Real-World Continuous Glucose Monitoring Data on Time in Range From a US Population 2015–2019

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An opportunity to improve attainment of TIR goals, and an ongoing need to support the use of CGM data to help optimize care

Background

- Improvements in technology and access have led to growing adoption of continuous glucose monitoring (CGM).[1]
- Recommended targets for glucose metrics are available (e.g. time in range [TIR]; 70–180 mg/dL).[2]

Aim

We aimed to investigate: i) the proportion of people with >70% TIR; ii) the proportion with >70% TIR and <1% time <54 mg/dL (clinically important hypoglycemia); and iii) the distribution of TIR over time on a population and on an individual level.

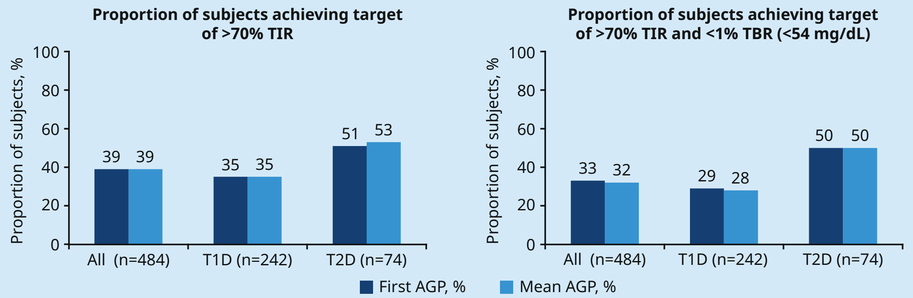
Methods

- Data from a US population were collected from 2015 to 2019 using Cornerstones4Care (C4C) powered by the Glooko database; this freely available patient support tool for people with type 1 diabetes (T1D) or type 2 diabetes (T2D) on any treatment type provides the opportunity to sync CGM readings to an app.
  - Subjects in this study may have used CGM for a long period before entering C4C.
- CGM traces were divided into 14-day periods according to the ambulatory glucose profile (AGP)-reporting system. Only profiles with adequate data aligned with these standards were included. Subject data are presented using the first and the mean of all AGP profiles.
- All patients in the C4C database, with either T1D or T2D, with CGM data between 2015 and 2019 were included in the analysis.
- All data are descriptive. No statistical analyses were performed.

Key results

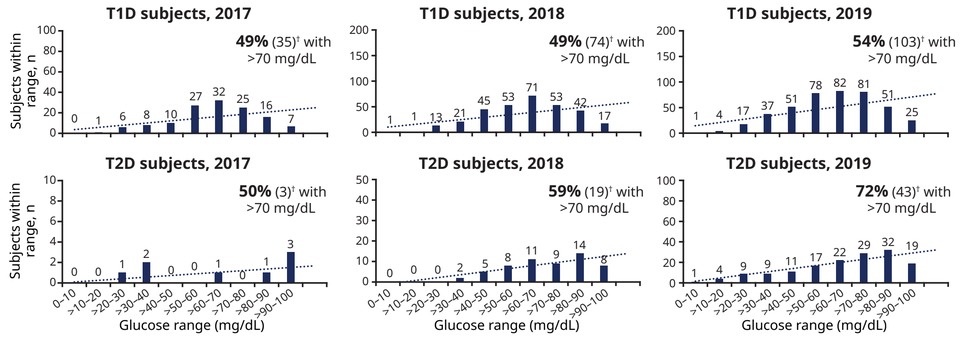
Figure 1: Proportion of subjects achieving TIR target including those with <1% TBR (<54 mg/dL)

Key result



n=subjects (all=484, T1D=242, T2D=74) based on number of AGPs (all=4727, T1D=2289, T2D=525). AGP, ambulatory glucose profile; TIR, time in range; TBR, time below range; T1D, type 1 diabetes, T2D, type 1 diabetes.

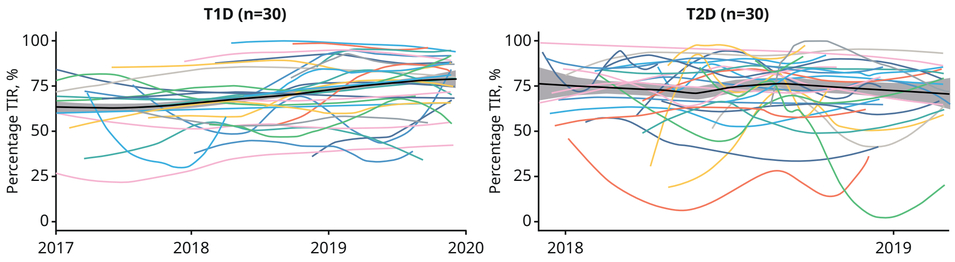
Figure 2: Population-level change in TIR over time, 2017–2019 (all AGPs included)



†Subjects could have multiple AGPs within a year and so could have been counted multiple times. The percentage (n) refers to the proportion and number of unique subjects with TIR profiles >70 mg/dL within that year. AGP, ambulatory glucose profile; T1D, type 1 diabetes; T2D, type 2 diabetes; TIR, time in range.

- In total, 484 subjects (n=242 T1D, n=74 T2D, n=168 not reported) uploaded CGM data to the database (4727 AGPs).
- Subjects uploaded between one and 75 AGPs (mean=10; median=5).
- Most subjects entered the database from 2017, although there were only very few with T2D prior to 2018.
- Average TIR (70–180 mg/dL) based on mean profiles: 63% (T1D), 68% (T2D) and 64% (all).
- Less than half of the population achieved >70% TIR, ~30% with >70% TIR and <1% time in clinically relevant hypoglycemia (**Figure 1**).
- Subjects with T1D or T2D displayed improvement in change in TIR over time at a population level (**Figure 2**). It is not possible to see an improvement at an individual level (**Figure 3**).

Figure 3: Individual-level change in TIR over time in subjects with the most uploaded AGPs (29–75)



T1D, type 1 diabetes; T2D, type 2 diabetes; TIR, time in range.

Conclusions

- Less than half of our real-world population who were using CGM achieved >70% TIR, and ~30% achieved >70% TIR and <1% time in clinically important hypoglycemia.
- A trend towards improvement in TIR over time was seen on a population level; however, this was not seen at an individual level based on these data.
- Results indicate an opportunity to improve attainment of TIR goals and an ongoing need to support the use of CGM data to help optimize care.

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References:
(**1**) Battelino *et al. Diabetes Care* 2019;42:1593–603; (**2**) Danne *et al. Diabetes Care* 2017;40:1631–40.