

Lower limb complications

Intuition



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I have previously written about the lack of evidence supporting diabetic foot ulcer dressing choices. Essentially, the randomised control trials that underpin drug choices are not performed for wound healing, resulting in the clinician using products based on personal experience or cost rather than on a solid evidence base. This quarter's Lower Limb Complications Digest highlights this more than most.

The articles I want to focus on are both Cochrane reviews. The Cochrane review methodology is a rigorous process, and it only accepts randomised control trials or higher as acceptable evidence for its reports. The process tries to include unpublished studies based on trials registers (where the study is registered at the onset not just on publication). This tries to reduce positive trial publication bias, where positive studies tend to be published more often than negative or inconclusive ones, but with small numbers of studies and small numbers of patients in those studies, it is hard to achieve.

The review below by Dumville et al (2011a) focuses on foam dressings. In six studies no significant improvement in healing was found

with foam dressings over basic dressings, hydrocolloids or alginates. In total there were only 157 patients or approximately 13 per group if equal recruitment. The variables in wound healing are so large that even large differences in dressing outcomes would be hard to detect with such small sizes. Even combining groups would need the foam to be almost twice as good to have an 80% power of detecting a difference.

It is therefore even more surprising that the study summarised alongside (Dumville et al, 2011b), looking at the effectiveness of hydrogel dressings in foot ulcer healing, does detect a difference in a meta-analysis of differing studies with around 300 subjects. However, most hydrogels are covered with a foam, making the above studies harder to interpret.

For diabetic foot ulcers, especially where plantar wounds are concerned, the risks of maceration and spread under load make hydrogels impractical for use on all but dorsal ulcers or possibly toes in most circumstances. Combine this with the qualifiers listed by the authors on the reliability of the results, and once again we are no further forward with making rational dressing choices for diabetic foot ulcers; we are left, as ever, using our own clinical judgment and intuition as to what works best.

COCHRANE DATABASE OF SYSTEMATIC REVIEWS

Hydrogel dressings offer some benefit in healing DFUs

Readability	✓✓
Applicability to practice	✓✓✓
WOW! factor	✓✓✓✓✓

- 1 Dressings form a key part of treatment for diabetic foot ulcers (DFUs), with a wide variety of choice.
- 2 The authors analysed published and unpublished randomised controlled trials to determine the effectiveness of hydrogel dressings for healing DFUs.
- 3 Data were analysed from five studies comprising 446 people with DFUs that compared the healing effects of hydrogels with alternative wound dressings.
- 4 Hydrogel dressings are made up of cross-linked, insoluble polymers and up to 96% water; they are designed to absorb wound exudate or rehydrate the wound, as necessary.
- 5 Meta-analysis of three studies comparing hydrogel dressings with basic contact wound dressings found that the hydrogel dressings significantly improved wound healing.
- 6 Studies comparing hydrogel dressings with larval therapy and with platelet-derived growth factor found no statistical difference in DFU healing rates between these treatments.

- 7 No statistical difference in healing was found between two different brands of hydrogel dressing.
- 8 Based on this comprehensive review, the authors concluded that hydrogel dressings may be better than basic contact wound dressings at healing non-complex DFUs.
- 9 There was insufficient research on how hydrogel dressings compare with other advanced wound dressings; practitioners may need to consider cost and properties of symptom management when choosing dressings.

Dumville JC, O'Meara S, Deshpande S, Speak K (2011) Hydrogel dressings for healing diabetic foot ulcers. *Cochrane Database Syst Rev* 9: CD009111

COCHRANE DATABASE OF SYSTEMATIC REVIEWS

Foam dressings do not improve healing in DFUs

Readability	✓✓
Applicability to practice	✓✓✓
WOW! factor	✓✓✓✓✓

- 1 As there is an increased prevalence of diabetes, the number of people with diabetic foot ulcers (DFUs) is rising.
- 2 This review article describes the wide range of dressings available to treat DFUs, with a focus on evaluating the effectiveness of foam dressings.

- 3 Six randomised controlled trials that evaluated the effects of foam dressings on DFU healing were analysed, totalling 157 participants; the primary outcome measure was DFU healing.

- 4 Meta-analysis of two studies showed that foam dressings did not improve DFU healing compared with basic dressings; pooled data from two studies comparing alginate and foam dressings found no difference in healing.

- 5 The authors concluded that there is no evidence that foam dressings are more effective in healing DFUs than other dressings, although the trials were small.

