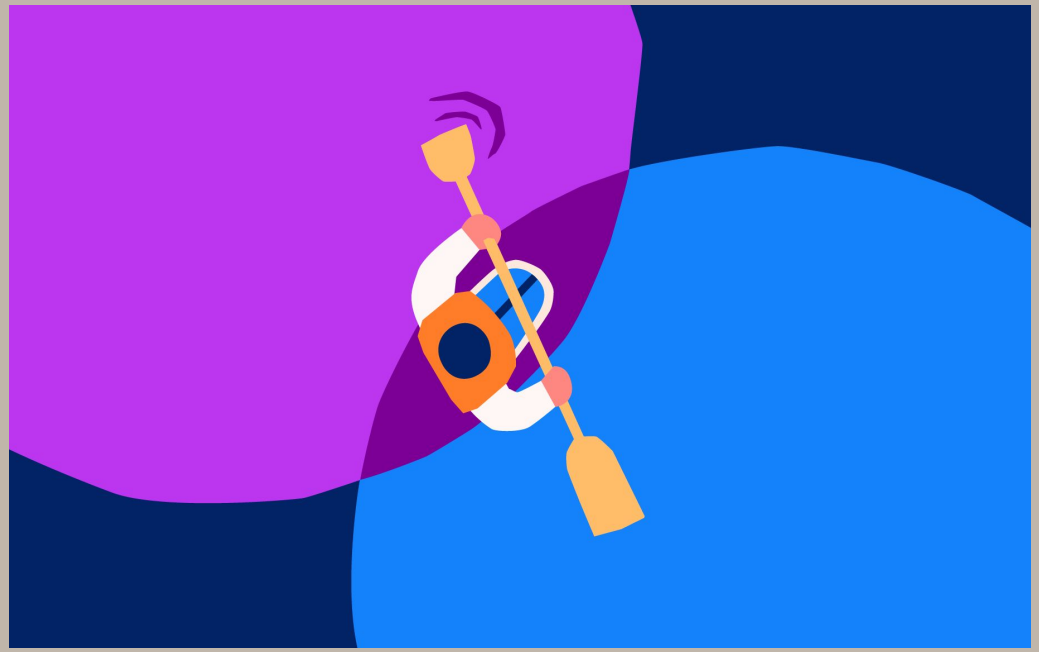
Impact of Nighttime Hypoglycemia on Glycemic Control in Type 1 and Type 2 Diabetes: A real-World Data Analysis

Michael Mitter, PhD[1]; Josip Zivkovic, MSc[1]; Delphine Theodorou, PhD[2]; Timor Glatzer PhD[3]

1.mySugr GmbH, Trattnerhof 1/5OG Vienna, **2.**Roche Diagnostics International, Basel Branch of Diabetes Care, Basel, Switzerland **3.**Roche Diabetes Care GmbH, Sandhofer Straße 116, D-68305 Mannheim

Background

- Nighttime hypoglycemia frequently occurs with insulin therapy, leading to various negative effects, including physical, psychological, and social challenges.
- While continuous glucose monitoring (CGM) has helped reduce nighttime hypoglycemia, it continues to be a significant and common burden for many patients.
- The influence of nighttime hypoglycemia on next-day glycemic control is not well-documented in real-world data, indicating a gap in understanding.

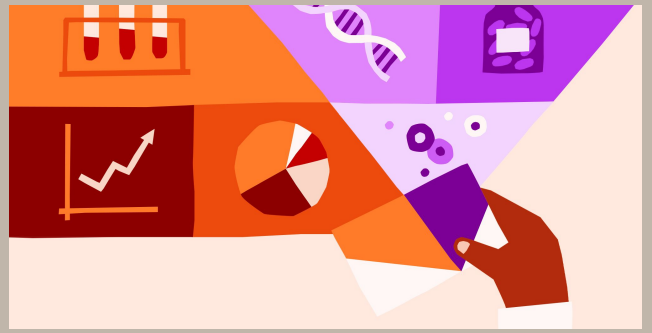


Impact of Nighttime Hypoglycemia on Glycemic Control in Type 1 and Type 2 Diabetes: A real-World Data Analysis

Study aim and method

Aim

Assess nocturnal hypoglycemia burden in a real-world setting for people with Type I and Type II diabetes, with a focus on impact on next day glycemic metrics.



Inclusion criteria

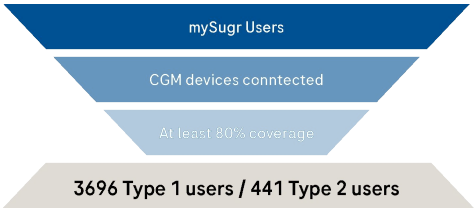
- mySugr users indicating either Type I or Type II diabetes during app onboarding
- Use of a CGM device with data imported from Apple Health
- At least 80 % CGM coverage during the first month of CGM use

Metrics analyzed

- Number of hypoglycemic events (nocturnal and diurnal)
- Time in range and CV analysis after nights with hypoglycemic episodes

Statistical analysis

- Bootstrapping for confidence intervals
- Mann Whitney U test to compare nocturnal and diurnal event rates



Impact of Nighttime Hypoglycemia on Glycemic Control in Type 1 and Type 2 Diabetes: A real-World Data Analysis

Results and conclusions

Incidence of Hypoglycemic events

- **T1D**: General 4.66/week; Nocturnal 1.03/week; Diurnal 3.63/week
- **T2D:** General 1.46/week; Nocturnal 0.47/week; Diurnal 1.01/week

Hypoglycemic events are longer during the night

- **T1D:** 65 vs. 40 mins, $p < 0.001$
- **T2D:** 57 vs. 40 mins, $p < 0.001$

Impact of nocturnal hypoglyemic event on the next day

- TBR & TB54: Increased (For T2D only for level 2 events)
- TIR: Increased (T1D & T2D)
  TAR: Decreased (T1D & T2D)
- CV: Increased (T1D &T2D)

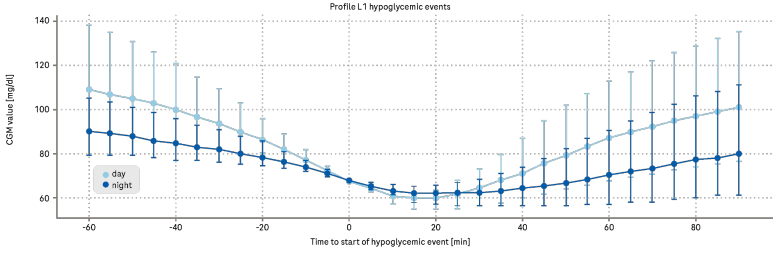


Fig.1: Average profiles of diurnal and nocturnal level 1 hypoglycemic events for patients with T1D. Curves show median and interquartile range for the respective time offset to the start of the hypoglycemic event.

Conclusions

- Nocturnal hypoglycemia has longer duration and significantly impacts next-day glycemic control compared to diurnal events.
- Findings emphasize the need for improved preventive measures to address nocturnal hypoglycemia.