Shearer Lay Summary

In 2004, Shearer et al.\[1\] published the results of a cost-effectiveness study that used modelling techniques to estimate the morbidity, mortality, and economic outcomes of implementing the DAFNE programme. NHS costs associated with standard care or DAFNE, and with the treatment of progressing complications were used to estimate a total cost for patients in each cohort over the 10 years of the model.

Methods

Outcomes of standard practice for treating type 1 diabetes (pre-specified insulin injections) were compared to those of the introduction of the DAFNE programme. Results were estimated over a period of 10 years post-treatment. Based on the UK DAFNE trial\[2\], glycated haemoglobin (HbA1c) levels remained constant for standard care, whereas HbA1c levels were assumed to decline over 12 months post-treatment in the DAFNE cohort by 0.9%.

The model used clinical data from three randomised controlled trials\[3-5\] to simulate the progression of microvascular complications. The progression of complications over time and between severity levels was combined with mortality data\[5\] to calculate total life years (LYs) gained for each patient cohort. Quality of life weights were also combined with LYs to estimate quality-adjusted life years (QALYs) associated standard care and DAFNE.

Results

Costs

The DAFNE cohort was estimated to have reductions in mortality, blindness, end stage renal disease, foot ulceration/amputation, and episodes of ketoacidosis, as compared with standard care. These reductions in complications resulted in a mean saving of £3238 per patient over 10 years. The majority of cost savings occurred from avoiding foot ulcers and renal dialysis.

The cost savings as a result of reduced complications were partly offset by the cost of delivering the DAFNE programme (mean cost per patient over 10 years = £545) and the more frequent insulin injections required in the DAFNE cohort than in standard care (mean cost per patient over 10 years = £456).

Overall, it was estimated that the DAFNE programme would save the NHS £2237 per patient over 10 years and would break even at approximately 4.5 years post intervention.

Cost-effectiveness

For the 10 years included in the model, DAFNE produces an additional 5 life years, 12 QALYs, or 9 QALYs for every 100 patients treated in comparison with the standard care. Given that DAFNE is more effective and less costly than standard care it is clearly cost-effective.

Conclusions and Impact

The results of this cost-effectiveness modelling study suggest that for an NHS centre implementing the DAFNE programme cost savings arising from a reduction in microvascular complications would outweigh the additional costs of providing the programme after approximately 4.5 years. In the long run, DAFNE could be a cost saving intervention for a provider to implement, whilst also yielding additional mortality and morbidity benefits over and above standard diabetic care. Further incentives for providing the DAFNE programme include its alignment with the National Service Framework for Diabetes[6] and with the NICE guidance for the use of patient education in diabetes care[7].