

SELF-CARE OF THE AT-RISK DIABETIC FOOT

With diabetic foot ulceration placing a high financial burden on the NHS (Kerr, 2012), not to mention the human cost, it is important that the patient is taught self-care techniques. This article will outline various aspects of diabetic foot care placing an emphasis on the role the patient can play in their own care.

“Diabetic foot care was once aptly described by the acronym “PITS”, whereby each of these letters described the essentials of foot care, namely: Prevention, Identification, Treatment, and Service.”

Diabetic foot complications are widespread and vary considerably in both aetiology and clinical presentation. They can include skin and joint changes, through to ulceration and gangrene. The latter two complications place a huge burden on the NHS and are associated with high morbidity and mortality (Resnick et al, 2004).

It is estimated that £1 in every £10 spent in the NHS in England is spent on diabetic foot ulceration and amputation, amounting to £662 million annually. More importantly, the impact on patients and their families can be devastating (Kerr, 2012).

Diabetic foot care was once aptly described by the acronym “PITS”, whereby each of these letters described the essentials of foot care, namely: Prevention, Identification, Treatment, and Service (Ward, 1987). Clearly, the first two facets of foot care should be swapped around so that, firstly, those who are at moderate or high risk of ulceration or amputation are reliably identified, and then prevention programmes are implemented and reviewed.

The screening of diabetic feet has been successful within the UK due to the Quality and Outcomes

Framework (QOF) targets and two QOF indicators – DM09, recording foot pulses and DM10, recording neuropathy status – with the achievement of rates of 91.6% and 91.4%, respectively, in 2010/11 (Health & Social Care Information Centre, 2011). However, other risk factors need to be recognised, including the presence of callus, infections, dry skin, nail conditions, and inappropriate footwear.

Although the clinician will use screening tools to identify the individual's risk status, it is important that patients are also involved in this process (Leese et al, 2006). Sharing and exploring this process with a patient provides the ideal opportunity for interactive foot health education and, hopefully, the person with diabetes can learn about effective self-care.

Addressing the patient's range of potential problems, such as the patient's lack of awareness, unsupported healthcare beliefs and attitudes, and unfounded fear or denial, can be challenging for the clinician, but is essential. It should be noted that the concept here is not about giving information but helping patients identify potential problems and finding solutions.

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It must also be remembered that many patients may be unable to perform foot inspections because of poor eyesight and reduced mobility (Masson et al, 1989; Thomson and Mason, 1992).

Whose feet are at risk?

Firstly the term “at risk” relates to diabetic foot ulceration and possible amputation. It is important to state that diabetes-related lower-extremity amputations are preceded by foot ulceration in 85% of cases (Pecoraro et al, 1990), thus identifying factors that are strongly associated with ulceration is essential.

Top tips for screening

It is important that clinicians ask at-risk patients the following questions on the following themes:

- ▶▶ Why they think the clinician needs to examine their feet?
- ▶▶ What does the patient understand by the term “at risk”?
- ▶▶ What the patient wants to know about their feet?
- ▶▶ Is there anything the patient is afraid of regarding their feet?

The patient must be allowed to reply and not prompted by the clinician. Listening carefully to the patient and determining any anxiety they may have will provide insight for formulating effective foot health education.

Peripheral neuropathy

Peripheral neuropathy is common, affecting up to 50% of people with diabetes (Ziegler, 1994). It is called a symmetrical distal polyneuropathy, which means that the damage affects the sensory, autonomic, and motor nerve fibres in a “glove and stocking distribution” starting in both feet and lower legs first.

Sensory neuropathy

Sensory neuropathy is characterised clinically by an inability to detect sensations, such as light touch, vibration, extreme temperatures, and pain. It is known as “painless neuropathy”. The associated inability to feel protective pain sensations can lead to unnoticed

injuries occurring, such as burns, cuts, blisters, and shoe rubs, all of which can quickly develop into ulcers.

Some patients describe unpleasant or painful symptoms, such as pins and needles, burning, shooting, stabbing, electric-shock type pains. This is called painful neuropathy. This is often overlooked but can significantly impact on the patient’s quality of life. Malik et al (2010) developed a self-reporting screening tool to help to identify and treat those with sensory neuropathy.

Top tips for self-care: Sensory neuropathy

It is important to inform people with sensory neuropathy:

- ▶▶ That they may not know when they have injured their feet, making inspection important.
- ▶▶ What they should do if they think they have sensory neuropathy.
- ▶▶ To be aware of risky situations (e.g. while on holiday walking barefoot, during cold winters).

