

# Learning Package

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## Implementing the Learning Package Performing a Diabetes Foot Screen

The prevention of diabetic foot complications requires a proactive approach involving the person with diabetes, family/care givers and an interdisciplinary team of health care providers.<sup>1</sup> An important aspect of this care is the performance of a diabetes foot risk screen and subsequent support and education for people living with diabetes.

The goal of the learning package and DVD is to increase

- the awareness of the need for screening
- the frequency of foot risk screening done by a variety of health care providers

The target audience for the basic foot risk screening is:

- Medical Office Assistants, or equivalent, who could perform a basic risk screening as part of a medical office visit with concurrent follow-up by the family physician or nurse practitioner
- Others who provide general foot care and who may do basic risk screening and refer problems or concerns to another care provider (family physician, nurse practitioner, podiatrist, Home Care Nurse, diabetes educator, etc)

### Objective of the learning package

At the completion of the learning package, participants will be able to

- Perform a basic diabetic foot risk screening
- Identify problems/issues of concern for referral to another health care provider

### Learning Package

The Learning Package is designed for use by health care providers (such as, Diabetes Educators, Nurse Practitioners, Registered Nurses, Physicians) to facilitate the learning about performing a basic diabetic foot risk assessment, primarily for providers who have little or no training, in the procedure. In addition, it can be used by health care providers to maintain or refresh their skills in performing a diabetes foot risk screen.

The learning package contains:

- Facilitators Guide for an inservice (about 1-1.5 hours) with suggestions for learning activities: return demonstrations, case studies
- A DVD (13 minutes) to review and demonstrate the foot risk assessment. Individual chapters allow the educator to tailor the content to the needs of the learner(s).
- A detailed script outlining the content of the "chapters" in the DVD
- Foot screen record sheet with risk category
- Diabetic foot screen instructions
- Illustrations of diabetic foot conditions
- Filament Application Instructions
- Care of monofilaments
- Where to buy monofilaments in Canada
- Saskatchewan Health's client brochure entitled Why People with Diabetes Need to Take Care of Their Feet
- Glossary of terms

All materials are consistent with the Saskatchewan clinical Practice Guidelines for the Prevention and Management of Diabetes Foot Complications

We wish to acknowledge and thank Heartland Health Region for their past work on a learning package and their willingness to share the content with others.

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<sup>1</sup> Clinical Practice Guidelines for the Prevention and Management of Diabetes Foot Complications p 11

## Facilitator's Guide for an Inservice: (1-1.5 hours)

### Learning to perform a Diabetes Foot Screen

This guide is intended for nurses, nurse practitioners, diabetes educators or physicians. It has been designed to teach care providers such as Medical Office Assistants or the equivalent how to conduct a basic foot risk screen for clients with known diabetes including bringing these results or concerns to the attention of a primary care provider for the necessary education or referral.

The workshop and materials can be adapted to the needs of the audience and the learning package includes written material, visual resources, and sample monofilaments.

#### Suggested Inservice Agenda

Adapt this agenda to the needs of your group and the learning time. **It could be divided into small parts and held over a period of time rather than as a single event.**

AGENDA	LEAD	TIME	OUTCOME
Introductions <ul style="list-style-type: none"> <li>• briefly review learning package</li> <li>• discuss basic facts about diabetic foot complications</li> </ul>	Facilitator	10 minutes	Meet everyone have them feel comfortable with the agenda
<ul style="list-style-type: none"> <li>• Discuss learning objective(s) and behaviours expected at the completion of the inservice</li> <li>• Encourage interaction and suggest participants may wish to work in pairs</li> </ul>	Facilitator	5 minutes	<ul style="list-style-type: none"> <li>• Common understanding of the purpose</li> <li>• Group will work together</li> </ul>
Introduce and play the DVD; explain it will be used as a teaching tool and that it will be stopped at certain points in order to practice a skill or review information	Facilitator	15 minutes	DVD will be viewed and the basic foot exam will be observed by participants
Have the participants work together, with one being the "patient" and the other practicing a foot screen; then switch. Use the screening form, spending time on each one of the questions. This can also be done by using the script and the DVD to focus in on individual skills or information	Everyone	30-40 minutes	Participants will get an opportunity to practice the foot screen, allowing time for questions and to feel more comfortable with the skill
* Case study or role play could be used to simulate a patient/client interaction	Everyone	15 minutes	Another opportunity to increase skill with clients
* Discuss new terminology	Facilitator	10 minutes	Increase knowledge of medical terminology
Summarize: emphasize it will take time and practice to learn the skills, and if in doubt, bring to another health care provider or supervisors attention	Facilitator	5 minutes	Summary of potential role in assisting in provider care to people with diabetes

\* In order to shorten the length of the inservice or break into more than one session, the above agenda items omitted or left to discuss at a subsequent follow-up session.

Once the participant has completed the inservice and had an opportunity to be observed performing a diabetic foot screen, they could receive documentation or certification of completion of the skill.

#### Inservice Objective

At the completion of the workshop the participant will be able to:

Conduct a basic diabetic foot screen for patients with known diabetes by:

- Observing the foot for physical or structural abnormalities
- Identifying the presence of a foot ulcer or any previous foot ulceration
- Determining the patient's self-care ability, or any barriers to self-care
- Observing the patient's footwear and any potential problems
- Assessing for loss of sensation by performing a monofilament test
- Feeling for the presence/absence of pedal pulses
- Recording findings on a form and presentation for review to health care provider

## Performing a Diabetes Foot Screen – Script

### Chapter 1 – Introduction: 0:00 – 1:08 min

Time	Picture	Sound
	<ul style="list-style-type: none"> <li>Opening: Silhouette of a foot builds from the bottom of the screen rotating to the left so the arch is facing right screen, in the arch area title appears: Performing a Diabetes Foot Screen</li> <li>Down to black</li> </ul>	<ul style="list-style-type: none"> <li>Music playing</li> </ul>
	<ul style="list-style-type: none"> <li>Up from black</li> <li>Picture of files and foot</li> <li>Picture of CPG's</li> </ul> <p>Down to black Up from Black</p> <p>Busy city street, people walking Driving down the street to the West Winds Clinic. Entering the clinic and meeting the receptionist.</p>	<p>Narr - The Saskatchewan Clinical Practice Guidelines for the Prevention and Management of Diabetes Foot Complications recognize the importance of an annual foot screen.</p> <p>Narr – There are approx 63,000 people living with diabetes in Saskatchewan. The purpose of this video is to show how to perform a diabetic foot screen and record the results</p> <p>Kim – Hi I'm Kim I am here for my diabetes appointment</p> <p>Glenda – Okay they are ready for you, just go in on your first door on the right</p> <p>Linda: Hi Kim How have you been doing. It's been awhile since we have seen you</p>

