Economic analysis of soft-heel casting for diabetic foot ulcer: prevention and treatment
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Record Status
This is a critical abstract of an economic evaluation that meets the criteria for inclusion on NHS EED. Each abstract contains a brief summary of the methods, the results and conclusions followed by a detailed critical assessment on the reliability of the study and the conclusions drawn.

CRD summary
This study evaluated the costs and effects of soft casting to prevent and treat diabetic foot ulcers. The authors concluded that their analysis suggested that soft casting could save about 10% of the costs of managing patients with an active ulcer, and it offered savings as a preventative measure. Given the limited effectiveness evidence and unclear reporting, further research is required to evaluate the cost-effectiveness of soft-casting, as highlighted by the authors.

Type of economic evaluation
Cost-effectiveness analysis

Study objective
This study evaluated the costs and effects of soft casting to prevent and treat diabetic foot ulcers.

Interventions
Soft casting was compared with an orthotic boot, which was the standard therapeutic footwear. The soft-heel cast used semi-rigid tape and was constructed over the primary dressings, and held in place by a secondary dressing. The orthotic footwear was a foot brace, covered in a washable material, such as fleece.

Location/setting
UK/out-patient and in-patient care.

Methods
Analytical approach:
The cost-effectiveness analysis was based on published effectiveness evidence, for three populations. These were patients at a high risk of ulceration, who were regularly assessed by specialists; in-patients with active foot ulcers; and out-patients with active foot ulcers. The time horizon was one year. The authors stated that they adopted a UK NHS Borders perspective.

Effectiveness data:
For patients at risk of developing an ulcer, the effectiveness outcome was the reduction in the relative risk of an ulcer developing. For in-patients and out-patients with an active ulcer, the effectiveness outcomes were the reduction in the relative risk of ulcer deterioration, and of death; and the relative risk of improvement in the ulcer, and of the ulcer healing. Based on a systematic review that compared total-contact casting with removable casts or shoes, and expert opinion, the authors applied a 10% relative risk reduction or improvement to every outcome. The effectiveness of the comparator was based on National Institute for Health and Care Excellence (NICE) guidance, for high-risk people; on an audit of 19 in-patients from the NHS Borders, for in-patients; and on data from a specialist out-patient foot care clinic, over three years, for out-patients.

Monetary benefit and utility valuations:
Not relevant.

Measure of benefit:
The measures of benefit were the effectiveness outcomes, for each population, as described above.

Cost data:
The costs included those of the intervention, and care pathway, including bed-days, out-patient visits, drugs, staff, and
diagnostic tests. The intervention costs included materials and staff time. The resource use data were from the hospital accounts of NHS Borders. The Information Services Division Unit costs were from the hospital accounts, the British National Formulary, the Personal Social Services Research Unit, and NHS Reference Costs. All costs were reported in UK £.

Analysis of uncertainty:
Sensitivity analysis was conducted on the estimate of the reduction in in-patient stay, with reduced dressing use. This was assumed to be an additional 10% in the sensitivity analysis.

Results
A 10% relative risk reduction or improvement was assumed for all outcomes, for soft casting compared with the orthotic boot.

For high-risk patients, the total cost per patient was £1,413 for the soft casting, and £1,637 for the orthotic boot.

For in-patients with an active ulcer, the total cost was £6,991 for the soft casting, and £7,540 for the orthotic boot.

For out-patients with an active ulcer, the total cost was £5,359 for the soft casting, and £5,977 for the orthotic boot.

A reduction in resource use with soft casting led to increased cost savings, in each case.

Authors' conclusions
The authors concluded that their analysis suggested that soft casting could save about 10% of the costs of managing patients with an active ulcer, and it offered savings as a preventative measure, but research was needed to confirm the estimated benefits.

CRD commentary
Interventions:
The interventions were described. The comparator appears to have been an option provided by NHS Borders, which was useful for local decision-makers, but there may be other relevant alternatives.

Effectiveness/benefits:
The authors acknowledged that there was limited clinical effectiveness evidence. The evidence on the reduction of the risk of developing foot ulcers was used for the reduction and improvement in outcomes for patients who had active ulcers. There is considerable uncertainty around the applicability of these effectiveness estimates for the intended populations. Given these data limitations, assumptions were required to facilitate modelling, and the authors appropriately noted the limitations.

Costs:
While details of the resource use and costs were provided, the reporting lacked clarity, making it difficult to determine which resources and costs were used for each analysis. The sources of the data and the results were also not clearly reported. The cost savings, quoted in the text, for the cost-benefit analysis did not correspond with those in Table 5, making it difficult to know which figures were the cost savings. No price year was stated.

Analysis and results:
Overall, the reporting of the study methods and results lacked clarity. The authors acknowledged the data limitations, but given the scarcity of data, a more systematic approach to identifying the best available evidence was warranted. This might not have provided more robust evidence, but it would ensure that the best available evidence was used.

Concluding remarks:
Given the limited effectiveness evidence and the unclear costing methods, further research is required to evaluate the cost-effectiveness of soft casting, as highlighted by the authors.

Funding
Funded by the Scottish Government Health Department.

**Bibliographic details**

**PubMedID**
23299358

**DOI**
10.12968/jowc.2013.22.1.44

**Original Paper URL**
http://www.internurse.com/cgi-bin/go.pl/library/abstract.html?uid=96188

**Indexing Status**
Subject indexing assigned by NLM

**MeSH**
Aged; Casts, Surgical /economics; Cost-Benefit Analysis; Diabetic Foot /economics /prevention & control /therapy; Female; Foot Orthoses /economics; Health Care Costs; Heel; Humans; Male; Models, Econometric; Scotland; Shoes /economics

**AccessionNumber**
22013015207

**Date bibliographic record published**
25/04/2013

**Date abstract record published**
18/09/2013