



Diabetes Looking After Your Feet

- The Trust offers support, understanding and information to people with diabetes and those who care for them.
- We listen to the needs of people who live with diabetes and do our utmost to offer help and support.
- We raise awareness of important issues for people living with diabetes and lobby governments on issues that affect people's lives.
- We fund research into ways of improving the lives of people with diabetes

Acknowledgements

IDDT would like to thank the Institute of
Chiroprodists & Podiatrists (IOCP)



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This booklet is entirely funded by the
InDependent Diabetes Trust.

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Introduction – the reasons for this booklet

Foot problems are one of the common complications of diabetes and are caused by nerve damage (neuropathy) or damage to blood vessels in the feet and legs.

- Around 10% of people with diabetes will have a diabetic foot ulcer at some time in their lives - this is around 400,000 people.
- 130 amputations take place each week in the UK, 80% of which are preceded by a diabetic foot ulcer. It is estimated that 80% of these amputations are preventable.
- Minor amputations, such as toes, are increasing. (National Audit Office report, 2015)

Sadly, many people with diabetes are not receiving the necessary and recommended treatment and care of their feet as shown by various statistics.

December 2014, an online survey of 6,696 people (Diabetes UK):

- 32% were not informed about the risk levels at their annual foot check.
- 32% also said they were not given adequate advice about foot care.
- 18% did not have their feet checked for corns, calluses and changes in shape.

April 2015 – analysis of NHS data (Diabetes UK):

414,784 people in England did not have an annual foot check - 27.7% of people with Type 1 and 13.3% with Type 2 diabetes.

National Diabetes Foot Care Audit 2014 to 2021

This Audit provides further evidence that while the National Institute for Health and Clinical Excellence (NICE) recommends high quality services for foot care, the results suggest that these are not well delivered.

Foot care for people with diabetes needs to improve

The obvious lack of appropriate foot care for many people with diabetes is the main reason for producing this booklet. There should be a more “proactive rather reactive” approach to foot care to prevent ulcers and amputations which have a large detrimental effect on health and quality of life.

While we can hope for improvements in the way the NHS looks after this important complication of diabetes, it is important that everyone with diabetes receives information and is taught about how to prevent damage to their feet. Prevention is the key.

We hope this booklet will help you to know how to look after your feet and also encourage you to make sure that you receive the care of your feet at the right time and from a suitably qualified health professional. If this means you have to be a little assertive, then so be it – your feet need looking after properly.

Facts

Diabetic foot complications – the reasons to look after your feet

- Around 10% of people with diabetes will have a diabetic foot ulcer at some point in their lives – this is about 400,000 people. A foot ulcer can be defined as a local injury to the skin and/or underlying tissue, below the ankle.
- Currently 300 new ulcers are diagnosed every day in the UK.
- 130 amputations take place each week, 80% of which are preceded by a diabetic foot ulcer. It is estimated that 80% to 85% of these amputations are preventable. (NICE)
- After a first amputation, people with diabetes are twice as likely to have a subsequent amputation as people without diabetes. (NICE)
- Amputations and ulcers have a huge detrimental effect on the quality of life and up to 70% of people die within 5 years of an amputation and 50% die within 5 years of developing a foot ulcer. (NICE)

- People with diabetic foot ulcers have been found to have fewer cognitive skills than people with diabetes without this complication, so they may face greater challenges in self-managing their foot care.
- In some areas of England people are twice as likely to undergo diabetes-related amputations as the national average. In some areas, there are as many as 4.9 amputations per 1,000 people with diabetes each year compared to the national average of 2.6 per 1,000. (https://www.diabetes.org.uk/About_us/News/Poor-diabetes-foot-checks/Footcare-survey-results/ Accessed 17/06/15)
- In 2013/14, the cost of diabetic foot ulcers and amputations to the NHS in England was an estimated £1 billion (Hex et al 2012).

NICE Guidance

The National Institute for Health and Clinical Excellence (NICE) issues guidelines on treatments that should be provided by the NHS. In the present system this means by your local Clinical Commissioning Group (CCG). So it is important that you are aware of the NICE recommended treatment so that you can ensure that you receive proper care and treatment of your feet, wherever you live.

The key recommendations from the NICE guidance 'Diabetic foot problems: prevention and management, NG 19'

- Everyone with diabetes should be informed of their level of risk of developing foot ulcers and supplied with advice about basic foot care, footwear, blood glucose management, signs of infection and who to contact if a foot emergency occurs.
- Children under 12, their family and carers should be advised on good daily care, warning signs of infection and who to contact if they have concerns. Those aged 12-17 years should have their feet screened annually or whenever a problem occurs.
- Everyone with diabetes should have an annual foot screening.

Damage to nerves and blood vessels

Damage to nerves

From early diagnosis of diabetes, most people should be told to look after their feet because of the risks that long-term diabetes or poorly controlled diabetes can cause nerve damage. This is just one form of diabetic neuropathy but probably the most common and well known form.

