

DIABETIC FOOT ULCERS: PATIENT INFORMATION AND EDUCATION

Diabetic foot ulcers present a significant management challenge for healthcare professionals as well as being a cause of great distress to patients. In severe cases, diabetic foot ulcers can result in amputation. This article examines how healthcare professionals can best improve patients' knowledge of the condition in order that they can take responsibility for their own foot health.

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Diabetes continues to be the underlying cause of many non-traumatic lower extremity amputations, both in the USA and in Europe (Frykberg et al, 2006). Indeed, it has been suggested that every 30 seconds a limb is lost to diabetes somewhere in the world (International Diabetes Federation, 2005).

These figures are even more startling when it is considered that the risk of amputation can be decreased by 49–85% with the implementation of appropriate care strategies, such as regular skin and nail care. This can be carried out by patients themselves, by carers or by a podiatrist if skin or nail pathologies such as calluses, corns or in-growing toenails (onychocryptosis) are present (International Diabetes Federation, 2005).

Another strategy that can reduce diabetic foot problems is the provision of patient information and education. Valk et al (2005) assessed the effectiveness of patient education in the

prevention of diabetes-associated foot ulceration. They found that, particularly in groups at high risk of ulceration, improving patients' knowledge of foot care positively influenced their behaviour in the short-term, for instance they were empowered to take responsibility for their own foot health, potentially reducing the chances of foot ulceration and amputation.

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Healthcare workers have a responsibility to provide structured education and training to all patients, which should be reviewed on a regular basis. This will improve patients' knowledge and understanding of their condition, enable them to undertake more effective self-care and thereby better maintain foot health (Department of Health, 2005). For example, self-care techniques, such as regular washing and drying (particularly between digits), filing toenails and the application of emollients can improve foot health and tissue viability.

Structured education

The National Service Framework for Diabetes (Department

of Health [DoH], 2001) recommends that structured education should be used to improve patients' knowledge and understanding of their condition (DoH, 2005; McIntosh and Newton, 2007). Healthcare workers should focus on developing a partnership with the patient — this can help to reduce the risk factors that contribute to poor foot health and diabetic foot ulcers. Developing a good rapport with the patient may assist in the delivery of health promotion — the following case study illustrates how regular structured education had a positive influence on one patient's behaviour.

Case study

The patient regularly attended the podiatry clinic (for care of skin and nail pathologies) and she had a history of type 2 diabetes, coronary heart disease and chronic lower limb oedema. Due to the oedema it was difficult for Mary to find comfortable footwear — she therefore preferred to wear an old, worn pair of shoes (*Figure 1*). However, these shoes offered little cushioning/shock absorbing support and the inner sole had a ridge that caused a callus on the ball of her foot. As she has sensory neuropathy she was unable to feel either the ridge or the callus, which

Table 1

Foot health and diabetes: what you should advise your patients to do

- ▶ Patients should be encouraged, as far as possible to undertake a daily foot inspection. If they are unable to see their feet, perhaps due to visual impairment, encourage a family member or carer to assist them
- ▶ Encourage patients, their relatives or carers to regularly inspect and feel the inside of shoes for any areas that could rub and cause tissue damage
- ▶ Advice should be given on basic hygiene. Regular washing of feet and careful drying particularly between the toes to reduce the risk of fungal infections, and regular washing of hosiery should be recommended
- ▶ Regular application of emollients can reduce dry skin, callus build up or fissuring (cracking) of the skin. However, advice should be given to avoid the application of emollients to areas between the toes to avoid fungal infections
- ▶ If the patient or their relative/carer notices any breach in the skin they should immediately contact a member of the foot care team for advice
- ▶ Any skin or nail pathologies should always be managed by a podiatrist
- ▶ Patients presenting with normal toenails without pathology should be encouraged and advised on safe self-care. For instance, cutting nails straight across and avoiding cutting into the corners of the nails. It may be more appropriate to advise regularly filing the nails, if possible, to avoid the need to cut toenails and reduce the likelihood of accidental self-harm
- ▶ Encourage the patient to avoid hosiery with seams, or if seams are present, to wear them on the outside to avoid unnecessary rubbing
- ▶ Advise the patient to test the temperature of water before bathing, particularly if they have sensory loss.

