

Anti-hyperglycaemic medicines sitagliptin and dapagliflozin

Summary

Objectives: To assess the effectiveness and cost-effectiveness of the DPP-4 inhibitor sitagliptin and the SGLT-2 inhibitor dapagliflozin (both in combination with metformin) compared to sulphonylureas (gliclazide) in type 2 diabetes (diabetes mellitus) in Estonia. Another objective was to perform a budget impact analysis for the inclusion of dapagliflozin in the reimbursement medicines list.

Methods: A literature search on the effectiveness, safety and cost-effectiveness of the medicines was conducted in PubMed, Cochrane Database of Systematic Reviews and the INAHTA database. Studies were selected using predefined selection criteria and summaries of scientific articles were included in the analysis. In order to calculate the costs of diabetes complications, data about diabetes patients' hospital bills and prescriptions were obtained from Estonian Health Insurance Fund. Cost-effectiveness was assessed using a Monte Carlo simulation model from AstraZeneca.

Results: The literature review showed that sitagliptin and dapagliflozin in combination with metformin both have effectiveness – lowering HbA1c levels by 0.5–0.8%. Dapagliflozin may have certain advantage in decreasing body weight by 1.5–4.54 kg.

The modelling results of a base-case scenario showed that using dapagliflozin would net 0.01 and 0.056 QALYs over sitagliptin and gliclazide, respectively, in five years. Using gliclazide would net 0.046 QALYs in five years over sitagliptin. In a base-case scenario, from the health service payer's perspective, ICER is estimated at €85,600 and €46,200 per QALY if dapagliflozin is used instead of sitagliptin or gliclazide. ICER of sitagliptin in relation to gliclazide is €37,900. Sensitivity analyses were performed to evaluate the effect of change in the medicines' effectiveness, HbA1c target value (when switching to insulin), quality of life assessments, price of dapagliflozin, longer time horizon and smaller discounting rate. When different inputs are changed, sensitivity analysis gave an ICER in the range of €7,808 – €846,500 per incremental QALY when using dapagliflozin instead of sitagliptin. The budget impact analysis showed that if every year 275 new patients would start treatment with dapagliflozin instead of sitagliptin, the additional cost for the Estonian Health Insurance Fund would be €600,000 for a five year period.

Conclusions: Using dapagliflozin or sitagliptin instead of gliclazide improves the quality of life. However, due to the steep prices, savings on treatment costs are lower than the additional costs of dapagliflozin or sitagliptin.

Reference: Juus E, Männik A, Volke V, Jakovlev Ü, Kiiwet RA. Diabeediravi sitagliptiini ja dapagliflosiiniga. Tartu: Tartu Ülikooli tervishoiu instituut; 2014.