ADA 2022: Real-World Evidence and Randomized Controlled Trial Data Comparing the Efficacy of Continuous Glucose Monitoring Systems

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The 82nd Scientific Sessions of the American Diabetes Association (ADA) was held from June 3-7, 2022, in New Orleans. The following studies presented at the meeting highlight findings from real-world evidence (RWE) and randomized controlled trial (RCT) data pertinent to Canadian health care decision makers in comparing the efficacy of real-time continuous glucose monitoring (rtCGM) and intermittently-scanned continuous glucose monitoring (isCGM) systems.

Real-World Evidence

Real-World Glycemic Outcomes in Adult Patients With Type 1 Diabetes Using a Real-Time Continuous Glucose Monitor Compared to an Intermittently Scanned Glucose Monitor: A Retrospective Observational Study from the Canadian LMC Diabetes Registry (REAL-CGM-T1D)

R. Brown, L. Chu, G. Norman, A. Abitbol

Study Design: Retrospective, observational study using data from the **Canadian LMC Diabetes Registry** comparing real-world glycemic outcomes in adults with T1D who initiated rtCGM with a propensity score matched cohort who initiated isCGM

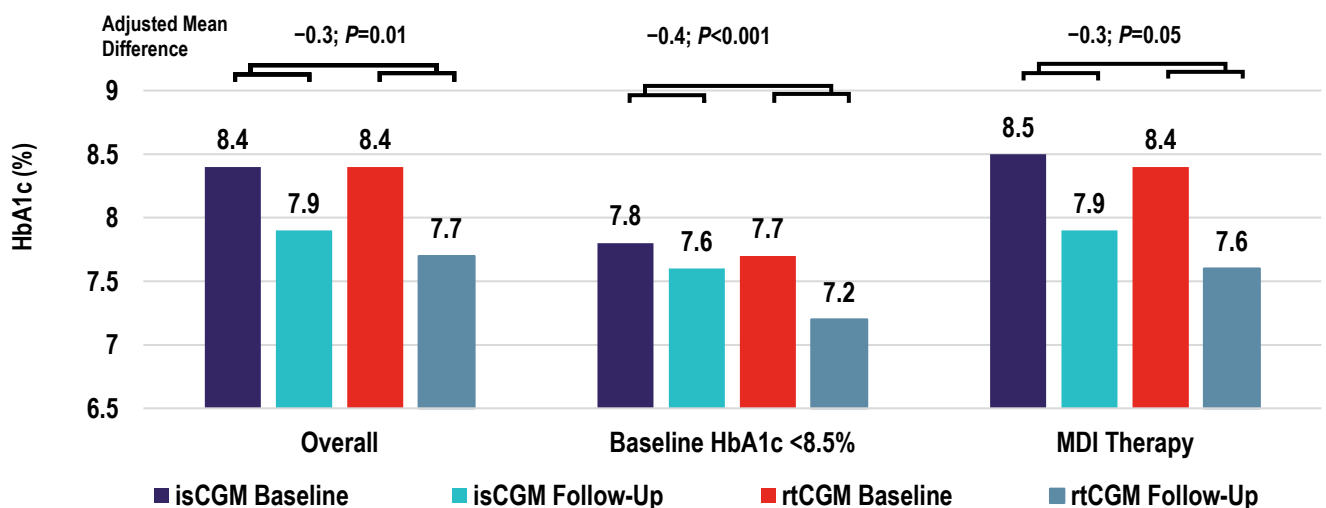**143 patients in each cohort after 1:1 propensity score matching**

Outcomes evaluated at baseline and during a 6-12-month follow-up period from June 2018 to September 2021

Results: Over a mean follow-up of 9.6 months (rtCGM) and 9.9 (isCGM) months, the rtCGM cohort had a significantly greater reduction in HbA1c compared with the isCGM cohort (between cohort difference of -0.30%, *P*=0.01).

- The **superiority of rtCGM for reducing HbA1c** was particularly apparent in patients with baseline HbA1c <8.5% and those using multiple daily injections (MDI) of insulin

- The rtCGM cohort had **significantly greater time in range** (4.4% or 1.1 hours, *P*=0.03), less time in hypoglycemia (-3.9% or 0.9 hours, *P*<0.001) ...