Neuropathy means damage to the nerves supplying any part of the body but it is usually divided into two categories:

- Peripheral neuropathy affects the nerves supplying the skin and muscles.
- Autonomic neuropathy affects the nerves supplying the organs such as the bladder, bowel or heart. It can also damage the nerves responsible for controlling blood pressure, sexual function etc.

Neuropathies also fall into two broad groups:

- Diffuse neuropathy affecting many nerves either the sensory or the autonomic nerves. This is the most common form and is the one that can affect the feet.
- Focal neuropathy affecting individual nerves – for example, this is the type that can cause impotence.

Symptoms of neuropathy affecting the feet or hands:

- Tingling or buzzing in the feet [parathesia] which is often worse at night making sleep difficult.
- Pins and needles [dyesthesia] which can become intense pain or an intense burning sensation, sometimes described as painful numbness. It can be intermittent or constant according to how much nerve damage there is and which nerves are affected.
- Muscle pain is different from the above in that it is more diffuse and more like cramp.

- Loss of temperature perception – the hands and feet are less sensitive to heat and can be very sensitive to cold
- Exaggerated sensitivity in the skin [called hyperesthesia] – an unpleasant sensitivity to skin stimulation, just wearing socks or tights can be very irritating to the skin. It seems like an allergic reaction but there are no changes in the appearance of the skin and nothing to actually see. Just minor damage to the skin can be very painful.

Drug treatment options for neuropathy

The latest information on drug treatment options for neuropathy appears to be the following:

- Antidepressants
- Anticonvulsants
- Selective serotonin reuptake inhibitors
- Narcotic analgesics
- Topical agents such as capsaicin and lidocaine patches.

Note: The reason for prescribing antidepressants for neuropathy is based on the suggestion that it might inhibit the pain pathways in the central nervous system. [Drugs and Therapeutics Bulletin April 2007].

When a simple painkiller, such as paracetamol, is ineffective in treating painful neuropathy, the next treatment may be with a tricyclic antidepressant, such as amitriptyline. Other options are available including duloxetine [sold as Cymbalta and Yentreve] which has been specifically approved for peripheral neuropathic pain. It is recommended that its use is assessed 2 months after starting treatment and then 3 monthly. The trials carried out with duloxetine showed that there was a significant reduction in pain when compared to a placebo [dummy pill].

You should explore all these options, or a combination of them, with your doctor before going down the easy and obvious route of taking large doses of painkillers.

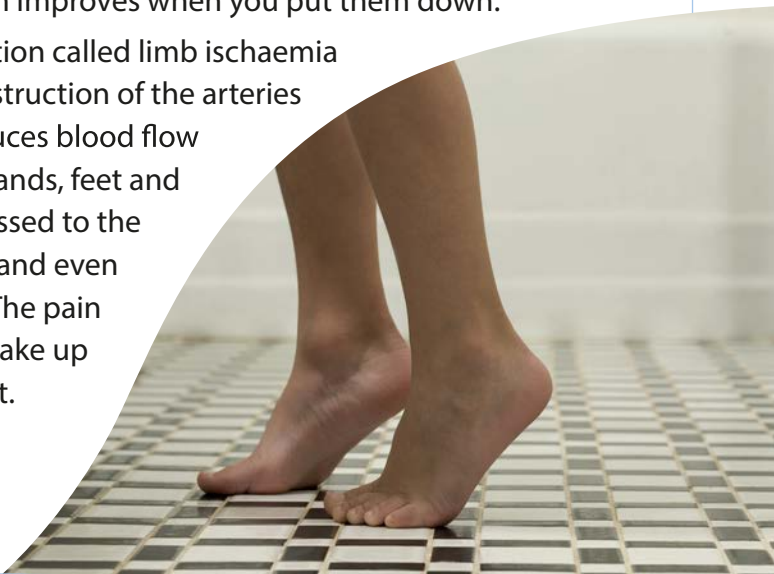
Damage to blood vessels

In addition to neuropathy, people with diabetes can also develop foot problems because of damage to blood vessels in the feet and legs. This may mean that less blood gets to the skin, muscles and tissues. A poor blood supply to the feet means that any injuries will not heal as quickly as expected.

Changes to the blood supply can cause the following symptoms:

- Cramp in the calves,
- Shiny, smooth skin,
- Loss of hair on the feet and legs,
- Thickened toenails,
- Cold, pale feet,
- Change in the colour of the skin of the feet,
- Wounds or sores,
- Pain in your feet, especially when you put them up, such as going to bed, and which improves when you put them down.

There is also a condition called limb ischaemia which is a severe obstruction of the arteries which markedly reduces blood flow to the extremities (hands, feet and legs) and has progressed to the point of severe pain and even skin ulcers or sores. The pain caused by this can wake up an individual at night.



