COALITION FOR METABOLIC HEALTH · POLICY BRIEF

Low-Carbohydrate Diets in the Dietary Guidelines for Americans: The Evidence Base

A summary of Appendix 4.5 of The Scientific Foundation for the Dietary Guidelines for Americans, 2025–2030

The 2025–2030 Dietary Guidelines Advisory Committee included a rigorous review to examine the evidence supporting low-carbohydrate (LC) diets. The review summarized 34 peer-reviewed meta-analyses of randomized controlled trials published between 2008–2025.

Conducted by Dr. Jeff Volek, PhD (The Ohio State University), this narrative umbrella review synthesized evidence on LC diets for weight loss, metabolic syndrome, and type 2 diabetes (T2D) management across tens of thousands of participants worldwide.

> **Key finding:** 100% of meta-analyses found low-carbohydrate diets to be as good or better than higher-carbohydrate comparators for weight loss and metabolic improvements.

34
peer-reviewed meta-analyses reviewed

82%
showed statistically significant short-term benefits of LC over higher-carb diets

100%
of meta-analysis found LC diets to be as good or better than higher-carbohydrate comparators.

8
meta-analyses found that ketogenic diets specifically produced the most consistent and largest improvements in weight loss, blood sugar control, and triglyceride and HDL cholesterol levels over higher-carbohydrate comparators

KEY EVIDENCE SUMMARY

Short-term (≤6 months)

- **Low-carbohydrate (LC)** diets produced greater weight loss, reduced waist circumference and fat mass, improved blood sugar control, and improved lipid profiles (lower triglycerides, higher HDL-C).
- **Ketogenic diets (KD)** consistently showed larger and more uniform benefits than moderately low-carb approaches across weight, blood sugar control, and dyslipidemia outcomes.
- **Metabolic Syndrome**: Two meta-analyses focused specifically on metabolic syndrome found LC diets improved all five diagnostic markers: high triglycerides, low HDL-cholesterol, high fasting plasma glucose, high blood pressure, and high waist circumference.

Intermediate-term (6–12 months)

- **Benefits attenuated**, though ketogenic diets continued to show advantages. Long-term adherence is the primary challenge for all dietary patterns, emphasizing the need for frequent and ongoing support.
- **LDL-C**: Low-carb diets may cause a mild to large increase in LDL cholesterol for a small subset of people. However, the type of LDL particles tends to shift from smaller (more atherogenic) to larger, less dense LDL particles, which are generally considered less harmful to heart health. At the same time, triglycerides (blood fats) tend to go down, and HDL cholesterol ("good" cholesterol) tends to go up. Importantly, most individuals do not experience an increase in LDL cholesterol on a low-carb diet.
- **Insulin resistance**: People with insulin resistance lose significantly more weight on LC compared to low-fat diets, suggesting LC approaches are especially valuable for metabolically vulnerable individuals.

TYPE 2 DIABETES: REMISSION & REVERSAL

Fourteen meta-analyses focused on T2D populations; ketogenic diets produced the most consistent improvements in glycemic control, weight, and lipid profiles. Beyond RCT data, real-world and longitudinal studies demonstrate substantial potential for T2D reversal:

>50% *T2D reversal at 1 year in a telemedicine-supported KD program (avg. disease duration: 8.4 years)*	**33%** *maintained T2D reversal at 5 years with sustained weight loss and improved biomarkers*	**94%** *of participants eliminated or reduced insulin medication at 1 year*

EQUITY & ACCESS CONSIDERATIONS

- Black and Hispanic populations face a disproportionate risk of impaired glucose/insulin dynamics; previous Dietary Guidelines for Americans (DGA) dietary patterns do not reflect the range of macronutrient approaches that could benefit these groups.
- LC diets can be adapted to diverse cultural foodways and plant-based eating patterns.
- Allowing macronutrient flexibility in dietary guidance could help address longstanding health disparities.

> ***Note:*** *LC/KD approaches for T2D should be implemented with physician oversight, particularly for patients on glucose-lowering medications, to manage hypoglycemia risk during medication reduction.*

WHAT LOW-CARBOHYDRATE DIETS LOOK LIKE

- **Low-carbohydrate**: <130 g/day (<26% of calories); replaces starchy/sugary foods with whole, unprocessed low-carb/high-fat foods.
- **Ketogenic (very low-carbohydrate)**: 20–50 g/day (<10% of calories); induces nutritional ketosis, distinct from ketoacidosis.
- Well-formulated LC diets are nutrient-dense, calorie-unrestricted, and comparable in diet quality to federal dietary guidance menu models.
- Calorie counting is generally not required; carbohydrate restriction itself drives metabolic improvements independent of calorie intake.

2025–2030 DGA NEW LANGUAGE ON CHRONIC DISEASE

"Individuals with certain chronic diseases may experience improved health outcomes when following a lower carbohydrate diet. Work with your health care professional to identify and adopt a diet that is appropriate for you and your health condition."

CONCLUSION OF THE REVIEW

"Based on the available evidence, including a low-carbohydrate dietary pattern as one option for people who are overweight or obese with metabolic syndrome or T2D is scientifically justified." — Dr. Jeff Volek, PhD, Ohio State University

Source: Volek JS. "A Review of Low-Carbohydrate Diets for Weight Loss, Metabolic Syndrome and Type 2 Diabetes." Appendix 4.5, The Scientific Foundation for the Dietary Guidelines for Americans, 2025–2030.