- …and **significantly lower glycemic variability** (based on mean SD and coefficient of variation, both *P*<0.001) compared to the isCGM cohort

Change in HbA1c Pre- and Post-CGM Initiation

Adjusted Mean Difference

	Overall −0.3; *P*=0.01	Baseline HbA1c <8.5% −0.4; *P*<0.001	MDI Therapy −0.3; *P*=0.05
isCGM Baseline	8.4	7.8	8.5
isCGM Follow-Up	7.9	7.6	7.9
rtCGM Baseline	8.4	7.7	8.4
rtCGM Follow-Up	7.7	7.2	7.6

HbA1c (%)

■ isCGM Baseline   ■ isCGM Follow-Up   ■ rtCGM Baseline   ■ rtCGM Follow-Up

Key Takeaway | Compared with isCGM, rtCGM results in superior glycemic control according to RWE demonstrating lower HbA1c, greater time in range and less time in hypoglycemia, and lower glycemic variability in routine clinical practice.

For additional study information, please see the full publication (Brown RE, et al. *Diabet Med*. 2022. doi:10.1111/dme.14937) at: https://onlinelibrary.wiley.com/doi/epdf/10.1111/dme.14937 .

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Retrospective Claims Analysis

Improved Glycemic Control and Continuous Glucose Monitoring (CGM) Utilization: A Comparison of Real-Time CGM and Intermittent Scanning CGM

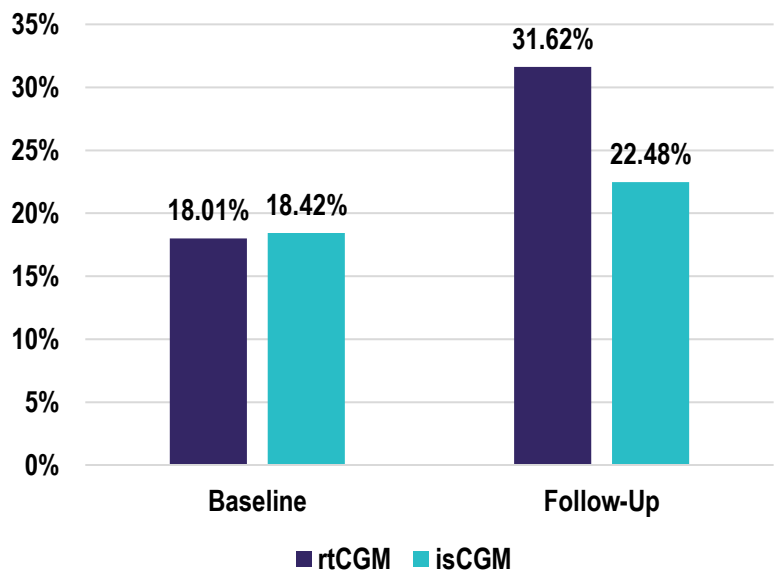K. Hannah, P. Nemlekar, D. Price, G. Norman | **Poster 647-P**

Study Design: Retrospective claims analysis of insulin-treated type 1 (T1D) and type 2 diabetes (T2D) 12 months pre- and post-acquisition of rtCGM (Dexcom G6; n=272) and isCGM (FreeStyle Libre; n=467).

Results: Patients with T1D and T2D using **rtCGM** were nearly **twice as likely to reach an HbA1c <7%** than those using isCGM (OR=1.97; P<0.01).
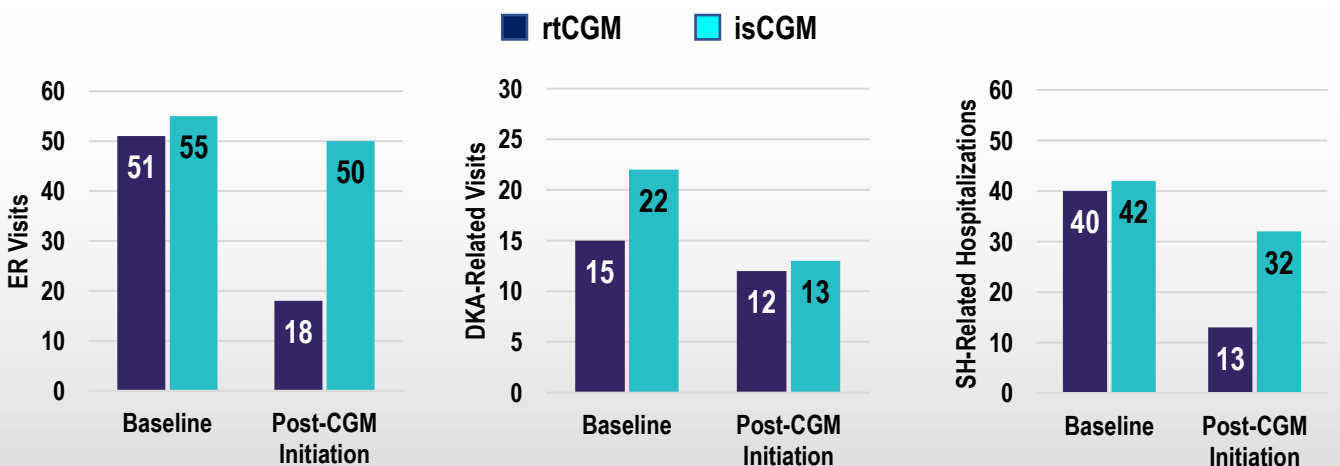
rtCGM users experienced a **-0.12 reduction in emergency room (ER) visits**, compared with a reduction of -0.01 ER visits among isCGM users, for a difference-in-difference (DiD) estimate of **-0.11** (95% CI: -0.21, -0.01; *P=0.02*).

