Effectiveness of pioglitazone and rosiglitazone in the treatment of type 2 diabetes

Clinical effectiveness and cost-effectiveness of pioglitazone and rosiglitazone in the treatment of type 2 diabetes: a systematic review and economic evaluation

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Executive summary

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Executive summary

Objectives

The aim of this review was to evaluate the use of pioglitazone and rosiglitazone, in terms of both clinical and cost-effectiveness in the treatment of type 2 diabetes.

Methods

Electronic databases and the reference lists of relevant articles, in addition 14 health services research-related resources were consulted via the Internet. A systematic review of the literature, involving a range of databases, was performed to identify all papers relating to the glitazones.

The methodological quality of the included randomised controlled trials (RCTs) was assessed using the Jadad method. A generic proforma for the critical appraisal of modelling studies in health economics was used in systematically reviewing the economic assessment studies identified. This was supplemented by a detailed review of the disease-specific factors within the studies. Where possible, key outcomes were compared.

Readers should note that information from the sponsor's submission was submitted in confidence to the National Institute for Clinical Excellence (NICE). Such information was made available to the NICE Appraisals Committee, but has been removed from this version of the report.

Results and conclusions

The total number of studies identified from these searches was 1272.

Number and quality of studies

Nine studies met the inclusion criteria.

Clinical effectiveness

The clinical evidence available showed that glitazones reduce glycosylated haemoglobin by approximately 1%, and are more effective at higher doses than at lower doses. Glitazone treatment is associated with weight gain. No published data were available on the long-term effects of glitazone use. No prospective randomised controlled trials (RCTs) were found comparing pioglitazone to rosiglitazone, but the available evidence indicated that the two treatments had similar effects.

Health economics

There are no published economic studies on either pioglitazone or rosiglitazone. Economic evaluations for both glitazones have been provided by the sponsors. In spite of the emphasis in the NICE 'Guidance for Manufacturers and Sponsors' that sponsors provide transparent economic models with a full range of sensitivity analyses performed, neither GlaxoSmithKline nor Takeda fulfilled this requirement. Even though this review is an update of the original glitazone reviews, all the economic evidence presented in the Takeda submission and the majority of the new evidence presented in the GSK submission is still marked 'Commercial in Confidence'.

Sensitivity analyses undertaken by the assessment team suggest that the cost per quality-adjusted life-year (QALY) of rosiglitazone is most sensitive to dosage and treatment effect, that is, the effect of rosiglitazone on β-cell function and insulin sensitivity. In the two scenarios where rosiglitazone is compared with metformin and sulfonylurea combination therapy, the cost-effectiveness of rosiglitazone switches from around £10,000 per QALY to being dominated by the comparator strategy. Since the baseline estimate of cost-effectiveness is not robust to changes in the treatment effect and is reliant on the many assumptions included within the metabolic and long-term economic models, caution should be used in interpreting the baseline result.

Recommendations for further research

It is recommended that research already undertaken should be published, preferably in peer-reviewed journals. Direct head-to-head comparisons of the glitazones in combination with metformin or sulfonylurea would be helpful. The current licence arrangements do not allow for routine use of the glitazones in triple oral combination therapy or in combination with

insulin. Evidence is emerging of use of the glitazones within such combinations; therefore, prospective RCTs would be useful. These studies could examine short-term transition strategies and longer term management. The impact of the glitazones in delaying transfer to insulin and the impact on long-term outcomes should also be considered for investigation.

Publication

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NHS R&D HTA Programme

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