wool, nylon? Cotton and wool “breathe.” Nylon does not breathe.
- Are the socks wrinkled inside the shoe? Large wrinkles create pressure points.
- Are they tight around the top? This may block circulation, causing swelling and softening of the feet.

## Testing for Insensitive Feet.

This section tells you how to examine for insensitive feet.



MONOFILAMENTS

Tools you will need:

- Monofilaments (5.07 or 10 gram), good light.
- The monofilament tests a person’s feeling in his feet. This is done by lightly touching one end of the monofilament against the part of the skin to be tested and then pressing until the monofilament bends. The patient tells you whether he can feel the pressure of the monofilament.
- Monofilaments usually come in sets of three. These include the 6.10 (75 gram), the 5.07 (10 gram) and 4.17 (1 gram). The most important monofilament to test for insensitive feet is the 5.07 (10 gram).

## Where to Test.



We only test certain parts of the foot that are at high risk. These test spots are indicated by the circles on this picture of the bottom of the foot.



# How to Test.

## The Wrong Way



## The Right Way



Demonstrate with the 5.07 monofilament.

- Touch the monofilament to your own arm first. This will show the patient that the exam will not hurt.
- Touch the monofilament to the patient's arm. Almost everyone should be able to feel this. Then touch the patient's foot. Most patients will feel this.

Next test with 5.07 monofilament at each test spot shown by a circle on the foot diagram at left.



- Patients may not be able to feel the monofilament because of a callous. If the test spot has a callous, touch the area next to the callous with the monofilament instead.
- If the patient can feel this, place a "+" in the circle on the drawing.
- If the patient cannot feel this, place an "o" in the circle on the drawing.
- The patient who scores "+" at all test spots has protective sensation.
- The patient who scores "o" at one or more test spots has insensitive feet and is at great risk for amputation.

## The Foot Exam: Putting It All Together To Determine Risk Level.

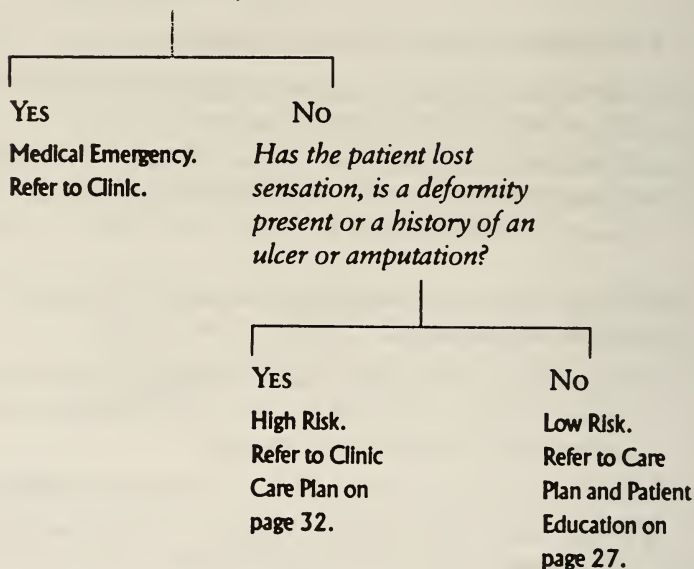
You have finished your exam of the patient's feet. The next step is to find out the risk level. The risk level will help you to plan how to prevent foot problems.

How to assess the risk level of the patient.

- Follow the diagram below to find out the risk level for your patient. Answer "Yes" or "No" to the question.

*Has the patient ever had a foot ulcer or an amputation?*

*Does the patient have an ulcer, black toe or infection?*



Now that you know the risk level for your patient, you can decide on a treatment plan. The next section will discuss treatment plans.

---

## Chapter Three: Taking Care of the Diabetic Foot

This chapter will teach you how to care for the diabetic foot.

You will learn about:

- foot care for all people with diabetes (Part A),
- special foot care needs of people with insensitive feet (Part B).

### Part A. Foot Care for All People with Diabetes.

All people with diabetes need to learn about foot care. After reading this section you will be able to:

- state how often a foot exam should be done,
- list the steps of a foot exam,
- know when to make a referral,
- describe how to make a referral,
- show how to do nail care and callus care,
- show how to apply oils and lotions.

### Things You Should Do for All People with Diabetes.

Educate the patient. Teach him:

- to stop smoking,
- to look at feet daily,
- to wash the feet daily,
- not to go barefoot,
- if feet are cold, to wear socks. Not to use hot water bottles or heating pads and not to soak in hot water,
- not to use chemicals such as callus remover or wart remover,
- not to soak feet except to soften nails for trimming,
- to pick the proper shoes and socks.

