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Title **Short-Acting Insulin Analogues for Diabetes Mellitus: Meta-Analysis of Clinical Outcomes and Assessment of Cost Effectiveness**

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Aim

To evaluate the clinical and economic implications of short-acting insulin analogues (insulin lispro (ILis), insulin aspart (IAsp), and insulin glulisine (IGlu)) in treating type 1, type 2, and gestational diabetes mellitus (DM).

Conclusions and results

In type 1 DM patients, treatment with ILis or IAsp significantly reduced HbA1c levels, compared to human insulin (HI). The occurrence of overall and severe hypoglycemia was similar for both treatments, but nocturnal hypoglycemia was less frequent with ILis compared with HI. In type 2 DM patients, HbA1c levels, occurrences of hypoglycemia, and quality of life were similar between those using HI and those using short-acting insulin analogues (SAIAs). SAIAs did not result in significant reductions in hypoglycemic episodes. Uncertainty remains regarding the use of short-acting insulin analogues in gestational DM patients and pregnant women with diabetes. If users of HI switch to the more expensive insulin analogues, further increases in drug plan expenditures can be anticipated. Evidence suggests that these additional costs can be offset by reductions in other healthcare expenditures in a 12-month horizon. These findings are limited to study settings in the United States. The economic evidence also showed that patients preferred ILis to HI or Mix25 to HI 30/70.

Recommendations

Not applicable.

Methods

A systematic review and a meta-analysis were undertaken to evaluate the clinical and economic implications of using SAIAs in treating diabetes mellitus, relative to human insulin and to oral anti-diabetic agents. SAIAs included insulin lispro (ILis), insulin aspart (IAsp) and insulin glulisine (IGlu).

Further research/reviews required

High-quality long-term studies are needed to determine the benefit and harm of short-acting insulin analogues, compared to conventional insulin. Data on patient mortality and quality of life are lacking. The impact on healthcare costs beyond 12 months is unknown.

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