

## Lower limb complications



### How much is enough?

**Matthew Young**  
Consultant Physician, Edinburgh Royal Infirmary, Edinburgh

I had intended to call this editorial *Infected* after the album and single by “The The”. However, this is not the focus of the articles highlighted this quarter. My initial experiences of managing diabetes foot ulceration, a very long time ago, probably taught me some bad habits in terms of antibiotic use. My use of antibiotic treatments occasionally conflicts with our infection control and antibiotic stewardship policies – I am still a big fan of co-amoxiclav but recently use a lot more doxycycline, and I continue to have doubts about flucloxacillin alone in the very chronic and, typically, previously treated and re-infected ulcers, which get through to us in a tertiary referral clinic. However, I have never used antibiotics for uninfected ulcers or to heal ulceration. The article by Abbas et al (summarised alongside) clearly sets out the rationale that supports this. The clinical diagnosis of infection promoted by the Infectious Diseases Society of America (IDSA) has done a lot to make antibiotic use more targeted and has even reduced the duration of medication for most patients. However, difficulties remain.

Not least of the difficulties is diagnosing osteomyelitis. The article by Khodae et al (summarised on the next page) reviews the literature and concludes that a magnetic

resonance imaging (MRI) scan should be performed on everyone who is suspected of having osteomyelitis. Certainly my infectious diseases and orthopaedic colleagues are big fans. However, I still take the view that, if there are bits of bone crumbling in a wound, then an MRI scan, which is typically over sensitive, is probably superfluous. If there are no bone fragments, then a plain radiograph, which typically has <2% of the radiological exposure of a chest X-ray, can be used repeatedly at a lower cost and with easier access in most outpatient clinics than an MRI scan.

With growing antibiotic resistance and the need for extended treatments in people with diabetes and osteomyelitis, I am grateful to my outpatient parenteral antimicrobial therapy (OPAT) colleagues for providing the treatment these patients need. Malone et al (summarised on the next page) demonstrate that OPAT can significantly reduce hospitalisation and make significant savings in treatment costs. However, it is important, particularly if the OPAT facility is not in the same place as their foot clinic, that these patients remain under multidisciplinary team foot clinic care for ongoing review of their off-loading and debridement and to determine when treatment can end on clinical grounds. ■

### Expert Opin Pharmacother

## Antibiotic prescribing is redundant for uninfected wounds

Readability ////  
Applicability to practice ////  
WOW! Factor ///

**1** The authors reviewed the literature and concluded that there is no reason to prescribe antibiotic therapy for an uninfected foot wound to either ward off infection or as a way to speed up wound healing.

**2** The treatment for clinically infected wounds is multi-faceted and includes pressure off-loading, wound debridement, wound dressing and antibiotic treatment. Often, the antibiotic therapy prescribed for diabetic foot wounds is inappropriate as it is not always clear whether there is infection in the first place.

**3** By reviewing the published literature on topical, oral or parenteral antibiotic use for infected diabetic foot wounds, the authors hoped to guide readers on when to prescribe and which antibiotics to prescribe.

**4** One of the common problems the authors found was the difficulty in initially diagnosing an infection, which has led to unnecessary prescription.

**5** There is no compelling evidence that treating clinically uninfected wounds with antibiotics either accelerates healing or prevents the development of active infection. It is also counter-productive as non-targeted antibiotic use can lead to antibiotic resistance.

**6** Another conclusion drawn was that no antibiotic regimen was found to be superior to others.

**7** The authors were keen to point out that when an infection is diagnosed, it is always appropriate to treat with antibiotics.

Abbas M, Uçkay I, Lipsky BA et al (2015) In diabetic foot infections antibiotics are to treat infection, not to heal wounds. *Expert Opin Pharmacother* **16**: 821–32

## J Fam Pract

### Best test for osteomyelitis

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

- Osteomyelitis means infection of the bone and 20% of individuals with diabetes who have foot ulcerations will develop osteomyelitis.
- The authors hoped to find out what the best test was for

diagnosing osteomyelitis in people with diabetic foot ulcers.