There are several handouts on foot care that you may want to use for patient education.



## Foot Care Every Visit.

Examine the feet every time you see the patient, even when you don't think there is a problem. It shows the patient that you think foot care is important.

- take a brief history to see if there are new problems,
- do an exam to look for new problems. Don't forget to look at the shoes,
- talk to the patient about problems and what to do for them,
- make a referral if needed,
- make plans for a follow-up visit with you.

## Foot Care Once a Year.

Every person with diabetes needs these things done once a year:

- test with monofilaments for insensitive feet (pages 24-25),
- check for deformities,
- fill out the foot care form and place it in the chart (see the appendix).

## When to Refer a Patient.

You should refer the patient to a clinic whenever you find a foot problem. Refer:

- foot problems you are not sure about,
- wounds that are not healing,
- pressure points, especially over a deformity,
- black spots,
- ulcers.

## How to Refer a Patient.

Be sure to tell the patient when to be seen. Be specific. When possible, help to set up the appointment and make sure transportation is available to the patient.

**Don't say:** "You should go to the clinic soon."

**Say this instead:** "You should go to the clinic this week. May I help you to set up a time?"

**Don't say:** "That looks pretty bad. I would have that looked at."

**Say this instead:** "That looks like an emergency. We must arrange for you to go to the clinic now."

## Extra Things You May Want to Do.

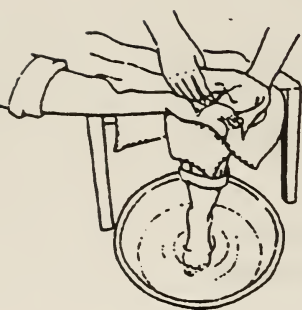
### Toenail Care

- Soak the patient's feet while you take the history and look at the shoes. This will soften the nails and make it easier to cut them.

- Trim the toenails straight across, then file the corners so that there are no small pieces of nail hanging off.
- Leave the toenail about  $\frac{1}{8}$ - $\frac{1}{4}$  inch long.
- If the nail is too thick to be cut easily, try to file it down with an emery board. If it is still too thick, ask the patient to have it cut at the clinic by the physical therapist or doctor.



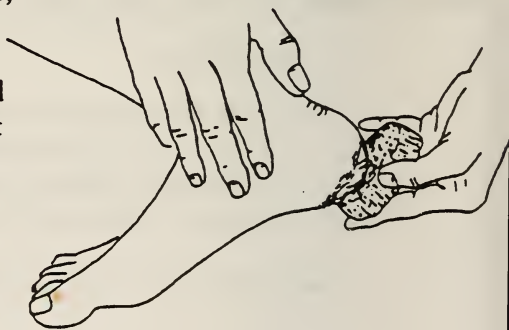
## Callus Care.



Teach the patient how to do callus care at home.

### Using a pumice stone.

- Soak the feet first for 10 to 15 minutes. (If the patient uses the pumice stone right after a shower or bath, he does not need to soak.)
- Rub the pumice stone gently in *one direction* across the callus. Rubbing back and forth could tear the skin.
- Suggest to the patient that he use a pumice stone on calluses after each bath, and before applying lotion.
- Do not cut the callus with scissors or clippers. If the callus is too thick for a pumice stone, or if it has an edge on it, refer the patient to a clinic to have it trimmed by the physical therapist or doctor.

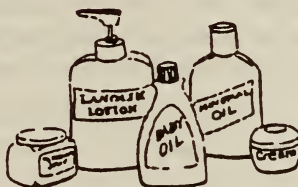


- Remind the patient never to use store medicines, scissors, knives, or razors to remove calluses and corns.



**When applying oils and lotions:**

- Avoid putting lotions and oils between the toes.
- Always apply the lotion or oil after bathing to “seal” in moisture and prevent cracking of the skin.
- Any type of oil may be used: mineral oil, baby oil, vaseline-type petroleum jelly, or hand creams and lotions with lanolin.



## Part B. Foot Care Extras for People with Insensitive Feet.

This section will talk about teaching patients who have insensitive feet. These feet are at high risk for foot problems. After reading this part you will be able to:

- state what people with insensitive feet should know about
  - daily care • cold or numb feet,
  - new shoes • frequency of exams,
- state what people with insensitive feet plus a deformity should know about foot care,
- state what people with insensitive feet plus an ulcer or amputation should know about foot care.

When a person loses nerve function two things may happen.

