



## Best Practices Using Footwear to Treat DFUs

We can lengthen the time until these ulcerations recur.

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### Considering Healed DFUs to Be “In Remission”

In the June 17, 2017 issue of the *New England Journal of Medicine*, David Armstrong, Andrew Boulton, and Sicco Bus promoted the concept of shifting the focus of attention from healing foot ulcers to putting greater emphasis on their recurrence and time until subsequent breakdown.<sup>1</sup> This is based on the frequency of re-ulceration, the likelihood of recurrence, the time and cost that wound healing treatment entails, and the association of wound recurrence with increased mortality. Armstrong, et al.'s message is based on the understanding that once a foot wound has healed, the likelihood of it recurring within a year is 40% and 75% within five years.<sup>2</sup> The median time to healing for diabetic wounds of the toe, midfoot, and heel is 237 days.<sup>3</sup> The relative five-year mortality rate after limb amputation is

68%. When compared with cancer, it is second only to lung cancer (86%). Colorectal cancer is 39%, breast cancer is 23%, Hodgkin's disease is 18%, prostate cancer is 8%.<sup>4</sup> This perspective of the value of delaying re-ulceration places increased importance on podiatrists' role as the leaders in providing diabetic foot care and as the most common prescribers of therapeutic footwear.

### Factors Contributing to the High Rate of DFU Recurrence

The use of diabetic footwear has

motivational encouragement to wear protective shoes at all times. In the study group, more steps were taken at home than outside. The longer the time from when shoes were provided, the less likely patients were to wear them. This could be improved by reiterating regularly and frequently the importance of the shoes being worn.<sup>5</sup>

Shoes can only be effective at preventing the occurrence of diabetic foot ulceration when they are worn, and thus patients need to be encouraged to have more than one pair, each appropriate for a different situation. Most im-

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been shown to be effective in reducing the incidence of diabetic foot ulcerations. To be most effective, it must be worn at least 60% of the time. Unfortunately, patients are frequently not receptive to being fit with shoes even when provided footwear at little or no cost, and even when fit, patients wear shoes sporadically. The style and appearance of shoes have been commonly blamed for this poor compliance. A patient's decision to wear diabetic footwear is based mostly on the perceived value of the shoe.<sup>5</sup>

A recent article in the *Journal of the American Podiatric Medical Association* compares how much patients at risk for ulceration walk at home versus outdoors and also the effectiveness of

portantly, since for many, the majority of steps are taken in the home, patients must be convinced of the importance of wearing protective footwear while indoors.

### Foot Care Interest Group Task Force Recommended Examination

Since 2008, the Task Force of the Foot Care Interest Group of the American Diabetes Association has recommended that all patients with diabetes have an ulcerative risk assessment that should include:

#### Dermatologic:

Skin status: color, thickness, dryness, cracking, seating

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Infection:

A check between toes for fungal infection

Ulceration:

Calluses/blistering: hemorrhage into callus?

Musculoskeletal:

Deformity, e.g., claw toes, prominent metatarsal heads, Charcot joint, muscle wasting (guttering between metatarsals)

Neurological Assessment:

10-g monofilament plus one of the following

- vibration using 128-Hz tuning fork
- pinprick sensation
- ankle reflexes
- VPT

Vascular assessment:

Foot pulses, ABI, if indicated

Based on the University of Texas Foot Risk Categorization Protocol, patients with a history of ulceration are categorized as Level 3, and as such, should have bi-monthly foot examinations.<sup>6</sup>

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## Applying Footwear Findings to Extend Time Before Ulceration Recurrence

To leverage the benefits of therapeutic shoes and podiatric visits, Armstrong says physicians must begin talking with their patients about severe complications the way they talk with their patients about cancer, and emphasize that with new technologies and continuous care, such as careful dosing of physical activity, remission can be prolonged. "The real idea here is for physicians to help people move through their world a little better and give them more ulcer-free days and more activity-rich days," Armstrong says. "We want to keep our patients moving, so they're not on the sidelines of life."<sup>1</sup>

Podiatrists should take the opportunity, at each bi-monthly foot evaluation visit, to reiterate the importance of wearing therapeutic shoes, all the time. Diabetics who are at high risk for foot ulceration show clinically meaningful short-term positive effects from motivational interviewing on adherence to wearing prescribed custom-made footwear at home, where walking activity is higher than away from home. Such effects were not seen in patients who receive standard education.<sup>5</sup>

## Suggested Protocol for Increasing Effectiveness of Diabetic Shoe Fitting

1) Schedule patients with a history of foot ulceration for bimonthly ulcerative risk assessment.