Dumville JC, Deshpande S, O'Meara S, Speak K (2011) Foam dressings for healing diabetic foot ulcers. *Cochrane Database Syst Rev* 9: CD009111

JOURNAL OF THE AMERICAN PODIATRIC MEDICAL ASSOCIATION

Task force outline treatment options for Charcot's foot

Readability	✓✓✓✓
Applicability to practice	✓✓✓✓
WOW! factor	✓✓✓✓

1 Charcot neuropathic osteoarthropathy is commonly known as Charcot's foot; it was first described in 1883, and affects the bones, joints and soft tissues of the foot and ankle.

2 Charcot's foot occurs as a result of peripheral neuropathies, with diabetic neuropathy being the most common aetiology.

3 An international task force of experts was assembled by the American Diabetes Association and the American Podiatric Association in January 2011 to review the literature on Charcot's foot and report on its pathophysiology, natural history, presentations and treatment.

4 The recommendations within this report are made by the authors and are not official recommendations by the American Diabetes Association or the American Podiatric Association.

5 There is not a single cause of Charcot's foot, but the interaction of several components, including diabetes, sensory-motor and autonomic neuropathy, trauma and metabolic abnormalities of the bone; this results in acute, localised inflammation, which can lead to bone destruction, subluxation, dislocation and deformity.

6 Radiographic imaging is the initial method for evaluating the foot in people with diabetes; magnetic resonance imaging enables diagnosis at the earliest onset of Charcot's foot.

7 The authors summarised the medical treatment of Charcot's foot, which comprises offloading the foot, treating bone disease and preventing further foot fractures.

Rogers LC, Frykberg RG, Armstrong DG et al (2011) The Charcot foot in diabetes. *J Am Podiatr Med Assoc* **101**: 437–46

DIABETIC MEDICINE

Phenytoin does not improve healing in diabetic foot ulcers

Readability	✓✓✓✓
Applicability to practice	✓✓
WOW! factor	✓✓✓

1 The study objective was to determine the effect of topical phenytoin on healing in diabetic foot ulcers (DFUs).

2 The study comprised 52 adults with T2D and 13 with T1D, all with peripheral neuropathy, an ankle brachial index >0.5 and a DFU ≥4 weeks' duration.

3 Participants were independently randomised to either phenytoin or control dressing and received standard wound care and dressing application for 16 weeks; the primary outcome was total DFU closure at study end.

4 After 16 weeks, 60% of the DFUs were closed (18 in the phenytoin group and 20 in the control group); there were no statistical differences in DFU closure rates between the two groups.

5 At 12 and 24 weeks' follow-up, one DFU recurred in the phenytoin group and none in the control group.

6 The authors concluded that phenytoin offered no benefit to healing in DFUs.

Shaw J, Hughes CM, Lagan KM et al (2011) The effect of topical phenytoin on healing in diabetic foot ulcers: a randomised, controlled trial. *Diabet Med* **28**: 1154–7

DIABETOLOGIA

Depression increases mortality in people with their first DFU

Readability	✓✓✓✓
Applicability to practice	✓✓✓✓
WOW! factor	✓✓✓✓

1 Diabetic foot ulcers (DFUs) are common in people with diabetes and are associated with a high rate of depression at first presentation and increased mortality 18 months later.

2 In this study, the authors sought to determine whether there is

a persistent effect of depression on mortality at 5-year follow-up.

3 The cohort comprised 253 people presenting with their first DFU; at baseline the presence of depressive disorder was determined.

4 The prevalence of depressive disorder at baseline was 32.8% ($n=82$); there were 92 (36.4%) deaths over the 5-year follow-up.

5 The authors concluded that depressive disorder at presentation of a first DFU was significantly associated with a persistent, two-fold increased risk of mortality over 5 years.

Winkley K, Sallis H, Kariyawasam D et al (2012) Five-year follow-up of a cohort of people with their first diabetic foot ulcer. *Diabetologia* **55**: 303–10

DIABETOLOGIA

Bisphosphonates not proven beneficial to healing Charcot's foot

Readability	✓✓✓✓
Applicability to practice	✓✓✓
WOW! factor	✓✓✓

1 Acute Charcot's disease is characterised by fracture and dislocation of the bones and joints of the foot.

2 Management includes offloading in a non-removable, below-knee cast, the use of pamidronate to reduce skin

temperature and weekly alendronate to reduce bone turnover markers.

3 The authors studied 288 cases of Charcot's foot to determine the long-term clinical benefit of non-removable offloading or bisphosphonate (BE) therapy.

4 The median time to resolution was 9 months for those using non-removable offloading devices at presentation (vs 12 months) and 12 months for those using BEs.

5 The authors concluded that BEs are not beneficial to healing of acute Charcot's disease.

Game FL, Catlow R, Jones GR et al (2012) Audit of acute Charcot's disease in the UK. *Diabetologia* **55**: 32–5

“Depressive disorder at presentation of a first diabetic foot ulcer was significantly associated with a persistent, two-fold increased risk of mortality over 5 years.”