Economic Impact of Cardiovascular Benefit of Semaglutide versus Tirzepatide in Patients with Overweight or Obesity in China

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Objectives

The cardiovascular (CV) benefit of semaglutide has been proved in the CV outcome trial, which STEER real-word study showed that semaglutide significantly reduced the primary composite endpoint (myocardial infarction, heart failure, stroke, coronary revascularization, and all-cause mortality) compared to Tirzepatide. This study aimed to assess the economic impact associated with reductions in major adverse cardiovascular events (MACE) with semaglutide versus tirzepatide among patients with overweight or obesity in China.

Methods

A 10-year cost-consequence model was built to compare the economic impact of semaglutide and tirzepatide (Figure 1). Incidence rates of four major CV complications (myocardial infarction, stroke, heart failure, and coronary revascularization) were extracted from STEER[1]. Only direct medical costs were included in the cost components, with data sourced from the most recent literature[2-4] (Table 1). Annual cost differences (years 1–10) were calculated and the contribution of each complication to overall savings was quantified. One-way sensitivity analyses were conducted to assess the robustness of the model, with key parameters including the discount rate and event costs.

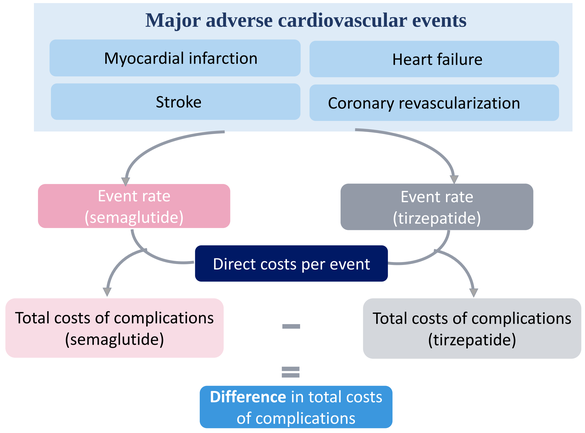


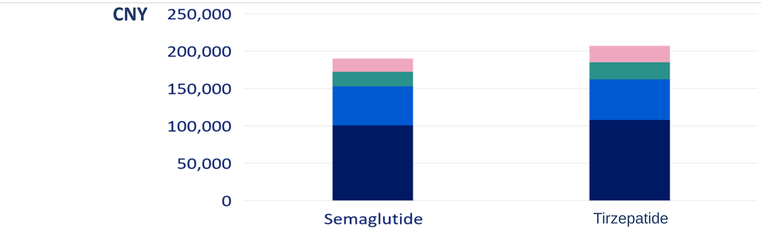
Figure 1 Model structure

Table 1 Model inputs

	Baseline prevalence	Event rate (per patient per year)		Event costs (CNY)	
		Semaglutide	Tirzepatide	At onset	In subsequent years
Myocardial infarction	37.0%	0.0023	0.0061	82,567	26,100
Stroke	31.0%	0.0021	0.0042	32,695	16,174
Heart failure	8%	0.0018	0.0050	39,556	20,984
Coronary revascularization	0%	0.0079	0.0098	119,801	26,100

Results

- Compared with tirzepatide, semaglutide saved a total of CNY 17,050 in direct medical costs per patient over 10 years—equivalent to CNY 4.7 per day (Figure 2). The cumulative cost savings with semaglutide are CNY 733, CNY 1,578, CNY 2,669, CNY 4,001, CNY 5,575, CNY 7,390, CNY 9,445, CNY 11,740, CNY 14,275, and CNY 17,050 over 1 to 10 years, respectively (Table 2).
- The total cost saving of semaglutide versus tirzepatide were derived from four components: CNY 7,124 from myocardial infarction (41.8%), CNY 2,056 from stroke (12.1%), CNY 3,623 from heart failure (21.2%), and CNY 4,247 from coronary revascularization (24.9%) (Figure 3).
- One-way sensitivity analysis showed, the cumulative cost savings of semaglutide ranged from CNY 13,398 to CNY 18,755 over a 10-year time horizon, when changing discount rates to 4.5% and increasing or decreasing the direct cost of events by 10%. The cost saving trend in each year of the analysis remained consistent with the base case analysis (Table 3).



	Semaglutide	Tirzepatide	Difference
Coronary revascularization	17,745	21,992	-4,247
Heart failure	19,387	23,010	-3,623
Stroke	52,199	54,255	-2,056
Myocardial infarction (MI)	100,765	107,889	-7,124
Total costs	**190,096**	**207,146**	**-17,050**

Figure 2 Total direct costs savings over 10 years

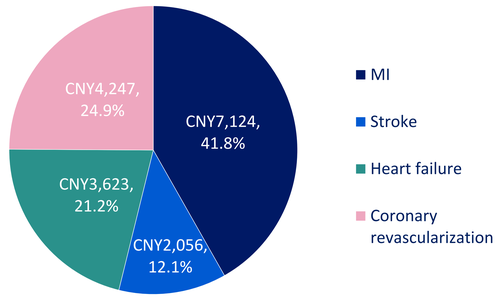


Figure 3 Distribution of cost savings

Table 2 Cost differences for semaglutide versus tirzepatide across 1-10 years

Year	1	2	3	4	5	6	7	8	9	10
Cost difference (Yearly, CNY)	-733	-845	-1,091	-1,332	-1,574	-1,815	-2,055	-2,295	-2,535	-2,775
Cost difference (Cumulative, CNY)	-733	-1,578	-2,669	-4,001	-5,575	-7,390	-9,445	-11,740	-14,275	-17,050

Table 3 One-way sensitivity analysis

Scenarios \ Year	Cumulative cost difference (semaglutide versus tirzepatide, CNY)									
	1	2	3	4	5	6	7	8	9	10
Base case	-733	-1,578	-2,669	-4,001	-5,575	-7,390	-9,445	-11,740	-14,275	-17,050
4.5% discount rate	-733	-1,542	-2,541	-3,708	-5,028	-6,484	-8,062	-9,749	-11,532	-13,398
Event costs increase 10%	-806	-1,736	-2,936	-4,402	-6,133	-8,129	-10,390	-12,914	-15,703	-18,755
Event costs decrease 10%	-659	-1,421	-2,402	-3,601	-5,018	-6,651	-8,501	-10,566	-12,848	-15,345

Conclusions

In the Chinese setting, semaglutide treatment resulted in significant direct medical cost savings compared with tirzepatide, driven by reductions in the incidence of cardiovascular events and their downstream complications. Myocardial infarction contributed the largest share of the long-term cumulative savings.

References: (1) L Wilson, et al Diabetes, Obesity and Metabolism. 2026. 28(3):2403-2415; (2) Su W, et al. Diabetes Ther. 2019;10(5):1969-1984; (3) Liang et al. Cardiovascular Drugs and Therapy. 2021. 35:775–785; (4) China Health Statistics Yearbook 2022.