could have led to further tissue damage and ulceration. She was reluctant to change her shoes and she had a negative perception of therapeutic footwear — she was adamant that she did not want therapeutic shoes. However, written and verbal health promotion was offered by the podiatrist and various product catalogues were provided. Following a number of regular consultations, where the podiatrist's advice was reinforced,

Table 2

Foot health and diabetes: what you should advise your patients to *never* do

- ▶ Patients should be advised **NEVER** to self-treat calluses or corns with a sharp instrument or with chemical agents such as corn plasters or acid pastes
- ▶ Encourage patients **NEVER** to walk barefoot inside or outdoors to prevent injury
- ▶ Advise patients to avoid the use of hot water bottles, or other warming devices even if their feet feel cold. Slow burns can occur due to sensory loss
- ▶ Patients should be instructed **NEVER** to wear hosiery that is too tight and if possible avoid elastic tops as these can reduce circulation into the foot.

The patient acknowledged the need to maintain her foot health and eventually agreed to purchase some more appropriate footwear (*Figure 2*) before problems such as foot ulceration could develop.

Multidisciplinary education

It is imperative that all members of the multidisciplinary team are involved in the delivery of patient education and generalist healthcare workers can play a significant role. *The International Consensus on the Diabetic Foot* (International Working Group on the Diabetic Foot, 1999) suggests that education should be provided over a period of several sessions and include a mixture of methods, for example verbal and written instructions.

It is also essential to regularly evaluate the effectiveness of the education provided and assess whether the patient has understood the information. This can be achieved on an informal basis during consultations.

Patient-centred education

Healthcare workers must take into consideration any potential

barriers that might prevent the information being understood. For example, patients with poor cognitive function may experience short-term memory loss, with the result that verbal instructions are soon forgotten. Visual impairment, common in patients with diabetes, may also make written advice leaflets ineffective.

Tables 1 and 2 highlight advice that should be provided to patients with diabetes in order to promote foot health and encourage them to self-care (International Working Group on the Diabetic Foot, 1999; McIntosh and Newton, 2005).

Footwear advice

Inappropriate footwear is a major cause of diabetic foot ulceration (International Working Group on the Diabetic Foot, 1999). One study assessing the impact of poorly fitting footwear, found that those who had developed a diabetic foot ulcer were 5.1 times more likely to have been wearing poorly fitting shoes than those who were ulcer free (Nixon et al, 2006).

Appropriate footwear is essential to prevent the excessive pressure, shear and friction that can cause tissue damage and foot ulceration.

At every consultation, the healthcare worker should perform a meticulous examination of the patient's footwear and its suitability. This should be accompanied by education on how to maintain foot health — this will help to minimise the risk of foot ulceration.

When buying shoes, patients should be advised to have their



Figure 1. An example of unsupportive, worn footwear.



Figure 2. An example of appropriate footwear.

feet measured to ensure an appropriate fit. Other factors, such as the depth of the toe box should also be taken into account, particularly if the patient has toe deformities.

Patients with impaired circulation and/or sensation are considered to be at high risk of foot ulceration, particularly if they also have a foot deformity. These patients may benefit from therapeutic footwear to prevent the development of further problems.

When assessing patients' footwear, the International Working Group on the Diabetic Foot (1999) suggests that healthcare workers should provide the following guidance:

- ▶▶ The shoe should not be too tight or too loose
- ▶▶ The inside of the shoe should be 1–2cm longer than the foot
- ▶▶ The internal width of the shoe should be equal to the width of the foot
- ▶▶ The height of the toe box should accommodate the toes.

If there is any doubt regarding the suitability of a patient's footwear, or if the healthcare worker feels that therapeutic shoes are required, a referral to a podiatrist or orthotist should be made for further specialist assessment and management.

Conclusion

All healthcare workers involved in managing patients with diabetes have a responsibility to provide structured education and training on foot health.

Appropriate advice regarding the prevention of foot problems has been shown to positively influence patient behaviour in the short term, which can reduce the risk of foot ulcerations and amputation.

The provision of patient information should be viewed as an ongoing process. Healthcare workers should perform regular reviews to ensure that patients understand the information provided.

Patients and relatives/carers should be instructed on the importance of maintaining their foot health, as improving patients' understanding of their condition empowers them to perform effective self-care measures. **WE**

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