

Lower limb complications



The message

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This quarter's papers highlight the continuing message that people with diabetes foot ulcers (DFU) are the most vulnerable diabetes patient group as they have a substantially greater mortality than individuals without ulceration. Martins-Mendes et al (summarised below) report that foot ulceration is more than just a marker of complication status: it is an independent factor in determining mortality rates. Something that I have wanted confirming for some time.

Secondly, Brownrigg et al (summarised alongside) report that all-cause mortality is four times greater, and the presence of cardiovascular disease is 2.5 times greater for people with DFU than matched non-ulcer individuals. However, surprisingly, the proportion of deaths due to cardiovascular disease (CVD) in their cohort was less than 20%. In my own study (Young et al, 2008), this was nearer to 75%, which is more in keeping with the causes of death in people with type 2 diabetes overall and with the findings of Bergis et al (summarised on the opposite page) who reported that, in their participants, coronary heart disease (CHD) was the most important factor to determine survivability.

Many commentators on diabetes foot care are calling for increased attention to be paid to the cardiovascular risk of people with DFU, and Bergis et al join this group. They could perhaps have been a little more definite in their conclusion, rather than just saying "For optimal management of Charcot neuro-osteoarthropathy, adequate diagnostics and treatment of CHD [...] should be considered".

The paper by Brooke et al (summarised on the opposite page) further adds to this movement; they determined that the more general diabetes care the CVD cohort of participants received following lower extremity revascularisation procedures, the less likely they were to lose limbs or be admitted to hospital post-operatively.

The aim of the multidisciplinary team approach to diabetes foot care is in healing ulcerations, but we can also aim to provide good general diabetes and cardiovascular risk management. This is a message that is growing but needs to go further. ■

Young MJ, McCardle JE, Randall LE, Barclay JI (2008) Improved survival of diabetic foot ulcer patients 1995-2008: possible impact of aggressive cardiovascular risk management. *Diabetes Care* 31: 2143-7

J Vasc Surg

Influence of foot ulceration on all-cause and cause-specific mortality

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

1 The authors hypothesised that the presence of diabetic foot ulceration (DFU) may signal an increased risk of cardiovascular mortality among people with diabetes.

2 Therefore, they chose to compare the odds of all-cause mortality in people with diabetes and DFU, to people with diabetes and no history of DFU (control group). The cause of death among adults was also compared.

3 A secondary study aim was to determine the strength of the association of DFU with cardiovascular and non-vascular mortality.

4 A total of 869 people were included in the UK study (433 in the DFU group and 436 in the control group).

5 The median follow-up was 3.6 years, and the association between DFU and all-cause mortality was evaluated by Cox regression.

6 After adjustment for potential confounders, DFU was associated with both cardiovascular disease (hazard ratio [HR] 2.53; 95% confidence interval [CI], 0.98-6.69; $P=0.05$) and all-cause mortality (HR 3.98; 95% CI, 2.55-6.21; $P<0.001$).

7 The proportion of deaths attributable to cardiovascular disease was similar between groups (18% with diabetes only and 19% with diabetes and DFU; $P=0.91$).

8 DFU is associated with premature death from vascular and non-vascular causes.

Brownrigg JR, Griffin M, Hughes CO et al (2014) Influence of foot ulceration on cause-specific mortality in patients with diabetes mellitus. *J Vasc Surg* 60: 982-6

J Diabetes Complications

DFU contribution to LEA and mortality risk

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

1 The authors aimed to estimate the 3-year risk for diabetic foot ulcer (DFU), lower extremity amputation (LEA) and death, and to determine the association between the three.

2 A retrospective cohort study was carried out including data from

people visiting a clinic from 2002 and 2010. People were excluded if they had an active DFU when attending the clinic for the first time.

3 The cohort of 644 people was followed for a median of 36 months. In the cohort, the cumulative incidence was 26.6% for DFU, 5.8% for LEA and 14.0% for death.

4 Previous incidence of DFU was associated with LEA and mortality. The authors conclude that DFU occurrence has a major and independent impact on LEA and death, even when adjusted for baseline characteristics.

Martins-Mendes D, Monteiro-Soares M, Boyko EJ et al (2014) The independent contribution of diabetic foot ulcer on lower extremity amputation and mortality risk. *J Diabetes Complications* 28: 632-8

Ann Vasc Surg

Improving outcomes: Outpatient care

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

1 A retrospective cohort study was performed to investigate whether geographical regions where individuals received more frequent high-quality outpatient care performed better in post-operative outcomes after open and endovascular lower extremity revascularisation for critical limb ischemia (CLI). The cohort comprised 172 134 people (84 652 with diabetes).

