



Never say never again

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I would like to thank Neil Baker for his excellent time so far as editor of the Diabetic Foot Digest section. However, for this issue, I am back, and hopefully not just for a poor remake of Thunderball.

Before discussing the actual content of the papers this quarter, I would like to discuss the continuing rise in the estimated lifetime prevalence of foot ulceration among the diabetes population. Crews et al quote last year's Armstrong et al (2017) paper, which now puts the estimated cumulative lifetime prevalence of foot ulceration as high as 34%, which was 15% 20 years ago (Reiber et al, 1998). While not everyone is referred, I do find it hard to understand how one in three individuals with diabetes will develop a foot ulcer. This may be true in selected secondary care populations, or those without universal health care or low access to rates to healthcare, but in Scotland, where there is a national population database, the data would suggest otherwise. Since population screening for risk factors for diabetes foot ulceration was introduced, the percentage of low-risk patients has increased to nearly 80% of the diabetes population as more patients are diagnosed with relatively low HbA_{1c} levels (NHS Scotland, 2016) and the prevalence of past or present foot ulceration has remained static at around 4.7% of the total diabetes population. The mathematical model used to work out the possible lifetime prevalence needs to be validated by more real-world data or else we will need to have even bigger foot clinics!

The Crews et al paper concentrates, as do most, on plantar offloading. It includes a wide ranging review of modalities and some interesting information that was new to me. Adherence remains a major problem, particularly with removable devices, and one way in which that might be improved is by using ankle-length walkers (moon boots), which in one study were as effective as knee-length ones at offloading, while being less heavy and more acceptable to patients. This is something I will trial in my clinic.

The same is unlikely to be true for amniotic membrane dressings. As the systematic review by Paggiaro reports, there is some evidence of reducing wound sizes using these dressings, but no statistical evidence of improved healing rates, which contrasts with last year's review (Haugh et al, 2017), which lead in part to their inclusion in NICE guidance. Having lived through the era of previous skin substitutes, I will wait for clearer evidence before I use them. ■

Armstrong DG, Boulton AJ, Bus SA (2017) Diabetic foot ulcers and their recurrence. *N Engl J Med* 376(24): 2367–75

Haugh AM, Witt, JG, Hauch, A et al (2017) Amnion Membrane in Diabetic Foot Wounds: A Meta-analysis. *Plast Reconstr Surg Glob Open* 5(4): e1302

NHS Scotland (2016) *Scottish Diabetes Survey*. NHS Scotland, Edinburgh. Available at: <http://bit.ly/2wLd4Ce> (accessed 16.03.2018)

NICE (2018) *EpiFix for Chronic Wounds*. NICE, London. Available at: <http://bit.ly/2pifwKs> (accessed 16.03.2018)

Reiber GE, Lipsky BA, Gibbons GW (1998) The burden of diabetic foot ulcers. *Am J Surg* 176: 5S–10S

Gerontology

Recent advances and future opportunities to address challenges in offloading diabetic feet: a mini review

Readability ////

Applicability to practice ////

WOW! Factor ////

1 Diabetic foot ulcers (DFUs) present a large problem in the geriatric population. Tissue breakdown associated with DFU is normally a by-product of repetitive cycles of physical stress, which is placed on the feet through weight-bearing activity. Offloading is a key facet of healing and preventing DFUs as it redistributes physical stress away from bony prominences, as well as other high-stress locations.

2 The authors decided to undertake a review of offloading in the literature, as well as any relevant technological advances in this field.

3 The authors focused on a range of topics relating to the offloading of diabetic feet, including how to achieve optimal offloading, adherence issues pertaining to offloading, optimising the patient's experience, dosing activity/physical stress and thermal monitoring.

4 The research undertaken found an association between the perceived benefits of offloading shoes and adherence, which could point towards improved patient education improving adherence levels. Additional research is needed on this as there is currently a heavy reliance on self-reported adherence measures, while adherence remains a challenge. Improvements in user experience may result in improved adherence.

