

## Foot Care and Footwear Practices in Patients with Diabetes: Simple Interventions and Adherence to Guidelines May Be Limb Saving

TS Ferguson

Foot complications account for much of the morbidity and disability experienced by persons with diabetes mellitus (1–3). Foot ulcers occur in 15–25% of people with diabetes and amputation rates range between 0.2% and 4.8% (3–6). Foot complications also exact a very high cost on society as a result of the associated mortality, disability and morbidity (1). Major risk factors for diabetic foot complications are peripheral neuropathy, peripheral vascular disease and foot deformity (4, 7); however, improper footwear and inappropriate foot care are thought to be important contributors to these complications (8–12). Many patients with diabetes are uninformed about the basic principles of foot care and often end up with adverse outcomes. This may be a result of unawareness or inertia on the part of their physicians. It is therefore important that physicians be reminded of the importance of this matter and be informed of the recommendations with regards to foot care and footwear.

Foot care recommendations are particularly relevant to the Caribbean, where diabetic foot complications are very common and foot care practices are suboptimal (13, 14). A recent study at the University Hospital of the West Indies (UHWI) in Jamaica found that the prevalence of amputations among patients of the diabetes clinic was 8.5% (15). This rate was higher than all estimates reported in the third edition of the Diabetes Atlas (5). It was also found that only 53% of patients reported having had foot care education, and that fairly high proportions of patients reported foot care and footwear choices that should be avoided (16).

The International Working Group on the Diabetic Foot and other professional bodies have published recommendations for appropriate foot care and choice of footwear which may reduce the risk of foot ulceration and amputations (17–20). These guidelines emphasize that proper foot care and appropriate footwear are important cornerstones in the care of patients with diabetes mellitus. Several points from these guidelines are reiterated here as a reminder to clinicians.

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From: Tropical Medicine Research Institute (Epidemiology Research Unit), The University of the West Indies, Kingston 7, Jamaica

Correspondence: Dr T Ferguson, Epidemiology Research Unit, Tropical Medicine Research Institute, The University of the West Indies, Kingston 7, Jamaica. E-mail: trevor.ferguson02@uwimona.edu.jm

All persons with diabetes should be examined at least once a year for potential foot problems. Patients with demonstrated risk factors should be examined more often, usually at one to six-month intervals. It is important that the patient's feet be examined with the patient lying down as well as standing up and that their shoes and socks are inspected. Foot evaluation should include: history of previous foot ulcer/amputation, presence of neuropathy symptoms, history of claudication or rest pain, examination of the pedal pulses, measurement of ankle brachial index, assessment of the skin colour and temperature, inspection for foot deformity and a sensory assessment. Sensory assessment should include pressure perception using 10 g monofilament, vibration perception using 128 Hz tuning fork, pain perception, light touch and assessment of the ankle jerk. If a single test for sensory assessment should be done, this should be the monofilament. We have shown that this test will pick up 97% of patients with neuropathy (15).

Patients should perform daily feet inspection, including the areas between the toes. If patients are unable to inspect their feet, another person should be asked to do so. Patients should perform regular washing of feet with careful drying, especially between the toes. Water temperature should be tested with the hands before putting their feet in. Patients should not use a heater or a hot-water bottle to warm their feet. Patients should avoid barefoot walking indoors or outdoors and the wearing of shoes without socks. Chemical agents or plasters to remove corns and calluses should not be used. Patients should not wear tight shoes or shoes with rough edges or uneven seams. Both patients and physicians should inspect the inside of the shoes. Socks should be changed daily and should not be tight or knee high. Lubricating oils, lotion or creams should be used for dry skin, but should not be applied between the toes. Patients should wear stockings with seams inside out or preferably without any seams. Nails should be cut straight across, while corns and calluses should be treated by a healthcare provider. Patients should be made aware of the need to ensure that their feet are examined regularly by a healthcare provider and should be advised to notify their doctor immediately if a blister, cut, scratch, or sore has developed.

Patients without loss of protective sensation can select off-the-shelf footwear; however, these shoes should not be too tight or too loose. The inside of the shoe should be 1–2

cm longer than the foot itself and the internal width should be equal to the width of the foot at the site of the metatarsophalangeal joints. The height of the shoe should allow enough room for the toes, taking into account any deformities that may be present. If the fit is too tight because of deformities or if there are signs of abnormal loading of the foot, patients should be referred for special footwear.

These recommendations are quite simple and can be communicated to patients in a single encounter or over several encounters. This article serves as a reminder of our duty to educate and empower patients in the care of their diseases. Adherence to these guidelines will go a long way in reducing the burden of diabetic foot complications and will save the feet of many patients.

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