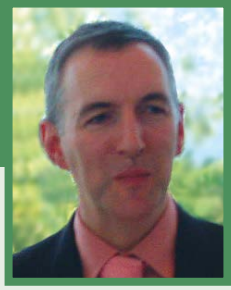
Lower limb complications



Simply the best

Matthew Young
Consultant Physician, Edinburgh Royal Infirmary, Edinburgh

We often strive for quick, effective, ways to treat or detect the early signs of a condition. Over the past 30 years, the detection of loss of protective sensation and vascular insufficiency sufficient to increase risk of foot ulceration in individuals with diabetes has been the basis of primary prevention programmes. A variety of screening methods have been tested over the years. A recent study by Crawford et al (of which I have the privilege of being a co-author and summarised alongside) has hopefully provided the definitive answer on this subject.

Individual patient data (IPD) analysis is where all the original data from source studies, in this case 16 studies of modalities to detect foot ulcer risk, are combined and reanalysed using the original data points to determine the answer to a research question. The combined dataset had 16 000 individuals. Potential predictors of foot ulceration ranged from gender to renal function.

In the end, the single most effective test of loss of protective sensation was the inability to detect a 10 g monofilament, and, interestingly, the location or number of sites did not appear to be important. Similarly the absence of single foot pulse was also predictive of increased risk. Conversely, being female reduced the risk of future ulceration. However, in keeping with all that clinical experience would tell us, a history of previous foot ulceration or amputation was the strongest single predictor of future ulceration.

Therefore two simple questions and two simple tests can provide the best way to determine a patient's risk of foot ulceration and allow tailored preventative care to be provided.

I would also like to mention two other studies, both summarised on the opposite page. Sadoskas et al lend excellent support to the maintenance of good diabetes control peri-operatively in order to reduce the risk of surgical infections, and Chu et al take a different look at the ongoing issue around antibiotic therapy duration. Their study suggests that, if there is peripheral arterial disease and moderate infection, then longer courses of antibiotics might be more effective at aiding healing and reducing amputations than short courses, but as always, further studies will be required. ■

Health Technol Assess

Systematic review of prognostic factors for foot ulceration

No scores published as Matthew Young is an author of this paper

1 A systematic review and meta-analysis was conducted to better understand the prognostic factors of foot ulceration in people with diabetes using worldwide individual patient data (IPD).

2 EMBASE and MEDLINE databases were searched for articles investigating predictive factors of foot ulceration and 16 cohort studies were selected and IPD was obtained for 10 of them. The IPD comprised data for 16 000 individuals from around the world.

3 The meta-analyses based on all the IPD data found that a previous history of ulceration, an inability to feel a 10 g monofilament test, at least one absent pedal pulse and a longer duration with a diagnosis of diabetes all were predictive of an increased risk of foot ulcerations. Female sex was a factor that was protective.

4 In people who did not have a previous history of ulceration or amputation, predictive risk factors were an inability to feel a 10 g monofilament test, at least one absent pedal pulse and a longer duration with a diagnosis of diabetes.

5 The 10 g monofilament test is an efficient prognostic tool as it is quick, simple, cheap and has the most consistent results. The authors propose the development of a standardised clinical prediction rule to include insensitivity to a 10 g monofilament, absent pedal pluses and a history of ulceration or lower limb amputations.

Crawford F, Cezard G, Chappell FM et al (2015) A systematic review and individual patient data meta-analysis of prognostic factors for foot ulceration in people with diabetes: the international research collaboration for the prediction of diabetic foot ulcerations (PODUS). *Health Technol Assess* **19**: 1–210

Foot Ankle Spec

Hyperglycaemia and peri-operative infections

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

1 Hyperglycaemia has been linked to an increased risk of surgical site infections (SSI) post-surgery. The authors aimed to determine whether hyperglycaemia increased the risk of SSI in people with diabetes undergoing foot or ankle surgery.

2 In total, 348 consecutive inpatients after surgery were retrospectively evaluated. Hyperglycaemia was defined as ≥200 mg/dL (≥11 mmol/L) and the inpatients were split into two groups.