Looking after your feet

Care of the feet is very important for people with diabetes because of the risk of diabetic peripheral neuropathy and of possible blood vessel damage. Systematic and regular foot care has been shown to reduce ulceration and limb loss by up to 50%. Almost half of all diabetes-related admissions to hospital are for problems related to the leg and foot.

Prevention is always better than cure and there are three ways to look after your feet.

Check your feet

Once diagnosed with diabetes, you should check your feet every day, even if they look healthy, and your feet should be checked regularly by health professionals.

This is something that you may not have done automatically before diagnosis, so here are some tips to help you to remember.

- Choose when and where you are going to check your feet each day, for instance, it could be when you get up in the bedroom or after a shower in the bathroom.
- Try to check your feet at the same time and in the same place every day to help you remember. If you find this difficult, use reminders such as a post-it note on the mirror or set a reminder on your mobile phone.

There are some areas of the feet where the skin is more at risk:

- The ball of the foot. You can use a sole mirror, see page 26 if you can't manage to look at the soles of your feet.
- Areas where the bones may stick out, such as bunions or hammer toes.
- Places where shoes or socks may rub.

The changes to your feet you are looking for

Foot problems can start due to an injury such as a cut, a blister caused by shoes rubbing, a burn / scald or hard skin. These injuries can take a long time to heal in people with diabetes and the wounds can sometimes become infected.

You should check for:

- swelling,
- redness or any changes in the colour of the skin, for example, pale or bruised skin,
- cuts or blisters,
- pain,
- fluid coming from a wound.



Wash your feet

- You should wash your feet daily in warm, soapy water making sure that the water is not too hot, especially important if you have lost the feeling in your feet. You can check by dipping your elbow in the water or by using a bath alert, see page 28.
- Don't soak your feet for too long in the bath as this can cause them to be easily damaged.
- Dry your feet well but gently, especially between your toes to prevent infections, such as athlete's foot, and avoid 'sawing'.

Use a moisturiser

- Use a moisturiser after you have dried your feet to keep the skin of your feet supple.
- Rub the moisturiser into the main parts of your feet, underneath and on top.
- Do not use moisturiser between your toes because it will make the skin there too moist.
- If you use talc, only use a small amount to avoid it clogging up and increasing the risk of infection.

ADVICE ON CUTTING YOUR TOENAILS

If you have been advised by your consultant or your GP not to cut your toenails yourself, then you should see a podiatrist.

However, if there is no reason why you should not cut your toenails, then here is the way you should do it:

- Follow the shape of the toe when cutting.
- Leave no sharp edges.
- Nails are for protection, so do not cut them too short.
- Never cut down the sides.
- If you have in-growing toenails or you suspect a nail infection, don't treat it yourself, see a podiatrist.

THE GOLDEN RULES FOR LOOKING AFTER YOUR FEET

- Never go barefoot.
- Wear good fitting shoes – not tight or worn.
- Break in new shoes gradually and make sure they don't rub.
- Keep your feet dry, especially between the toes.
- If you need to use talc, use it sparingly.
- Moisturise your skin so that your feet do not get dry or cracked.
- Cut your toenails straight across, not deep into the corners.
- Wash your feet daily using lukewarm water.
- Do not use heating pads, hot water bottles, iodine, Epsom salts or alcohol.
- Check your feet every day and if there are any problems see your doctor or podiatrist.

Just a note about beauty treatments

Nail varnish

You can use nail varnish but if you use it all the time, you will not be able to see any problems or infections with your nails. It is sensible to remove the varnish and reapply it regularly so that you can inspect your nails.

Pedicures

You can have a pedicure but make sure that you use someone that is well qualified and that you inform them that you have diabetes when you make the appointment.

Foot spas

If you have been informed by a health professional that you have nerve damage to your feet, then you should not use foot spas. If you do use foot spas, then check that the water is not too hot and don't soak your feet for a long time.



Your annual foot check by a health professional

As said above, everyone with diabetes should have an annual check of their feet. This should be conducted by your GP's, practice nurse or podiatrist as part of your diabetes annual review. It is to check the skin, nerve supply and circulation to your legs and feet.

You should have to remove your shoes and socks or tights:

- Your feet should be checked for corns, calluses and any changes in shape.
- Your feet should be tested for any numbness or loss of sensation with a tuning fork or plastic strand.
- Your shoes should be looked at to make sure they are not causing any problems, such as sore areas from rubbing.
- At the end of the examination, you should be told the results and your level of risk of foot problems, what this means and what you should do next. If you are at increased risk of foot problems, then you should be referred to the Foot Protection Service.

When should people with diabetes have their feet checked?

