Lower limb complications

What difference does it make?

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For the vast majority of people with diabetes foot ulceration, ulcer healing can be achieved with debridement, off-loading, infection control and re-vascularisation when required. In my view, the biggest challenges for the 21st century diabetes foot care team are reducing the substantial mortality of people with diabetes foot ulcers, a topic I return to time and again in these columns (see Young, 2015), and preventing the recurrence of ulceration.

The most recent review on the subject of death after ulceration is by Jupiter et al (summarised alongside). The authors systematically reviewed the literature and reported high mortality rates after foot ulceration, over 40% at 5 years. Being male, having peripheral arterial disease and renal problems all increased mortality. Sadly, in 2015 things are only marginally better in most centres than they were in 1995.

Primary prevention of ulceration is a topic that is also frequently discussed in these columns. There is no clear evidence that it reduces ulceration, and this has threatened primary preventative podiatric care in many NHS trusts across the UK. The latest paper on this topic by Gibson et al (summarised opposite) confirms my own beliefs about the value of primary preventative podiatric care in individuals with risk factors for ulceration, but who have not yet ulcerated.

It may be true that we cannot stop individuals from developing ulcers. Many of the causes of ulceration in our patients are either bizarre (for example, hammering a nail through their own foot by accident) or so mundane and ingrained in behavioural patterns (e.g. bad shoes) that it is not surprising that they cannot be stopped even with comprehensive screening and attempts at foot care education. However, papers including Kennon et al (2012) have shown a reduction in amputation rates as screening programmes roll out. Gibson et al suggest that this is because people with risk factors for ulceration and in regular podiatric care are less likely to have amputations and be admitted to hospital. Presumably, they are identified earlier and managed quicker before the ulcers get substantially worse. Foot protection services may not prevent ulceration, but they are remarkable value for money if they can reduce amputations and are definitely worth the investment. ■

Kennon B, Leese GP, Cochrane L et al (2012) Reduced incidence of lower-extremity amputations in people with diabetes in Scotland: a nationwide study. *Diabetes Care* **35**: 2588–90

Young M (2015) The message. *Diabetes Digest* **14**: 30–1

Int Wound J

Systematic review: Ulceration and mortality

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

1 There is a belief that limb amputation of people with diabetic ulceration may be a proximal cause of death. The authors sought to investigate whether this was true via a systematic review of the literature.

2 Ovid, CINAHL and the Cochrane Central Database were searched for articles published between 1980 and 31 January 2013 on diabetic ulceration or peripheral vascular disease (PVD) and death.

3 The inclusion criteria included original research articles with 5 years of follow up data, or Kaplan–Meier estimates of 5-year mortality.

4 Twelve articles were selected for systematic review and there was heterogenity in patient groups and methodology (including how the 5-year mortality was calculated – the primary outcome). This made it difficult for the authors to interpret the findings.

5 Although the demographic was varied, most patients were in their mid-60s and predominately had T2D. The majority of the people included were male.

6 The 5-year mortality rates after ulceration were around 40%, and the risk factors identified were generally increased age, male gender, PVD and renal disease.

7 The authors emphasise the importance of an aggressive approach to the underlying disease, in the hope that it will become irrelevant to determine whether it is diabetes, ulceration or amputation that is most associated with mortality.

Jupiter DC, Thorud JC, Buckley CJ et al (2015) The impact of foot ulceration and amputation on mortality in diabetic patients. I: From ulceration to death, a systematic review. *Int Wound J* 20 Jan [Epub ahead of print]

Int Wound J

Podiatrist care and outcomes

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

1 The authors examined whether outcomes in care among people with diabetes and foot ulceration differed between those who received pre-ulcer care from podiatrists and those who did not. The outcomes measured were lower extremity amputation, major amputation and hospitalisation.

