

## ABSTRACT

**Title:** The place of DPP-4 inhibitors in the treatment algorithm of diabetes type 2: a Systematic Review of Cost-effectiveness Studies

**Objective:** To conduct a systematic review of cost-effectiveness, cost-utility and cost-benefit studies of DPP-4 inhibitors for diabetes treatment *versus* other antidiabetics.

**Methods:** Three investigators searched the CRD York, Tufts CEA Registry, MEDLINE (PubMed) databases, and grey literature through 2015. Revision of all potentially relevant titles and abstracts (1<sup>st</sup> screening), and subsequently screened full-text articles (2<sup>nd</sup> screening), according to inclusion criteria. The studies should be available as a full-text publication in English, French, Spanish, or Portuguese. A critical appraisal of the methodology and reporting was performed using the 35 item version - BMJ checklist.

**Results:** A total of 295 studies were identified, of which 24 were accepted in a 1<sup>st</sup> screening and 20 in 2<sup>nd</sup> screening. Compared to sulphonylureas, the ICER varied between 924- 13,931€/QALY for saxagliptin, 5,949-20,350€/QALY for sitagliptin and 9,072€/QALY for vildagliptin, all as add-on to metformin. Compared to insulin, saxagliptin presented an ICER of 6,100 €/QALY (+sulphonylurea) and 6,790 €/QALY (+metformin).

Compared to sitagliptin, liraglutide had an ICER that varied between 10,436-32,869€/QALY as second line therapy. Finally, the only study on GLP-1 agonists established an ICER of 37,463€/QALY versus DPP-4 inhibitors. The majority of the studies were based on clinical trials of high quality; differences in ratios were essentially due to differences in costs of resources across countries.

**Conclusion:** According to commonly accepted thresholds, DPP-4 inhibitors are cost-effective versus sulphonylureas and liraglutide versus sitagliptin for diabetes type 2. However, recent evidence demonstrates that GLP-1 agonists are cost-effective versus DPP-4 inhibitors, possibly questioning the national current therapeutic guidelines.