

Title	Insulin analogues
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Aim

To assess the safety, efficacy or effectiveness and economic implications of using rapid-acting, long-acting or premixed insulin analogues compared with conventional human insulin for treatment of type 1, type 2, or gestational diabetes mellitus.

Conclusions and results

Forty-five full text articles comprising of five Health Technology Assessments reports, 10 systematic reviews, 16 Randomised Controlled Trials, 13 cost-effectiveness analyses and one costing analysis were included in the review.

Efficacy or effectiveness and safety of Insulin Analogues

Treatment with insulin analogues compared with conventional human insulin appeared to offer minor benefit in terms of glycaemic control as reflected in glycosylated haemoglobin A1c (HbA1c) level, postprandial blood glucose and fasting blood glucose but have advantages in terms of reduced occurrence of hypoglycaemia, particularly nocturnal hypoglycaemia and severe hypoglycaemia as reported in some studies. While the adverse events (excluding hypoglycaemia episodes) were found to be similar in both treatment groups, patients treated with insulin analogues showed greater treatment satisfaction and less weight gain.

Recommendations

It is recommended that insulin analogues should be made available for treatment of all type 1 diabetes mellitus and for type 2 diabetes mellitus who have recurrent hypoglycaemia. However, it is not recommended for gestational diabetes mellitus. Although insulin analogues could be considered cost-effective in some countries, generalizability and international comparisons of economic evaluations are limited. Local cost analyses research with the decision maker and societal perspective are encouraged.

Methods

Studies were identified by searching electronic databases. The following databases were searched through the Ovid interface: MEDLINE(R) In-process and other Non-Indexed Citations and Ovid MEDLINE(R), EBM Reviews-Cochrane Database of Systematic Reviews, EBM Reviews-Cochrane

Central Register of Controlled Trials, EBM Reviews-Database of Abstracts of Review of Effects, EBM Reviews-Health Technology Assessment, EBM Reviews-NHS Economic Evaluation Database and PubMed. No limits were applied to the search, except for publication year from 2006 to current for EBM Reviews-Cochrane Central Register of Controlled Trials. The FDA database was also searched. The last search was run on 7 March 2012. Additional articles were identified from reviewing the references of retrieved articles and contacting the authors. Studies were selected based on inclusion and exclusion criteria. All relevant literature was appraised using the Critical Appraisal Skills Programme (CASP) tool for systematic review (including HTA reports) and economic evaluation and Jadad scale for RCT. All full text articles were graded based on guidelines from the U.S./Canadian Preventive Services Task Force.

Further research/reviews required

More high quality clinical trials are warranted to provide evidence on long term safety and effectiveness of insulin analogues.

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