Projecting the incidence and costs of major cardiovascular and kidney complications of type 2 diabetes with widespread SGLT2i and GLP-1 RA use

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1 Background

- Sodium-glucose co-transporter 2 inhibitors (SGLT2is) and glucagon-like peptide-1 receptor agonists (GLP-1 RAs) prevent cardiovascular and kidney disease among people with diabetes.[1,2]
- Whether they are cost-effective when considering solely their cardiovascular and kidney benefits is unknown.

Aim

To estimate the cost-effectiveness of SGLT2is and GLP-1 RAs considering solely their cardiovascular and kidney benefits in people with type 2 diabetes.

2 Methods

- Microsimulation model using real world data that captured CVD and ESKD morbidity and mortality from 2020-2040 (Figure 1).
- Population: 1.1 million people with type 2 diabetes
- Transition probabilities were derived via linking the Australian diabetes registry to hospital admissions databases, the National Death Index, and the Australia and New Zealand Dialysis and Transplant registry using data from 2010-2019.
- Four Interventions: increasing use of SGLT2i (1) or GLP-1 RA (2) to 75% of the total population (TP); and increasing use of SGLT2i (3) or GLP-1 RA (4) to 75% of the secondary prevention population (SPP).
- All interventions were compared to current use of SGLT2is (20% of the total population) and GLP-1 RAs (5%).
- We applied 5% annual discounting.
- Willingness-to-pay threshold was set at $28,000.[3]

3 Results

- The primary outcomes was the incremental cost-effectiveness ratio (ICER) from the Australian Public Healthcare perspective (Table).
- SGLT2is were cost-effective in both the TP and SPP, while GLP-1 RAs were not cost-effective in either population.
- Results from a societal perspective were similar (likely because the median age of people with type 2 diabetes is >67 years).
- 58.6% of simulations were cost-effective in the SGLT2i TP intervention (Figure 2).
- 99.4% of simulations were cost-effective, and 7.3% cost-saving in the SGLT2i SPP intervention.
- Most scenario and one-way sensitivity analyses did not alter the conclusions, except when using U.S. drug prices, which led to substantially increased costs.

Figure 1. Model structure

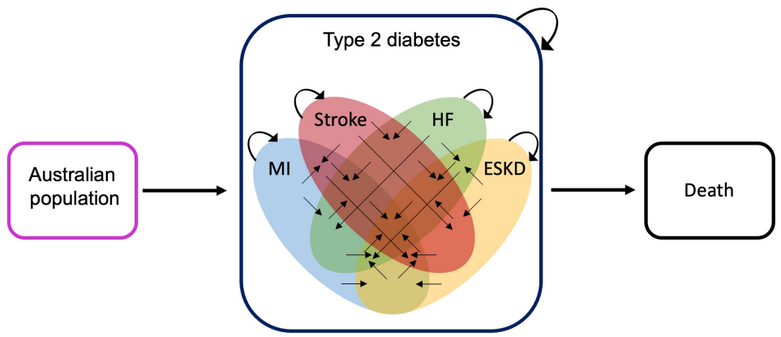
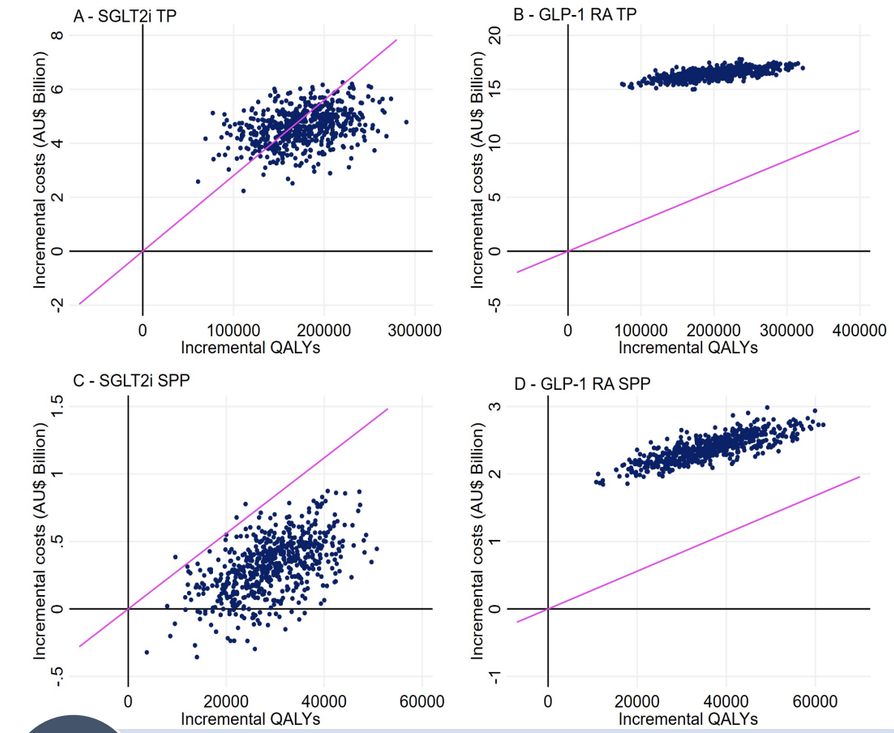


Figure 2 – Results of probabilistic sensitivity analyses



4 Conclusions

At current prices, SGLT2is, but not GLP-1 RAs, would be cost-effective when considering only their cardiovascular and kidney benefits for people with type 2 diabetes.

References

1. McGuire DK, et al. JAMA Cardiology. 2021;6(2):148-58.
2. Sattar N, et al. Lancet Diabetes Endocrinol. 2021; 9(10): 653-62.
3. Edney LC, et al. Pharmacoeconomics. 2018;36(2):239-52.

Table. Base-case outcomes (compared to current use)

	Total population		Secondary prevention population	
Outcomes	SGLT2i	GLP-1 RA	SGLT2i	GLP-1 RA – SPP
Quality adjusted life years	176,445	200,189	29,359	36,033
Total healthcare costs	AU$4.58 billion	AU$16.43 billion	AU$0.31 billion	AU$2.38 billion
Incremental cost-effectiveness ratio	25,976	82,050	10,661	66,000