- At diagnosis and then annually for people at low risk.
- Frequently (every 3 to 6 months) for people who are at moderate risk.
- More frequently (every 1 to 2 months) for people at moderate or high risk if there is no immediate concern.
- Very frequently (every 1 to 2 weeks) for people at high risk if there is immediate concern.
- More frequent assessments may be necessary for people at moderate or high risk who are unable to check their own feet.

Definitions of risk are:**Low risk**

- no risk factors present except callus alone

Moderate risk

- deformity
- neuropathy
- non-critical limb ischaemia (reduced blood flow)

High risk

- previous ulceration
- previous amputation
- on renal replacement therapy
- neuropathy and non-critical limb ischaemia together
- neuropathy in combination with callus and/or deformity
- non-critical limb ischaemia in combination with callus and/or deformity

Ulcerated foot/foot emergency

When problems occur, diabetes foot care is treated by the following services, as defined by NICE:

Foot protection service is usually based in a health centre or GP clinic. It provides foot care for people with diabetes, preventing diabetic foot problems and dealing with foot problems that don't need to be treated in hospital. It should be led by a podiatrist with special training in diabetic foot problems.

Multi-disciplinary foot care service is usually based at a hospital and specialises in treating more severe diabetic foot problems. It is made up of different healthcare professionals who work together to deliver care. This should include diabetologists, podiatrists and diabetes nurse specialists, as well as other healthcare professionals with expertise in treating and managing diabetic foot problems.

People with an active foot problem should be referred to the Multi-Disciplinary Team (MDT) within 1 working day, or 24 hours if in hospital.

Active foot problems are:

- ulceration
- spreading infection
- critical limb ischaemia
- gangrene,
- if there is suspicion of Charcot foot (see page 22) or an unexplained hot, red, swollen foot with or without pain.

People who have a moderate or high risk of developing a foot ulcer should be referred to the foot protection service within 2–4 weeks for those at high risk and within 6–8 weeks for those at moderate risk.

Note: the full NICE guidance can be found at <http://www.nice.org.uk/guidance/ng19>

Teeth have Dentists – which Health Professionals look after feet?

(by Martin Harvey, FPodM, PGC, BSc, Chair of Board of Executives, Institute of Chiropodists and Podiatrists)

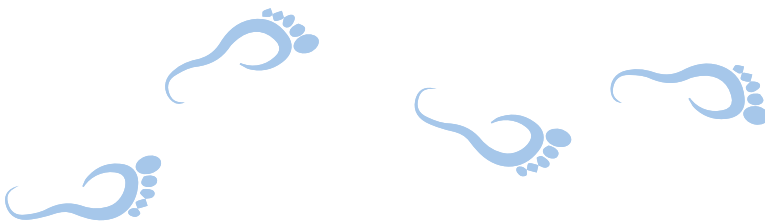
The registered Health Professionals who specialise in the medical care of the feet are Podiatrists, who are also known by the older term Chiropodist. Both of these titles have been protected by law since 2003 and all persons using them must, by law, be currently registered with the Health and Care Professions Council (www.hcpc-uk.org).

This statutory organisation regulates and maintains a register of UK Podiatrists/Chiropodists in the same fashion as the General Medical Council regulates and maintains a register of UK Doctors. The HCPC sets standards, investigates complaints and can, where necessary, discipline or even strike off registrants whose practice falls short of the high standards required for registration.



Members of the public can check that individuals using the title of podiatrist or chiropodist are registered by accessing **www.hcpc-uk.org/check-the-register**. The site searches by name as well as a registrants number (which should be prefixed by CH). The register also shows specific training in specific areas (annotations) for an individual podiatrist, such as POM-A (medicines administration rights) and other specific entitlements such as IP (Independent Prescribing). These annotations are explained on the HCPC web site.

Although it is not mandatory, many podiatrists also choose to belong to a professional trade body such as the Institute of Chiropodists and Podiatrists (IOCP), The Royal College of Podiatry or the British Chiropody and Podiatry Association etc. Such organisations are often the most effective way to offer advice and support to their members and also offer professional services such as indemnity insurance (legally required), continuing education, practice accreditation and advice on legal matters and ethics etc.



All podiatrists must be qualified to a sufficient standard that enables them, for example, to generally assess diabetic feet and their health. Some podiatrists may have detailed knowledge and/or training in particular areas, such as surgery, medicines, musculoskeletal conditions or specific diseases, such as diabetes and, for example, treating diabetic ulcers etc. If you have a specific problem talk it over with your podiatrist. If they feel that they need to refer the matter on to a more specifically trained practitioner or consultant, they should do so willingly and indeed, are required to do so by the HCPC.

In both the NHS and private practice, podiatrists often work with supporting practitioners known variously as podiatry assistants (PAs), footcare assistants (FAs) or foot health practitioners (FHPs). These individuals have the same relationship to podiatrists as dental hygienists have to dentists and they offer valuable basic support services – including to diabetic patients who have a care/management plan drawn up by a podiatrist. However, it should be borne in mind that PAs, FAs and FHPs do not have an equivalent level of training to chiropodists / podiatrists nor are they regulated by statutory law, so in all instances the initial assessment and care plan for diabetic feet should be done by a registered podiatrist whose advice should always be sought in the event that problems develop.



