Lower limb complications

NEPHROLOGY, DIALYSIS, TRANSPLANTATION

Renal replacement therapy increases risk of ulceration

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

1 This study aimed to see if an association existed between commencing renal replacement therapy and the first occurrence of a foot ulcer in people with diabetes.

2 Details of all patients with diabetes undergoing renal replacement therapy were extracted from the renal database and cross checked with the first incidence of a foot ulcer.

3 Out of 466 patients with diabetes undergoing renal replacement therapy, 94 were documented as having a foot ulcer, with 15 of those undergoing major amputation.

4 Four patients were excluded due to incomplete data and incidence ratios were calculated for the 90 remaining.

5 A close relationship was observed between onset of ulcer and initiation of renal replacement therapy. The incidence ratio calculated in the first year was 3.35 and between years 2 and 5 was 4.56 relative to time the time before dialysis.

6 The incidence ratios for amputation were 31.98 and 34.01 respectively for year 1 and years 2 to 5.

7 The results show a strong relationship between the start of dialysis and the onset of the first foot ulcer.

8 A possible reason for this is that dialysis takes up the majority of the time for a patient and their carers and so other aspects of diabetes management may become relatively neglected. Steps need to be taken to ensure that diabetic foot care is coordinated before and during RRT.

Game FL, Chipchase SY, Hubbard R, Burden RP, Jeffcoate WJ (2006) Temporal association between the incidence of foot ulceration and the start of dialysis in diabetes mellitus. *Nephrology, Dialysis, Transplantation* **21**: 3207–10

Another brick in the wall for preventative care?

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The cornerstone of diabetic foot care is screening followed by structured care and the prevention of ulceration/amputation. Sadly as a committed believer in this approach there are few, if any, studies to back me up beyond the formation of specialist foot clinics in secondary care centres having an impact on amputation rates.

The paper by Game et al (summarised on left) highlights one high-risk group, namely those people with diabetic renal disease. Although the timescale is a little confusing, that is 5 years before and 5 years after for the steepest parts of the curve, the relationship between renal replacement therapy and foot problems seems clear. Certainly it is well-known to those with renal departments on their patch, even more so with transplant units!

The solution, they suggest, is to have special arrangements to coordinate care for the feet of these patients. With almost 18-hour working days in dialysis units and patients attending three times a week, to reduce the number of appointments in a patient-centred care approach might mean extended working days for podiatrists, a feature which myself and others are considering for ulcer treatments in accident and emergency departments. However, will this work?

Snyder et al (summarised below) describe their efforts to reduce second amputations in those with forefoot amputations. Of these, transmetatarsal amputations are, in my view, universally unsuccessful and recurrent ulceration is the norm. This study highlights the high mortality in this group (49% in 32 months). The results showed once again that, despite structured care, there was no significant difference between the intervention and standard care group. Similar results in a larger study have been reported from the UK (Carrington et al, 2001). Although disheartening at first glance I do not feel it is time to abandon pre- and post-ulcer or amputation care. However, we must ensure that what we do is the best available, and, when ulcers do occur, refer patients to the gold standard multidisciplinary foot clinic as soon as possible.

Carrington AL, Abbott CA, Griffiths J et al (2001) A foot care program for diabetic unilateral lower-limb amputees. *Diabetes Care* **24**: 216–21

AMERICAN JOURNAL OF SURGERY

Post-amputation care is inadequate

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

1 This study was implemented to evaluate the efficacy of post-amputation care for preventing further amputations.

2 The charts of 81 patients who had had some form of forefoot amputation over a period of 3 years were reviewed and the nature of pre- and post-amputation care was noted. Forty-one people were followed to evaluate post-amputation care.

3 Following the initial amputation, 63% of the patients underwent further amputation.

4 The 41 patients were followed up by either their primary care provider or a foot specialist. There was no significant difference between groups in terms of prevention of further amputations.

5 The authors conclude that despite initial forefoot amputation being selected as the best choice for the patient, it presents a high risk factor for repeat amputation and they suggest that post-amputation care is not effective in preventing further amputation.

