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The Time in Tight Range for People With Type 1 Diabetes Debate Presents a False Dichotomy

Accepted for publication in Diabetes Care.

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~~h~~<https://diabetesjournals.org/care/article/47/5/790/154032/Time-in-Tight-Glucose-Range-in-Type-1-Diabetes>

~~a~~<https://diabetesjournals.org/care/article/47/5/782/154500/Time-in-Tight-Range-for-Patients-With-Type-1>

TITLE: The Time in Tight Range for People With Type 1 Diabetes Debate Presents a False Dichotomy

RUNNING HEAD: TITR vs TIR

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Word count: 460

Number of tables: 0

Number of figures: 0

Main text of commentary

In their commentary on Casteñeda et al (1), Hamidi and Pettus (2) argued that it is too early to introduce the Time in Tight Range (TITR) metric for people with type 1 diabetes, not least because a TITR of at least 45% constitutes a greater safety risk than a target of at least 70% TIR. While agreeing with their focus on safety, we believe that the emphasis on TIR versus TITR presents a false dichotomy that diverts attention from key considerations, notably, that no single metric is sufficient for managing type 1 diabetes.

We used secondary data from a large cohort of 497 US adults living with type 1 diabetes (3) to illustrate this point. Having calculated the degree to which all major targets of the ADA-EASD consensus report on the management of type 1 diabetes in adults are met (4), we found that 74% of participants achieved the target for level 1 hypoglycemia (i.e., <4% of time below 70 mg/dL) and 82% achieved the target for level 2 hypoglycemia (i.e., <1% of time below 54 mg/dL). Importantly and in line with Hamidi and Pettus's concerns, those who managed a TITR above 45% were less likely ($P=0.02$) to avoid a level 1 hypoglycemia (70% achieved the <4% target) than those who managed less than 45% of time in TITR (80% matched the <4% target). For level 2 hypoglycemia, we found no difference between these two groups of participants. However, this is only half the story. For those who had a TITR below 45%, only 19% achieved the target of level 2 hyperglycemia (i.e., <5% of time over 250 mg/dL), while 91% of those with a TITR above 45% manage this target ($P<0.001$). Therefore, acute and long-term risks of both severe levels of hypo- and hyperglycemia should be considered when weighing TIR vs TITR, especially given the often overlooked acute safety risks of hyperglycemia in accidents, including driving (5).

Ultimately, whether people with type 1 diabetes aim for >45% of TITR or >70% TIR, it is equally important for them to understand why they should also manage the targets for levels 1 and 2 of hypo- and hyperglycemia, as well as other targets, such as glycemic variability. Rather than looking out for one ideal glycemic target, researchers need to explore strategies to facilitate the simultaneous assessment and communication of the seven interrelated glycemic targets in the ADA-EASD management of type 1 diabetes in adults consensus report (4). This is as much a medical as well as a psychological endeavor, which is not sufficiently reflected in the current research literature (e.g., how exactly do people with type 1 diabetes evaluate the constant stream of information?). We hope that the research community and diabetes technology developers will take on this challenge.

Note: This manuscript is based on research using data from the Type 1 Diabetes EXercise Initiative (TIDEXI) Study that has been made available through Vivli, Inc. Vivli has not contributed to or approved, and is not in any way responsible for, the contents of this publication.

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