RWD309

USING REAL-WORLD DATA TO ESTIMATE COMPLICATION COSTS FOR A DIABETES COST-EFFECTIVENESS MODEL: An Australian public healthcare system perspective

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INTRODUCTION

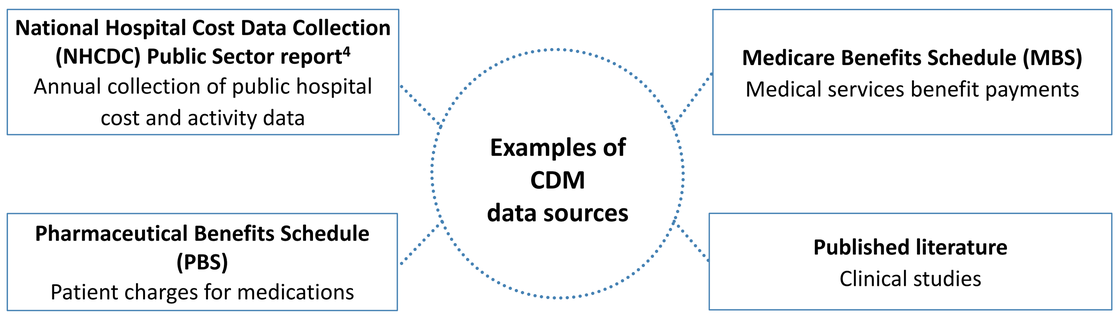
Diabetes affects how the body processes glucose. As of June 2025, 142,873 Australians live with type 1 diabetes (T1D)[1], relying on external insulin and vigilant glucose management to avoid complications. Despite this, 81.7% fail to meet the HbA1c target of 7%[2]. Automated insulin delivery (AID) systems improve clinical outcomes, achieving 65–80% time-in-range and lower HbA1c levels[3]. However, access remains limited due to cost, provider bias, and low awareness—despite strong public demand for broader availability.

OBJECTIVE

To inform the cost-effectiveness analysis of an AID system for managing T1D, we estimated conservative cost inputs for the IQVIA Core Diabetes Model (CDM) to quantify the economic burden of diabetes-related complications. The CDM is a validated model based on a series of inter-dependent sub-models that simulate the progression of diabetes and diabetes-related complications. Key outcomes include quality-adjusted life expectancy and incremental cost-effectiveness ratios (ICERs).

METHODS

To support a cost-effectiveness analysis of AID systems from the Australian public healthcare perspective, a conservative dataset of diabetes complication costs was developed using published data as inputs for the CDM.



Inputs from the NHCDC data included identifying the relevant medical-partition diagnosis related groups (DRGs) for the complications; calculating weighted averages where multiple DRGs applied; and determining when to use non-admitted costs for services, for example peritoneal dialysis.

Cost data were also obtained from other published sources. Hypoglycaemic medical episodes were costed from MBS and PBS. Published studies were referenced for non-hospital type costs such as blindness, and to provide weights that were used to discount the first-year cost of complications.

The cost model inputs were deemed conservative due to:

- not inflating NHCDC 2021-22 costs to 2024
- assuming only one hospital admission per year
- using medical-partition only DRGs
- not including out-of-hospital costs.

RESULTS

Most of the CDM cost inputs were able to be sourced from the NHCDC data. See Tables 1 and 2 for selected examples of complications, data used and cost inputs.

By leveraging real-world data from the NHCDC, MBS, PBS, and published literature, a comprehensive and conservative dataset of Australian costs for diabetes complications was able to be developed for this cost-effectiveness modelling. When applied to the CDM, the results aligned with published findings, confirming that AID systems are cost-effective for managing T1D, with an ICER below $50,000—even under conservative assumptions. This provided additional validation and confidence in the data sources that were selected.

