

Diabetic Foot Complications

When is it an emergency?

Wounds Canada has developed a simple guide that can be used by patients and their care partners for preventing or caring for diabetic foot complications at home.

Diabetes is a complex disease that causes blood sugar (also called blood glucose) levels to rise higher than normal. Over time higher than normal blood glucose levels can lead to changes in the body that can cause the person to have a higher risk for foot complications such as diabetic foot ulcers (DFUs) (which are wounds or breaks in the skin) and broken bones. Diabetic foot complications can have serious consequences if not recognized early and treated promptly and properly. These complications may include the development of ulcers that do not heal and become infected, leading to amputation and even death.



What can lead to a diabetic foot complication?

If you have diabetes, any of the following five conditions, especially when more than one is present, can contribute to a diabetic foot complication, so it is important that you know if any of these are affecting you.

1. Nerve damage, or peripheral diabetic neuropathy (PDN), is the loss of the ability to feel the normal pain from an injury in the feet (and sometimes in the hands too). It is not usually a total loss of feeling, but rather foot tingling or numbness. A person with neuropathy may not know when they injure their feet (through a stubbed toe, stepping on a nail, poor foot or nail care or wearing shoes that rub the skin, for example). Even a small injury, left untreated in a person with neuropathy, can lead to a foot ulcer that becomes a serious health threat.

Neuropathy can be very subtle, and you may not even know you have it. If you answer “yes” to any of the following questions you may have neuropathy in your feet:

- Are your feet ever numb?
- Do your feet ever tingle?
- Do your feet ever feel like they are burning?
- Do your feet ever feel like insects are crawling on them?

2. Less blood flow to the feet caused by peripheral arterial disease, or PAD—a condition that can occur often in those with diabetes—means the body is less able to heal a wound or scratch if an injury occurs, no matter how minor the injury. If you answer “yes” to any of the following questions you may have PAD:

- Has there been a change in the colour of your legs or feet?
- Is one foot colder than the other?
- Do your legs (calves) hurt when you walk?

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3. Changes in the shape of the foot, such as bunions, or claw, hammer or mallet toes can lead to redness, a thickening or hardening of the skin (corn or callus) and eventually ulcers.

A rare, but more severe, condition, is called Charcot foot. Charcot changes can include crumbling and rearranging of the bones of the foot if not treated early. Once this occurs the foot will be altered for the rest of the person's life and it becomes almost impossible to wear off-the-shelf footwear without causing injury to the foot. Early signs of Charcot include a foot that is hotter and redder than the other.

CAUTION: Acute Charcot foot can easily be misdiagnosed; a medical history and an X-ray can help identify an acute Charcot foot.

If you answer "yes" to any of the following questions you may have changes that are affecting the bones in your feet:

- Do any of my toes have an unusual shape?
- Is one foot warmer than the other foot, and did this happen suddenly?
- Is one foot a different shape than the other?

4. Visual problems can interfere with your ability to perform safe, adequate foot skin and nail care. Diabetes can affect blood flow to the eye and lead to a condition called retinopathy, which is damage to the retina of the eye. If you answer yes to the following question you may have retinopathy:

- When I look at my feet is my vision blurred or are there dark or empty spots?

5. Lack of body flexibility that means you have difficulty reaching your feet or using nail and skin care tools, can also make self care difficult. If you answer "yes" to the following question you may have been putting yourself at risk by doing your own foot and nail care and may need someone else to help you, such as a care partner or foot care professional:

- Can I reach my feet easily enough to be able to see the bottoms, sides and tops, and reach my nails without difficulty?