### Chapter 2 –Explanation of Foot Nerve and Circulation problems – 1:08- 2:12

Time	Picture	Sound
		<ul style="list-style-type: none"> <li>Narr: There are 2 main conditions that can affect the feet due to diabetes. These are peripheral neuropathy which affects feeling and peripheral arterial disease which results in reduced circulation.</li> </ul>
1:26	<ul style="list-style-type: none"> <li>Animated picture of nerve (peripheral nerve dysfunction)</li> </ul>	<ul style="list-style-type: none"> <li>Diabetic peripheral neuropathy is defined as: the presence of symptoms and or signs of peripheral nerve dysfunction in people with diabetes after exclusion of other causes</li> </ul>
		<ul style="list-style-type: none"> <li>One of the symptoms of neuropathy can be the loss of protective sensation in the feet</li> </ul>
1:43 1:47	<ul style="list-style-type: none"> <li>Picture of bruised toe</li> <li>Picture of injured toe</li> </ul>	<ul style="list-style-type: none"> <li>A person with loss of protective sensation could injure their foot and be completely unaware of any resulting problems</li> </ul>
1:53	<ul style="list-style-type: none"> <li>Animated picture of blood flow and blockage in blood vessel</li> </ul>	<ul style="list-style-type: none"> <li>Peripheral arterial disease causes calcification, arterial narrowing and blockage of the blood vessels which can result in reduced blood flow to</li> </ul>

		the feet
2:01	<ul style="list-style-type: none"> <li>Picture of poor healing feet</li> </ul>	<ul style="list-style-type: none"> <li>This can manifest itself in many ways and in particular it may cause pain when walking or at rest and result in reduced ability to heal</li> </ul>

### Chapter 3: Examination of the Feet 2:12 – 3:30

	<ul style="list-style-type: none"> <li>Podiatrist performing foot exam</li> </ul>	<ul style="list-style-type: none"> <li>Sit the patient on the examination couch with their shoes and socks or stockings removed. Inform them that you're going to examine their feet and carry out a diabetic foot screening to check their risk of developing any diabetic foot complications</li> </ul>
2:32	<ul style="list-style-type: none"> <li>Examining shape of feet</li> </ul>	<ul style="list-style-type: none"> <li>The next stage of the screening process is to check the general shape of the feet for any structural abnormalities such as: pes cavis, claw toes, or hallux valgus (bunion), all of which could increase the patient's risk of developing foot complications</li> </ul>
2:39	<ul style="list-style-type: none"> <li>Claw toe</li> </ul>	
2:40	<ul style="list-style-type: none"> <li>Still shot of hallux valgus (bunion)</li> </ul>	
2:48	<ul style="list-style-type: none"> <li>Callus on ball of foot</li> </ul>	<ul style="list-style-type: none"> <li>Check both feet for any areas of significant callus or dry skin paying particular attention to the heel area</li> </ul>
2:57	<ul style="list-style-type: none"> <li>Checking between the toes</li> </ul>	<ul style="list-style-type: none"> <li>Check between the toes for problems such as athlete's foot soft corns or fissures.</li> </ul>
3:03	<ul style="list-style-type: none"> <li>Checking and asking about ulceration</li> </ul>	<ul style="list-style-type: none"> <li>Check both feet for areas of ulceration and ask the patient if they've suffered any previous ulceration</li> </ul>
3:12	<ul style="list-style-type: none"> <li>Patient self care – patient touching and looking at their feet</li> </ul>	<ul style="list-style-type: none"> <li>Check if the patient is able to self care. This can be done by checking if the patient can touch their feet with ease and if they're able to see their feet clearly.</li> </ul>
3:23	<ul style="list-style-type: none"> <li>Thickened and yellowed toe nails</li> </ul>	<ul style="list-style-type: none"> <li>If there are other risk factors present such as nail pathologies, obesity or inappropriate footwear, record as appropriate.</li> </ul>

### Chapter 4: Checking Circulation 3:30 – 4:15

		<ul style="list-style-type: none"> <li>The next stage of the screening process is to check the patient's circulation to their feet.</li> </ul>
3:37	<ul style="list-style-type: none"> <li>Animated diagram of the dorsalis pedis and posterior tibial pulses</li> </ul>	<ul style="list-style-type: none"> <li>There are two pulses we look for in each foot. The dorsalis pedis and the posterior tibial.</li> </ul>
3:45	<ul style="list-style-type: none"> <li>Locating the dorsalis pedis</li> </ul>	<ul style="list-style-type: none"> <li>To find the dorsalis pedis pulse palpate the top of the foot between the first and second metatarsal. Note that the dorsalis pedis is absent in about 10% of the population.</li> </ul>
3:55	<ul style="list-style-type: none"> <li>Locating the posterior tibial</li> </ul>	<ul style="list-style-type: none"> <li>And to find the posterior tibial palpate they are behind the medial malleolus. Record whether either is present or both are absent</li> </ul>
4:09	<ul style="list-style-type: none"> <li>Calf pain/tightness</li> </ul>	<ul style="list-style-type: none"> <li>Ask the patient if they're experiencing intermittent claudication which is pain or tightness in the calves when walking, relieved by</li> </ul>

		stopping, and if they've had any previous vascular intervention.
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### Chapter 5: Checking for Neuropathy 4:14 – 6:30

		<ul style="list-style-type: none"> <li>The next test we carry out is for diabetic neuropathy. This is to enable us to easily check if the patient's protective sensation is intact</li> </ul>
4:30	<ul style="list-style-type: none"> <li>Example of a monofilament</li> </ul>	<ul style="list-style-type: none"> <li>For this test we use a 10 gram monofilament. It's important that you only use reputable makes of monofilaments. This will ensure that the information you are collecting is accurate. The monofilament must be rested after use and replaced regularly approximately every 6 months.</li> </ul>
		<ul style="list-style-type: none"> <li>The advantages of this test are its simplicity, accuracy and low cost.</li> </ul>
		<ul style="list-style-type: none"> <li>Studies have shown that the inability to feel a 10 gram monofilament is a useful test as a predictor of future occurrence of diabetic foot ulcers</li> </ul>
5:09	<ul style="list-style-type: none"> <li>Demonstrating monofilament to a patient</li> </ul>	<ul style="list-style-type: none"> <li>Inform the patient you're going to test the sensation in their feet with a monofilament. Show the patient that it is not sharp by first testing it on their forearm and then with their eyes closed as a comparison.</li> </ul>
5:23	<ul style="list-style-type: none"> <li>Showing correct application of the monofilament</li> </ul>	<ul style="list-style-type: none"> <li>The monofilament should be applied perpendicular to the skin and with sufficient pressure to cause a slight bend in the filament. If it's kinked it will need to be replaced.</li> </ul>
5:35	<ul style="list-style-type: none"> <li>Showing testing around callus</li> </ul>	<ul style="list-style-type: none"> <li>Avoid testing areas on the foot where there is callus present, areas of ulceration or scar tissue. You may have to test proximally or distally when any of these are present. Do not make any repetitive contact or allow the monofilament to slide across the skin</li> </ul>
5:53	<ul style="list-style-type: none"> <li>Monofilament testing on patient's foot</li> </ul>	<ul style="list-style-type: none"> <li>The patient should have their eyes closed and respond yes each time they feel it on their foot. The total time from contact to removal of the monofilament should be approximately 2 seconds in duration. The sites and timing should be randomized to prevent the patient guessing.</li> </ul>
		<ul style="list-style-type: none"> <li>Ask the patient if they are experiencing any pain, paresthesia, usually described as tingling or burning in their feet and record as appropriate.</li> </ul>