Conditions that can affect the feet

There are various conditions that can affect the feet and for people with diabetes, it is especially important that you are aware of these conditions so that you know what to look for when you inspect your feet.

Diabetic foot calluses

Where there is extra or constant pressure on the feet, hard skin builds up and these areas of thickened skin are often called calluses. For instance, if the arch of the foot drops or the toes curl under, this will put pressure on different parts of the foot and can cause a build-up of hard skin.

Calluses protect the foot because without the layer of thickened skin, pressure or friction can cause an open wound. However, in people with diabetes and peripheral neuropathy, calluses may be covering up a much deeper wound or ulcer. The presence of calluses can prevent healing and can also create increased pressure from footwear or walking differently for those with a neuropathic diabetic foot. If neglected and allowed to accumulate, calluses can cause pressure necrosis (dead tissue) and ulceration of the underlying tissues.

There is a link between calluses and ulcers - callus formation preceded the formation of ulcers in 82% of people with diabetic foot ulcers. (Sage et al. in 2001)

Management of calluses

As calluses can hide a developing ulcer, it is very important that they are managed appropriately. There are danger signs that a callus is becoming pre-ulcerative, such as speckles of blood within the callus.

The best approach is prevention through (i) the use of proper footwear and orthotics to reduce friction and (ii) regular screening.

To prevent ulceration, calluses on pressure points need regular treatment and careful follow up as a callus may hide or worsen inflammation underneath the skin.

Calluses should only be removed by podiatrists because incorrect removal can lead to infections. In people with diabetes, infections heal more slowly and if they don't heal, can lead to amputations.

Heel fissures

Heel fissures are common in the whole population, but in people with diabetes they can cause serious problems if they are not dealt with effectively. They are cracks or splits in the skin which can extend through to the dermis [the inner layers of the skin] and they are often painful when pressure is applied to the heel when standing. They can bleed and once the fissure opens, it is often difficult to get the two edges of the split to knit back together.

With so many people with diabetes suffering from neuropathic damage causing loss of feeling in the feet, these fissures often go unnoticed until they have become quite severe. Frequently they can become infected, and for people with diabetes with ischaemia (a reduced blood supply), they are subsequently difficult to heal and may ulcerate.

What causes heel fissures?

Invariably heel fissures are symptomatic of dry skin conditions. Loss of nerve supply to the sweat glands in the feet can result in people with diabetes having drier skin than the rest of the population. Hot weather, wearing of sandals, inadequate skin care, abrasive hosiery, poor circulation and possibly some forms of medication can all contribute to the drying of skin.



How can I prevent heel fissures?

Generally, after washing or a short soak of the feet, the application of a good moisturising cream should be sufficient to keep skin supple and so prevent the formation of heel fissures. Moisturiser should be applied every day, particularly if you have been instructed to do so by your chiropody/podiatry clinic. Basically, you can use any moisturiser. These can be purchased over the counter or prescribed by your doctor or podiatrist, in which case you may not have to pay for them.

How do I deal with a heel fissure already present?

If on your daily foot inspection you discover a crack in the heel, keep a close eye on the area and increase the moisturising routine maybe to 2 or 3 times a day. If there is no improvement after a week, it is advisable to contact your podiatrist for an assessment and advice. They will be able to apply suitable dressings to heal the fissure and suitable padding materials to prevent any shoe rubbing that might prevent them healing.

Charcot foot

Charcot foot is a non-ulcerative foot condition that can occur in people with diabetes and is associated with nerve damage (neuropathy). It is a condition that affects people who have lost their sense of pain in their feet. Pain protects the feet as it warns people that they are doing too much walking, standing or exercising. In Charcot foot, the foot changes shape due to destruction of the bones and joints but this is not caused by infection.

However, it is difficult to detect and is often treated as an infection because areas of the foot become red and swollen. It may also be mistaken for cellulitis. Another problem with diagnosis is that the initial X-ray of the foot may appear normal. Sometimes people are alerted to Charcot foot if they have a history of injuries caused by tripping or falling. If the condition goes untreated or is badly managed, then it can have very serious results. Despite difficulties with diagnosis, immediate diagnosis and putting the foot out of action are essential.

The treatment of Charcot foot is continuous foot care education, protective footwear and routine foot care to prevent the formation of ulcers.

