

# Prevention and management of foot problems in people with type 2 diabetes

Understanding NICE guidance –  
information for people with type 2  
diabetes, their families and carers, and  
the public

January 2004



Corporate member of  
Plain English Campaign.  
Committed to clearer communication.

197

## Prevention and management of foot problems in people with type 2 diabetes

### Understanding NICE guidance – information for people with type 2 diabetes, their families and carers, and the public

**Issue date:** January 2004

#### To order copies

Copies of this booklet can be ordered from the NHS Response Line; telephone 0870 1555 455 and quote reference number N0410. A version in Welsh and English is also available, reference number N0411. Mae fersiwn yn Gymraeg ac yn Saesneg ar gael hefyd, rhif cyfeirnod N0411. The NICE clinical guideline on which this information is based, *Type 2 Diabetes: Prevention and Management of Foot Problems*, is available from the NICE website ([www.nice.org.uk/CG010NICEguideline](http://www.nice.org.uk/CG010NICEguideline)). A short version of the guidance (a 'quick reference guide') is also available on the website ([www.nice.org.uk/CG010quickrefguide](http://www.nice.org.uk/CG010quickrefguide)) and from the NHS Response Line, reference number N0409.

---

## National Institute for Clinical Excellence

MidCity Place  
71 High Holborn  
London  
WC1V 6NA

Web: [www.nice.org.uk](http://www.nice.org.uk)

ISBN: 1-84257-501-5

Published by the National Institute for Clinical Excellence  
January 2004

Typeset by Icon Design, Eton  
Printed by Abba Litho Sales Limited, London

© National Institute for Clinical Excellence, January 2004. All rights reserved. This material may be freely reproduced for educational and not-for-profit purposes within the NHS. No reproduction by or for commercial organisations is allowed without the express written permission of the National Institute for Clinical Excellence.

## Contents

<b>About this information</b>	<b>2</b>
Clinical guidelines	2
What the recommendations cover	3
How guidelines are used in the NHS	5
If you want to read the other versions of this guideline	5
<b>What is diabetes?</b>	<b>6</b>
General problems in people with diabetes	7
Foot and leg complications (problems) in people with diabetes	9
<b>Footcare for all people with diabetes</b>	<b>10</b>
Assessing your risk of foot problems	10
Learning how to look after your feet	13
Agreeing a care plan	14
<b>If you have a foot ulcer</b>	<b>14</b>
<b>Care for people with a Charcot foot</b>	<b>18</b>
<b>What to do if the condition of your feet changes</b>	<b>19</b>
<b>Further information</b>	<b>20</b>

## About this information

This information describes part of the guidance that the National Institute for Clinical Excellence (called NICE for short) has issued to the NHS on type 2 diabetes. It is based on *Type 2 Diabetes: Prevention and Management of Foot Problems*, which is a clinical guideline produced by NICE for doctors, nurses and others working in the NHS in England and Wales. Although this information has been written chiefly for people with type 2 diabetes, it may also be useful for family members, those who care for people with type 2 diabetes and anyone with an interest in type 1 or type 2 diabetes or in healthcare in general.

## Clinical guidelines

Clinical guidelines are recommendations for good practice. The recommendations in NICE guidelines are prepared by groups of health professionals, lay representatives with experience or knowledge of the condition being discussed, and scientists. The groups look at the evidence available on the best way of treating or managing a condition and make recommendations based on this evidence.

There is more information about NICE and the way that the NICE guidelines are developed on the NICE website ([www.nice.org.uk](http://www.nice.org.uk)). You can download the booklet *The Guideline Development Process – Information for the Public and the NHS* from the website, or you can order a copy by phoning 0870 1555 455 and quoting reference number N0038.

## What the recommendations cover

This booklet tells you about the recommendations in the NICE guideline, *Type 2 Diabetes: Prevention and Management of Foot Problems* (NICE Clinical Guideline no. 10). This NICE guideline makes recommendations about:

- educating people with type 2 diabetes and carers about foot problems
- what is meant by being 'at risk' of foot problems and how people at risk are identified
- prevention of foot problems
- detection of foot problems
- care for people with type 2 diabetes who have foot problems.

The NICE guideline does not cover the care of people with foot problems who do not have type 2 diabetes, nor does it cover surgical procedures such as amputation or rehabilitation after amputation.

NICE has issued other guidelines on the treatment and care of people with type 2 diabetes. These cover:

- the prevention and management of renal (kidney) problems
- screening for retinopathy and early management of this eye condition
- the management of blood glucose (sugar) levels
- the management and control of blood pressure and blood lipid (fats) levels.