### Chapter 6: Performing the foot screen 6:30 – 8:20

		<ul style="list-style-type: none"> <li>We're now going to carry out a simple diabetic foot screening on our patient in a clinical situation</li> </ul>
6:40	<ul style="list-style-type: none"> <li>Checking foot shape</li> </ul>	<ul style="list-style-type: none"> <li>Firstly we check that there has been no previous amputations. We then check the general shape</li> </ul>

		of the feet for any structural abnormalities.
6:52	<ul style="list-style-type: none"> <li>Looking at the heel area for callus formation</li> </ul>	<ul style="list-style-type: none"> <li>Check for areas of callus, paying particular attention around the heel areas.</li> </ul>
5:56	<ul style="list-style-type: none"> <li>Checking between the toes</li> </ul>	<ul style="list-style-type: none"> <li>Check between the toes for any problems such as athlete's foot or fissuring</li> </ul>
7:03	<ul style="list-style-type: none"> <li>Scar from previous ulcer</li> </ul>	<ul style="list-style-type: none"> <li>Ask the patient if there has been any previous ulceration.</li> </ul>
7:09	<ul style="list-style-type: none"> <li>Observing patient checking own feet</li> </ul>	<ul style="list-style-type: none"> <li>Check if the patient is able to self care by being able to reach and see their feet easily.</li> </ul>
7:15	<ul style="list-style-type: none"> <li>Pulse checks</li> </ul>	<ul style="list-style-type: none"> <li>We then check the two pulses on either foot. Firstly, the dorsalis pedis and then the posterior tibial</li> </ul>
7:24	<ul style="list-style-type: none"> <li>Monofilament</li> </ul>	<ul style="list-style-type: none"> <li>We are now ready to carry out the neurological test using the monofilament.</li> </ul>
7:30	<ul style="list-style-type: none"> <li>Demonstration use of monofilament</li> </ul>	<ul style="list-style-type: none"> <li>I'm about to test the sensation in your feet using this monofilament but first of all I'll test it on your arm so that you can see that it doesn't feel sharp...okay.</li> <li>Feel that?</li> <li>Yes</li> <li>If you close your eyes can you still feel it?</li> <li>Yes</li> </ul>
7:46	<ul style="list-style-type: none"> <li>Performing the monofilament test on the feet</li> </ul>	<ul style="list-style-type: none"> <li>I am now going to test the sensation in your feet so if you would like to just close your eyes and say yes each time you feel anything on your feet.</li> <li>Yes, yes, etc</li> </ul>

### Chapter 7: Additional recommendations specific to Saskatchewan 8:20 – 13:32

	<ul style="list-style-type: none"> <li>Kim on the exam table and Linda chatting with her, making her comfortable and relaxed</li> </ul>	<ul style="list-style-type: none"> <li>Narr – Regular foot screening and risk assessment, along with education and timely referral help to prevent diabetic foot complications</li> </ul>
		<ul style="list-style-type: none"> <li>Narr - In this section we will look at areas of the foot screen and recording method that differ from the Scottish video.</li> </ul>
8:50	<ul style="list-style-type: none"> <li>Diabetes Foot Screen form used in Saskatchewan</li> </ul>	<ul style="list-style-type: none"> <li>Narr – Kim is here for a diabetes visit. Let's join Linda as she performs the foot screen. Linda is using the Diabetes Foot screen form included in the Saskatchewan Clinical Practice Guidelines.</li> </ul>
9:00	<ul style="list-style-type: none"> <li>Checking for swelling</li> </ul>	<ul style="list-style-type: none"> <li>Linda – Okay Kim So the first thing that I want to do is to check for swelling so I'm just going to go right down the legs and check right at the ankles if there is any kind of swelling there.</li> </ul>
9:08	<ul style="list-style-type: none"> <li>Checking foot shape and overall appearance</li> </ul>	<ul style="list-style-type: none"> <li>I am just going to check to see about the shape of your feet now and see if there is any swelling. So the first thing I am going to do is pick up the foot here and have a look. I am looking to see and feel if there is any kind of lesions or any kind of bumps or if there is any bruising or any kind of dried skin. Checking</li> </ul>



<p>9:30</p> <ul style="list-style-type: none"> <li>• Toe check</li> </ul>		<p>along the back of your heel to see if there is any callus. Feels good.</p> <ul style="list-style-type: none"> <li>• Now I am just going to check your toes to make sure there is no dry areas underneath or any cuts. Does this hurt at all?</li> <li>• Kim: No</li> <li>• Linda – well that’s good. Now let’s just check the other foot Again I ‘m just going to check along the inside of your arch. This is something you might want to do at home just to make sure there is nothing that’s sore or dry along there. The heels are very nice. I am just going to check again along the bottom of the toes, now that’s a tricky thing and you may want to put a mirror on the floor so that you can see. Any soreness?</li> <li>• Kim – No</li> <li>• Linda – OK so that’s good. So now we’re going to check your temperature. So I am just going to do this by placing my hands on the top of your feet and what I am looking at is if the left and the right are the same temperature. What that indicates that the circulation is good and equal on both sides Temperature feels great</li> <li>• Now I am going to test the strength of your feet. I am going to place my hands on the top of your feet and I want you to push against my hands. Now push up. Excellent. Now I am going to place my hands under the soles of your feet and push down..... as if you are making a pointy foot....excellent</li> </ul>
<p>10:09</p> <ul style="list-style-type: none"> <li>• Shows the skin temperature check</li> </ul>		
<p>10:27</p> <ul style="list-style-type: none"> <li>• Checking for foot or ankle weakness</li> </ul>		<ul style="list-style-type: none"> <li>• Narr - People with diabetes want to avoid foot infections which may occur if the skin becomes broken. Ask the client who cuts his or her nails and if there are any problems. If needed, a referral can be made for assistance with nail care.</li> </ul>
<p>11:19</p> <ul style="list-style-type: none"> <li>• Testing sites in Saskatchewan</li> </ul>		<ul style="list-style-type: none"> <li>• Narr – When examining the foot note an abnormal foot shape, (pause) swelling, (pause) increased foot temperature or redness (pause) and weakness</li> <li>• Narr – In Saskatchewan we recommend testing 12 sites for sensation on each foot using the monofilament</li> </ul>