Diabetic holiday foot syndrome

Research has shown that there is a greater risk of foot ulceration that can lead to serious complications during holidays, especially those taken in hot countries, hence the name 'Diabetic holiday foot syndrome'. In one study, among 435 people studied, 17 experienced foot lesions during foreign holidays, 10 of whom reported a foot lesion for the first time. The people with holiday foot damage were a younger age, mainly male and their diabetes was of shorter duration than people with foot damage from other causes

The causes of diabetic holiday foot syndrome were:

- direct injury
- unaccustomed exercise
- walking barefoot on the beach or in the sea
- burns from walking barefoot on hot pavements
- wearing inappropriate inflexible bathing shoes.

It is also important not to forget to put sun cream on the top of the feet. If you need further warnings for your holidays, the research also showed that 9 out of the 17 people had to be hospitalised for infections as a result of holiday foot damage and the average stay in hospital was 11 days.

The researchers concluded that there is a need to increase education about foot care at holiday periods and that this should include preventative measures for those people at high risk of foot lesions.

(Prac Diab Int March 2001,
Vol 18 No 2).



Practical ways to look after your feet

Wear correctly fitting shoes

Ill-fitting shoes can cause damage to the feet in people who have neuropathy and because of loss of sensation in their feet, the damage can go unnoticed. If shoes are too narrow, tight or loose, they can cause blisters or ulcers which can be slow to heal and lead to infections.

Clearly it is important to have comfortable, correct fitting shoes, your podiatrist can advise you about this, but here are some tips:

- Beware of choosing shoes that are too tight as the increased pressure of tight shoes can make them feel the right size.
- Feet get larger and broader in older people but many people often continue to buy the same size. One study showed that a third of the people surveyed said they took a different shoe size from the one they were actually wearing, probably due to the fact that shoes sizes vary from maker to maker.
- After buying a new pair of shoes, wear them for 2 hours at first, then inspect your feet for pressure marks or irritations. A hand mirror is useful to ensure that all parts of the feet can be examined. Gradually build up the wearing time.
- The most comfortable shoes are running shoes because they are made of soft fabric, provide a shock absorbing thick sole and a lace up top for a good snug fit.

There is a clear message here for people with diabetes – having well-fitting shoes may be expensive but not as costly as the damage that can be done by not doing this!



Liqua Care Diabetic Flowgel Orthotics

This is the only insole in existence with published, clinical evidence showing a huge offloading of peak pressures combined with a significant increase in circulation to the feet, thereby countering the two main causes of diabetic foot ulcers.

They are now available on an NHS prescription, can be purchased directly online www.liquacare.co.uk or you can order by telephone: 0870 041 0150. The retail price is £24.85 + £3 P&P.

The insoles give your feet a constant, gentle massage – the liquid gel filling helps eliminate cold feet, pain on walking any distance with many people reporting an improvement in the symptoms of diabetic neuropathy.

Post-clinical trial checks by the National Diabetes Foot Coordinator on the test user group, revealed that after two years there was a “remarkable” record - despite all participants being classed as “at risk” of developing an ulcer, not one was presented.

Not just designed for those with diabetes, Liqua Care insoles were invented to reduce the aches and pains in feet and lower legs caused by prolonged standing, so treat your feet to what quite possibly, could also save them!

Note: Having said that Liqua Care Flowgel insoles are approved for use on the NHS, IDDT’s experience is that many GPs are unaware of this and are refusing to prescribe them. This is probably because their Clinical Commissioning Group has not put them on their prescribing lists. However, this lack of awareness of such a simple way to prevent ulcers developing, is costing people with diabetes in terms of their health but also increasing the cost to the NHS. Treating a single foot ulcer costs the NHS about £5,500 but the cost of one pair of insoles is a third of 1% of that cost!

neuropad®

neuropad® is a patented 10-minute screening test for the early detection of diabetic foot syndrome. The test is completely painless and is an early warning system for your feet.

As we have read, nerve damage to the feet is a common complication of diabetes but is often not noticed until it becomes quite advanced. neuropad® helps to solve this problem with a simple colour change test.

Here's how it works

Damage to the nerves in the feet can result in the sweat glands not producing enough moisture, leading to dry and cracked feet (called sudomotor dysfunction).

A neuropad® is stuck to the sole of each foot like a small sticking plaster and left in place for 10 minutes. The pad is blue to start with and should turn pink in the presence of moisture from sweating to indicate a normal result. If the neuropad® test patch stays blue, or turns patchy blue/pink, this indicates that you may have diabetic peripheral neuropathy and your sweat glands are not working properly because there is not enough moisture to complete the colour change.

comparable to well-established hospital-based tests.

The price of the test comprising of two test pads is £17.99, no VAT payable, and can be purchased from IDDT's website shop, <http://www.iddt.org/shop> or by phoning IDDT on 01604 622837.



Dealing with loss of temperature sensation

Cold

Dealing with increased feelings of being cold in the hands and feet is relatively easy. For the hands wearing gloves and increasing their thickness in winter helps. For the feet wearing heavy socks is not always possible but lined socks are available and these are warm but not very thick. For women thick tights are available.