Autonomic neuropathy

Autonomic neuropathy mainly affects the sweat glands and arteries in the foot, leading to a dry, pink, and warm oedematous foot. Skin dryness and skin splits on the borders of the heel are common in those with autonomic neuropathy.

Top tips for self-care: Autonomic neuropathy

For those individuals with autonomic neuropathy, the following questions should be asked:

- ▶▶ What happens when the patient’s skin gets very dry on the hands?
- ▶▶ What regimen does the patient undertake to combat this dryness?

The message here is to use an effective moisturiser for the feet to combat dryness. Positively, a daily moisturising regimen means the individual’s feet are also being regularly inspected.

Motor neuropathy

The manifestation of nerve dysfunction

Glossary

At risk: Factors that combine to increase the risk of foot ulceration and potential amputation.

Emollients: Skin moisturisers.

Foot deformity: Structural changes to the architecture of the foot that usually result in the inability of a foot to be accommodated in a high street shoe.

Peripheral neuropathy: Nerve dysfunction leading to loss of protective sensations, sweating, and muscle function in the extremities.

Peripheral vascular disease: A significant reduction in peripheral vascular supply leading to poor tissue perfusion.

evident with motor neuropathy occurs late in the natural history of diabetic neuropathy and leads to foot deformity, muscle wasting, and altered gait. These patients are at risk of falls and injury and should be monitored.

Peripheral vascular disease

Peripheral vascular disease is the reduction or loss of bloody supply to regions of the lower limbs. It may manifest in the absence of foot pulses, tissue loss, intermittent claudication, or rest pain. Other clinical features include, poor skin and nail condition, wasting of soft tissues, pain, cool skin, loss of hair on feet and legs, and very thin, onion-like hard skin or dryness.

Top tips for self-care: Peripheral vascular disease

When treating people with peripheral vascular disease, the clinician should ensure that:

- ▶▶ The patient knows why their foot is being checked for pulses and what this means.
- ▶▶ Feet are never warmed too quickly.
- ▶▶ The importance of smoking

cessation, a healthy diet and exercise, as well as optimal cardiovascular risk-factor management are all discussed.

- ▶ Meticulous nail and skin care is conducted.
- ▶ The importance of avoiding slippers and slip-on shoes is underlined due to the potential of shoe rubs leading to ulceration.
- ▶ The patient understands the impact of poor blood flow.

Dry skin (xeroderma)

Dry skin is a commonly associated with diabetes-related autonomic neuropathy, peripheral vascular disease, and ageing, which can lead to a loss of skin elasticity. This reduces the skin's antifrictional qualities, leading to callus formation and skin fissures with the potential for infection, tissue loss, and ulceration.

Dry skin is often perceived as insignificant and is, therefore, not managed well. It is best treated by the daily use of emollients, but adherence is poor due to two fundamental reasons: an education failure and inappropriate emollient prescription.

Most emollients act as barrier creams, capturing sweat that moisturises the skin. Thus, when sweating is reduced or absent, an emollient that reintroduces moisture into the skin, not a barrier cream, is essential. Only emollients that contain urea or glycerin are capable of achieving this and, therefore, these product types should be considered to be first-line treatments.

Top tips for self-care: Dry skin

It is important that clinicians bear in mind the following when advising people with dry skin on their skin care regimen:

- ▶ A mild abrasive should be used lightly over dry skin before emollient is applied.
- ▶ An emollient should be prescribed that ideally only needs to be used once daily.

Skin and nails

Thick callus is a common characteristic of the neuropathic foot, occurring on weight-bearing areas (e.g. metatarsal heads). In contrast, the neuroischaemic foot is thin, dry, and glassy (hard and shiny) and callus occurs on the borders of the foot. A combination of callus and neuropathy is associated with ulceration, and its removal significantly reduces this risk (Young et al, 1992; Murray et al, 1996).

The presence of bloodstained callus is highly predictive of ulceration (Rosen et al, 1985; Harkless and Dennis, 1987); this looks like raspberry or blackcurrant jam under hard skin. This is a clinical emergency and requires urgent referral to a diabetic foot specialist.

Normal nails should be cut following the shape of the toe and filed afterwards. This can be done by patients or carers, as long as they can bend, see, and their sensations are intact. Thicker nails must be thinned down regularly by a podiatrist to prevent nailbed pressure sores.