11:30	<ul style="list-style-type: none"> <li>Samples of footwear</li> </ul>	<ul style="list-style-type: none"> <li>Narr – It is important to look at the footwear for fit and pattern of wear. Shoes should fit well with good support and have lots of room for the toes. Look in the shoe for any foreign objects, such as a stone.</li> <li>People with loss of sensation are often unaware that they may be stepping or walking on a sharp object. They often experience decreased sensation to heat and cold</li> </ul>
12:00	<ul style="list-style-type: none"> <li>Patient education</li> </ul>	<ul style="list-style-type: none"> <li>Linda – So Kim, in order to help keep your feet as nice as they are right now we've got a little brochure we want to show you Okay? It's about why people want to look after their feet and what are the things to do and don't do.</li> </ul>
		<ul style="list-style-type: none"> <li>Narr –An important part of managing diabetes is taking care of the feet.</li> </ul>
		<ul style="list-style-type: none"> <li>Linda - and there over here it's talking again about not smoking. You don't smoke, do you?</li> <li>Kim: oh no</li> <li>Linda – good for you ....and watching out for hot water. Making sure you that your feet are not being compressed in tight shoes or sandals.</li> </ul>
12;32	<ul style="list-style-type: none"> <li>Saskatchewan health brochure</li> </ul>	<ul style="list-style-type: none"> <li>Narr - Saskatchewan's client brochure shown here is available from Saskatchewan Health.</li> </ul>
		<ul style="list-style-type: none"> <li>Narr - If you will be doing foot screening for people with diabetes, talk with your colleague; physician, nurse or other providers to determine your specific role, when to refer and how referrals will be done.</li> <li>Services in Saskatchewan may differ between health regions, however all agree that early detection, treatment, along with education on self care are key to prevention and management of foot complications</li> </ul>
13:20	<ul style="list-style-type: none"> <li>Thanks to the Small Video Company</li> </ul>	<ul style="list-style-type: none"> <li>Narr - In the true spirit of collaboration the Small Video Company has generously agreed to share their video produced in 2008 for the Scottish Diabetes group.</li> </ul>

## Chapter 7 – Credits: 13:32 – 14:02

## Diabetes Foot Screen

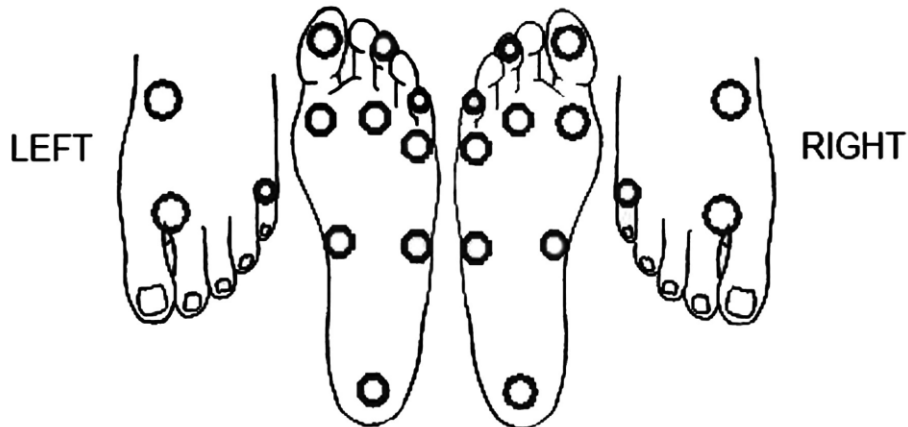
Name (Last, First, MI) \_\_\_\_\_ Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

Fill in the following blanks with a "Y" or "N" to indicate findings in the right or left foot.

	R	L
Is there an abnormal foot shape?	_____	_____
Is there a claw toe deformity?	_____	_____
Is there heavy callus build-up?	_____	_____
Is there a history of a foot ulcer?	_____	_____
Is there a foot ulcer now?	_____	_____
Is the patient unable to see the bottom of their feet?	_____	_____
Are the toenails thick or ingrown?	_____	_____
Is there swelling?	_____	_____
Is there elevated skin temperature?	_____	_____
Is there foot or ankle muscle weakness?	_____	_____
Is there limited ankle dorsiflexion?	_____	_____
Are the shoes inappropriate in style and fit?	_____	_____

Note the level of sensation in the circles:

+ = Can feel the 5.07 filament    - = Can't feel the 5.07 filament



Skin Conditions on the Foot or Between the Toes:

Draw in: Callus                      Pre-ulcer                      Ulcer                      (note length and width in cm)  
 Label with: **R** – redness, **M** – maceration, **D** – dryness, **W** – warm **T** – Tinea, **Dis** - discoloration

Is there an absent pedal pulse? (yes or no)                      R \_\_\_\_\_    L \_\_\_\_\_

<b>RISK CATEGORY:</b> (determined by experienced health care provider)	
_____	0 No loss of protective sensation
_____	1 Loss of protective sensation
_____	2 Loss of protective sensation with either high pressure (callus/deformity, of poor circulation
_____	3 History of plantar ulceration, neuropathic fracture (Charcot foot) or amputation

Performed by: \_\_\_\_\_

## Risk and Management Categories For the Feet

RISK CATEGORY	DESCRIPTION	ACTIONS TO BE TAKEN
<b>0</b>	No loss of protective sensation (LOPS) in feet NOTE: LOPS is assessed using a 5.07 monofilament (10 gram) at multiple locations on each foot.	<ul style="list-style-type: none"> <li>• <b>EDUCATION</b> emphasizing               <ul style="list-style-type: none"> <li>○ disease control</li> <li>○ proper shoe fit and design</li> </ul> </li> <li>• <b>FOLLOW UP ANNUALLY</b> for foot screen</li> <li>• <b>FOLLOW AS NEEDED</b> for skin/callus/nail care or orthoses.</li> </ul>
<b>1</b>	Loss of protective sensation in feet	<ul style="list-style-type: none"> <li>• <b>EDUCATION</b> emphasizing               <ul style="list-style-type: none"> <li>○ disease control</li> <li>○ proper shoe fit and design</li> <li>○ daily self-inspection</li> <li>○ skin/nail care</li> <li>○ early reporting of foot injuries</li> </ul> </li> <li>• <b>ROUTINE FOLLOW UP 3-6 MONTHS</b> for foot/shoe examination + nail care.</li> </ul>
<b>2</b>	Loss of sensation in feet with high pressure (callus/deformity) or poor circulation	<ul style="list-style-type: none"> <li>• <b>EDUCATION</b> emphasizing               <ul style="list-style-type: none"> <li>○ disease control</li> <li>○ proper shoe fit and design</li> <li>○ daily self-inspection</li> <li>○ skin/nail care</li> <li>○ early reporting of foot injuries</li> </ul> </li> <li>• <b>FOOTWEAR</b> <ul style="list-style-type: none"> <li>○ Depth-inlay footwear</li> <li>○ Molded/modified orthoses</li> <li>○ Modified shoes as needed</li> </ul> </li> <li>• <b>ROUTINE FOLLOW UP 1-3 MONTHS</b> for foot/activity/foot wear evaluation and callus/nail care</li> </ul>
<b>3</b>	History of plantar ulceration or neuropathic fracture (Charcot foot)	<ul style="list-style-type: none"> <li>• <b>EDUCATION</b> emphasizing               <ul style="list-style-type: none"> <li>○ disease control</li> <li>○ proper shoe fit and design</li> <li>○ daily self-inspection</li> <li>○ skin/nail care</li> <li>○ early reporting of foot injuries</li> </ul> </li> <li>• <b>FOOTWEAR</b> <ul style="list-style-type: none"> <li>○ Depth-inlay footwear</li> <li>○ Molded/modified orthoses</li> <li>○ Modified shoes as needed</li> </ul> </li> <li>• <b>ROUTINE FOLLOW-UP 1-12 WEEKS</b> for foot activity/foot wear evaluation and callus/nail care</li> </ul>

## Diabetic Foot Screen Instructions

Please refer to your learning package and the foot screen DVD entitled **Performing a Diabetes Foot Screen**. For each question below there is a reference to the DVD by chapter(s) or by minutes which will allow you to go to the specific location in the DVD demonstrating the example or procedure. In some cases reference is made to a page in the learning package to illustrate the example.

