

AUGUST 2019

Diabetes Care®

In This Issue of *Diabetes Care*

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International Consensus Report on CGM Data and Recommendations for Achieving Time in Range

An international consensus report on the use of continuous glucose monitoring (CGM), published in this issue of *Diabetes Care* (p. 1593), sets out a series of recommendations on the practical application of key CGM metrics. Endorsed by the American Diabetes Association and the European Association for the Study of Diabetes as well as numerous other professional organizations, the report provides a summary of the consensus reached by an international panel of CGM experts and individuals with diabetes. With a focus on data interpretation, it highlights that while CGM usage is growing, it remains the case that successful utilization in routine clinical care is relatively low. To be effective, the panel agreed that 10 possible metrics out of a broader set were likely to be the most useful in clinical practice. They also discussed the clinical validity of the targets and the need for setting SMART (Specific, Measurable, Achievable, Relevant, Time-bound) goals for individuals who use CGM as a way of achieving targets, noting that individualized therapy will likely be needed, particularly for populations with higher risks. Notably, the panel also agreed that a standardized method for data reporting is crucial for efficacious collaboration between health care providers and individuals with diabetes. They suggest that an Ambulatory Glucose Profile (AGP) be used as a standard report of CGM data. Author Tadej Battelino told *Diabetes Care*: “The consensus panel aimed at straightforward time in range (TIR) targets that can be adopted by health care providers and, most importantly, by individuals with diabetes. The target of >70% (or >16 ¾ h) of TIR between 70–180 mg/dL may roughly correspond to an HbA_{1c} of <7%, and in combination with the time below range (TBR) of <4% (or <1 h) <70 mg/dL and target above range (TAR) of >25% (or <6 h) >180 mg/dL also aim at reducing glucose variability, and thus increasing the quality of life of individuals with diabetes.”

Battelino et al. Clinical targets for continuous glucose monitoring data interpretation: recommendations from the international consensus on time in range. *Diabetes Care* 2019;42:1593–1603

Physical Activity Improves Insulin Sensitivity but Not β -Cell Function in Individuals With Impaired Glucose Tolerance, Diabetes

Physical activity is associated with higher insulin sensitivity in individuals with impaired glucose tolerance or recently diagnosed drug-naive type 2 diabetes, according to Temple et al. (p. 1521). As a result, they suggest that physical activity might act as adjunctive therapy to weight loss to prevent or delay the development of diabetes. The findings come from a cross-sectional substudy of the Restoring Insulin Secretion (RISE) Study in which 230 participants underwent a combination of an oral glucose tolerance test and a hyperglycemic clamp, preceded by 7 days of wearing an activity tracker to derive total physical activity scores. Using various measures of glucose, insulin, and C-peptide levels, the authors subsequently looked for any association between them and the tracked physical activity. After adjusting for a series of confounding factors, they found that there was no association between total physical activity and three different measures of glycemia. However, there was an association between total physical activity and a measure of insulin sensitivity. After additionally adjusting for insulin sensitivity, they found that the remaining measures, which act as a proxy for β -cell function, did not associate with physical activity. Discussing the findings, the authors point out that the lack of association between β -cell response and physical activity suggests that β -cell response is a function of insulin sensitivity and that overall, there is unlikely to be any changes in β -cell function. Nevertheless, they note that this still does not explain how activity can be associated with insulin sensitivity but not β -cell function. Commenting further, author Karla A. Temple said: “Higher levels of physical activity are associated with an improvement in insulin sensitivity, which may have beneficial effects on the development and/or progression of type 2 diabetes. Despite the lack of a relationship between physical activity and glycemia or β -cell function, it remains important for populations at risk for developing diabetes to have higher levels of daily physical activity to help improve long-term outcomes.”

