Basal supported oral therapy with insulin glargine results in longer persistence and lower costs compared with insulin detemir in type 2 diabetics in Germany

Pfohl M, Dippel FW, Kostev K, Fuchs S, Kotowa W

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 estimated the potential cost savings associated with basal supported oral therapy, based on insulin glargine compared with insulin detemir, for patients with type 2 diabetes. Starting therapy with insulin glargine, rather than detemir, was associated with a later initiation of intensified conventional therapy, and potential cost savings. There were a few limitations and some of the methods were not well reported. This makes the conclusions difficult to assess, but they appear to reflect the evidence available.

Type of economic evaluation
Cost-effectiveness analysis

Study objective
The objective was to estimate the potential cost savings associated with basal supported oral therapy, based on insulin glargine compared with insulin detemir, for patients with type 2 diabetes.

Interventions
Basal supported oral therapy using insulin glargine was compared with therapy using insulin detemir.

Location/setting
Germany/primary care.

Methods
Analytical approach:
A Markov model was used to combine the outcome data from a German database and the costs from published literature, over five or 10 years. The authors stated that the perspective was that of the German statutory health insurance.

Effectiveness data:
The effectiveness data were from a cohort study, called the IMS Disease Analyzer, for the first five years. These were extrapolated to 10 years, using multivariate regression analysis and including covariates to control for confounding. All German patients with type 2 diabetes who were treated with an oral antidiabetic drug and had an initial prescription of insulin glargine or detemir between 2003 and 2007 were included. The database contained 2,994 patients who met the inclusion criteria; 2,588 received insulin glargine and 406 received insulin detemir. The main clinical effectiveness estimate was the persistence with basal supported oral therapy.

Monetary benefit and utility valuations:
Not relevant.

Measure of benefit:
The main clinical effectiveness estimate was the persistence on basal supported oral therapy.

Cost data:
The cost data were from two published observational studies. The categories included the costs of insulin glargine and detemir, the basal-bolus regimens, the tests, and the equipment, such as test strips, lancets, and needles. All costs were
in Euros (EUR) and they were discounted at a rate of 5% per annum.

**Analysis of uncertainty:**
Several one-way sensitivity analyses and some scenario analyses were conducted.

**Results**
The mean persistence, defined as the time until a switch to intensified conventional therapy, was 659 days for insulin glargine and 591 days for insulin detemir. This difference was statistically significant (p<0.001).

Over five years, insulin detemir was estimated to cost a total of EUR 178.8 million, compared with EUR 134.0 million for insulin glargine. This was a saving of EUR 44.8 million with insulin glargine.

Over 10 years, the cost with insulin detemir was EUR 338.3 million, compared with EUR 271.8 million with insulin glargine; a saving of EUR 66.6 million.

The results of the sensitivity analysis did not alter the base-case conclusions.

**Authors’ conclusions**
The authors concluded that starting therapy with insulin glargine, rather than detemir, was associated with a later initiation of intensified conventional therapy, and potential cost savings.

**CRD commentary**
**Interventions:**
The interventions were described and appear to have been appropriate comparators. It was unclear if other relevant treatment options existed and could have been included. The interventions could be relevant for other settings.

**Effectiveness/benefits:**
The effectiveness data were from a source relevant to the setting and they were reported sufficiently. Valid methods were used to extrapolate the five-year data to 10 years. The treatments were assumed to have equal uptake, but few patients (406 out of 2,994) received insulin detemir. The benefit measure appears to have been appropriate, but a more generic measure, such as quality-adjusted life-years, could have increased the generalisability of the results and assessed the morbidity and mortality of the patients.

**Costs:**
The cost categories reflected the perspective stated, but some potentially important costs might have been omitted, such as the costs of treating complications, if these differed between treatments. More detail on the sources for the costs and the price year and cost adjustments would have been useful to fully assess the estimates. As these inputs were not reported in detail, the generalisability of the results may be limited.

**Analysis and results:**
It was appropriate to use a model to synthesise the cost and outcome data from multiple sources. This model was described and a diagram was provided. The results were adequately reported. The costs and outcomes were not combined and a cost-consequences analysis was conducted. The authors conducted one-way sensitivity analyses to explore the impact of uncertainty on the results, but multi-way and probabilistic sensitivity analyses could have more thoroughly explored the uncertainty. The authors acknowledged several imitations to their study.

**Concluding remarks:**
There were a few limitations and some of the methods were not well reported. The authors’ conclusions appear to reflect the evidence available, but they are difficult to fully assess due to these limitations.

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