2) On an annual basis, patients with Medicare should be prescribed a pair of shoes and three pair of accommodative inserts.

3) Ensure that patients are only wearing shoes that have been expertly fit and that are worn with accommodative inserts. Patients should have different style shoes to participate in their various activities: dress shoes, walking shoes, casual shoes, gardening shoes, etc. Even while Medicare covers the cost of one pair of shoes per calendar year, patients should not compromise their foot health by only wearing prescribed shoes some of the time.

4) Emphasize the importance of patients wearing protective footwear in the house.

5) Replace shoes/inserts that demonstrate excessive wear.

6) Repeat the above year after year.

## How Practices Can Promote Patient Self-Care to Increase Time Before DFU Recurrence

Everyone in the practice can play a role in promoting activities intended to improve patients' mobility and quality of life. Patients should get the message that there are things that they can do to free themselves from the burden of a non-healing wound and enjoy more of what life has to offer.

It has been demonstrated that motivational interventions can be effective but short-lived. This suggests the need for ongoing reminders. Consider providing "diabetic shoes" to the people working in the practice so that they can be "brand ambassadors" emphasizing to patients how much they like their shoes and how important it is for patients to keep wearing theirs. When people working in the practice wear the same style shoes that are being prescribed, patients get the message that their condition doesn't mean that the shoes they wear need be different from those worn by people not battling foot ulceration. Patients get a better way to see how good shoes look compared to when viewed in catalogs.

There are opportunities for practice employees to address reasons why patients are disinclined to want "orthopedic shoes". Issues that patients may communicate could include that shoes previously prescribed never fit properly, looked longer and deeper than shoes commonly worn, were unfamiliar brands, don't coordinate with the patient's wardrobe and are hard to put on.

There is the opportunity to insert phases on patient communications that reiterate the spirit of the practice and its emphasis on improving the quality of patients' lives:

"Shoes intended to start and end your day with."

"The most important person you have to impress is yourself."

"Wear these shoes inside so that you don't lose the opportunity to walk outside."

Practices can benefit by featuring photographs of patients engaging in fun activities and traveling to distant places, always featuring the shoes prescribed by the office. Patients should be reminded what they will miss when burdened by foot ulceration, and what they can enjoy by remaining wound-free.

More often than not, patients who are fit with shoes one year are not refit the next. Medicare covers the cost

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of replacement shoes each calendar year. Practices should have a recall process to ensure that happens on an annual basis. Patients get fit with shoes that are appropriate for different situations know to look forward to new shoes year after year.

There's reason for optimism that while the incidence of diabetes continues to grow, the devastating effects of foot ulceration and limb amputation can be curbed by more effectively addressing factors contributing to patient and practitioner non-compliance with recommended treatment protocols. Instituting a structured diabetic foot program can yield a 75% reduction in amputation rates and a near four-fold reduction in inpatient mortality.<sup>7</sup> When foot care is removed from a population with diabetes, there is a 37% increase in hospital admissions for limb threatening wounds and a 45% increase in individual patient charges.<sup>8</sup>

It's complicated to align the desires of patients, practitioners, medical staff, payers, and manufacturers. Given the room for improvement by more effectively coordinating shoe fitting with frequent foot evaluations, the goals remain: patients enjoying longer and better-quality lives, healthcare providers delivering better, more systemized, profitable care, and insurer cost savings. **PM**

## References

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- <sup>2</sup> Pickwell, et al., *Diabetes Metab Res Rev*, 2013.
- <sup>3</sup> Armstrong, et al, *International Wound Journal*, 2007.
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- <sup>5</sup> Renske Keukenkamp, Maarten J.

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<sup>6</sup> *Diabetes Care* 2008 Aug; 31(8): 1679-1685.

<sup>7</sup> Weck, et al., *Cardiovascular Diabetology*, 2013.

<sup>8</sup> Skrepnek, Mills, Armstrong, *Diabetes Care*, 2014.



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