- After reviewing the literature, magnetic resonance imaging (MRI) had the highest sensitivity and probe-to-bone testing had the highest specificity of any test.
- The authors recommend that plain X-rays be used to determine bone abnormalities, soft tissue gas and foreign bodies, while MRI may be useful to use to determine the presence of infection.

Khodae M, Lombardo D, Montgomery LC et al (2015) Clinical Inquiry: What's the best test for underlying osteomyelitis in patients with diabetic foot ulcers? *J Fam Pract* **64**: 309–10, 321

## Diabetes Metab Res Rev

### Clinical outcomes following OPAT

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

- Outpatient parenteral antimicrobial therapy (OPAT) involves delivering intravenous antibiotics in the community setting. The authors aimed to evaluate the cost savings achieved from the use of OPAT and analyse which patient characteristics would predict who would find it most effective.
- Over the 5-year study period, 59 people were identified as receiving

OPAT. The success rate for healing diabetic foot infections was 88%, but secondary infections after the primary infection had healed were fairly common.

- The authors estimated that OPAT could provide a cost saving of \$16 672 per individual as hospital admission can be avoided.
- No statistically significant factor was identified (e.g. age, history of ulceration) as leading to failure of OPAT, and as there are high re-infection rates for this population it is imperative that they are closely monitored.

Malone M, West D, Xuan W et al (2015) Outcomes and cost minimisation associated with outpatient parenteral antimicrobial therapy (OPAT) for foot infections in people with diabetes. *Diabetes Metab Res Rev* **7** Apr [Epub ahead of print]

## J Diabetes Complications

### Predictors of wound healing after minor amputation

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

- Among 50 people with T2D who received a forefoot or toe amputation, physiological tests were carried out before and 6 weeks after the procedure to identify any significant clinical differences between people who had healing amputation sites and people who had non-healing sites.

Tests included pedal pulses, pre-operative arterial spectral waveforms at the ankle, absolute toe pressures, toe-brachial pressure index (TBPI) and ankle-brachial pressure index (ABPI).

- There were a significantly higher mean TBPI and toe pressure readings in the healing group compared to the non-healing group, and there were significant differences in ankle spectral waveforms between the two groups ( $P=0.028$ ). ABPI showed no significant difference and, thus, the authors conclude it should not be relied on as an indicator of wound healing.

Caruana L, Formosa C, Cassar K et al (2015) Prediction of wound healing after minor amputations of the diabetic foot. *J Diabetes Complications* **29**: 834–7

## Prim Care Diabetes

### Foot care: Written information versus interactive educator-led sessions

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

- By consecutively allocating people with T2D to different education styles for foot health, the authors compared the effectiveness of written education (Group A) with an interactive educator-led session (Group B).
- The written education was an information booklet that patients could read in their own time. The educator-led session was a single, 90-minute, group session given by a diabetes educator.
- In total, 154 adults (mean age  $68\pm 10$  years; 59.7% male) were recruited, and they completed a set of clinical and psychological tests at baseline and 3 months later.
- There was a greater change in Foot Score from baseline to 3 months in Group A (change  $-1.8$  [95% confidence interval (CI),  $-2.4$  to  $-1.2$ ]) versus Group B (change  $-0.1$  [95% CI,  $-0.7$  to  $0.4$ ];  $P<0.001$ ).
- There was no change in the Nottingham Assessment of Functional Foot Care survey score in either group, and results from the attitudes survey suggested that Group B felt they better understood how to prevent foot complications compared to Group A after education.
- The interactive education sessions appeared to increase the confidence of individuals in undertaking preventative measures, and the written information was more effective at improving overall foot health. This suggests that effective foot care education should include a combination of both styles.

Baba M, Duff J, Foley L et al (2015) A comparison of two methods of foot health education: the Fremantle Diabetes Study Phase II. *Prim Care Diabetes* **9**: 155–62

“There is no compelling evidence that treating clinically uninfected wounds with antibiotics either accelerates healing or prevents the development of active infection. It is also counter-productive as non-targeted antibiotic use can lead to antibiotic resistance.”