3 Those with a random serum glucose ≥200 mg/dL (≥11 mmol/L) during the admission (Group 1; *n*=176) were compared to inpatients whose serum glucose never exceeded 200 mg/dL (<11 mmol/L) (Group 2; *n*=172). Interestingly, over half of the cohort were above the target glucose level (<180 mg/dL [10 mmol/L]) for inpatients with diabetes.

4 The two groups had similar baseline characteristics. However, 11.9% of Group 1 and 5% of Group 2 developing an SSI during peri-operative admission (odds ratio, 2.45; 95% confidence interval, 1.09–5.52; *P*=0.03).

5 Hyperglycaemia has been shown to cause diminished healing potential in surgical inpatients and increased rates of SSI. In this cohort, the authors discerned that glycaemic management was based largely on the patient's outpatient routine and that it is imperative to be vigilant in glycaemic management.

Sadoskas D, Suder NC, Wukich DK (2015) Perioperative glycemic control and the effect on surgical site infections in diabetic patients undergoing foot and ankle surgery. *Foot Ankle Spec* 30 Jun [Epub ahead of print]

Int J Low Extrem Wounds

Stopping antibiotic treatment

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

1 The questions the authors hoped to answer were can antibiotic therapy be stopped once the signs and symptoms of diabetic foot infection (DFI) have gone? And does the severity of peripheral arterial disease(PAD) and infection affect antibiotic therapy duration? A prospective randomised controlled trial of 375 people was carried out with a continuing antibiotic group (CAG) and a discontinuing antibiotic group (DAG).

2 The authors concluded that when the clinical signs and symptoms of infection have resolved, it might be appropriate to stop antibiotics for DFI in people without PAD and individuals with mild infection with mild to moderate PAD. For people with mild infection with severe PAD and moderate to severe infection with PAD, continuing antibiotic therapy should be considered.

Chu Y, Wang C, Zhang et al (2015) Can we stop antibiotic therapy when signs and symptoms have resolved in diabetic foot infection patients? *Int J Low Extrem Wounds* **14**: 277–83

Diab Vasc Dis Res

Survival after DF-related minor and major amputation

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

1 Researchers in Germany investigated the long-term prognosis and survival of people who have diabetic foot (DF) and have undergone amputation by completing a retrospective cohort study, which included 314 individuals over a 6-year period.

2 In total, 48% of the cohort had a minor amputation; 15% had a major amputation and 36% had a minor followed by a major amputation. Survival of DF individuals was significantly lower among those with major amputation compared to minor amputation, and significantly lower among those with a major amputation compared to those with a minor followed by major amputation.

3 People who experienced a major amputation had a median survival of 40 months, which is a prognosis comparable to patients with malignant diseases.

Hoffmann M, Kujath P, Flemming A et al (2015) Survival of diabetes patients with major amputation is comparable to malignant disease. *Diab Vasc Dis Res* **12**: 265–71

J Foot Ankle Res

Surgeries for healing and preventing DFU

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

1 The current best treatment for diabetic foot ulcers (DFU) is total contact casting (TCC); however, the rate of ulcer recurrence is high. To investigate the effectiveness of other procedures in healing and preventing DFU, a systematic review and meta-analysis was carried out.

2 Data from the 11 selected papers were analysed descriptively or using random effects meta-analysis.

3 After meta-analysis of two randomised controlled trials, there was no significant difference in healing time and rate of ulcers healed between Achilles tendon lengthening or gastrocnemius recession and TCC. However, the rate of ulcer recurrence was significantly lower following Achilles tendon lengthening or gastrocnemius recession than TCC.

Dallimore SM, Kaminski MR (2015) Tendon lengthening and fascia release for healing and preventing diabetic foot ulcers: a systematic review and meta-analysis. *J Foot Ankle Res.* **8**: 33

> ***"It is imperative to be vigilant in glycaemic management, as hyperglycaemia can increase the occurrence of surgical site infections in people with diabetes undergoing foot or ankle surgery."***