**Question 1: Is there an abnormal foot shape?** This is determined by inspecting the general shape of the patient's foot. Conditions to consider include: prominent bony areas such as bunions, partial or complete amputations of the foot or toes or high arches or flat feet. **(Chapter 3, 6 and 7 or at 2:32, 6:40 and 9:08 in the DVD or page 15 in the learning package)**

Charcot Foot is a serious condition that can develop in the neuropathic foot and is often referred to as a 'rocker bottom shaped foot'. There is often swelling in just one foot, increased skin temperature in that foot, redness, and possible pain in an otherwise insensate foot. **(see page 17 in the learning package)**

**Question 2: Is there a claw toe deformity?** A toe deformity will cause the toe to bend into an odd position at one or more joints. It may appear more like a claw rather than assuming a normal toe shape  
**(Chapter 3 or at 2:39 in the DVD or refer to page 15 in the learning package)**

**Question 3: Is there heavy callus build-up?** This is a thickened, toughened area of the skin caused by friction or pressure. Calluses may be present on the ball of the foot, heel, or on the edge of the big toe. Fissures (cracks in the skin) may also develop in callused areas of the foot, particularly on the heel. **(Chapter 3, 6 & 7 or at 2:48, 6:52, 9:08 in the DVD or page 16 in the learning package)**

**Question 4: Is there a history of a foot ulcer?** Ask the patient if they have ever had a foot ulcer. If the patient is not sure, ask if they have ever had an open area anywhere on the foot that has required treatment and taken a long time to heal. **(Chapter 3 or at 3:03 in the DVD)**

**Question 5: Is there a foot ulcer now?** Ulcers destroy the protective layer of the skin causing an open sore on the foot which may lead to infection. Ulceration may be hidden under a callus.  
**(Chapter 6 or at 7:03 in the DVD or page 17 in the learning package)**

**Question 6: Is the patient unable to see the bottom of their feet?** Obesity and/or lack of flexibility can prevent a patient from seeing his/her feet. Self-inspection and foot care is difficult with these limitations often requiring family or outside assistance. **(Chapter 3 and 6 or at 3:12 & 7:09 in the DVD)**

**Question 7: Are the toenails thick or ingrown?** Look for discoloration, thick or ingrown toe nails. Mycotic means a skin or nail condition caused by fungus or yeast and tinea is a fungus such as athlete's foot that can grow on the foot, between the toes, nails or skin. **(Chapter 3 or at 3:23 in the DVD or page 17 in the learning package)**

**Question 8: Is there swelling?** Swelling of the feet and/or ankles and legs may indicate infection or circulation problems with pooling of fluid in the lower extremities **(Chapter 7 or at 9:00 in the DVD)**

**Question 9: Is there elevated skin temperature?** Elevated, localized skin temperature can indicate infection or areas of pressure and stress on the foot. *(Chapter 7 or at 10:09 in the DVD)*

**Question 10: Is there foot or ankle muscle weakness?** Weakening muscle strength can lead to muscle imbalance which produces changes in foot structure and gait resulting in foot deformities *(Chapter 7 or at 10:27 in the DVD)*

**Question 11: Is there limited ankle dorsiflexion?** Dorsiflexion refers to the upward movement of the foot and toes toward the shin. Limited range of this motion can lead to increase stress on other areas of the foot *(Chapter 7 or at 10:27 in the DVD)*

**Question 12: Are the shoes inappropriate in style and fit?** Improper or poor fitting shoes may create foot pressure points leading to further complications. Look at the foot wear, for signs of wear, holes, areas of pressure and appropriateness. Look inside the shoe for foreign objects or anything that may cause damage to the foot. *(Chapter 7 or at 11:30 in the DVD)*

**10 Gram Monofilament Test:** Perform the Foot screen for neuropathy using the 10 gram monofilament as indicated on the foot diagram *(see entire chapter 5 or from 7:24 to 8:20 in chapter 6 in the DVD)* **Note: in Saskatchewan 12 sites on the foot are used for testing with the monofilament – see chapter 7 at 11:19**

Examine the foot and record any problems identified on the form. Draw in calluses, pre-ulcerative lesions (a closed lesion such as a blister or bruise) or open ulcers. Label areas of:

- Redness
- Maceration (is the softening and whitening of skin kept constantly wet)
- Dryness
- Warm
- Tinea: is a group of fungal diseases of the skin or nails, such as Athletes Foot.)
- Discoloration

**Question 13: Is there an absent pedal pulse?** Pulses on the feet may be difficult to feel and require some skill and practice. This is an area that you may want to ask for assistance or confirmation from another health care professional. There are two pulses to palpate:

Dorsalis Pedis: is on the top of the foot

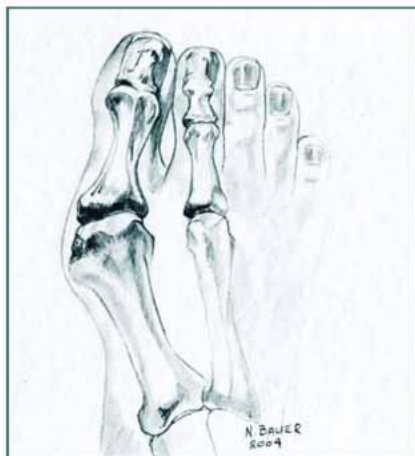
Posterior tibial: behind and slightly below the ankle bone on the inside of the foot

***(to locate the pulses see demonstration in Chapter 4 at 3:37 in the DVD)***

**Risk Category:** Once the foot screen form has been completed to the best of your ability, please consult with your supervisor, manager or other health care professional. The physician, nurse practitioner, nurse or foot specialist can determine the risk category and proceed with the appropriate patient care and education.

## Deformities

Diabetes Foot: Risk Assessment Education Program — **The Diabetic Foot**



### Hallux Valgus (Mild/Moderate)

A small bump (sometimes called a bunion) forms when the big toe turns in toward the second toe. The joint at the base of the big toe is pushed to the side.



### Hallux Valgus (Severe)

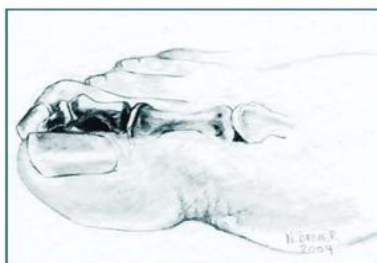
The angulation of the big toe is marked, forming a large bunion. The big toe may move under the second toe.