The information that follows tells you about the recommendations in the NICE guideline. It describes the advice about prevention and management of foot problems, and the treatment and care that people with type 2 diabetes should receive. It doesn't attempt to explain type 2 diabetes or describe the treatments in detail. If you want to find out more about type 2 diabetes, NHS Direct may be a good starting point. You can call NHS Direct on 0845 46 47 or view the NHS Direct website at [www.nhsdirect.nhs.uk](http://www.nhsdirect.nhs.uk)

## How guidelines are used in the NHS

In general, health professionals working in the NHS are expected to follow NICE's clinical guidelines. But there will be times when the recommendations won't be suitable for someone because of his or her specific medical condition, general health or personal wishes, or a combination of these. If you think that the treatment or care you receive does not match the treatment or care described in the pages that follow, you should discuss your concerns with your healthcare professional. This may be the doctor, nurse, podiatrist (a person trained to look after feet, sometimes called a chiropodist) or another professional responsible for the care that you receive for your diabetes.

## If you want to read the other versions of this guideline

There are four versions of this guideline:

- this one
- the NICE guideline, *Type 2 Diabetes: Prevention and Management of Foot Problems*
- a short version of the NICE guideline (a 'quick reference guide') which has been distributed to people working in the NHS

- the full guideline, which contains all the details of the guideline recommendations, how they were developed and information about the evidence on which they are based.

All versions of the guideline are available from the NICE website ([www.nice.org.uk](http://www.nice.org.uk)). This version and the quick reference guide are also available from the NHS Response Line – phone 0870 1555 455 and give the reference number(s) of the booklet(s) you want (N0410 for this version, N0411 for this version in English and Welsh, and N0409 for the quick reference guide).

## What is diabetes?

Diabetes mellitus is a common condition in which the amount of glucose (a type of sugar used by the body to transport energy) in the blood is too high because the body is unable to store or use it properly. Normally, a person's pancreas (an organ in the body) produces a hormone (a natural chemical) called insulin, which controls the level of glucose in the blood. Diabetes occurs when the body does not produce enough insulin, or produces insulin but cannot use it properly. There are two types of diabetes.

- Type 1 diabetes (also called insulin-dependent diabetes) occurs when there is a severe lack of insulin in the body because most or all of the

cells in the pancreas that produce it have been destroyed. This type of diabetes usually appears in people under the age of 40, often in childhood, and is treated by insulin injections and diet.

- Type 2 diabetes (also called non-insulin-dependent diabetes) develops when the body can still make some insulin, but not enough for its needs, or when the insulin that is produced does not work properly (known as insulin resistance). This type of diabetes usually appears in people over the age of 40 but increasingly it is appearing in children and young adults. To begin with, it may be possible to control type 2 diabetes by lifestyle changes only (diet, exercise, weight loss) but with time, most people need tablets and some will require insulin injections as well.

## General problems in people with diabetes

Diabetes can directly cause a number of problems, which may affect:

- blood glucose (sugar) levels
- blood pressure levels
- the feet and lower legs (through damage to blood vessels and/or nerves)

- the eyes (a condition called 'diabetic retinopathy')
- the levels of certain substances in the blood – for example, lipids (fats) such as cholesterol
- the kidneys (kidney problems are sometimes called nephropathy or renal disease)
- the risk of heart attacks and strokes.

One of the effects of type 1 and type 2 diabetes is that blood vessels in the body can become damaged. Damage to the small blood vessels can cause problems in the eyes, kidneys and the nerves. Damage to the larger blood vessels can cause heart problems such as heart attacks and strokes as well as reduced circulation in the feet and legs (and sometimes hands).

Research shows that people with diabetes can reduce the risk of developing these problems by:

- controlling their levels of blood pressure, blood glucose and blood lipids (your healthcare professional will advise you on the levels you should be aiming to maintain)
- managing their weight (your healthcare professional can advise you on your own appropriate weight)

- maintaining good levels of physical activity (your healthcare professional can advise you on appropriate exercise or fitness plans).

## Foot and leg complications (problems) in people with diabetes

Diabetes can cause damage to blood vessels, leading to poor circulation in the feet and legs (and elsewhere). It can also cause nerve damage, which may cause pain or uncomfortable tingling but may also lead to numbness or even complete loss of feeling in the feet and legs.

