Does contact with a podiatrist prevent the occurrence of a lower extremity amputation in people with diabetes? A systematic review and meta-analysis

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CRD summary
This review concluded that there was insufficient evidence to determine whether contact with a podiatrist had an effect on leg, foot or toe amputation, in people with diabetes. These conclusions are likely to be reliable, as they reflect the limited evidence identified.

Authors' objectives
To determine the effects of contact with a podiatrist, on amputations of the leg, foot or toe, in people with diabetes.

Searching
PubMed, CINAHL, EMBASE and The Cochrane Library were searched, up to September 2011, for studies in English; search strategies were reported in an appendix. The reference lists of relevant articles were checked.

Study selection
Randomised and observational studies of the effects of contact with a podiatrist on the risk of leg, foot or toe amputation in people of any age, with type 1 or 2 diabetes, were eligible. Comparison groups had no contact with podiatrists or received written instructions only. Cross-sectional studies and case series were excluded.

In the included studies, in addition to diabetes, some patients had a history of ulcers, or were receiving dialysis. One study was of a mix of patients with either diabetes, peripheral vascular disease, or gangrene. The interventions were educational or podiatry visits, or both. Control groups received either written information, or no podiatry care. The initial risk of foot disease was measured using the Scottish Intercollegiate Guidelines Network's guidelines, and varied from low to high, across the studies.

Two authors independently selected studies, with disagreements resolved by discussion.

Assessment of study quality
A modified version of the Downs and Black checklist was used to assess the methodological quality of the randomised and the non-randomised studies.

This was done by two reviewers independently, with disagreements resolved by discussion.

Data extraction
Data were extracted to obtain risk ratios, with 95% confidence intervals. Authors were contacted for missing data, if necessary. Two reviewers independently extracted the data, with disagreements resolved by discussion.

Methods of synthesis
Meta-analyses were performed to calculate pooled risk ratios, with 95% confidence intervals, using either a fixed-effect model or a random-effects model, depending on statistical heterogeneity.

Sensitivity analyses were planned, to examine the effects of initial risk. Heterogeneity was assessed using $I^2$ and Cochran's Q. The possibility of publication bias was explored by visual inspection of a funnel plot.

Results of the review
Six studies were included: two were randomised trials (621 participants) and four were cohort studies (445,286 patients); one of these (300 patients) provided insufficient data for meta-analysis. Follow-up ranged from one to seven years.

All studies were deemed suitable quality for inclusion; no details were given. One trial blinded outcome assessors and the other trial had adequate allocation concealment. One trial performed intention-to-treat analysis. None of the four
cohort studies adjusted their analyses for important confounders.

Meta-analyses of the two randomised trials (RR 1.41, 95% CI 0.20 to 9.78; no significant heterogeneity; fixed-effect model) and three cohort studies (RR of 0.73, 95% CI 0.39 to 1.33; significant heterogeneity; random-effects model) showed no significant differences between groups, in amputations.

The funnel plot did not suggest publication bias.

**Authors' conclusions**
There was insufficient evidence to determine whether contact with a podiatrist had an effect on lower extremity amputation, in people with diabetes.

**CRD commentary**
The review addressed a clear question and was supported by reproducible eligibility criteria. One included study recruited some non-diabetic patients, so it did not strictly meet the inclusion criteria. Several relevant electronic databases were searched. The restriction to studies published in English means that some relevant studies may have been missed. Suitable methods (independent duplicate processes) were used to reduce the risk of reviewer error and bias throughout the review.

Study quality was assessed, but only for selected items from the modified checklist. None of the cohort studies adjusted for possible confounders, which means that their results might not be reliable. The value of pooling the data was limited, as there were considerable clinical differences across the studies, but amputation was rare; in the randomised trial of 91 high-risk patients, three events occurred in one year of follow-up.

The authors' conclusions are likely to be reliable.

**Implications of the review for practice and research**

**Practice:** The authors stated that they could not make any practice recommendations.

**Research:** The authors made several recommendations for research, highlighting the need for adequately powered, long-term studies, especially on the effects of multidisciplinary teams, and low-risk populations.

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Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.