rtCGM and isCGM users showed a **-0.02 reduction in diabetic ketoacidosis (DKA)-related visits**, and rtCGM users showed a **greater reduction in severe hypoglycemia (SH)-related hospitalizations** compared with isCGM users (DiD = -0.08, 95% CI, -0.08 to 0.00, *P*=0.06).

Proportion of Patients Achieving HbA1c <7%

Baseline: rtCGM 18.01%, isCGM 18.42%
Follow-Up: rtCGM 31.62%, isCGM 22.48%

Pre- and Post-CGM Initiation Outcomes

ER Visits — Baseline: rtCGM 51, isCGM 55; Post-CGM Initiation: rtCGM 18, isCGM 50

DKA-Related Visits — Baseline: rtCGM 15, isCGM 22; Post-CGM Initiation: rtCGM 12, isCGM 13

SH-Related Hospitalizations — Baseline: rtCGM 40, isCGM 42; Post-CGM Initiation: rtCGM 13, isCGM 32

Key Takeaway | rtCGM initiation in T1D and T2D resulted in a greater likelihood of meeting glycemic targets and a greater reduction in ER visits and SH-related hospitalizations compared with isCGM. rtCGM was also associated with a reduction in the number of DKA-related visits, with RWE demonstrating the potential for decreased resource utilization.

For additional study information, please see the full abstract for Poster 647-P at:
https://ada.scientificposters.com/apprizr.cfm?4I1qUFYqHhCGv0FYt1bMqW3hjnABeK%2F4Rb7Gex92bZCu8Kum0Bn%2B76HtiEf%2FeTcE3j8keyo yoPY%3D .

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Randomized Controlled Trial

Sustained Impact of Switching from Intermittently Scanned to Real-Time Continuous Glucose Monitoring in Adults with Type 1 Diabetes: 24-Month Results of the ALERTT1 Trial

M. Visser, S. Charleer, S. Fieuws, C. De Block, R. Hilbrands, L. Van Huffel, T. Maes, G. Vanhaverbeke, E. Dirinck, N. Myngheer, C. Vercammen, F. Nobels, B. Keymeulen, C. Mathieu, P. Gillard

Study Design: The 6-month multicenter randomized controlled ALERTT1 trial showed improvement of time in range, HbA1c, time < 54 mg/dL and fear of hypoglycemia in adults with T1D switching from isCGM to rtCGM. In this partial crossover extension trial, the control group (n=127) switched from isCGM to rtCGM from month 6 to month 24 and the experimental group (n=127) continued rtCGM until month 24.

Results: After cross-over to rtCGM:

- In the former isCGM group, **TIR increased from 51.8% to 63.5%** at month 12 (Δ 11.7% [9.6–13.8] *P*<0.0001) and remained stable up to month 24 (Δ 11.7% [9.4–14.0] *P*<0.0001)

- In the continued rtCGM group, **TIR increased from 52.5% to 63.0%** at month 12 (Δ 10.6% [8.4–12.8] *P*<0.0001) and remained stable up to month 24 (Δ 10.5% [8.2–12.8] *P*<0.0001)