Snyder DC, Salameh JR, Clericuzio CP (2006) Retrospective review of forefoot amputations at a Veterans Affairs hospital and evaluation of post-amputation follow-up. *The American Journal of Surgery* **192**: e51–4

"Eventually almost 100% of patients with type 1 diabetes will develop diabetic polyneuropathy"

ANNALS OF THE NEW YORK ACADEMY OF SCIENCES

CV risk factors predict neuropathy

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

1 The idea behind his investigation was to collate routinely collected data and see which data can be used to predict the development of peripheral neuropathy.

2 This is a retrospective analysis of data collected from 404 people with type 1 diabetes between 1992 and 2001 in the UK.

3 Of the 404 people with diabetes, 18 had distal peripheral neuropathy at baseline.

4 Those who developed peripheral neuropathy were generally older and had a longer duration of diabetes, had a significantly higher serum cholesterol and blood pressure.

5 Neuropathy is predicted by CVD rather than microvascular disease factors.

Sibal L, Law HN, Gebbie J, Home P (2006) Cardiovascular risk factors predicting the development of distal symmetrical polyneuropathy in people with type 1 diabetes: A 9-year follow-up study. *Annals of the New York Academy of Sciences* **1084**: 304–18

PAIN

Ischaemic pain should be treated early

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

1 The authors of this study investigated the usefulness of quantitative sensory testing (QST) as a useful tool.

2 There were 45 people enrolled in this study, along with 20 controls. Sixteen of the 45 had critical limb ischaemia and 29 had moderate peripheral arterial disease (PAD).

3 The quantitative sensory testing showed increased vibration detection thresholds and perceptual wind-up and impaired hot/cold detection. The investigators also observed significant dynamic mechanical allodynia and paradoxical heat sensation.

4 Those participants with severe PAD had significantly more pronounced sensory deficits than those with moderate PAD, indicating that QST is a useful tool for detecting sensory abnormalities.

5 While revascularisation may be the best way to treat ischaemia, the pain should be treated at an early stage.

Lang PM, Chober GM, Rolke R et al (2006) Sensory neuropathy and signs of central sensitisation in patients with peripheral artery disease. *Pain* **124**: 190–200

JOURNAL OF VASCULAR SURGERY

Microcirculatory disease amplifies foot perfusion

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

1 This study was undertaken to evaluate the influence of peripheral neuropathy and lower-limb arterial disease on cutaneous foot perfusion.

2 One hundred and thirty limbs were studied during the 8 months of the study. Carbon dioxide tension at foot and chest, transcutaneous oxygen and toe-brachial pressure were measured.

3 The toe-brachial pressure indices had a positive correlation with transcutaneous oxygen values for the foot; however, values of >1.2 showed a negative correlation.

4 In those people with diabetes and no critical limb ischaemia, impaired foot perfusion was significantly amplified by microcirculatory disease.

Williams DT, Price P, Harding KG (2006) The influence of diabetes and lower limb arterial disease on cutaneous foot perfusion. *Journal of Vascular Surgery* **44** : 770– 75

ANNALS OF THE NEW YORK ACADEMY OF SCIENCES

Neuropathy differs in type of diabetes

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

1 The authors of this article outline the differences in the mechanisms of diabetic polyneuropathy between type 1 and type 2 diabetes and describe how these differences lead to milder defects in those with type 2 diabetes compared with type 1.

2 Type 1 diabetic polyneuropathy is characterised by paranodal degenerative changes, as well as progressive axonal atrophy to a greater extent than seen in type 2.

3 Eventually almost 100% of patients with type 1 diabetes will develop diabetic polyneuropathy.

4 Despite there having been several trials in the last few decades and the disease being so prevalent, there is no effective or accepted therapy for diabetic polyneuropathy. The most effective way of dealing with it is strict glycaemic control.

5 The reasons for the high incidence of disappointing outcomes may be that glycaemic control is exercised too late sub-optimal potency of the agents used and treatment duration being too short.

6 While hypoglycaemia is undoubtedly important in development of diabetic polyneuropathy, the differences in severity between patients with type 1 and 2 diabetes probably occur due to insulin impairment and the subsequent abnormal signal transduction.

7 The differences in effect of diabetic polyneuropathy on both types of diabetes must be taken into account to enable effective control or treatment of this prevalent condition.

Sima AAF, Kamiya H, 2006 Diabetic neuropathy differs in type 1 and type 2 diabetes. *Annals of the New York Academy of Sciences* **1084**: 235–49