**The feet no longer sweat.** This causes dryness and cracking. Cracks in the foot allow germs to enter. This can lead to infection and even to amputation.

**The feet lose protective sensation.** This means that they are not able to feel pain. The patient could be burned or step on a tack and not feel it. If the shoes are too tight, the patient may not feel a blister forming. These sores may become infected and can lead to amputation.

### How Can Insensitive Feet Be Protected?



Teach all people with insensitive feet to:

- check the feet twice a day,
- check the temperature of the water with an elbow before putting the feet in. Insensitive feet can be easily burned,
- dry feet by patting the tops and gently rubbing the bottoms, dry well between the toes,
- apply lotion with lanolin, mineral oil, or vaseline to the feet and legs twice daily. Do not apply lotion between the toes.





## For Cold or Numb Feet



- Suggest that the person take special care in winter to keep the feet warm and dry outside to prevent frostbite.
- Wear socks to bed.
- Never warm feet near a stove or open fire. Burns can result.
- Do not use heating pads or hot water bottles. Burns can result.



## New Shoes.

People with insensitive feet often buy shoes that are too tight. Beware if the person tells you he is buying shoes a size smaller. A smaller shoe size may have a tighter fit. Pressure points may occur on the foot. This can lead to ulcers.



- Teach the patient what to look for when buying shoes and socks (see page 23). Encourage the patient to wear jogging shoes.
- Suggest that he bring new shoes to the clinic to be checked for fit before he wears them.
- Tell him to first wear new shoes for 1-2 hours at a time. Look for red spots on the foot after wearing new shoes. New shoes should never be worn all day.
- For extra protection show the patient how to wear soft insoles in his shoes. These are made of materials such as spenco or nylon-covered PPT. These materials may be available at the clinic.



- ▶ People with insensitive feet should have a complete foot exam every six months.

## Special High-Risk Feet.

For the patient who has *insensitive feet and a foot deformity*:

- Teach that a foot deformity causes areas of high pressure in the shoe. These areas of high pressure may cause an ulcer.
- Have a special insole made for the shoe. This special insole is molded to the patient's foot and spreads pressure evenly over the bottom of the foot. These are called **orthotics**. They are usually made by specialists.
- Consider custom-made shoes. These shoes shift the pressure away from the deformity so that an ulcer will not form. These shoes must be made by a shoe specialist.



- ▶ Schedule a complete foot exam every 4 months.

For the patient who has an *insensitive foot and a foot ulcer or amputation in the past*:

- Warn the patient that skin that has had an ulcer is not as strong as normal skin. This means that the most likely place for a new ulcer to form is the old ulcer site.
- Have special insoles or custom shoes made for the patient. These will take pressure off the old ulcer site. The pressure will be spread evenly over the whole foot.

- ▶ Schedule a complete foot exam every 2-3 months.


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## Chapter Four: The Patient With a Foot Ulcer

This chapter will teach you about diabetic foot ulcers.  
You will learn:

- what causes foot ulcers,
- how to care for the patient with a foot ulcer,
- how to prevent an amputation.

### What Is an Ulcer?



An ulcer is an open wound. Germs can enter open wounds. Infection can develop. Infections may not heal. If the infection cannot be healed it can spread and lead to gangrene. Gangrene means dead tissue. Gangrene is an emergency. The dead tissue must be taken off, or infection could spread through the whole body.

#### What Causes Ulcers?

Patients with diabetes get ulcers on the feet from two causes:

- **insensitive feet** that allow pressure points, sores, burns, and cracks to go unnoticed.
- **poor circulation** so the blood supply to an area is low. When these problems are not treated, they cause the skin to break down and an ulcer can form.

#### What about ulcers and poor circulation?

Sometimes a total block in the blood flow occurs. This block causes an ulcer that may be very painful. An ulcer due to poor circulation is an emergency. Blood flow has to be restored quickly or the tissue will die. This type of ulcer is different from the more common ulcer which is due to an injury to an insensitive foot. The ulcer on an insensitive foot is often without pain.

► **Remember:** A foot ulcer that is painful is an emergency.

## What to Do for the Patient with a Foot Ulcer.

First, make sure the ulcer is seen by the clinic doctor. The doctor and clinic staff need to find out why the ulcer formed, whether there is an infection in it, and what type of treatment is needed. The staff will also teach the patient how to prevent ulcers in the future.