- **HbA1c decreased to 6.9%** (Δ -0.54%; *P*<0.0001) and 7.0% (Δ -0.43%; *P*<0.0001) at month 24 in the former isCGM and rtCGM groups, respectively.
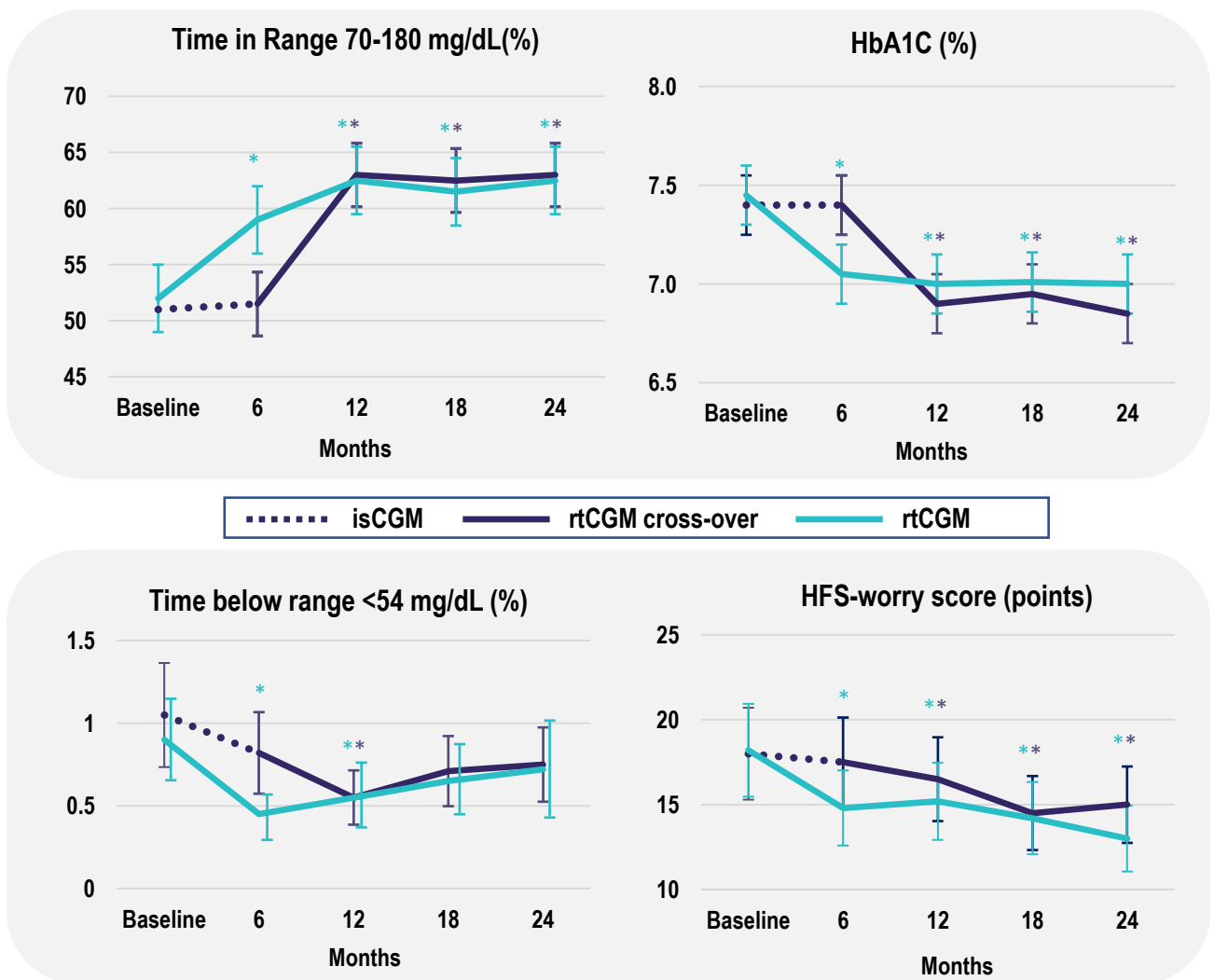
*P<0.05; HFS-worry=Hypoglycemia Fear Survey Version II Worry subscale

Key Takeaway | Switching from isCGM without alerts to rtCGM with alerts is beneficial in adults with T1D, with a sustained effect out to 24 months that highlights the long-term value of this technology in terms of patient engagement/satisfaction and associated outcomes.

For additional study information, please see the full abstract for Poster 646-P at:
https://ada.scientificposters.com/apprizr.cfm?e37G86I8vn2Gv0FYt1bMqW3hjnABeK%2F4Rb7Gex92bZCu8Kum0Bn%2B76HtiEf%2FeTcE3j8key oyoPY%3D