Evaluation of the long-term cost-effectiveness of IDegLira versus liraglutide for patients with type 2 diabetes uncontrolled on oral antidiabetic drugs in China

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INTRODUCTION

- International Diabetes Federation (IDF) estimated that the prevalence of diabetes in China has increased from 2.7% in 2000 to 10.9% in 2019[1]. According to the latest epidemiological study in China in 2020, the prevalence of diabetes is 12.8% and the number of adults with diabetes is up to 129.8 million in China[2]. Diabetes is also associated with a significant economic burden in China. In 2019 the annual diabetes related medical expenditure was estimated to be USD 109 billion[1].
- There is a need for new treatment strategies for patients with type 2 diabetes mellitus (T2DM) and poor glucose control that minimize the negative impact of treatment on patients' daily lives associated with current therapies, such as weight gain, high risk of hypoglycemia, gastrointestinal side effects or regimen complexity.
- Insulin degludec/liraglutide(IDegLira) is the first basal insulin and glucagon-like peptide-1 receptor agonist (GLP-1 RA) in a single pen injection device, and a once daily treatment option for patients with T2DM who are uncontrolled on basal insulin and require treatment intensification.

OBJECTIVES

- To assess the long-term cost-effectiveness of the insulin degludec/liraglutide combination (IDegLira) versus liraglutide for patients with T2DM uncontrolled on oral antidiabetic drugs (OAD) in China.

METHODS

- Long-term projections of cost-effectiveness outcomes were made using IQVIA CORE Diabetes Model from China's health care system perspective, specifically, to simulate disease progression and determine the total direct medical cost, life years (Lys) and quality-adjusted life years (QALYs) over 30 years.
- Clinical inputs were obtained from the DUAL I China randomized controlled trial in which adults with T2DM falling to achieve glycemic targets with OAD were randomly allocated to receive either IDegLira or liraglutide..
- Treatment costs including drug price and needle cost, were derived from marketing retail prices of 2021 Q1 in China. Cost for complications and management were derived from published sources in Chinese T2DM patients and inflated to 2020 values. Discount rates of 5% for both costs and clinical outcomes were applied in the base case.
- Patients were assumed to receive IDegLira or liraglutide for the first 5 years of the analysis before treatment was intensified to basal-bolus insulin.
- To assess the robustness of results, one-way sensitivity analyses and probabilistic sensitivity analyses were performed.
- A non-parametric bootstrapping approach was used for this health economic analysis. Using second-order Monte Carlo simulation, T2DM progression was simulated in 1000 patients through the model 1000 times to calculate the mean and standard deviation of life expectancy, quality-adjusted life expectancy, and costs.

RESULTS

- IDegLira was associated with improved discounted life years of 0.01 (12.408 vs. 12.398) and quality-adjusted life years (QALYs) of 0.02 (8.825 vs. 8.805) compared to liraglutide. Improved clinical outcomes resulted from fewer diabetes-related complications and a delayed time to their onset.
- IDegLira was associated with mean costs savings of 5,986 versus liraglutide (CNY 288,599 vs. CNY 294,585), resulting from lower treatment costs and avoided diabetes-related complications.
- IDegLira remained dominant over liraglutide in sensitivity analysis.

Table 1 Base case analysis

	IDegLira	Comparator	Difference
Life expectancy, Years	12.408	12.398	0.010
Quality-adjusted life expectancy, QALYs	8.825	8.805	0.020
Direct costs, CNY	288,599	294,585	-5986
ICER	IDegLira dominant		

Table 2 Sensitivity analysis

	△COST	△QALY	ICER
40-year time horizon	-5170	0.030	Dominant
20-year time horizon	-5924	0.018	Dominant
3% discount rate	-6635	0.026	Dominant
8% discount rate	-5219	0.014	Dominant

CONCLUSIONS

- IDegLira is estimated to be a cost saving treatment in China compared with liraglutide for patients with T2DM uncontrolled on oral antidiabetic drugs.

REFERENCES

1. IDF Diabetes Atlas, 2000-2019.
2. Yongze Li, et al. Prevalence of diabetes recorded in mainland China using 2018 diagnostic criteria from the American Diabetes Association: national cross sectional study. BMJ. 2020, 369 :m997.

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