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## **Cost-Effectiveness of Dapagliflozin as a Treatment for Chronic Kidney Disease among Patients with Diabetes in China**

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**Objectives :** Patients with diabetes are at increased risk of developing chronic kidney disease (CKD). Dapagliflozin has been demonstrated to slow CKD progression and reduce the risk of cardiovascular disease (CVD) and mortality. However, the introduction of novel medications inevitably increases treatment costs. Currently, evidence regarding the cost-effectiveness of dapagliflozin for CKD among patients with diabetes in Asian populations remains limited. This study therefore aimed to evaluate its cost-effectiveness among patients with diabetes in China.

**Methods :** We developed a microsimulation model based on high-quality data sources to simulate lifetime costs and disease progression for a cohort of 10,000 patients with diabetes from a societal perspective. The primary outcomes included the incremental cost-effectiveness ratio (ICER), quality-adjusted life years (QALYs), kidney failure with replacement therapy (KFRT), and CVD. These outcomes were estimated as weighted averages across four age-specific diabetic cohorts (45-year-old, 55-year-old, 65-year-old, 75-year-old). To better capture the variability of real-world clinical practice, scenario analyses were conducted to explore different levels of patient adherence to dapagliflozin treatment.

**Results :** Compared with standard CKD treatment alone, adding dapagliflozin decreased lifetime KFRT incidence by 16.38 per 1,000 individuals and lifetime CVD incidence by 8.11 per 1,000 individuals. Furthermore, dapagliflozin yielded an additional 1.096 life years and 0.537 QALYs, with an incremental cost of \$1,087. The ICER of dapagliflozin was \$2,026 per QALY gained, which was below the willingness-to-pay threshold in China. Scenario analyses indicated that higher adherence to dapagliflozin treatment yielded greater health benefits, with treatment consistently remaining cost-effective across different adherence levels.

**Conclusions :** For patients with diabetes, incorporating dapagliflozin into standard CKD treatment can increase life years, reduce the incidence of KFRT and CVD, and is likely to be cost-effective in China.

Table1.jpg



Table 1. Benefits of dapagliflozin on kidney failure with replacement therapy and cardiovascular disease.

	Lifetime incidence of KFRT			Lifetime incidence of CVD		
	Events per 1000 individuals	Absolute decrease	Relative decrease (%)	Events per 1000 individuals	Absolute decrease	Relative decrease (%)
<b>45-year-old</b>						
Standard Treatment	58.09			376.14		
Dapagliflozin plus Standard Treatment	30.85	27.24	46.89	364.85	11.29	3.00
<b>55-year-old</b>						
Standard Treatment	56.87			251.40		
Dapagliflozin plus Standard Treatment	34.08	22.79	40.07	242.36	9.04	3.60
<b>65-year-old</b>						
Standard Treatment	52.27			164.71		
Dapagliflozin plus Standard Treatment	42.06	10.21	19.54	157.40	7.31	4.44
<b>75-year-old</b>						
Standard Treatment	24.48			70.58		
Dapagliflozin plus Standard Treatment	23.00	1.48	6.05	66.76	3.82	5.41
<b>Weighted results</b>						
Standard Treatment	50.04			221.93		
Dapagliflozin plus Standard Treatment	33.66	16.38	32.73	213.82	8.11	3.65

Abbreviations: KFRT, kidney failure with replacement therapy; CVD, cardiovascular disease.

Table1.jpg

Table 2. Cost-effectiveness of dapagliflozin for chronic kidney disease among patients with diabetes.

	Life Years	Incremental Life Years	QALYs	Incremental QALYs	Costs, \$	Incremental costs, \$	ICER, \$
<b>45-year-old</b>							
Standard Treatment	32.860		19.160		19903		
Dapagliflozin plus Standard Treatment	34.310	1.450	19.699	0.539	20558	655	1217
<b>55-year-old</b>							
Standard Treatment	23.109		15.239		20220		
Dapagliflozin plus Standard Treatment	24.420	1.311	15.868	0.629	21204	985	1563
<b>65-year-old</b>							
Standard Treatment	14.100		10.197		16793		
Dapagliflozin plus Standard Treatment	15.075	0.975	10.767	0.570	18325	1531	2685
<b>75-year-old</b>							
Standard Treatment	6.448		4.990		9191		
Dapagliflozin plus Standard Treatment	6.923	0.475	5.308	0.318	10285	1094	3450
<b>Weighted results</b>							
Standard Treatment	19.717		12.835		17200		
Dapagliflozin plus Standard Treatment	20.813	1.096	13.372	0.537	18288	1087	2026

Abbreviations: QALY, quality-adjusted life year; ICER, incremental cost-effectiveness ratio.