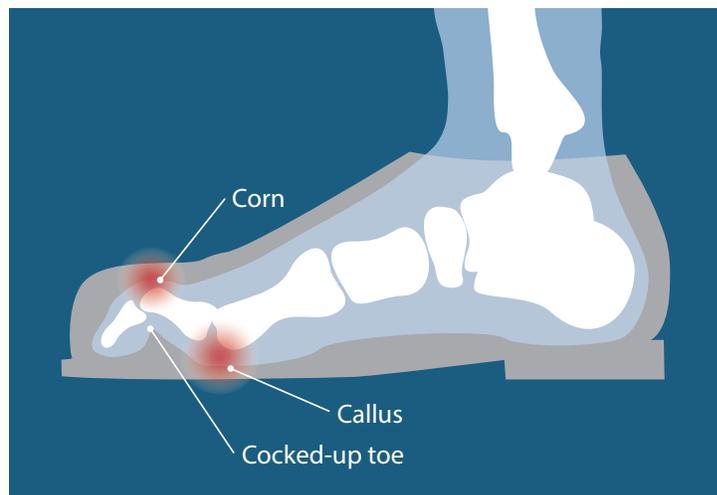


Figure 1: A cocked-up toe (claw or hammer toe) is caused by (a) shortening tendons and/or (b) wearing shoes that are too small. Pressure of the toes and the bony parts of the foot against the inside of the shoe can lead to redness, corns, calluses and even ulcers.

Tip:

- Shoe length should be fitted to the longest toe, not the first toe, and fit the shape of the foot.

How can I prevent diabetic foot complications?

- **Start with a healthy lifestyle.** Eat healthy foods, exercise and manage your blood glucose levels.
- **Take charge of prevention!** Inspect your feet every day. If you have trouble seeing the bottoms of your feet, use a mirror or get a care partner to help. Remove your shoes and socks at every visit to your health-care professional so they can inspect your feet too and test for neuropathy and blood flow.
- **Protect your feet.** Foot damage in a person with diabetes may take longer to heal, so it's important that you prevent the damage from happening in the first place.
- **For more information** on preventing diabetic foot complications, see the [Caring for Your Feet: Safe Foot Care if You Have Diabetes](#) resource.

How will I know if I need help?

If you have diabetes but have healthy feet you can probably look after your feet on your own, with occasional help from a qualified professional. **Perform a daily foot inspection** (see the [Caring for Your Feet: Safe Foot Care if You Have Diabetes](#) resource) to stay on top of any problems that arise. By doing this you will develop a habit that will help you avoid surprises about your foot health.

The longer you have diabetes, or the longer you have high blood sugar, the more likely you are to need professional help more often. Occasionally, something will happen that will put your foot at high risk and you will need emergency care immediately. **Every month or so**, use the information on page 4 to see where you are. If all your checks are in the green area, continue to do what you're doing. If you have even one check in the amber area, see your health-care professional as soon as possible. At any time, if you notice something in the red area, **DO NOT WAIT**. Waiting may put you at greater risk of infection and amputation. See your doctor immediately or go to the emergency department of your nearest hospital.

What is offloading?

Offloading is a method where your body's weight is spread or moved from a small area of your foot to a larger or different area. This is done to prevent problems or allow a wound to heal. Offloading may involve the wearing of a specialized cast or boot and/or the use of a wheelchair or crutches. If you have been prescribed offloading to help you prevent or heal a wound, make sure you wear your offloading device as instructed by your care provider. **Do not** go without it at any time when you are up and walking. Even **one step** can undo the healing that may have occurred.

How do I prevent another ulcer from occurring?

It's important for you to know that if you get a foot ulcer and it heals, you are at a higher risk for developing another one in the same location. Here's why. Once a foot ulcer has healed, the new tissue is only about 70–80% as strong as the skin before the injury occurred. The chances are high that it will open again (called a recurrence of the ulcer). The best thing you can do to prevent recurrence is to keep a healthy lifestyle and do the healthy foot care activities that have been outlined in the [Caring for Your Feet: Safe Foot Care if You Have Diabetes](#) resource.

Tip:

- How much pressure is too much pressure? Imagine you have a grape taped to the bottom of your foot . . . if there is enough pressure at the bottom of your foot to squish the grape, there is enough pressure to open a healing wound!



Figure 2: Offloading device



Figure 3: Charcot foot and foot ulcer

When is it an emergency?

