Cost-Effectiveness of Adding Sodium-Glucose Cotransporter 2 Inhibitors to Standard of Care among patients with Heart Failure and a Reduced Ejection Fraction

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Background

- Sodium-glucose cotransporter 2 inhibitors (SGLT2i) have been approved for treating heart failure with reduced ejection fraction (HFrEF)
- However, the cost-effectiveness of SGLT2i remains unclear in patients with heart failure (HF)

Objectives

- To evaluate the cost-effectiveness of SGLT2i plus standard of care (SOC) vs SOC for patients with HF

Methods

- **Economic model (Figure 1):** A 2-state (alive and dead) Markow model comparing SGLT2i plus SOC with SOC using a 5-year study period from a healthcare system perspective

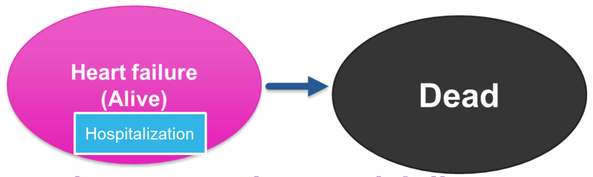

Figure 1. Markov model diagram

- **Simulation sample:** cohort of patients modeled from EMPEROR-Reduced Trial
- **Model inputs (Table 1)**
- **Outcome (Table 2):** incremental cost-effectiveness ratio (ICER)
- **Threshold of willingness-to-pay:** $50,000 per quality-adjusted life-years (QALYs)
- **One-way sensitivity analyses (Table 3):** examine the impact of uncertainties in the key inputs

Results

Table 1. Model Inputs

	Value	Source
SOC (Annual event probabilities, %)		
All-cause hospitalization	0.63	EMPEROR-Reduced
All-cause mortality	0.11	EMPEROR-Reduced
SGLT2i plus SOC vs SOC, HR (95%CI)		
All-cause hospitalization	**0.69 (0.62 - 0.78)**	Meta-analysis of EMPEROR-Reduced and DAPA-HF
All-cause mortality	**0.87 (0.77 - 0.98)**	Meta-analysis of EMPEROR-Reduced and DAPA-HF
Annual costs, median (IQR)		
Background costs, $	3,557 (1934 - 11,574)	Urbich et al 2020
All cause Hospitalization, $	20,826 (18,779 - 29,045)	Urbich et al 2020
SGLT2i, $	6,048 (5,976 - 6,228)	Luo et al 2020
Utilities		
Baseline utility	0.82 (0.71 - 0.94)	Sandu et al, 2016
Hospitalization, %baseline utility	-29 (-15 - -44)	Ambrosy et al 2016
Discount rate, median (IQR), %	3 (0 - 5)	Gold et al 1996

HR, hazard ratio; CI, confidence interval; IQR, Interquartile range.

Table 2. Total costs, health effects, and ICER

	Cost, $		QALYs		
	Total	Incremental	Total	Incremental	ICER, $
SOC	62,104		2.33		
SGLT2i plus SOC	69,531	7427	2.64	**0.31**	**24,159**

Table 3. Results of one-way sensitivity analysis

Parameters			ICER, $/QALY	
	Low limit	Upper limit	Low limit	Upper limit
HR of all-cause Hospitalization	0.62	0.78	10,911	47,891
HR of All-cause mortality	0.77	0.98	23,125	26,285
Cost of Hospitalization, $	18779	29,045	28,810	5,484
Background cost, $	1934	11,574	23,363	28,090
SGLT2 inhibitors cost,$	5976	6,228	23,329	26,234
Baseline utility	0.71	0.94	27,902	21,075
Hospitalization, %baseline utility	-15	-44	33,276	18,676
Discount rate, %	0	5	25,654	23,255

The results from sensitivity analyses suggest that our conclusion is robust to parameter uncertainties.

Conclusions

- For patients with HF, SGLT2i plus SOC is associated with lower risks of all-cause mortality and all-cause hospitalization than SOC
- Compared to SOC, SGLT2 inhibitors plus SOC would be a cost-effective treatment option for treating HF

Disclosure of interests

None