Top tips for self-care:

Skin and nails

The following steps should be undertaken by the clinician to ensure effective self care takes place:

- ▶ An emollient should be used daily.
- ▶ Patients should be helped to understand the cause of their callus (usually inappropriate footwear).
- ▶ A mild abrasive should be used prior to emollient use (e.g. an emery board).
- ▶ Sharp implements or chemicals should *never* be used to remove hard skin.
- ▶ If neuropathy is present, regular podiatry care should be sought.
- ▶ The patient should be checked for blood staining or oozing under callus.

Fissures/skin splits

Commonly, fissures and skin splits occur on the borders of heels and are

attributed to skin dryness. They can deteriorate rapidly to ulceration and frequently become necrotic in patients with neuroischaemia. They must be dealt with correctly and swiftly, with referral to a podiatrist recommended for callus debridement. Applying emollients on a daily basis is an effective prevention.

Thin strips of adhesive tape should be used to bring the edges of the fissure together and prevent further splitting. After callus removal and taping, the affected area should be covered with a thin dressing.

Top tips for self-care: fissures/skin splits

People with fissures/skin splits should:

- ▶ Check daily for any signs of deterioration.
- ▶ Keep their heels off the floor while resting, and of the mattress when sleeping.

Foot deformity

Foot deformities are hard to describe as they vary enormously from slight to gross presentations. A simple definition would be a foot that cannot be accommodated in a high-street shoe without distorting it.

Asking patients to identify where potential shoe rubs might occur is a useful method to facilitate self-monitoring and care. It also identifies those who may need more help in understanding and applying foot advice.

The most common deformities are clawed or hammered toes, and bunions. Corrective surgery to reduce ulceration risk in cases of gross deformity may be considered (i.e. marked clawing of lesser toes and bunions).

Inability to self-care

The individual's ability to care for themselves is a frequently overlooked risk factor for foot ulceration and amputation. This is probably because it is so obvious that clinicians unintentionally ignore it. Giving

advice to a patient who is physically or mentally unable to adopt it is futile. In this situation, a patient's active carer(s) should be involved, however, both parties must be fully involved in this process.

Identifying patients who are not able to self care can be difficult, but spending some time observing and conversing with them and, if possible, their carers, can provide valuable insight.

Footwear

Ill-fitting footwear is a common cause of foot ulceration, especially in older people. However, addressing footwear problems is difficult due to a range of factors, including fashion, finance, perceived comfort, and patient flexibility.

Asking patients how shoes might affect their feet and what they determine to be a "good" shoe, is a better technique than telling them what they should or should not be wearing. Helping the individual relate to their neuropathy and footwear is an essential aspect of self care.

Commonly, people with neuropathy wear smaller shoes than they would usually wear as this stimulates larger, undamaged nerves, letting them know their shoes are on. It should be borne in mind that some people may not be able to afford to change their footwear, even if they need to. However, expensive shoes are not necessarily well-fitting shoes.

Top tips for self-care: Footwear with neuropathy

People with neuropathy should be given the following advice regarding footwear:

- ▶ Do not go barefoot; avoid open-toed shoes.
- ▶ Avoid slippers, except to go from the bedroom to the bathroom during the night.
- ▶ Training shoes are good indoor shoes.
- ▶ Laces, buckles or Velcro® straps are essential and should cover the

middle section of the foot.

- ▶ Always check inside the footwear for foreign objects before putting them on.
- ▶ Take shoes off twice a day and inspect feet for reddened areas or rubs.

Regular foot inspections

Here is a brief checklist of what patients should look for when examining their feet daily:

- ▶ Open cuts, wounds, skin splits (around the heels and between the toes), or blisters.
- ▶ Evidence of shoe rubs or localised reddened areas.
- ▶ Signs of infection.
- ▶ Sudden hotness or swelling.
- ▶ Increased skin pinkness or darkness.
- ▶ Sudden changes in foot shape.
- ▶ Bleeding under hard skin.
- ▶ Oozing from between toes or from under a nail.
- ▶ Sudden pain and coldness of the foot or leg.

Conclusion

Foot ulcers, gangrene and lower limb amputations are all complex long-term complications of diabetes. In many instances, they could be avoided by identifying potential harm to the patient and instigating early intervention. The key to self care for the person with diabetes is education and they should be supported by the clinician in this endeavour. It is hoped that the content of this article will provide help towards achieving this goal, thus reducing the burden and suffering caused by diabetic foot complications. **WE**

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