Encourage the patient to follow the treatment advice that he got at the clinic. This advice usually includes:

- **Bed rest**—staying off the ulcer is the best treatment. Standing on the foot even one time can further damage the healing area around the ulcer and make things worse.
- **Keep scheduled visits at the clinic**—the physician or physical therapist will want to see the patient often to remove old tissue on top of the ulcer. This lets the new tissue heal faster. This is called **debridement**. The physician or therapist will also want to measure the ulcer at each visit to see how well it is healing.
- **Keep the ulcer clean**—swabbing with half-strength peroxide is a good way to do this. An antiseptic may be prescribed for use on a thin sterile dressing, such as a 2×2 gauze. This is held in place by a small wrap of kling or tubular gauze.
- **Soaking in a whirlpool for ulcer care is not done routinely**, because in many cases it does not appear to help and may slow healing of the wound. Antibiotic creams and ointments (such as bacitracin or neomycin) are avoided for the same reason.

## Look at the Ulcer at Every Visit.

Is the dressing dirty? This could mean that the patient has been walking on it. It could also mean that he isn't changing the dressing and cleaning the ulcer.

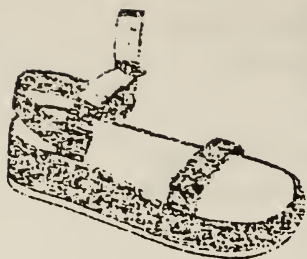
Is the ulcer clean? The tissue should be mostly pink and the edges pale. If there is a lot of green, yellow, or brown tissue on the ulcer it may need debridement (removal of the tissue).

Is there redness or swelling of the skin around the ulcer? Is there pus or bloody drainage coming from the ulcer? Either of these may mean there is an infection. The patient should be seen at the clinic right away.

Is there any black or purple color to the ulcer? Are there red streaks from the ulcer? Does the ulcer smell very bad? These signs can mean a serious infection is present. This may be an emergency. You should take the patient to the clinic right away if you see this.



## What to Do for the Patient with a Newly Healed Ulcer.



The *first three weeks* after an ulcer has healed is a danger period. If the patient does not take care of the foot during this time the ulcer could easily return.

- Often the patient with a newly healed ulcer will be given special sandals to wear during this danger period. You can help the patient by reminding him that these are important to wear *all the time* to keep the ulcer from coming back.
- The doctor will tell the patient with a newly healed ulcer to *slowly* increase walking over this three-week danger time. The patient may be asked to use crutches. Encourage him to follow this advice. If the patient tries to do too much too soon the ulcer may come back.
- Check the foot where the newly healed ulcer is located. Look carefully at the skin after the patient has been walking. Are there areas of redness or warmth? The patient should stop all walking if this happens and go to the clinic.

After the three-week danger period is over, the patient will be asked to wear *special inserts* in the shoe or *custom-made shoes*. Many patients want to go back to wearing their old shoes because they “look better.” Tell them not to do this! Wearing the old shoes may cause the ulcer to return. The new shoes or inserts are made to keep pressure away from the newly healed ulcer and to protect the foot. You can do a lot for the patient by helping him to accept the new shoes.

## What to Do for a Patient in a Healing Cast.

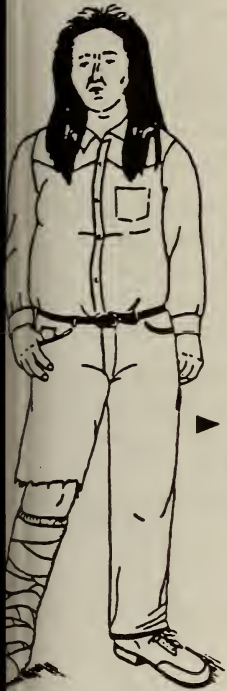
The physician or physical therapist may decide to put the patient in a cast to heal better. This allows the patient to walk around instead of remaining in bed.

This type of cast is only used for ulcers that are due to insensitive feet. They are not used for ulcers that occur on the leg or ulcers that form because of poor circulation. Casts are never put on a patient with swelling or an infection of the ulcer area.

If your patient is wearing a healing cast, you should check for these problems:

- swelling of the skin around the top or bottom of the cast,
- red areas (pressure points) around the top or bottom of the cast,
- stains on the cast that could be from drainage of the ulcer,
- the cast has become loose,
- damage to the cast,
- pain or discomfort in the leg or foot.

► These signs mean the patient should be seen by the therapist or physician right away. The cast may need to be removed and replaced.