2 Participants were sampled from America and were all insured: 27 545 people were aged 65 years or greater, and 20 208 people were aged less than 65 years. Podiatric care was defined as one or more visits to a podiatrist during the year prior to the index foot ulcer.

3 Podiatric care in the year before a diabetic foot ulcer was associated with a lower hazard of lower extremity amputation, major amputation and hospitalisations than no care.

4 Those that received podiatric care tended to be older and sicker, and a higher percentage of women and those living in urban areas were more likely to receive podiatric care than those that did not.

5 Patients receiving care from podiatrists had a significantly longer length of time to amputation than those who did not receive care, regardless of the type of medical insurance.

Gibson TB, Driver VR, Wrobel JS et al (2014) Podiatrist care and outcomes for patients with diabetes and foot ulcer. *Int Wound J* **11**: 641–8

J Diabetes Complications

Depression: A risk factor for diabetic foot ulcers?

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

1 The aim of the study was to determine whether depressive symptoms increased the risk of diabetes and diabetic foot ulceration.

2 The cohort was from the Nord-Trøndelag Health Study (HUNT), and comprised 36 031 people followed for 11 years (34 616 people without diabetes; 1331 people with diabetes not reporting a foot ulcer; and 84 people with diabetes reporting a foot ulcer). Depressive symptoms were assessed by the Hospital Anxiety and Depression Scale (HADS-D subscale).

3 Logistic regression was used to investigate the effect of depressive symptoms on the development of diabetes and of foot ulceration.

4 Unadjusted odds for reporting diabetes at follow-up was higher among individuals who reported a HADS-D score ≥8 at baseline (odds ratio=1.30; 95% confidence interval, 1.07–1.57) than among those reporting a lower score. The association was no longer significant after adjustment.

5 The odds of developing a foot ulceration was almost double for those with a HADS-D of between 8 and 10, and was three times higher for those with a HADS-D score ≥11 compared to those with a HADS-D score below 8 (after adjustment).

6 Depressive symptoms at baseline were associated with an increased risk of foot ulceration in a dose-response manner during this 11-year follow-up.

Iversen MM, Tell GS, Espehaug B et al (2015) Is depression a risk factor for diabetic foot ulcers? 11-years follow-up of the Nord-Trøndelag Health Study (HUNT). *J Diabetes Complications* **29**: 20–5

Diabetes Metab Res Rev

Evaluation on the systems stratifying by risk

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

1 Eleven systems developed for lower extremity amputation prediction in people with diabetes were evaluated for their accuracy: CHS, DEPA scoring system, DUSS, IDSAIWGDF classification, Margolis et al. classification, Meggitt–Wagner classification, SEWSS, SIGN, SINBAD score, TUC and Van Acker–Peter classification.

2 A cohort of 293 Portuguese people with active ulceration had their baseline characteristics measured and then the predictive value of each variable and each system's prognosis were analysed.

3 The mean age of the participants was 67.6 years (±11.7); 64.3% were male, 98.3% had T2D and 49.1% used insulin.

4 During a median follow-up of 91 days, ulcers healed among 62% of participants. Major amputations occurred in 7% and minor amputation occurred in 17% of participants.

5 The authors concluded that the available systems present similar and substantial accuracy and typically present sensitivity values of ≥80% and negative likelihood ratios ≤0.5 for the highest risk group.

6 All of the classifications' stages, grades or overall prognostic were highly associated with the overall lower extremity amputation occurrence (all $P<0.001$, except for SIGN: $P<0.05$).

7 The most important predictive variables associated with lower extremity amputation were peripheral arterial disease, previous diabetic foot ulceration, multiple diabetic foot ulcerations, infection and gangrene.

Monteiro-Soares M, Martins-Mendes D, Vaz-Carneiro A, Dinis-Ribeiro M (2014) Lower-limb amputation following foot ulcers in patients with diabetes: classification systems, external validation and comparative analysis. *Diabetes Metab Res Rev* 20 Dec [Epub ahead of print]

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