2 Frequency of post-operative diabetic testing was compared to amputation-free survival, major adverse limb events and rates of readmission across all US hospital referral regions.

3 Individuals with diabetes who underwent lower extremity revascularisation in regions with higher utilisation of outpatient diabetic care quality measures had significantly better long-term limb salvage and readmission outcomes.

4 The study emphasises the importance of optimal outpatient care for people undergoing this procedure.

Brooke BS, Kraiss LW, Stone DH et al (2014) Improving outcomes for diabetic patients undergoing revascularization for critical limb ischemia: does the quality of outpatient diabetic care matter? *Ann Vasc Surg* **28**: 1719–28

Acta Diabetol

Charcot neuro-osteoarthropathy

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

1 Charcot neuro-osteoarthropathy (CN) is a complication of diabetic foot syndrome and is associated with inflammation of the foot and life-threatening musculoskeletal deformities.

2 In a diabetes specialist hospital in Germany, 111 people were enrolled and followed over a 15-year period. Data were collected with patient and

clinician questionnaires.

3 Presence of CN was significantly associated with diabetic retinopathy ($P=0.032$) and plantar ($P<0.001$), tarsal ($P=0.032$) and middle-foot ulcers ($P=0.01$). There was also a significant correlation between the presence of CN and history of amputation.

4 Coronary artery disease (CHD) was an independent predictor of mortality for people with CN, and median overall survival was significantly shorter in people with CN and CHD than people without CHD (7.8 vs 13.1 years, respectively; $P=0.0045$).

Bergis D, Bergis PM, Hermanns N et al (2014) Coronary artery disease as an independent predictor of survival in patients with type 2 diabetes and Charcot neuro-osteoarthropathy. *Acta Diabetol* **51**: 1041–8

Diabetes Medicine

The Ipswich Touch Test at home

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

1 The Ipswich Touch Test, also known as the Touch the Toes Test, is an integral part of the Diabetes UK “Putting Feet First” campaign.

2 The aim of this study was to determine whether the test could be used correctly by family members and carers in the home environment to test for signs of neuropathy in people

at risk.

3 Invitations to attend the foot clinic were sent and contained detailed instructions of the test and a sheet for recording the results. The findings were compared with those obtained in the clinic by a healthcare professional at a later date using a 10 g monofilament at the same six sites (first, third and fifth toes of both feet).

4 The touch test can be used by non-professionals and helps in the early detection of “at risk” individuals, as well as raising the awareness of the tester for diabetes complications.

Sharma S, Kerry C, Atkins H, Rayman G et al (2014) The Ipswich Touch Test: a simple and novel method to screen patients with diabetes at home for increased risk of foot ulceration. *Diabet Med* **31**: 1100–3

Diabetes Care

Antibiotic therapy for diabetic foot osteomyelitis

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

1 A multicentre, open-label controlled randomised study was carried out to compare 6- and 12-week antibiotic treatments for non-surgically treated diabetic foot

osteomyelitis (DFO) to find the optimal duration of therapy.

2 Remission of DFO during the monitoring period was defined as complete and persistent (>4 weeks) healing of the wound (if present initially), absence of recurrent infection at the initial site or that of adjacent rays, and no need for surgical bone resection or amputation at the end of a follow-up period of at least 12 months after completion of antibiotic treatment.

3 Forty individuals followed at five French general hospitals were randomised over a 2-year period, with 20 participants treated with antibiotics

for 6 weeks and 20 participants treated for 12 weeks.

4 Remission occurred in 26 (65%) participants: 12 in the 6-week group and 14 in the 12-week group. There was no significant difference between those treated for 6 versus 12 weeks ($P=0.50$).

5 The results of the study suggest that a 6-week course of antibiotics may be sufficient for people for whom non-surgical treatment is considered best.

Tone A, Nguyen S, Deveryn F et al (2015) Six-week versus twelve-week antibiotic therapy for nonsurgically treated diabetic foot osteomyelitis: a multicenter open-label controlled randomized study. *Diabetes Care* **38**: 302–7

“The study emphasises the importance of optimal outpatient care for people undergoing lower extremity revascularisation for critical limb ischemia.”