Use this table to rate the condition of your feet and plan a course of action.

	Regular Self Care		Frequent At-risk Care		Immediate, Urgent Care	
	Condition	Actions	Condition	Actions	Condition	Actions
Skin	<ul style="list-style-type: none"> No redness or open areas, minor callus 	<ul style="list-style-type: none"> Look at your feet daily Wash and dry feet daily Moisturize as required 	<ul style="list-style-type: none"> Heavy callus, redness and/or blistering Previous foot ulcer 	<ul style="list-style-type: none"> Seek professional foot care Get footwear reassessed by a professional, such as a pedorthist 	<ul style="list-style-type: none"> Ulcer and/or signs of infection: increased pain, redness, odour, drainage and warmth 	<ul style="list-style-type: none"> Ensure you receive professional care that includes offloading, dressings and infection management
Nails	<ul style="list-style-type: none"> Well kept 	<ul style="list-style-type: none"> Keep nails well groomed 	<ul style="list-style-type: none"> Thickened and/or poorly kept 	<ul style="list-style-type: none"> Seek professional nail care 	<ul style="list-style-type: none"> Ingrown nails and/or nails causing trauma to skin 	<ul style="list-style-type: none"> Get a referral for professional nail care
Changes in the shape of the foot	<ul style="list-style-type: none"> No signs of bony changes 	<ul style="list-style-type: none"> Be aware of changes to the shape of your feet and report them immediately 	<ul style="list-style-type: none"> Hammer toes, claw toes, bunions 	<ul style="list-style-type: none"> Get your footwear fitted or custom made 	<ul style="list-style-type: none"> Skin is red, warm and foot is changing shape 	<ul style="list-style-type: none"> Insist on X-rays and a plan for offloading to prevent further damage
Blood flow	<ul style="list-style-type: none"> Warm feet, no pain 	<ul style="list-style-type: none"> Do not smoke Exercise regularly 	<ul style="list-style-type: none"> Cool and red, feet painful during activity 	<ul style="list-style-type: none"> Get a vascular assessment followed by medical management 	<ul style="list-style-type: none"> Blackened skin, painful legs and feet when at rest 	<ul style="list-style-type: none"> Obtain a referral to a vascular surgeon
Footwear	<ul style="list-style-type: none"> Good-fitting footwear, appropriate for activity 	<ul style="list-style-type: none"> Measure feet before purchasing shoes 	<ul style="list-style-type: none"> Redness on skin where shoe is rubbing 	<ul style="list-style-type: none"> Get your footwear fitted by a trained professional 	<ul style="list-style-type: none"> Footwear causing ulceration 	<ul style="list-style-type: none"> See a health-care professional as soon as possible Get fitted for offloading

Quick Check: Keep Your Feet for LIFE

Lifestyle choices:

- ☑ Eat a healthy diet, exercise daily and maintain blood sugars within your normal range.
- ☑ Cut down or stop smoking.

Inspect your feet and footwear:

- ☑ Look at your feet daily.
- ☑ Check your shoes and socks every time you put them on.
- ☑ Check your socks for blood every time you remove them. Wear white or light-coloured socks so you can see any blood more easily.

Find professional help:

- ☑ Your feet deserve the best professional care you can find. Examples include:
 - Foot care professional (e.g., a podiatrist, chiropodist or specially trained nurse)
 - Foot care professional for function assessment and orthotics fitting (orthotist)
 - Shoe fitter (pedorthotist)

Expect your feet to last a lifetime:

- ☑ If you have reduced feeling (neuropathy) in your feet you need to pay special attention to them. Self caring for neuropathic feet requires continuous mindful thought and action, because the normal warning signal of problems (e.g., foot pain) is not functioning.
- ☑ If you have an open area (or a crack) on your feet see your foot health-care professional immediately.
- ☑ Remember: even if you have diabetic foot problems there is much that can be done to help keep your feet working for you!





CARE AT HOME SERIES

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