Temple et al. Association of habitual daily physical activity with glucose tolerance and β -cell function in adults with impaired glucose tolerance or recently diagnosed type 2 diabetes from the Restoring Insulin Secretion (RISE) Study. *Diabetes Care* 2019;42:1521–1529

Mediterranean Diet Supplemented With Extra-Virgin Olive Oil Delays Diabetes Medication Introduction

A Mediterranean diet supplemented with extra-virgin olive oil appears to delay the introduction of glucose-lowering medications in individuals with type 2 diabetes. Specifically, the delay occurred in comparison to a low-fat eating plan and no promotion of energy restriction or increased physical activity. According to the authors of the study, Basterra-Gortari et al. (p. 1390), the delay in the introduction of glucose-lowering medications is likely due to better overall glycemic control in the group and hence reduced need for medications to control glycemia. The outcomes are from a substudy of the Prevención con Dieta Mediterránea (PREDIMED) trial that originally examined the effects of two Mediterranean diets on the primary prevention of cardiovascular disease in high-risk adults. For the subanalysis, the authors specifically examined the subset of participants who had type 2 diabetes at the baseline of the trial but who were not using glucose-lowering medication or insulin. They found that the diet supplemented with extra-virgin olive oil did result in lower probability of starting a glucose-lowering medication after a median follow-up of 3.2 years. This was in comparison to the control low-fat diet. In contrast, the diet supplemented with nuts did not reduce the probability in comparison to the control diet. Neither supplemented diet resulted in lower insulin requirements than the control diet. Addressing the issues relating to randomization in the original study, the authors point out that when they adjusted the analysis, the results remained in line with the initial outcomes. According to author Fernando Arós: “No trial has ever assessed the effect of a Mediterranean eating plan without energy restriction, weight loss, or other lifestyle interventions on the need for glucose-lowering medications in participants with diabetes. Our findings support that a Mediterranean eating plan supplemented with extra-virgin olive oil may delay the need of new-onset glucose-lowering medications. The role of a Mediterranean eating plan at a later stage of diabetes (before treatment with insulin) requires further research.”

Basterra-Gortari et al. Effects of a Mediterranean eating plan on the need for glucose-lowering medications in participants with type 2 diabetes: a subgroup analysis of the PREDIMED trial. *Diabetes Care* 2019;42:1390–1397

Mediterranean Diet Improves Cognitive Health in Type 2 Diabetes

Further research on the Mediterranean diet, this time by Mattei et al. (p. 1372), suggests that adhering to the diet for 2 years—while also effectively managing type 2 diabetes—might result in better brain function. In contrast, other measures of dietary quality were not associated with changes in cognitive function in individuals with type 2 diabetes, suggesting that specific components of the Mediterranean diet may have some sort of influence on brain function. This contrasted with individuals without diabetes who saw improvements in memory function after following any healthy diet. The conclusions come from the longitudinal and observational Boston Puerto Rican Health Study that involved ~1,000 individuals of Puerto Rican heritage living on the U.S. mainland. The individuals underwent tests at baseline to determine glycemic control (i.e., HbA_{1c} >7% was considered uncontrolled) and a series of scoring methods to determine adherence to various diets considered to be healthy. They were then followed-up at 2 years with a battery of cognitive tests. The authors found that adherence to a Mediterranean diet was associated with higher cognitive function in adults with type 2 diabetes and similar sorts of patterns in other measures, including the Mini-Mental State Examination, word recognition, digit span, and clock drawing tests. Individuals with good glycemic control at baseline and during the 2-year study period experienced the improvements, but this was not the case for individuals with poor control at baseline or during the study period, suggesting that good glycemic control is a prerequisite for improved cognitive function. Commenting more widely on the research, author Josiemer Mattei said: “For better cognitive function, patients with type 2 diabetes should eat a healthy Mediterranean-style diet while keeping their blood sugar under control. For everyone, diets rich in fruit and vegetables, whole grains, nuts, legumes, fish, and healthy oils, and low in refined sugars, meats, and highly processed foods would be best for brain health.”

Mattei et al. The Mediterranean diet and 2-year change in cognitive function by status of type 2 diabetes and glycemic control. *Diabetes Care* 2019;42:1372–1379

<https://doi.org/10.2337/dc19-ti08>

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