These circulation and nerve problems can occur separately or together and can result in:

- you not noticing if you injure your feet or have developed any sores or ulcers
- sores, injuries or ulcers that get infected easily or won't heal as quickly or as well as they used to or, in some cases, won't heal at all
- bony swelling or deformity (Charcot foot, also called Charcot's osteoarthropathy)
- mobility difficulties that can affect the way you stand or walk; these may require changes in lifestyle that can affect your employment, social life and even routine tasks such as nail-cutting

- in extreme cases, such severe damage that, if the problem is not dealt with promptly or proves impossible to treat, the tissues in the feet may die (gangrene). If this happens, it is necessary to remove (amputate) toes, part of the foot or even the lower leg.

Prevention is the best approach. But if problems that do arise are dealt with quickly, they are less likely to become severe.

## Footcare for all people with diabetes

Effective care involves a partnership between people with diabetes and healthcare professionals. Healthcare professionals should work with you and, where appropriate, in consultation with your family or carers to make decisions that take into consideration your preferences and personal circumstances.

### Assessing your risk of foot problems

It's very important that you have your feet and lower legs regularly examined and assessed. You should, in any event, have a full medical examination for your diabetes at least once a year, and more often if you are at risk of or have problems. If you have mobility problems or, for example, if you are housebound or live in a care or nursing home, arrangements should be made

by your healthcare professional (in consultation with you and/or your carers) to make sure that you can still have the same access to foot care examinations and treatments as everyone else.

During the regular examination, someone trained in caring for people with diabetes should, among other checks, examine your feet. They should:

- check your skin for changes in colour and look for ulcers and sores
- test the feeling in your feet, to see how well the nerves are working, using a 'monofilament' (a plastic bristle that lightly touches the skin) or using a vibration device such as a tuning fork
- take the pulses in your feet to check the blood flow (circulation)
- examine your foot shape and footwear to see whether you may be at risk of rubbing or pressure.

Your healthcare professional should then discuss with you whether you have any problems at present and, if so, how serious they are. In addition, they should assess your level of risk for developing problems in the future. (There is more about risk levels on pages 16-17.)

This assessment should take account of the factors that are known to increase the risk of foot (and other) problems in people with type 2 diabetes. (See the box on the next page.)

## Additional factors that can increase your risk of foot problems if you have type 2 diabetes

You are more likely to develop foot problems if you:

- smoke, because cigarette smoking increases the risk of poor circulation
- often have high blood sugar levels, because these can damage the nerves and circulation
- have high blood pressure levels, because these can damage the nerves and circulation
- have high cholesterol levels, because these can damage the nerves and circulation
- are older, because many risk factors increase with age
- have had diabetes for a long time, because research has shown that complications increase with the length of time that someone has had diabetes
- have difficulty seeing, because it is more difficult to look after your feet
- wear footwear that rubs or causes pressure points or that doesn't protect your feet, because this may cause or allow damage to your feet
- live alone with no one to help you look after your feet, particularly if you cannot see well
- live in a poor environment where you are more likely to get cold and damp or injure yourself
- eat an unhealthy diet – because this can make you prone to infections and prevent sores from healing

## Learning how to look after your feet

There are things you can do about some of these risk factors – for example, giving up smoking, eating a healthy diet, and making sure you wear appropriate footwear. Your healthcare professional can help you tackle these. But there is obviously nothing you can do about other factors, such as how old you are or how long you have had diabetes. It is therefore important to be extra careful in looking after your feet if you have any of the risk factors shown in the box on page 12. But even if you don't have any of these risk factors, you still need to take care of your feet, because having diabetes puts you at risk of foot problems.

It is therefore very important that you learn how to look after your feet. You should be offered a structured education programme when you are first diagnosed with diabetes and then further programmes as you need them – the information you need about foot care will depend on your level of risk of developing foot problems. (For some people with serious foot problems such as ulcers, your healthcare professional may ask whether you would like to see a video or pictures showing the results of severe foot problems, such as long-term foot damage or amputation.)

At each review, someone should discuss with you how to look after your feet and what you can do to help avoid foot problems. They should answer any questions that you or the person who cares for you may have.

## Agreeing a care plan

A healthcare professional should agree with you a plan of what needs to be done (a 'care plan' or 'management plan'), which will depend on your level of risk for developing foot ulcers. After examining your feet (see page 10) and taking into account the risk factors shown in the box on page 12, your healthcare professional should assess your level of risk of developing foot ulcers as being in one of the categories shown in the box below. The action that your healthcare professional should take will depend on your level of risk (see table on pages 16-17).

