

Dipeptidyl peptidase-4 (DPP-4) inhibitors were superior to placebo but not statistically different than intermediate-acting insulin in adults with type 2 diabetes: Results of a network meta-analysis

Summary

This review includes 10 studies evaluating the effectiveness of DPP-4 used as a third-line agent in adult patients with T2DM. DPP-4 inhibitors were superior to placebo and similarly effective to intermediate-acting insulin in reducing A1C levels. The use of DPP-4 was also associated with a reduced risk of infection when compared to placebo.

Implications

Our review is similar to previous reviews on the topic, all of which found reduced A1C for DPP-4 compared to placebo. Patients and their healthcare providers should consider these results along with patient preferences and other factors when selecting T2DM medications.

Reference: Tricco AC, Antony J, Khan PA, et al. Safety and effectiveness of dipeptidyl peptidase-4 inhibitors versus intermediate-acting insulin or placebo for patients with type 2 diabetes failing two oral antihyperglycaemic agents: a systematic review and network meta-analysis. *BMJ Open* 2014;4:e005752. doi:10.1136/bmjopen-2014-005752

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For more information, please contact Dr. Andrea Tricco:
triccoa@smh.ca

What is the current situation?

- Type 2 diabetes mellitus (T2DM) treatment begins with lifestyle modifications and metformin.
- If glycosylated hemoglobin (A1C) levels remain elevated, second-line therapy (e.g. sulfonylurea) is introduced.
- If the addition of second-line therapy is insufficient, patients may be offered third-line agents, including dipeptidyl-peptidase-4 (DPP-4) inhibitors or immediate-acting insulin.

What is the objective?

- We conducted a systematic review to determine the comparative safety and effectiveness of DPP-4 and intermediate-acting insulin for adults with T2DM.

How was the review conducted?

- We included studies of patients with T2DM who failed treatment with first- and second-line agents and were currently receiving a third-line agent.
- The primary outcome of interest was A1C level, but we were also interested in capturing harms outcomes (i.e., overall harms, treatment-related harms, weight gain, severe hypoglycemia, cardiovascular disease, and mortality).
- Screening, data abstraction and quality appraisal of relevant studies were conducted by two independent reviewers.
- A network meta-analysis was used to assess the comparative effectiveness of interventions that may or may not have been compared directly.
- The outcomes were selected and full methods were published a priori.

What did the review find?

- We identified 10 relevant studies (5 unpublished), which included a total of 2,967 adults with T2DM.
- Network meta-analysis showed that DPP-4 inhibitors significantly reduced A1C levels when compared to placebo.
- No clinically significant differences in A1C were observed when DPP-4 was compared to intermediate-acting insulin.
- DPP-4 was also associated with patients experiencing fewer infections, but no other differences in harms were observed.