Economic analysis of the implementation of guidelines for type 2 diabetes control developed by Diabetes Poland: what increase in costs is justified by clinical results?


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
The study examined the cost-effectiveness of intense treatment for newly diagnosed type 2 diabetes patients compared to conventional pattern of care. The authors concluded that improving the standards of diabetes treatment was a cost-effective strategy from the perspective of the public payer. The analysis used a valid cost-effectiveness framework that considered key variations in the cost of pharmacotherapy. The authors’ conclusions appear robust.

Type of economic evaluation
Cost-utility analysis

Study objective
The study examined the cost-effectiveness of intense treatment based on specific guidelines for patients with newly diagnosed type 2 diabetes compared to conventional pattern of care.

Interventions
The analysis compared new guidelines of type 2 diabetes (according to therapeutic goals defined by Diabetes Poland) with the conventional clinical practice for this patient population.

The guideline goals included blood pressure control and appropriate levels of total, low-density and high-density cholesterol and triglycerides.

Location/setting
Poland. Primary care.

Methods
Analytical approach:
The analysis was based on the previously published CORE model that simulated disease progression over a patient's lifetime. The authors stated that the study took the perspective of public payer.

Effectiveness data:
A selective approach was used to identify data sources. Most evidence on baseline characteristics of the patient population were taken from a study of the Polish population supplemented with data from the United Kingdom Prospective Diabetes Study (UKPDS). Other data were already incorporated in the CORE model. The efficacy of treatment was the main endpoint and was estimated by assessing disease progression (change over time for control of glycaemia, blood pressure and lipid metabolism) in the patient population as observed in the Polish database for the conventional care and the achievement of therapeutic goals defined in the guidelines for the intense care strategy.

Monetary benefit and utility valuations:
Sources of utility valuations were not explicitly stated but may have already been incorporated in the decision model.

Measure of benefit:
Quality-adjusted life-years (QALYs) were used as the summary benefit measure and were discounted at an annual rate of 3.5%.

Cost data:
The economic analysis included two main cost categories: costs associated with the interventions (mainly pharmacotherapy) and costs associated with the treatment of complications. Drug costs were based on official price lists. Patterns of resource consumption were mostly estimated using expert opinion and taken from a manufacturer. Costs of complications were based on prices of medical services established by the National Health Fund. Costs were in Euros (€). A 5% annual discount rate was applied. The price year was 2011.

Analysis of uncertainty:
Deterministic sensitivity analyses were carried out to investigate the impact on the model outcomes of variations in baseline patient characteristics and proportions of patients on hypotensive and hypolipaemic agents.

Results
Deterministic sensitivity analyses were carried out to investigate the impact of variations in baseline patient characteristics and proportions of patients on hypotensive and hypolipaemic agents on the model outcomes.

QALYs were 8.1 with usual care and 8.4 with intense treatment.

Costs of treating complications were €5,950 with usual care and €5,550 with intense treatment.

If intense treatment cost €250 per patient per year more than usual care, the incremental cost per QALY gained with intense treatment would be €7,500.

Using a threshold value of €25,511 corresponding to three times the gross domestic product (GDP) per capita, intense treatment would be cost-effective up to a treatment cost of €750 per year relative to usual care.

The sensitivity analysis showed that better health conditions of patients at baseline (especially in terms of blood pressure and high-density lipoprotein cholesterol) improved the cost-effectiveness of intensive treatment. Variations in use of hypotensive and hypolipaemic agents did not alter the conclusions of the analysis.

Authors’ conclusions
The authors concluded that improving the standards of diabetes treatment was a cost-effective strategy from the perspective of the public payer as long as the incremental cost was lower than €725 per year.

CRD commentary
Interventions:
Selection of the interventions was appropriate as the authors considered moving from a conventional approach to a more intense one. The authors noted that the study did not compare specific therapeutic options but considered variations in a comprehensive pattern of care.

Effectiveness/benefits:
Epidemiological data were appropriately taken from local evidence and from a large observational study conducted in the UK. Transition probabilities among health states and risk of complications were taken directly from the CORE model that has been validated in several countries. Treatment effect for the current patterns of treatments was based on evidence from Polish studies and the intervention under analysis represented the results of achievements of the goals stated in the guidelines. QALYs was a relevant benefit measure given the impact of the disease on patients’ survival and quality of life. There were no details on sources of utilities but these were likely to have been taken directly from the CORE model.

Costs:
The economic analysis was consistent with the perspective adopted in the study for types of costs and their sources. Most costs were taken from official price lists. Unit costs and quantities of resources used were not presented separately and costs were mainly reported as macro-categories, especially for the costs of complications. It appeared that resource use was based on experts’ opinions. The price year was clearly stated and this enabled refutation exercises in other time periods. The change in the price of pharmacotherapy was a key step of the simulation.

Analysis and results:
The study results were presented clearly. An incremental approach was used to combine the costs and benefits of the two approaches for multiple costs of pharmacotherapy. A validated simulation model was used in the analysis. Conventional discounting was applied to costs and benefits of the two comparators. Few univariate sensitivity analyses were conducted and the issue of uncertainty in model parameters was not fully investigated. The study findings were specific to the Polish environment and appeared difficult to transfer to other settings.

Concluding remarks:
The analysis used a valid cost-effectiveness framework that considered key variations in the cost of pharmacotherapy. The authors' conclusions appear robust.

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