Heat

Dealing with loss of sensation of heat is more important because failure to do so can result in severe burns or scalds. It is not always the obvious such as hot water bottles that are the problem but judging the temperature of everyday things like the washing up water or bath water can be difficult. Usually the forearms or the upper arms are more sensitive to heat, so running water over them as a test is a good idea.

Bath alerts are particularly important devices for people with diabetic neuropathy and loss of heat and cold sensations in their feet. They can

a buzzer if the water temperature goes above this. They also detect the water level and warn if the water goes above this to prevent the bath flooding, particularly useful for people who are visually impaired.



Dealing with painful neuropathy

The pins and needles extending to varying degrees of pain is often treated with pain killing drugs as described earlier but other options are available.

- The tingling and buzzing sensation can be helped by physical activity – walking or rubbing the affected area.
- Medical gel packs have been found to help some people. The gel pack is chilled in a freezer before use and then placed on the painful area. These are inexpensive and can be obtained from pharmacies.
- Pain control clinics are available in many areas and you can ask your doctor to refer you to your nearest one.
- TENS machines (Transcutaneous Electrical Nerve Stimulation) are convenient, safe and effective, easy to purchase and cheap to run. They can be used at home without training and, for some people, have a demonstrable record of reducing pain. Unlike many drugs, there are no side effects. They work by blocking the pain messages to the brain in the same way as rubbing the painful area.

Note: TENS should not be used near the heart or front of the neck and should not be used by anyone fitted with a pacemaker. They can be purchased in many larger pharmacies but always talk to your doctor first.



Additional effects of neuropathy

Hearing loss and diabetes

Researchers in Italy are exploring the effect that diabetes may have on hearing loss. Forty seven people with insulin dependent diabetes and still with normal hearing abilities were studied and all of them had impairments in the spiral canal in the ear. These problems usually begin with a lesion in the inner ear spiral canal and can be caused by neuropathy. Previous studies have found that hearing loss is in the high frequency area of the ear with a progressive loss over time.

Gastroparesis

Gastroparesis is a stomach condition estimated to affect 25% of people with diabetes to a greater or lesser extent. It is caused by neuropathy affecting the nerves of the stomach so that the stomach muscles do not work properly and the food remains in the digestive system for a long time. The symptoms include:

- nausea
- vomiting
- abdominal bloating, discomfort and/or pain
- feeling full soon after eating
- indigestion or heartburn

In addition to this, gastroparesis affects blood glucose control because the food remains in the stomach for longer than it should and this can lead to erratic blood sugar.

Developments

In the US a company, Medtronic Inc, has developed an implantable device that has been shown to improve the symptoms of gastroparesis. The device delivers mild electrical pulses to the nerves in the stomach which stimulate digestion. A study involving 100 patients from various countries, showed that there was a variety of responses

to the device but 93% of the participants vomited less than half as many times after using the device and most of them felt better after using the device.

This treatment is called Enterra therapy and has been available in the US since March 2000.

NICE interventional procedures guidance [IPG489] on gastroelectrical stimulation, May 2014

Treatment options are limited and include modification of dietary intake and medical therapy with antiemetics or prokinetics. Gastroelectrical stimulation is an option for treating chronic, intractable nausea and vomiting secondary to gastroparesis. It is delivered via an implanted system that consists of a neurostimulator and 2 leads. Implantation is done with the patient under general anaesthesia by an open or laparoscopic approach.

When the neurostimulator is turned on, electrical impulses are delivered. The rate and amplitude of stimulation can be adjusted wirelessly with a hand-held external programmer. It may be necessary to return to hospital for adjustment or reprogramming of the device to optimise the effect on gastric emptying.

NICE recognises that gastroparesis can be a very debilitating condition with very few treatment options, and it notes patient commentaries describing substantial improvements in quality of life with gastroelectrical stimulation. Its key recommendations are:

- Current evidence on the efficacy and safety of gastric electrical stimulation for gastroparesis is adequate to support the use of this procedure.
- Patients should give consent and they should be told that some patients do not get any benefit from the procedure. They should also be given detailed written information about the risk of complications, including the need to remove the device.



- Patient selection and follow-up should be done in specialist gastroenterology units with expertise in gastrointestinal motility disorders, and the procedure should only be performed by surgeons working in these units.

Taste and smell as a complication of diabetes

Although rare, diabetes can impair the senses of smell and taste. Losing these senses can have serious consequences on those who are affected. We tend not to appreciate how much the senses of smell and taste give us pleasure until we don't have them, but it can also be dangerous. For instance, if the gas is accidentally left on, someone with an impaired sense of smell will not pick it up.

Sense of smell

When there are chemicals in the air they are dissolved in the mucus in the nasal passages and these are detected by nerves which give us our sense of smell. One of the causes of an impaired sense of smell may be diabetic neuropathy and one study has shown that people with painful neuropathy are more likely to have an impaired sense of smell. Research has also shown that people without diabetes complications a better sense of smell.