## If you have a foot ulcer

If you have developed a foot ulcer, arrangements should be made for you to be seen urgently by a multi-disciplinary team. A 'multi-disciplinary team' may be based in the community or in the hospital, but wherever it is based, it should be made up of several different kinds of health professionals. The team should include someone trained to look after your feet

(a podiatrist), doctors and nurses who specialise in treating foot problems in people with diabetes, and someone who is a specialist in specially designed footwear (an orthotist). The team should also have rapid access to hospital services such as laboratory services to identify infections, and specialists in wound treatment and surgery.

The multi-disciplinary team should treat the ulcers by one or more of the following methods.

- Applying wound dressings. The healthcare professional should choose a suitable dressing, based on their experience of what works best and taking into account where the ulcer is, the patient's preferences and the cost of suitable dressings.
- Prescribing an antibiotic if there is an infection. The healthcare professional may suspect an infection if the ulcer doesn't heal or gets worse and if there is redness, pain, swelling and pus. This infection could be in the soft areas around the ulcer (this is cellulitis) or in the bone (this is osteomyelitis).
- Clearing away the dead and infected skin. This is called debridement.
- Prescribing specialist footwear or 'total contact casts' (special plaster casts to relieve pressure on the ulcer).

## Care at different levels of risk

Level of risk of foot ulcers	What it means	The care you should receive
Low current risk	Your feet don't show any sign of blood circulation problems or nerve damage	<p>Your healthcare professional should agree with you a plan of what needs to be done (a 'care plan').</p> <p>Your feet should be examined once a year.</p> <p>You should be offered appropriate education about foot care.</p>
Increased risk	The examination of your feet shows nerve damage or problems with blood circulation, or you have one of the risk factors in the box on page 12	<p>A foot protection team should examine you once every 3–6 months. (A foot protection team is a team based in your local area that is trained in caring for the feet of people with diabetes.)</p> <p>The team should:</p> <ul style="list-style-type: none"> <li>• advise you on the best kind of footwear to help prevent problems</li> <li>• if necessary, refer you to a team that specialises in problems involving the blood vessels of the feet and legs</li> </ul>

Level of risk of foot ulcers	What it means	The care you should receive
High risk	The examination of your feet shows nerve damage or problems with blood circulation and you have other foot problems such as your foot becoming misshapen or severely calloused, or you have changes to the skin of your foot, or you have had a foot ulcer in the past	<p>A foot protection team should examine you once every 1–3 months.</p> <p>The team should:</p> <ul style="list-style-type: none"> <li>• provide further education about foot care</li> <li>• make sure you get appropriate care for your skin and nails</li> <li>• if necessary, recommend and provide specialist footwear and insoles</li> <li>• if necessary, refer you to a team that specialises in problems involving the blood vessels of the feet and legs.</li> </ul>
Foot ulcer	You have developed a foot ulcer	See the next section

If the team thinks you would benefit from treatment to increase the blood supply to your feet, they should rapidly arrange for you to be seen by a doctor who specialises in this kind of treatment.

You may have heard of or read about treatments such as growth factors, topical ketanserin, hyperbaric oxygen therapy or cultured human dermis for the treatment of ulcers. There is not enough research on any of these treatments and techniques to indicate whether or not they are effective, so you are unlikely to be offered them.

## Care for people with a Charcot foot

A Charcot foot (which is also known as Charcot's osteoarthropathy) develops when a joint becomes permanently damaged as a result of repeated minor injuries that you do not feel. If not treated promptly, the foot may become misshapen and can rub against shoes, which can cause ulcers or other sores. If a healthcare professional thinks you may have a Charcot foot, you should quickly be referred to the multi-disciplinary team so that the joint can be treated and rested. This may involve putting it into a special plaster known as a total contact cast. In the longer term, it may be necessary to avoid bearing weight on the affected foot – this is

called 'off-loading'. 'Off-loading' may include using a cast, brace or special footwear. If you have a Charcot foot, your healthcare professional should discuss with you any actions you need to take when walking, such as wearing casts, braces or special footwear.

## What to do if the condition of your feet changes

If you notice a change in any part of your feet, even if it does not hurt, you should contact a healthcare professional\* immediately and you should expect to be seen by a multi-disciplinary team (see page 14 for an explanation of a multi-disciplinary team) within 24 hours. Changes to look out for include:

- a new ulcer or any broken skin
- new swelling or redness or pain (this is probably an infection but might be Charcot foot)
- change in colour (it becomes blacker, bluer, redder or whiter) over part or all of the foot.

\*At your very first foot care appointment, you should be given the details of the healthcare professional to contact should your condition change between appointments.