Crews RT, King AL, Yalla SV, Rosenblatt (2018) Recent Advances and Future Opportunities to Address Challenges in Offloading Diabetic Feet: A Mini-Review. *Gerontology* doi: 10.1159/000486392. [Epub ahead of print]

J Wound Care

Biological effects of amniotic membrane on diabetic foot wounds: a systematic review

Readability ✓✓✓✓
 Applicability to practice ✓✓
 WOW! Factor ✓✓

- 1 The biological properties related to the amniotic membrane have been found to be valuable to the wound healing process associated with diabetic foot ulcers (DFU). The authors conducted a literature review relating to the use of the amniotic membrane to stimulate DFU healing.
- 2 The following search terms were used by the authors: 'placenta' 'diabetic foot' 'amniotic membrane' and biological dressing', while assessing 'wound healing' and 'wound healing time', in DFUs. Numerous randomised controlled trials (RCT) were identified, while the risk of bias was analysed according to the Cochrane risk of bias tool. A meta-analysis of the two outcomes was then undertaken to evaluate the available evidence.
- 3 Six clinical trials were identified, encompassing 331 patients, with the authors finding that wound healing in patients treated with amniotic membrane occurred 2.32 times more frequently than those treated with conventional dressings, while healing was 32 days faster.
- 4 Although no statistical evidence was found to definitively support amniotic membrane use in comparison with conventional dressings, the use of amniotic membrane treatment resulted in quicker healing times in a large number of DFUs.

Paggiaro AO, Menezes AG, Ferrassi AD et al (2018) Biological effects of amniotic membrane on diabetic foot wounds: a systematic review. *J Wound Care* 27(Suppl 2): S19–S25

Ther Adv Cardiovasc Dis

Patency of the arterial pedal-plantar arch in patients with chronic kidney disease or diabetes mellitus

Readability ✓✓✓
 Applicability to practice ✓✓✓
 WOW! Factor ✓✓

- 1 Considering that the patency of the pedal-plantar arch restricts the risk of amputation in patients with peripheral artery disease (PAD), the authors examined a large number of patients without chronic kidney disease (CKD)/diabetes mellitus (DM), as well as those with DM without CKD, and individuals with CKD without DM.
- 2 The authors used uni- and multivariate logistic regression in order to assess the link between CKD with a loss of patency of the pedal-plantar arch and the presence of tibial or peroneal vessel occlusion.
- 3 On assessing 419 patients for pedal-plantar arch patency and atherosclerotic occlusion of BTK arteries, CKD was found to almost double the unadjusted odds ratio (OR) for loss of patency of the pedal-plantar arch. Following adjustment, the association remained significant for severe CKD, while CKD was not related to risk of tibial or peroneal artery occlusion, but DM was.
- 4 Severe CKD was indicated as a vascular risk factor in the subgroup of PAD patients who were deemed at risk for pronounced below-the-ankle artery disease. Specific atherosclerotic disease patterns of patients with CKD and 'nephropathic' foot ischemia may have implications in relation to contemporary endo-vascular revascularisation strategies; this requires further research.

Haine A, Haynes AG, Limacher A et al (2018) Patency of the arterial pedal-plantar arch in patients with chronic kidney disease or diabetes mellitus. *Ther Adv Cardiovasc Dis* 1:1753944718756605.

Diabetes Care

Limb- and person-level risk factors for lower-limb amputation in the Prospective Seattle Diabetic Foot Study

Readability ✓✓✓✓
 Applicability to practice ✓✓✓✓
 WOW! Factor ✓✓✓

- 1 Although diabetes is the leading cause of nontraumatic lower-limb amputations in the US, there has, to the authors' knowledge, been no research undertaken on the link between limb-specific measurements and amputation risk among patients without a foot ulcer. The authors looked into amputation risk by limb, using similar limb- and person-level factors.
- 2 A prospective study was conducted among 1,461 male patients with diabetes without foot ulceration. A total of 2,893 lower limbs were examined among subjects recruited between 1990–2002 in a veterans affairs General Internal Medicine Clinic. A range of patient information was collected, including demographic, lifestyle, lower-limb measurements and diabetic characteristics among others.
- 3 With 136 amputations taking place in this population, a multivariable Cox model identified a range of independent risk factors, including sensory neuropathy, 1-SD decrease in eGFR, poor vision, body weight in 21.4-kg increments, and age.
- 4 The only limb-specific risk factors for amputation that emerged were arterial disease and neuropathy, although the authors found that these factors and person-level factors may be responsive to prevention or treatment interventions.

Boyko EJ, Seelig AD, Ahroni JH (2018) Limb- and Person-Level Risk Factors for Lower-Limb Amputation in the Prospective Seattle Diabetic Foot Study. *Diabetes Care* doi: 10.2337/dc17-2210. [Epub ahead of print]

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