

Does the time interval between podiatric review and intervention influence the rates of recurrence of **foot ulceration in diabetes patients?**

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Joanne McCardle, winner of the Canonbury Clinical Research Award 2008, is a diabetes podiatrist working in the diabetes foot clinic at the Royal Infirmary of Edinburgh. Joanne is also currently undertaking a Professional Doctorate in Health and Social Care at Glasgow Caledonian University. Joanne's research aims to investigate whether or not time intervals between podiatric review and intervention will influence the rates of recurrence of foot ulceration in diabetes patients. In this article, Joanne discusses why she chose this research topic, and the aims and potential benefits of the research.

One of the most challenging aspects for clinicians involved in diabetes foot disease is not just healing a foot ulcer, but also ensuring that the individual does not re-ulcerate in the future. Apelquist *et al*¹ have already identified that re-ulceration occurs in 70% of people over five years and 34% over one year. Pound *et al*² found that over 40% of patients had a recurrent or repeat ulcer over a 31-month period.

A further study reported a 26% recurrence rate in individuals that wore specialist footwear in comparison with 83% re-ulceration in those that had inappropriate footwear over a two-year period.³ More recently, Nube *et al*⁴ also identified a 51% recurrence over three years.

Although these figures vary, it is clear that the likelihood of a secondary ulcer is high, and that it continues to be a common and serious problem for both patients and healthcare providers.

In the UK, around two million people are registered with Diabetes Mellitus (DM), and a further half million remain undiagnosed. These figures are rising rapidly, and synonymous with this will be increased numbers of patients with diabetic foot disease. 'The Scottish Diabetes Framework Action Plan'⁵ has identified that footcare will be prioritised



Do time intervals between podiatric assessments affect rates of recurrence of foot ulceration in patients with diabetes?

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in diabetes planning. This has triggered initiatives from the Scottish Government, including ensuring that all patients receive annual foot screening for risk stratification and improving existing specialised foot services for diabetes patients.

These strategies are aimed at preventing primary ulceration, but it is also apparent that one of the greatest risk factors for ulceration is a history of previous foot ulceration.⁶⁻⁹

Therefore, this group of patients is of the highest risk and should be prioritised when planning patient care packages and foot services.

Background

Diabetes-related foot complications are the largest single reason for patients with DM to be admitted to hospital in the UK,¹⁰ and continue to be a substantial economic burden on the NHS (estimated as £239 million per annum).¹¹ The indirect cost to the patient is also high, and many individuals with foot ulceration are unable to work and are reported to have a poorer quality of life than those without an ulcer.¹²⁻¹⁴

As a consequence of diabetic foot disease, a lower limb is lost in the world every 30 seconds.¹⁵ The majority of these

STUDY	1Y	3Y	5Y
Ebskov & Josephson ²⁰	18%	19%	
Deerochanawong <i>et al</i> ²¹	40%	50%	
Lee <i>et al</i> ²²		40%	60%
Lavery <i>et al</i> ²³			
Larsson <i>et al</i> ²⁴	15%	38%	68%
Frykberg <i>et al</i> ²⁵			70%
Ebskov ²⁶	32%	55%	72%
Schofield <i>et al</i> ²⁷	33%	53%	68%
Young <i>et al</i> ^{28*}	7%	19%	25%

* Young *et al*²⁸ measured mortality following intensive cardiovascular risk management. Y = year.

Table 1. Mortality following lower-limb amputation.

amputations are preceded by foot ulceration,^{16,17} and survival rates are low in those that have undergone this type of amputation.^{18,19} The extent of this is displayed in Table 1. Furthermore, the risk of lower extremity amputation is 15 times higher in those with diabetes than in those without.²⁹

Rationale and aims of the study

Standards of footcare, as recommended by guidelines,^{8,30-33} all state that patients with DM that are high risk should be referred to a diabetes specialist podiatrist for further assessment. They also conclude that any patient with active foot disease should be referred immediately to a specialised diabetes foot multidisciplinary team. For those that have ulcerated in the past, it continues to be standard practice to receive regular podiatric follow-up footcare.

However, as the American Diabetes Association³⁴ points out, healthcare plans can vary, and treatment is often delivered at variable time intervals. Therefore, it is an individual NHS trust’s decision regarding what services are provided, which may lead to variations in service provision.

Podiatry aftercare is already widely accepted as the cornerstone in the management of the previously ulcerated foot. Previous research has identified the benefits of podiatry care in reducing re-ulceration rates and lower extremity amputation.^{35,36} However, to date, there has been no research that has identified the optimum time interval between podiatric review appointments to reduce foot re-ulceration rates in patients with DM.

This research will primarily aim to bridge that gap and investigate if time intervals between appointments do make a difference to the rate of re-ulceration in diabetes patients. Additionally, it will

analyse if these time intervals influence the period of time a patient remains ulcer free. To clarify whether or not the time between podiatry appointments can help to reduce the high incidence of ulcer recurrence is a proactive rather than a reactive approach to patient care.

Implications of the Study Findings

If the research provides clear guidance as to the optimal follow-up interval for patients with healed foot ulceration, which either reduces the likelihood of, or prolongs the time to, re-ulceration, then it will have major implications for diabetes foot care.

By identifying the best approach to aftercare, this study will assist the NHS in structuring services and planning workforce requirements. It will also raise the profile of podiatry and further emphasise the necessity of specialist diabetes podiatry input into this complex cohort of patients.

The main benefit will be to ensure patients are receiving the best evidence-based care provided by the most qualified person at the appropriate time. Although clinical experience is essential to the modern NHS, it should not be ignored that this may lead to inconsistent care regionally and nationally. Therefore, establishing an optimum return appointment frequency and standardising foot services by equipping staff with the tools to make informed decisions on patient care would add value at all levels.

Additionally, patients that remain ulcer free (or ulcer free for longer) will have an improved quality of life, and ultimately this will preserve limbs and prolong length of life. Furthermore, if it is identified that re-ulceration can be reduced, foot care services will benefit, and the associated costs of treating ulcers and amputations will be lowered. Services will be based on needs, rather than expectation, as highlighted by Leese *et al*,³⁷ and finite NHS resources will be used to their fullest potential.

Conversely, if there is evidence that treatment intervals do not influence either re-ulceration or time to re-ulceration, then NHS services for diabetes foot care might be able to adjust appointment intervals to make more time available for the treatment of acute foot complications. In addition, factors other than podiatry input and aftercare will need further research to elucidate the causes of recurrent ulceration.

Conclusion

It has been identified that there is a lack of evidence in regard to podiatry care of the

previously ulcerated foot. It could be argued that podiatry review intervals cannot and should not be quantified or regulated, and that treatment should always be based on the clinical judgements and the individual needs of the patient. However, there is no evidence to support this approach and, unless this is evaluated, it will never be fully known if treating a patient more or less frequently does in fact affect rates of re-ulceration.

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