

Supplementary Information – Online Resource 7

Evaluating cost-utility of continuous glucose monitoring in individuals with type 1 diabetes: a systematic review of methods and quality of studies using decision models and/or empirical data.

de Jong LA^{1*} (ORCID ID: 0000-0001-8814-0670), Li X² (ORCID ID: 0000-0002-0225-6937), Emamipour S³, van der Werf S⁴ (ORCID ID: 0000-0001-5856-7657), Postma MJ^{1,5}, van Dijk PR⁶ (ORCID ID: 0000-0002-9702-6551), Feenstra TL² (ORCID ID: 0000-0002-5788-0454)

¹ Department of Health Sciences, University Medical Center Groningen, University of Groningen, Groningen, the Netherlands

² Unit of Pharmacotherapy, -Epidemiology & -Economics, University of Groningen, Groningen Research Institute of Pharmacy (GRIP), Groningen, the Netherlands

³ Department of Clinical Pharmacy and Pharmacology, University Medical Center Groningen, University of Groningen, Groningen, the Netherlands

⁴ Central Medical Library, University Medical Center Groningen, University of Groningen, Groningen, the Netherlands

⁵ Department of Economics, Econometrics and Finance, Faculty of Economics & Business, University of Groningen, Groningen, the Netherlands

⁶ Department of Endocrinology, University Medical Center Groningen, University of Groningen, Groningen, The Netherlands

*Corresponding author: t.l.feenstra@rug.nl

Table 1. Economic evaluation methodology: empirical-data-based cost-utility studies

Publication (author year, country)	Study design	Rationale for the design	Number of patients	Study follow-up	Study period	Location and setting of the study	Clinical outcomes measures included in the study		Costs and quality of life measures included in the study	
							Diabetes complications included	Hypoglycemic events included?	Costs	Quality of life
Emamipour 2022, The Netherlands [1]	Nationwide Dutch observational study (FLARE-NL), which has a prospective, observational design. The study compared costs and outcomes 12 months before and after using isCGM.	Yes	381	12 months	Started in year 2016	Dutch hospitals	No, only compared EQ-5D between the groups	No	Costs or health care resource use were not measured in the FLARE-NL study. Therefore, healthcare spending was derived from linked health insurance data.	EQ-5D-3L collected in the study
Ly 2014, Australia [2]	Unblinded RCT involving patients with type 1 diabetes. Patients were randomized to insulin pump only or automated insulin suspension for 6 months, stratified by 5 age groups.	Yes	95	6 months	December 2009 to January 2012	Tertiary adult and pediatric hospitals in Western Australia	Yes, hypoglycemia	Yes	Resource use data (non-protocol-driven) over the 6-month study period were entered into the analysis.	EQ-5D-3L collected in the study
Wan 2018, US [3]	Unblinded multicenter trial (DIAMOND), involving 158 patients with T1D and HbA1c $\geq 7.5\%$ using multiple insulin injections were randomly assigned in a 2:1 ratio to CGM or SMBG, usual care (control), stratified by clinical site and HbA1c level ($< 8.5\%$ and $\geq 8.5\%$), for 6 months.	No	158	6 months	October 2014 to December 2015	US multicenter	Yes: NSHEs, SHEs, HbA1c levels, insulin dosing, and BMI.	Yes	Total costs included all direct costs associated with clinical care provided by trial personnel, CGM device use, health care services, test strip use, and medications and also indirect costs associated with	EQ-5D-5L collected in the study

									patients' reduced work productivity and daily hours devoted to diabetes care.	
Huang 2010, US [34]	A randomized, parallel group, efficacy and safety study, in which patients with T1D were randomized to CGM versus standard glucose monitoring for 6 months.	No	228	6 months	NR in this study	NR in this study	NR in this study	NR in this study	Costs estimated in the trial included staff time spent with patients or for CGM training and diabetes management; costs related to CGM and glucose monitor utilization; costs related to health service utilization outside of the trial (routine office visits, after-hours clinic visits, emergency room visits, 911 calls, and hospitalization); indirect costs for hours devoted to diabetes care, missed days from work or school due to diabetes, and number of days of work underperformance.	TTO collected in the study

Abbreviations: BMI, body mass index; CGM, continuous glucose monitoring; isCGM, intermittently-scanned continuous glucose monitoring; NSHE, non-severe hypoglycemic event; SHE, severe hypoglycemic event; SMBG, self-monitoring blood glucose; T1D, type 1 diabetes; US, United States.

References

1. Emamipour S, van Dijk PR, Bilo HJG, Edens MA, van der Galiën O, Postma MJ, et al. Personalizing the Use of a Intermittently Scanned Continuous Glucose Monitoring (isCGM) Device in Individuals With Type 1 Diabetes: A Cost-Effectiveness Perspective in the Netherlands (FLARE-NL 9). *J Diabetes Sci Technol*. 2022 Jul 9:19322968221109841.
2. Ly TT, Brnabic AJM, Eggleston A, Kolivos A, McBride ME, Schrover R, et al. A cost-effectiveness analysis of sensor-augmented insulin pump therapy and automated insulin suspension versus standard pump therapy for hypoglycemic unaware patients with type 1 diabetes. *Value Health*. 2014;17(5):561–9.
3. Wan W, Skandari MR, Minc A, Nathan AG, Winn A, Zarei P, et al. Cost-effectiveness of Continuous Glucose Monitoring for Adults With Type 1 Diabetes Compared With Self-Monitoring of Blood Glucose: The DIAMOND Randomized Trial. *Diabetes Care*. 2018 Jun 1;41(6):1227–34.
4. ES Huang M O'Grady A Basu A Winn P John J Lee et al 2010 The cost-effectiveness of continuous glucose monitoring in type 1 diabetes *Diabetes Care* 33 1269 1274