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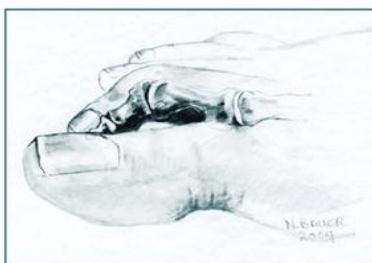
## Deformities

Diabetes Foot: Risk Assessment Education Program — **The Diabetic Foot**



### Mallet Toe

With a mallet toe, the joint nearest the tip of the toe is bent.



### Hammer Toe

With a hammer toe, the middle joint is bent.



### Claw Toe

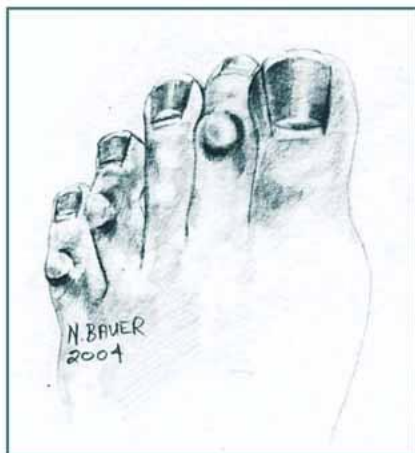
With a claw toe, the joint at the base of the toe is bent up. The middle joint is bent down.



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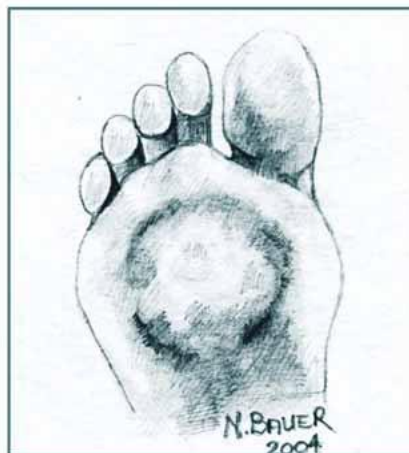
## Pressure Related

Diabetes Foot: Risk Assessment Education Program — The Diabetic Foot



### Corns

A corn is a conical, horny induration and thickening of the skin caused by friction or pressure. Hard corns may develop on the tops or tips of the toes. Soft corns develop between the toes.



### Calluses

A callus is a horny layer of skin caused by pressure or friction. It may spread across the ball of the foot or along the outer edge of the heel or big toe. A callus may develop a central core or plug of tissue where the pressure is greatest.

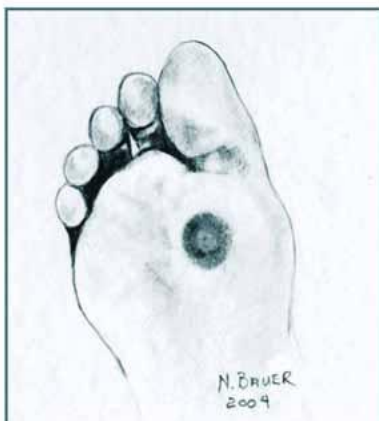


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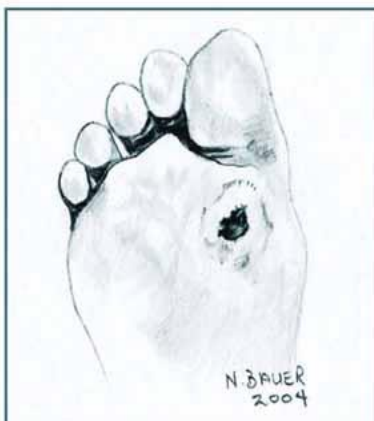
## Infections

Diabetes Foot: Risk Assessment Education Program — The Diabetic Foot



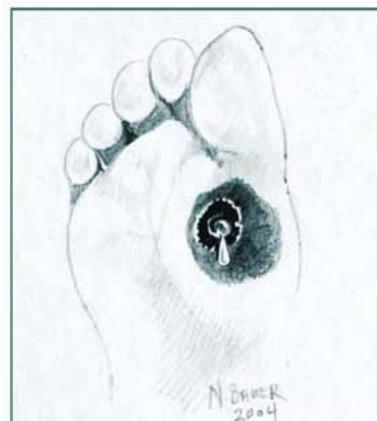
### Hot Spots

Red “hot spots” on the feet are signs of pressure or friction. If pressure is not relieved, a hot spot may develop into a blister. Left untreated, a blister may turn into an open wound or a corn or callus.



### Ulcer

If corns or calluses press into the foot, they destroy underlying skin layers, and an ulcer results. Ulcers may lead to infection. In some cases, skin from a callus or corn may cover an open wound, making it difficult to assess.



### Infected Ulcer

Infected ulcers may result in the death of healthy tissue. Symptoms of infection include white, yellow or green discharge, bleeding or odour.



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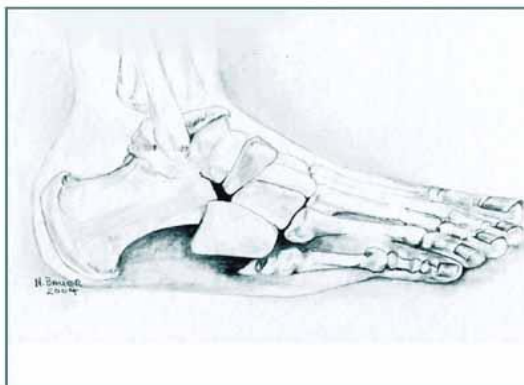
## Infections

Diabetes Foot: Risk Assessment Education Program — The Diabetic Foot



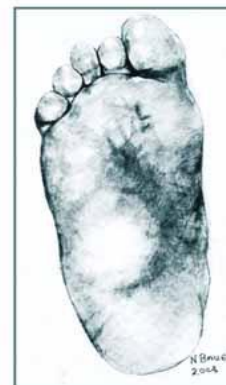
### Fungal Nails

Fungal nails may be the result of fungal infections such as Athlete's Foot, the use of artificial nails or nail polish, or injury to the nail. Fungal nails may become thickened, inflamed, and sensitive and may turn unnatural colours.



### Charcot Joint

Charcot joint is a form of neuroarthropathy that occurs most often in the foot. Nerve damage from diabetes causes decreased sensation, muscle atrophy and subsequent joint instability. Walking on an insensitive joint makes it worse. In the acute stage there is inflammation and bone reabsorption which weakens the bone. In later stages, the arch falls and the foot may develop a “rocker bottom” appearance. Early treatment can stop bone destruction and help healing.



