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Economic benefits of adopting the subsidised continuous subcutaneous insulin infusion (CSII) for People with Type 1 Diabetes (T1D) in Singapore

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Background and Aims

The continuous subcutaneous insulin infusion (CSII) system has been subsidised in Singapore since 2020 for adults and children with T1D. This study analysed the 5-year budget impact of using the CSII plus self-monitoring of blood glucose (SMBG) compared to Multiple Daily Injections (MDI) plus SMBG from Singapore's healthcare system perspective.

Methods

The cost avoidance arising from reduction in diabetes-related complications was estimated using a published probabilistic budget impact model which simulated incidence and progression of microvascular, macrovascular complications, severe hypoglycemic events (SHE) and diabetic ketoacidosis¹. Baseline HbA1c of 8.4% and SHE rate of 1.73 per patient year were obtained from the Singapore General Hospital (SGH) database and a local literature respectively². A meta-analysis comparing the HbA1c improvement, and SHE rate of the two treatment strategies was used to estimate treatment effects and SHE reduction rates³. Other types of complication rates were estimated through published risk curves. Treatment and complication management costs were derived from published literature and the SGH database, inflated to 2024 costs

Results

Compared to using MDI plus SMBG, the use of CSII plus SMBG in T1D would be anticipated to lead to a HbA1c reduction of 0.8% from a baseline of 8.4%, and a reduction of SHE rate from 8.65 per patient to 2.05 per patient over 5 years (Figure 1a and 1b). The associated cost savings from complications avoided would be SGD 6,066 per patient over 5 years (Figure 2).

Figure 1a

5-year cumulative incidence of acute complications

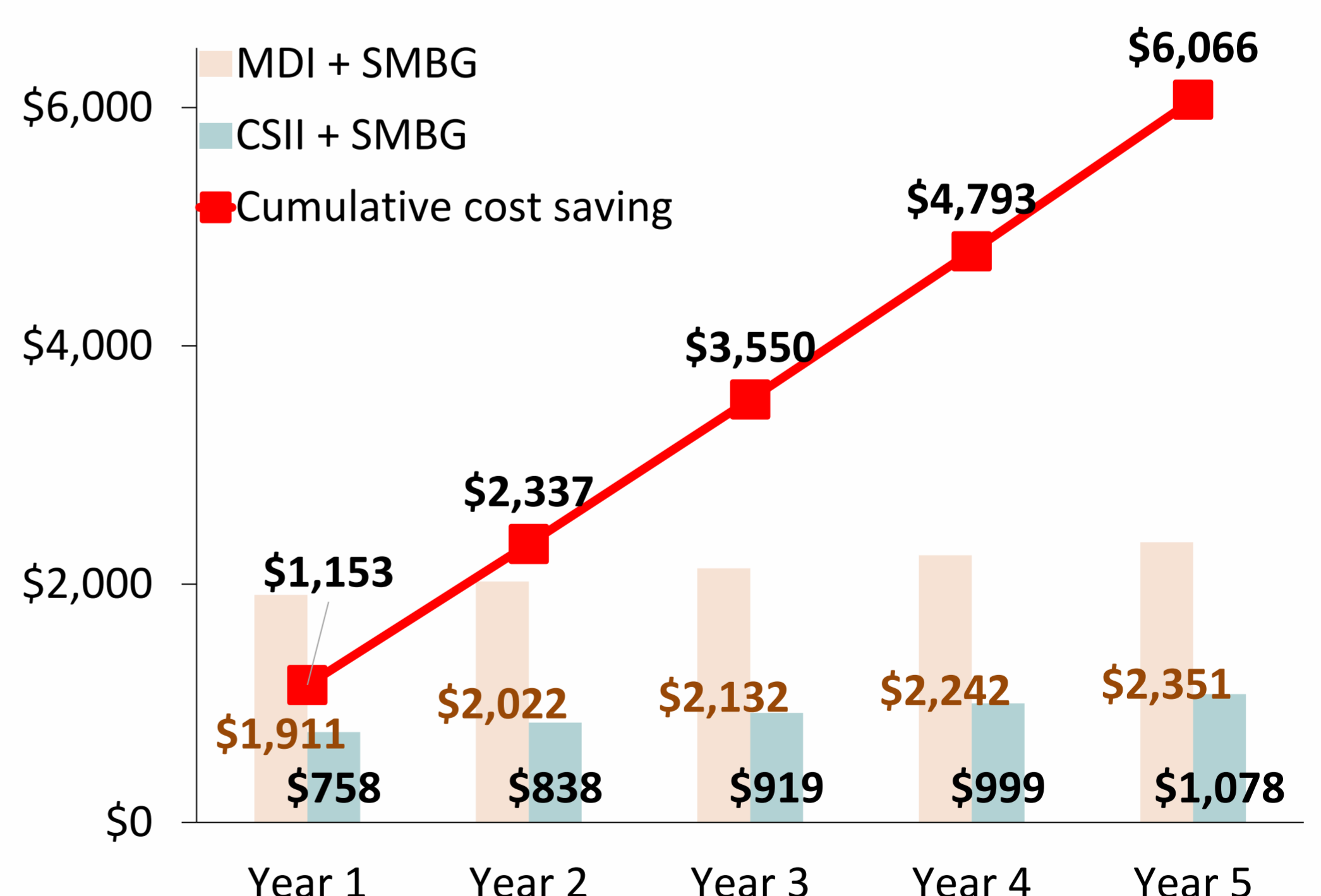
Incidence per person	DKA	SHE
CSII + SMBG	0.13	2.05
MDI + SMBG	0.23	8.65

Figure 1b

5-year cumulative incidence of long-term complications

Incidence per person	Microvascular			Macrovascular
	Eye	Renal	Neuro	CVD
CSII + SMBG	0.05	0.02	0.05	0.02
MDI + SMBG	0.07	0.03	0.07	0.02

Figure 2 Yearly expected complication costs



Conclusion

Better glycaemia and reduction in complications with the use of CSII is expected to generate cost savings to Singapore's healthcare system over a 5-year time period, supporting its use as a subsidised treatment option for people with T1D.