# Appendix

## Sample Clinic Foot Care Form.

### ■ Patient History:

Height \_\_\_\_\_ Age \_\_\_\_\_ Smoker? \_\_\_\_\_  
 Weight \_\_\_\_\_ Amputee? \_\_\_\_\_ Site \_\_\_\_\_

### ■ Patient Education Provided:

Nail care \_\_\_\_\_ Skin care \_\_\_\_\_  
 Corn/callus care \_\_\_\_\_ Shoe selection \_\_\_\_\_

### ■ Footwear Features (yes/no)

Leather uppers \_\_\_\_\_ Shoe modified? \_\_\_\_\_  
 Lace style \_\_\_\_\_ Laces okay? \_\_\_\_\_ Inserts \_\_\_\_\_  
 Adequate length \_\_\_\_\_ Adequate width \_\_\_\_\_

### ■ Comments: \_\_\_\_\_

### ■ Physical Findings

	NORMAL FINDINGS <i>Left</i>	NORMAL FINDINGS <i>Right</i>	ABNORMAL FINDINGS <i>Left</i>	ABNORMAL FINDINGS <i>Right</i>
heel walking				
EHL strength				
DP pulse				
PT pulse				
open wound/blisters				
dry skin				
varicose veins/stasis				
swelling				
nails				
corns/calluses				
bunions				
claw/hammer toes				
other deformity				
joint mobility				
sensory findings (10 gm) toes				
lat. border foot				
med. border foot				
met. heads				

### ■ Risk Category (4=highest risk)

- 0=No sensory loss—annual recheck
- 1=Sensory loss only—6-month recheck
- 2=Sensory loss+scar tissue—3-month recheck
- 3=Sensory loss+scar tissue+deformity—2-month recheck
- 4=Open wound/active—weekly or less recheck

### ■ Plan:

- Patient education
- Nail care
- Callus trim
- Inserts
- Wound tracing
- Establish vascular index
- New shoes
- Physician referral
- P.T. appoint.
- Special foot clinic

NAME \_\_\_\_\_ PHYSICIAN \_\_\_\_\_ BIRTHDATE \_\_\_\_\_

HOSPITAL \_\_\_\_\_ DATE \_\_\_\_\_ NEXT SURVEY \_\_\_\_\_

RIGHT FOOT



LEFT FOOT





# Sample Home Visit Foot Care Form.

## ■ History:

How many years has this patient been a diabetic? \_\_\_\_\_

Is the patient a smoker? \_\_\_\_\_ How many a day? \_\_\_\_\_

What medications is the patient taking? \_\_\_\_\_

## ■ Home Supplies (Does the patient have enough of the following?):

Medication? \_\_\_\_\_ Self-monitoring materials? \_\_\_\_\_

Lanolin? \_\_\_\_\_ Syringes, swabs and needles? \_\_\_\_\_

Dressings, tape, etc.? \_\_\_\_\_ Is a night light available? \_\_\_\_\_

Is a pan available in which to soak the feet? \_\_\_\_\_

Is the water system  City  Well  Reservoir?

If patient does his own nails, are clippers okay and file available? \_\_\_\_\_

## ■ Shoe Evaluation (everyday shoes):

Are they leather? \_\_\_\_\_ Are they in good repair? \_\_\_\_\_

Are they lace type? \_\_\_\_\_ Is the toe rounded? \_\_\_\_\_

Are they long enough? \_\_\_\_\_ Are shoe laces okay? \_\_\_\_\_

Are they wide enough? \_\_\_\_\_

## ■ Foot Evaluation:

General hygiene:  Good  Adequate  Poor

Swelling:  None  Mild to moderate  Severe

Toe nails:  Need trim  Too short  Fungus  In-grown

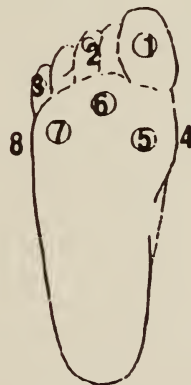
Pulses present? DP rt \_\_\_\_\_ PT rt \_\_\_\_\_ DP left \_\_\_\_\_ PT left \_\_\_\_\_

Skin evaluation:  Open wounds  Calluses/corns  Dryness

Stasis skin  Between toe macerations

## ■ Sensation (10 grams pressure, check if present)

Left		Right	
1. _____	2. _____	5. _____	6. _____
3. _____	4. _____	7. _____	8. _____



## ■ Action Taken:

No problems and no action required \_\_\_\_\_

Patient education provided \_\_\_\_\_

Patient needs referral to \_\_\_\_\_ for the purpose of \_\_\_\_\_

NAME \_\_\_\_\_ HOSPITAL \_\_\_\_\_

ADDRESS \_\_\_\_\_ PHONE \_\_\_\_\_





