

ESTIMATION OF ECONOMIC IMPACT ASSOCIATED WITH CSII TREATMENT IN ADULT TYPE 1 DIABETES IN UK, ACCORDING TO NICE GUIDANCE

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Objective

Over 90% of diabetes cost is related to complications, most of which are related to elevated glycated haemoglobin (HbA1c). The aim of this analysis is to estimate health economic benefits associated with continuous subcutaneous insulin infusion (CSII) treatment in adults with Type 1 diabetes (T1D), used according to NICE guidance in the UK setting.

Materials and Methods

An interactive probabilistic budget impact model using published risk curves based on DCCT^{1,2,3,4} data was developed to project incidence and progression of diabetes-related complications associated with different HbA1c levels over a 5-year time horizon in T1D. CSII efficacy was derived from published meta-analysis⁵.

Associated costs of diabetic ketoacidosis (DKA), severe hypoglycaemia, microvascular and macrovascular complications as well as costs associated with loss of productivity were derived from published literature and used to estimate the economic impact of complications in the UK setting. Costs were assessed from the societal perspective.

Based on the HbA1c distribution of the UK National Diabetes Audit data, eligible adult patients meeting NICE criteria for CSII (HbA1c $\geq 8.5\%$ or disabling hypoglycaemia) were modelled (171 875 patients – 68.8% of total adult T1D).

Results

Over 5 years, as per the meta-analysis, we estimated HbA1c will improve over MDI from -0.82% for those at baseline HbA1c 8.5% to -1.86% for those at baseline HbA1c 10.5%. Such HbA1c improvement is projected to lead to 43% and 76% relative reduction in micro/macrovascular complications and acute complications respectively compared to MDI (Figure 1).

Over 5 years, we estimated £3 664 per patient saved on complications avoided [micro/macrovascular and acute complications].

The additional 5 years CSII investment over MDI (£8 938 per patient) was partially offset by savings from reduced complications and associated loss of productivity, leading to a total CSII extra cost of £821 per patient over 5 years. As of the year 5, CSII became cost-saving (Figure 2).

Over 10 years, CSII is expected to provide savings up to £1 293 per patient.

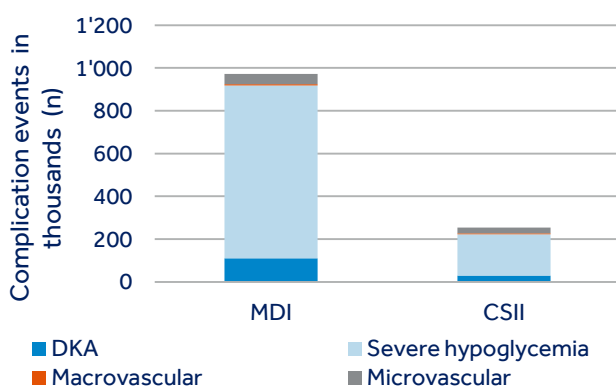


Figure 1 : 5 years cumulated complication events (n)

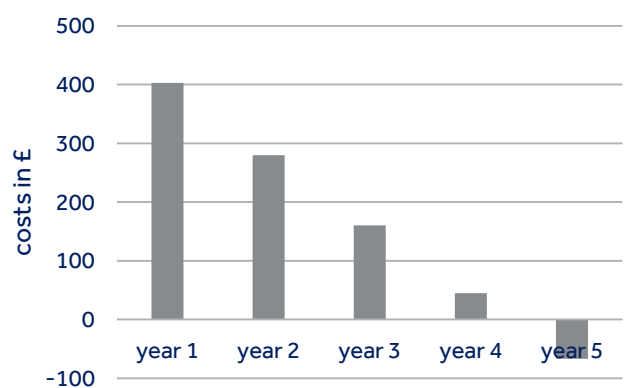


Figure 2 : Yearly total costs with CSII - per patient

Conclusions

Implementation of CSII therapy as per NICE guidance in T1D in the UK has the potential to drive a significant reduction in complications, leading to important cost savings for the NHS over 5 and 10 years. This is likely an underestimate of the cost savings of CSII as the budget impact model has not accounted for Quality of Life improvements.