Table 1 Selected cost inputs for diabetes complications sourced from the NHCDC[4]

Complication	Description	Cost ($AUD)	Data used
MI 1st year – current/4wks	Cost for myocardial infarction (MI) event (all costs incurred in first year)	$8,518	DRG F60A
CHF 1st year	Cost for congestive heart failure (CHF) event (all costs incurred in first year)	$9,728	Weighted average of ADRG F62
Stroke 1st year	Cost for stroke event (all costs incurred in first year)	$12,613	Weighted average of DRGs B70A, B70B & B70C
PVD 1st year	Cost for peripheral vascular disease (PVD) event (all costs incurred in first year)	$6,501	Weighted average of ADRG F65
HD 1st year	Annual cost for haemodialysis (HD) in first year	$99,372	DRG L61Z cost ($637) x number of services per week (3) x 52 weeks
PD 1st year	Annual cost for peritoneal dialysis (PD) in first year	$32,340	Tier 2 10.16 PD - home delivered clinic cost per month ($2,695) x 12 months
SHE 2	Event cost for a “major” severe hypoglycaemic event (SHE) requiring medical assistance	$5,534	DRG K60B
Keto event	Cost for a ketoacidosis (keto) event	$8,422	Weighted average of ADRG K60
Neurop 1st year	Cost of neuropathy (neurop) in the first year	$3,858	Weighted average of ADRG B71
Infected ulcer	Cost for treatment of infected ulcer	$9,080	Average of weighted averages of ADRG J60 & ADRG K60
Total cost data used; Cost data are expressed in 2021-22 years value. *DRG, Diagnosis related group; ADRG, Adjacent diagnosis related group.*			

Table 2 Examples of cost inputs for diabetes complications from other published sources

Complication	Description	Cost ($AUD)	Data used
SHE 1	Event cost for a “major” severe hypoglycaemic event (SHE) requiring 3rd party assistance	$118.90	MBS item benefit (116)[5] + PBS charge (1449G)[6]
Blindness - year of onset	Cost of blindness in the first year only	$3,182.43	Wright SE et al. (2000)[7]
Second and subsequent year costs	Cost for diabetes complications in all subsequent years following 1st event	Fraction of the complication’s total 1st year cost as used in Jendle et al. (2023)[8]; for example stroke costs were calculated as 80% of 1st year costs.	

CONCLUSION

Regularly updated real-world datasets, such as NHCDC data, provide accessible and reliable sources to replicate and update previously published cost analyses of diabetes complications. Alternative Australian sources for costs, including published studies, and MBS and PBS data, are also important inputs for robust and conservative cost-effectiveness modelling.

References
1. National Diabetes Services Scheme (NDSS) - https://snapshots.ndss.com.au/ 2. NADC. Australian Quality Clinical Audit 2021 Annual Report. National Association of Diabetes Centres; 2021. 3. Saboo B, Garg S, Bergenstal RM, Battelino T, Ceriello A, Choudhary P, et al. A Call-to-Action to Eliminate Barriers to Accessing Automated Insulin Delivery Systems for People with Type 1 Diabetes. Diabetes Technol Ther. 2025;27(3):147-51. 4. National Hospital Cost Data Collection Public Sector - https://www.ihacpa.gov.au/health-care/costing/national-hospital-cost-data-collection/national-hospital-cost-data-collection-public-sector. 5. MBS - https://www9.health.gov.au/mbs/search.cfm. 6. PBS - https://www.pbs.gov.au/browse/medicine-listing. 7. Wright SE, Keeffe JE, Thies LS. Direct costs of blindness in Australia. Clin Exp Ophthalmol. 2000;28(3):140-2. 8. Jendle J, Buompensiere MI, Ozdemir Saltik AZ, de Portu S, Smith-Palmer J, Pollock RF, et al. A European Cost-Utility Analysis of the MiniMed 780G Advanced Hybrid Closed-Loop System Versus Intermittently Scanned Continuous Glucose Monitoring with Multiple Daily Insulin Injections in People Living with Type 1 Diabetes. Diabetes Technol Ther. 2023;25(12):864-76.