## Further information

You have the right to be fully informed and to share in decision-making about your healthcare. If you need further information about any aspects of your diabetes or treatment, please ask your GP or a relevant member of your healthcare team. You can discuss this guideline with them if you wish.

For further information about the National Institute for Clinical Excellence (NICE), the Clinical Guidelines Programme or other versions of this guideline (including the sources of evidence used to inform the recommendations for treatment and care), you can visit the NICE website at [www.nice.org.uk](http://www.nice.org.uk)

The NICE guideline on the prevention and management of foot problems is one of a series of guidelines on the management of type 2 diabetes. Other guidelines in the series are listed below. These guidelines can be found on the NICE website, and paper copies can be ordered from the NHS Response Line – phone 0870 1555 455 and quote the reference number shown below.

- Screening for and the early management of retinopathy (eye problems). Available from [www.nice.org.uk/cat.asp?c=27915](http://www.nice.org.uk/cat.asp?c=27915) Reference numbers: NICE guidance, N0058; information for people with type 2 diabetes and the public, N0059. (Clinical Guideline published in February 2002.)

- The prevention and early management of renal (kidney) disease. Available from [www.nice.org.uk/cat.asp?c=39385](http://www.nice.org.uk/cat.asp?c=39385) Reference numbers: NICE guidance, N0061; information for people with type 2 diabetes and the public, N0062. (Clinical Guideline published in February 2002.)
- Managing blood glucose levels. Available from [www.nice.org.uk/cat.asp?c=36733](http://www.nice.org.uk/cat.asp?c=36733) Reference numbers: NICE guidance, N0128; information for people with type 2 diabetes and the public, N0129. (Clinical Guideline published in September 2002.)
- Managing blood pressure and blood lipid levels. Available from [www.nice.org.uk/cat.asp?c=38551](http://www.nice.org.uk/cat.asp?c=38551) Reference numbers: NICE guidance, N0167; information for people with type 2 diabetes and the public, N0168. (Clinical Guideline published in October 2002.)

NICE has also issued the following guidance that may be of particular interest to people with type 2 diabetes. This guidance can be found on the NICE website, and paper copies can be ordered from the NHS Response Line – phone 0870 1555 455 and quote the reference number shown on the next page.

- The use of glitazones for the treatment of type 2 diabetes. Available from [www.nice.org.uk/cat.asp?c=83263](http://www.nice.org.uk/cat.asp?c=83263) Reference numbers: NICE guidance, N0209; information for people with type 2 diabetes and the public, N0211. (Technology Appraisal published in August 2003.)
- The use of long-acting insulin analogues for the treatment of diabetes. Available from [www.nice.org.uk/cat.asp?c=43424](http://www.nice.org.uk/cat.asp?c=43424) Reference numbers: NICE guidance, N0179; information for people with diabetes and the public, N0181. (Technology Appraisal published in August 2003.)
- The use of patient-education models for diabetes. Available from [www.nice.org.uk/cat.asp?c=68326](http://www.nice.org.uk/cat.asp?c=68326) Reference numbers: NICE guidance, N0213; information for people with diabetes and the public, N0215. (Technology Appraisal published in April 2003.)
- The use of orlistat for the treatment of obesity in adults. Available from [www.nice.org.uk/cat.asp?c=15712](http://www.nice.org.uk/cat.asp?c=15712) Reference numbers: NICE guidance, 23358; information for the public, 23364. (Technology Appraisal published in March 2001.)

- The use of sibutramine for the treatment of obesity in adults. Available from [www.nice.org.uk/cat.asp?c=23003](http://www.nice.org.uk/cat.asp?c=23003) Reference numbers: NICE guidance, N0033; information for the public, N0035. (Technology Appraisal published October 2001.)
- The use of surgery to aid weight reduction in people with morbid obesity. Available from [www.nice.org.uk/ cat.asp?c=34789](http://www.nice.org.uk/cat.asp?c=34789) Reference numbers: NICE guidance, N0119; information for the public, N0121. (Technology Appraisal published July 2002.)
- The use of nicotine replacement therapy (NRT) and bupropion for smoking cessation. Available from [www.nice.org.uk/cat.asp?c=30590](http://www.nice.org.uk/cat.asp?c=30590) Reference numbers: NICE guidance, N0082; information for the public, N0084. (Technology Appraisal published March 2002.)







*National Institute for  
Clinical Excellence*

**National Institute for  
Clinical Excellence**

MidCity Place  
71 High Holborn  
London  
WC1V 6NA

[www.nice.org.uk](http://www.nice.org.uk)