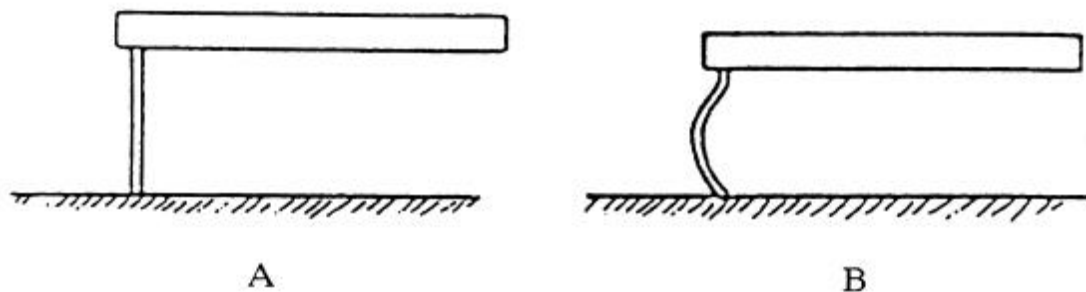
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## Comprehensive Diabetes Lower Extremity Amputation Prevention (LEAP) Program

### Filament Application Instructions

Note: The sensory testing device used with the LSU Medical Center Diabetic Foot Screen is a nylon filament mounted on a holder that has been standardized to deliver a (5.07) 10-gram force when properly applied. Research has shown that a patient who can feel the (5.07) 10-gram filament in the selected sites has "protective sensation" and has a reduced risk of developing plantar ulcers. Additional information about the LEAP Program and disposable test kits is available at: <http://www.hrsa.gov/leap>

1. Use the (5.07) 10-gram filament to test for "protective sensation".
2. Test the sites indicated on the Diabetic Foot Screen.
3. Apply the filament perpendicular to the skin's surface (see diagram A).
4. The approach, skin contact and departure of the filament should be 1 1/2 seconds.
5. Apply sufficient force to cause the filament to bend (see diagram B).



6. Do not allow the filament to slide across the skin or make repetitive contact at the test site.
7. Randomize the selection of test sites and time between successive tests to reduce patient guessing.
8. Ask the patient to respond "Yes" when the filament is felt and record the response on the Diabetic Foot Screen Form.
9. Apply the filament along the margin of and NOT on an ulcer, callus, scar or necrotic tissue.
10. Have the patient close his/her eyes while the filament test is being performed.

REV 9/99

## Care of Monofilaments

Two types of monofilaments are available commercially – disposable/single client use and re-usable. Each requires different care.

### Single Use or Single Client Use Monofilaments



Single use or single client monofilaments are usually a monofilament with a paper handle as illustrated in the picture. These monofilaments are intended for use with one client only. After use, they should be discarded.

Alternatively, if they will be used again with the same client – such as in a home care setting - or by the client for self examination, they can be stored in a dry, clean environment. A simple envelope will protect the monofilament. For re-use the monofilament must remain straight and un-bent.

### Re-usable Monofilaments



Re-usable monofilaments are supplied by the manufacturer with a permanent plastic handle and are in a plastic protective cover. The monofilament may retract into the case or be stored in the case.

For recommendations for cleaning first check the manufacturer's instructions and your organization's policy. The method most often recommended is cleaning with an alcohol swab after each patient use. The monofilament should be used only on dry intact skin and stored dry in its protective case. Replace the monofilament if it has a permanent bend.



When performing the monofilament test, **do not use the instrument on areas of the foot with ulcers or open sores.** A monofilament is intended for use only on intact skin. Also, do not use the monofilament on a callused area of the foot as the reading will not be accurate.

For those who do screening clinics with foot risk assessment or clinics with multiple patient exams in day, the literature<sup>2</sup> suggests that monofilaments not be used on more than 10 patients without a 24-hour rest.

<sup>2</sup> Booth J, Young MJ. Differences in the Performance of Commercially Available 10-g Monofilaments. Diabetes Care. 2000;23:984-988.

## Where to buy monofilaments in Canada

If you are just starting out and want to 'try it on', physicians can get one free sample:

### **Lower Extremity Amputation Prevention (LEAP) Program**

Bureau of Primary Care (BPHC)  
Division of Programs for Special Populations  
4350 East West HWY., 9<sup>th</sup> Floor  
Bethesda, MD 20814  
[www.hrsa.gov/leap](http://www.hrsa.gov/leap)

First set of 50: Free (disposable monofilaments)  
For orders > 50 contact one of the organizations below

Canadian Association of Wound Care  
2171 Avenue Road. Suite 102,  
Toronto, Ontario, M5M 4B4  
Toll free number: 1-866-474-0125  
[www.cawc.net/](http://www.cawc.net/)

Package of 25 for \$25.00 plus tax  
FAX order form available on web  
site under 'boutique'

Auto Control Medical Inc.  
6695 Millcreek Dr. Unit 5, Mississauga ON, L5N 5R8  
Toll-free number: 1-800-461-0991  
[www.autocontrol.com](http://www.autocontrol.com)

Package of 40 monofilaments:  
1-9 packs: \$25.50 per pack  
10-24 packs: \$23.50 per pack  
25+ packs: \$21.50 per pack

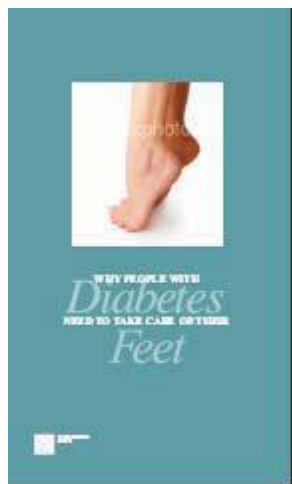
**Diabeters**  
Website: [www.diabeters.com](http://www.diabeters.com)  
Phone: 1-866-342-2328  
FAX: 1-613-584-1017

Dual Purpose Neuropen and  
Replacement Monofilaments &  
Tips  
\$35.00 (re-usable)

**Medical Mart**  
Toronto, Ontario  
Phone: 877-883-4658  
E-mail: [maxine.polon@rogers.com](mailto:maxine.polon@rogers.com)

Also carry the Neuropen

## SASKATCHEWAN HEALTH DIABETES FOOT BROCHURE INFORMATION



### Why People with Diabetes Need to Take Care of Their Feet

This brochure is available by contacting the Primary Health Services Branch at (306) 787-0872

An important part of managing your diabetes is **Taking Care of Your Feet**

People who have diabetes are more likely to have problems with poor blood flow (circulation) or loss of feeling (sensation) in their feet. Loss of sensation and poor circulation to the foot may lead to sores that are slow to heal.

Loss of feeling or sensation is caused by damage to the nerves in the lower legs and feet. This nerve damage occurs as a result of blood sugar levels that have been high over a long period of time. As a result of loss of feeling or sensation, the person with diabetes may not be aware of temperature, pressure or pain.

#### **For example...**

If your feet get too hot, such as with the use of a hot water bottle or stepping into hot water, your feet can suffer a burn and **you will not feel it.**



***You may not feel injuries, such as blisters developing, if your shoes are too tight.***



You may not feel anything when you step on a sharp object. You can damage your feet and not even know it.



***Foot damage can lead to serious lifelong problems. That is why you need to take care of our feet!***

## **Do's For Taking Care of Your Feet**

**DO** wash your feet daily with warm water and mild soap.

**DO** dry your feet well, especially between the toes.

**DO** use lotion to keep skin soft, but not between the toes.

**DO** change your socks every day. Wear socks that are in good condition and that do not have tight elastic at the band



**DO** wear shoes and socks all the time. Make sure nothing is inside your shoes when you put them on.

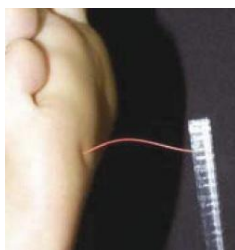
**DO** wear shoes that fit well with good support and have lots of room for the toes. When buying new shoes be fitted for them late in the day to allow for foot swelling.