Taste

Taste is more complicated and involves the sense of smell, the tongue and mouth, the saliva and some of the cranial nerves. In the general population taste worsens with age, smoking and glucose levels.

Research has again shown that those with diabetic complications are more likely to have an impaired sense of taste. This was linked to age, duration of diabetes, peripheral neuropathy but not with glycaemia. Some drugs can also affect the sense of taste, for example, metformin for the treatment of Type 2 diabetes can cause taste disturbance, usually a metallic taste.



Treatment

It can be difficult to recognise these conditions but if impaired smell or taste is suspected, it is important to seek the help of experts. The first course of action is to have any nasal or sinus diseases treated and to have dental treatment. However, in many cases there is no treatment, so the following may help:

- have good oral and dental hygiene and regular dental care
- stop smoking
- artificial saliva for those with dry mouth

It is important to remember that if there is impaired taste, then care is needed with unfamiliar or spicy food. Care also needs to be taken not to eat too much sugary food or to put extra sugar in food and drink because the sweetness cannot always be detected.

More research is necessary to increase awareness of these problems and to understand how diabetes affects these senses.

Reduced sense of taste may increase weight loss after surgery

A study has shown that an adverse effect after weight loss surgery (bariatric) is that some people can't taste food as well as they did before surgery.

The study involved 88 severely obese people with an average age of 49 who were tested before surgery and 3, 6 and 12 months afterwards. The results showed:

- 87% of people had taste changes, including 42% who said they ate less because the food did not taste as good.
- Those with decreased taste lost 20% more weight over 3 months than those with higher taste sensitivity.
- It was not just flavour that influenced weight loss but the intensity of the flavour and those with diminished taste intensity lost the most weight.

(American Society for Metabolic and Bariatric Surgery, news release, Nov. 4, 2014)

National Diabetes Foot Care Audit 2014 to 2021

The National Diabetes Footcare Audit (NDFa) enables all diabetes footcare services to measure their performance against NICE clinical guidelines and peer units, and to monitor adverse outcomes for people with diabetes who develop diabetic foot disease. The NDFa is a continuous collection and data can be collected throughout the year and produces an annual interval review. The NDFa looks at the following key areas:

Structures: are the nationally recommended care structures in place for the management of diabetic foot disease?

Processes: does the treatment of active diabetic foot disease comply with nationally recommended guidance?

Outcomes: are the outcomes of diabetic foot disease optimised?

Published in May 2022, the NDFa Interval Review (July 2014 to March 2021) has found:

An increase in the proportion of referrals seen by a specialist foot care team within 13 days from 43% in 2014-15 to 46% in 2020-21

A linked reduction in the proportion of ulcers that are graded as severe at first expert assessment (FEA) from 48% in 2014-15 to 43% in 2020-21

A linked reduction in the proportion of ulcers still active (not healed) at 12 weeks after FEA from 49% in 2014-15 to 40% in 2020-21

To help guide service improvement, the NDFa has identified recommendations that aim to further improve foot care provision and outcomes that, if put into operation, will improve foot care services for everyone with diabetes, especially recommendation 5.

Recommendation 1: Ensure that healthcare professionals (HCPs) arrange early expert assessment of all new foot ulcer episodes.

Why? The NDFA has shown that faster referral to the specialist foot care service leads to fewer severe ulcers and better 12 week outcomes.

Recommendation 2: Ensure that healthcare providers and HCPs review NDFA measures for their organisations, including time to first expert assessment (FEA), ulcer severity at FEA and 12-week outcomes.

Why? Internal review of NDFA outcomes will help healthcare providers and HCPs identify gaps in service provision and potential areas for improvement, leading to improved care processes and better outcomes for people with diabetes.

Recommendation 3: Ensure that specialist clinical services which care for foot ulcers in diabetes are accessible everywhere.

Why? All trusts should have a dedicated multi-disciplinary footcare service (MDFS) as stated in the NHS Long Term Plan and NICE guideline NG19.

Recommendation 4: Ensure that healthcare providers and HCPs have effective integration between different clinical groups: in the community and with different specialist expertise.

Why? The NDFA has identified a lack of integration between different services: For example, only 33% of healthcare providers confirmed that the MDFS was integrated with renal (kidney) services and dialysis units.

Recommendation 5: Healthcare commissioners should ensure that diabetic foot care training and education is available to all HCPs who provide services to people with diabetes and is available across all healthcare settings and services.

Why? Only 76% of providers confirmed that regular training was provided to ensure that people at increased risk of foot ulceration are both identified and have access to appropriate protective surveillance.

The NDFA 6th National Report has now been published and is available at: <https://digital.nhs.uk/data-and-information/publications/statistical/national-diabetes-footcare-audit/2014-2021>



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