COMMENTS AND RESPONSES

On Real-Time Estimates of Blood Sugar Levels

Response to Treviño

The GuardControl Study (1) demonstrated the impact of real-time continuous glucose monitoring relative to standard care (self-monitored blood glucose) on glycemic control. Glycemic control was measured by A1C at months 0 (baseline), 1, and 3. Repeated-measures ANOVA, in which the dependence among repeated A1C measures was modeled using an autoregressive covariance structure, was performed to evaluate change over time in three study arms.

We agree with Treviño (2) that use of the usual SD formula to summarize the variability of serial measures of glucose, which are likely to be positively correlated, will result in an underestimate of variability. Statistical summary measures describing the variability of a correlated series do need to account for the degree of positive association.

Subjects in the study did observe correlated readings from the Guardian RT device or from sequential self-monitored checks. Estimates of the variability of the sequential measures were not displayed (by the Guardian RT), so subject behavior was in no way influenced by correctly or incorrectly calculated measures of glucose variability.

In summary, we do agree that dependent data need to be summarized using methods that account for that dependency. The modeling used to examine repeated A1C measures did account for that dependency by specifying an autoregressive structure. No serial glucose measures were described in the publication (1), so the criticism raised by Treviño seems to be misplaced.

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