Clinical Effectiveness of Continuous Glucose Monitoring in Pregnancies Affected by Type 1 Diabetes
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BACKGROUND
• Glycemic control significantly affects the risk for developing adverse gestational health outcomes in pregnancies affected by type 1 diabetes (T1D)1-4.
• HbA1C may not be the only glucose metric of importance in assessing adverse outcomes5.
• Utilizing continuous glucose monitoring (CGM) in T1D pregnancies improved neonatal outcomes despite similarly low HbA1C levels between CGM and SMBG groups in a randomized controlled trial (RCT) in Europe and Canada6.

STUDY OBJECTIVE
We examined the effect of glucose monitoring in T1D pregnancies managed with CGM compared to conventional monitoring of blood glucose (SMBG) on various maternal and neonatal health outcomes.

METHODS
Study Design: Retrospective chart review of:
• T1D pregnancies in women 18-55 years of age,
• Using multiple daily insulin injection or insulin pump therapy, and
• Managed at the Barbara Davis Center for Diabetes (BDC) Pregnancy and Women’s Health Clinic for pregnancy care at least once each trimester (unless delivery was before the 3rd trimester) between 1/1/14 and 8/31/20.

Data Collection: The electronic medical records were reviewed for baseline characteristics, point-of-care hemoglobin A1C levels (HbA1c), and various pregnancy visit data.

CGM Stratification: CGM use was defined as ≥60% wear in the 2nd and 3rd trimesters of pregnancy using raw CGM data from clinic software accounts.

HbA1c Goals: HbA1c goals were defined as ≤6.5% in the 1st trimester and ≤6% in the 2nd and 3rd trimesters, per guidelines by the American Diabetes Association.

Data Analysis: We compared outcomes between groups using student’s t-tests for continuous variables and chi-squared tests for categorical variables.

RESULTS
• CGM users had a significantly higher rate of commercial insurance use (Table 1), while other baseline characteristics were similar between groups (p=0.005).
• CGM users were more likely to meet HbA1c goals in all trimesters (p=0.01 for all; Table 2).
• More than half of SMBG users did not meet HbA1c goals in any trimester (58.7% SMBG vs 32.5% CGM, p=0.004; Table 2).
• CGM users had infants with lower mean birth weights (3,315 grams CGM vs 3,588 grams SMBG, p=0.0215; and 69.1% CGM vs 83.0% SMBG, p=0.0030).
• CGM users had lower rates of LGA infants (41.5% CGM vs 61.5% SMBG, p=0.011, Table 3).
• CGM users had higher rates of preeclampsia (40.2% CGM vs 24.7% SMBG, p=0.0365, Table 3).
• While unexpected, PE pathogenesis was multifactorial with other relevant key players besides glycemic control.
• In summary, CGM users had lower rates of LGA infants and infants with lower mean birth weights, as well as a significantly increased likelihood of meeting trimester-specific HbA1c goals in each trimester throughout pregnancy in this real-world study.

CONCLUSIONS

ACKNOWLEDGMENTS
This was an investigator-initiated study supported by Dexcom, Inc through the Board of Regents at the University of Colorado Denver. This study was supported by NIH/NCRR Colorado CTSA Grant Number UL1 RR025780. Its contents are the authors’ sole responsibility and do not necessarily represent Dexcom, Inc. or official NIH views. The funders had no role in data collection and analysis, decision to publish, or preparation of the abstract.

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