

# Low Carbohydrate Diets for Adults with Diabetes

## Summary

Diabetes Canada's position statement on "Low Carbohydrate Diets for Adults with Diabetes: A Rapid Review" gives an overview of the latest evidence about this dietary pattern as it relates to diabetes.

Diabetes Canada believes that people with diabetes should have the best information available to guide their choices about diabetes management and this review will not only inform them of the most current research conducted on low carbohydrate diets and diabetes, but also offer some recommendations for care.

### Background

Carbohydrates (CHO) are molecules that are present in the form of starches, sugars, and fibre. We know that excess calorie intake and over-consumption of refined CHO are major drivers of the epidemic of obesity and type 2 diabetes, while obesity is emerging as a challenge for people with type 1 diabetes. *The Diabetes Canada 2018 Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada* (CPG) emphasize the importance of nutritionally balanced, calorie reduced diets to achieve and maintain a healthier body weight. This can be achieved with several dietary patterns based on individual preferences and treatment goals.

We hope that this update will facilitate meaningful communication between health-care teams and people with diabetes and clearly identify key safety issues and clinical monitoring requirements.

### Summary of the Research

Research on lower-CHO diets have shown improvements in people with type 1 diabetes, including lower A1C levels (average blood glucose levels over three months), reduced insulin requirements, less glucose variability, and weight loss.

Studies on lower-CHO diets in people with type 2 diabetes have shown similar improvements when compared to higher-CHO diets or low-fat diets. Some also show higher rates of diabetes remission, improved triglyceride levels and a reduced need for medication in the short term.

It is unknown if the improvements seen in the current research will be maintained long-term or will result in lower rates of cardiovascular disease or other diabetes complications or mortality. Research has also reported that many individuals have difficulty following a lower-CHO diet with less success over time. It is unknown whether the improvements seen in the lower-CHO diets were related to the amount of CHO in the diets or other factors. There are gaps in the research and many studies are limited by poor research quality, making it difficult to make general recommendations for everyone living with diabetes.

Research on lower-CHO diets have shown improvements in people with type 1 diabetes, including lower A1C levels, reduced insulin requirements, less glucose variability, and weight loss. Studies on lower-CHO diets in people with type 2 diabetes have shown similar improvements.

## Cautions

People with type 1 and type 2 diabetes following lower-CHO diets may need to reduce or stop insulin and/or diabetes medications to lower the risk of hypoglycemia (low blood sugar) or ketoacidosis (DKA) (when blood sugar is very high and acidic substances called ketones build up to dangerous levels in the body). Hypoglycemia may be harder to detect and treat while on a low-CHO diet because the body may change the way it uses CHO for energy. Strategies (including extra glucose monitoring) are needed to safely detect and manage severe hypoglycemia.

A lower-CHO diet may make it harder to get the recommended amount of fibre and other nutrients. It is important to consider the big picture of healthy eating which includes more than just the amount of CHO eaten and body weight.

## Recommendations

1. Individuals with diabetes should be supported to choose healthy eating patterns that are consistent with the individual's values, goals, and preferences.
2. Healthy\* low or very-low-CHO diets can be considered as one healthy eating pattern for individuals living with type 1 and type 2 diabetes for weight loss, improved glycemic

- control, and/or to reduce the need for antihyperglycemic therapies. Individuals should consult with their health-care provider to define goals and reduce the likelihood of adverse effects.
3. Health-care providers can support people with diabetes who wish to follow a low-CHO diet by recommending enhanced blood glucose monitoring, adjusting medications that may cause hypoglycemia (sulfonylureas and insulin), or increase risk for DKA (SGLT2 inhibitors, underdosing insulin in those with insulin deficiency), and to ensure adequate intake of fibre and nutrients.
  4. Individuals and their health-care providers should be educated about the risk of euglycemic DKA while using SGLT2 inhibitors and low-CHO diet, and further educated about the strategies to mitigate this risk.
  5. People with diabetes who begin a low-CHO diet should seek support from a dietitian who can help create a culturally appropriate, enjoyable, and sustainable plan. A dietitian can propose ways to modify CHO intake that best aligns with an individual's values, preferences, needs, and treatment goals as people transition to or from a low-CHO eating pattern.

\* Canadians, with and without diabetes, who prefer to adopt a low or very low-CHO dietary pattern, should be encouraged to consume a variety of foods recommended in Canada's Food Guide. Regular or frequent consumption of high energy foods that have limited nutritional value, and those that are high in sugar, saturated fat, or salt, including processed foods and sugary drinks, should be discouraged.

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**For More Information:** Please visit [www.diabetes.ca](http://www.diabetes.ca)

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