**DO** check your feet daily for sores, cracks, nail problems, infections or color changes. Use a mirror to see the bottom of your feet. If you find any problems, get help from your health care provider right away.

**DO** cut toenails straight across.

**DO** be active every day. Exercise helps the blood flow to the feet.



**DO** have your feet checked on a regular basis by your doctor, nurse or a foot doctor (podiatrist/chiroprapist).  
Remove your shoes and socks to remind them to check your feet.

## Don'ts For Taking Care of Your Feet

**Don't smoke.** *Smoking causes less blood flow to your legs and feet.*

**Don't walk barefoot indoors or outdoors.**

**Don't use chemicals such as alcohol, peroxide or iodine on your feet unless directed by a health care professional.**

**Don't cut corns or calluses with sharp objects, such as a razor blade or use corn or wart removal products.**



**Don't bathe in water that is too hot.** *Check the temperature of the water with your elbows or arm before getting in to the bathtub or shower.*

**Don't go out in cold weather without wearing socks and shoes or boots.**

**Don't use a heating pad, hot water bottle or heated bag on your feet.**

**Don't get sunburned.** *Cover your feet to protect them from the sun.*



**Don't wear tight-fitting shoes; wrinkled or tight socks/stockings; tight sandals, straps or garters.**

**Don't cross your legs at the ankles or knees for long periods of time,** *as this decreases blood flow to your feet.*

**Don't let the skin on your feet get dry and cracked.** *Use lotion to keep the skin soft, but not between your toes.*

**Don't leave any sores, scrapes or skin cracks on your feet or legs unattended.** *Watch the area closely for signs of infection (redness, swelling, drainage, warm to touch, foul odor). If the area does not heal or does not improve in 48 hours you should seek medical help.*



**Remember when visiting your health care provider; always remove your shoes and socks to remind them to check your feet!**

## Foot Screen Glossary

**Amputation:** is the removal of a body extremity by trauma or surgery<sup>1</sup>

**Atherosclerosis:** A thickening, hardening, and loss of elasticity of the blood vessel (artery walls) due to deposits of cholesterol plaques<sup>2</sup>

**Athlete's foot:** is a fungal infection of the skin that causes scaling, flaking, and itch of affected areas. It is typically transmitted in moist areas where people walk barefoot, such as showers or bathhouses. Blisters and cracked skin may also occur, leading to exposed raw tissue, pain, swelling, and inflammation. Secondary bacterial infection can accompany the fungal infection

**Callus:** is an especially toughened area of skin which has become relatively thick and hard in response to repeated friction, pressure, or other irritation. <sup>1</sup> It is often the result of a foot deformity or poorly-fitting shoes <sup>2</sup>

**Claw/Hammer Toes:** A deformity of the toe in which the toe is bent upward like a claw. Most commonly seen in the second toe, the condition may be congenital or acquired

**Corns:** a hard thickening of the skin (especially on the top or sides of the toes) often caused by the pressure of ill-fitting shoes. The location of soft corns tends to differ from that of hard corns. Hard corns occur on dry, flat surfaces of skin. Soft corns (frequently found between adjacent toes) stay moist, keeping the surrounding skin soft<sup>1</sup>

**Distally:** situated farthest from the centre, median line, or point of attachment or origin<sup>3</sup>

**Dorsalis Pedis pulse:** is one of the arteries supplying blood to the foot. The pulse can be located by palpating the top of the foot<sup>1</sup>

**Dorsiflexion:** the turning or bending of the foot or toes upward toward the shin

**Fissures:** is a groove, natural division, deep furrow, cleft, or tear in various parts of the body.<sup>1</sup> Heel fissures are commonly caused by dry skin. Cracks or fissures that occur within a callus can be more serious leading to pain, bleeding and infection

**Hallux Valgus:** (bunion) Angulation of the great toe away from the midline of the body or towards the other toes of the foot<sup>2</sup>

**Intermittent Claudication:** muscle pain (ache, cramp, numbness or sense of fatigue), classically calf muscle, which occurs during exercise and is relieved by a short period of rest<sup>1</sup>

**Maceration:** occurs when the skin is kept wet. It appears soft, white and is prone to infection and breakdown

**Metatarsal:** bones of the foot: these are the five long bones in the foot located between the tarsus bones and the phalanges of the toes

**Medial malleolus:** is the bony prominence on the inside (medial) aspect of the ankle<sup>1</sup>



**Palpate:** is used as part of a physical examination in which an object is felt (usually with the hands of a healthcare practitioner) to determine its size, shape, firmness, or location<sup>1</sup>

**Paresthesia:** is a sensation of tingling, pricking, or numbness of a person's skin with no apparent long-term physical effect. It is more generally known as the feeling of "**pins and needles**" or of a limb "**falling asleep**" The manifestation of paresthesia may be transient or chronic<sup>1</sup>

**Pedal Pulse:** pulses palpated in the foot

**Peripheral Arterial Disease:** includes all diseases caused by the obstruction of large arteries in the arms and legs. PAD can result from atherosclerosis, inflammatory processes leading to narrowing of the blood vessels, or a blood clot. It causes ischemia (lack of blood supply), typically of the legs<sup>1</sup>

**Peripheral Neuropathy:** Any and all disease or malfunction of the nerves affecting the extremities such as the feet or hands<sup>2</sup>

**Pes Cavus:** foot has a high arch (high instep). It may be hereditary or acquired and in the case of diabetes may be related to motor and sensory neuropathy<sup>1</sup>

**Phalanges:** these are the bones that form the fingers and the toes

**Plantar flexion:** the turning or bending of the foot or toes downward toward the bottom of the foot

**Posterior tibial pulse:** is one of the arteries supplying blood to the foot. The pulse can be located by palpating in the area just behind the medial malleolus<sup>1</sup>

**Proximally:** close to the centre, median line, or point of attachment or origin<sup>3</sup>

**Tarsus:** are the clusters of bones in the foot. The bones of the tarsus do not belong to individual toes where the metatarsus does and there are seven tarsus bones in the human body<sup>1</sup>

**Tinea:** is a fungal infection that can grow on the skin, nails or hair. Tinea pedis is usually called "athlete's foot." ("Pedis" is the Latin word for foot.) The moist skin between the toes is a common place for a fungus to grow. The skin may become itchy and red, with blisters and cracking of the skin. The infection may also spread to the toenails. (This is called tinea unguium — "unguium" comes from the Latin word for nail.) Here it causes the toenails to become yellowed, thick and crumbly

**Ulcer:** An ulcer is a sore on the skin or a mucous membrane, accompanied by the disintegration of tissue and often the formation of pus. An ulcer that appears on the skin is often visible as an inflamed tissue with an area of reddened skin<sup>1</sup>

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<sup>1</sup> Wikipedia: <http://www.wikipedia.org/>

<sup>2</sup> Clinical Practice Guidelines for the Prevention and Management of Diabetes Foot Complications p 66-68

<sup>3</sup> The Free Dictionary: <http://www.thefreedictionary.com/>