

# Type 2 Diabetes and Therapeutic Carbohydrate Restriction

*'Reducing overall carbohydrate intake for individuals with diabetes has demonstrated the most evidence for improving glycaemia.'* [American Diabetes Association 2023](#)

## Nutrition Network

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## Systematic Reviews and Meta-analyses

1. Zhou, C. et al. (2022) 'Ketogenic Diet Benefits to Weight Loss, Glycemic Control, and Lipid Profiles in Overweight Patients with Type 2 Diabetes Mellitus: A Meta-Analysis of Randomized Controlled Trails', International Journal of Environmental Research and Public Health, 19(16), p. 10429. Available at: <https://doi.org/10.3390/ijerph191610429>.
2. Yuan, X. et al. (2020) 'Effect of the ketogenic diet on glycemic control, insulin resistance, and lipid metabolism in patients with T2DM: a systematic review and meta-analysis', Nutrition & Diabetes, 10(1), pp. 1–8. Available at: <https://doi.org/10.1038/s41387-020-00142-z>.
3. Choi, Y.J., Jeon, S.-M. and Shin, S. (2020) 'Impact of a Ketogenic Diet on Metabolic Parameters in Patients with Obesity or Overweight and with or without Type 2 Diabetes: A Meta-Analysis of Randomized Controlled Trials', Nutrients, 12(7), p. 2005. Available at: <https://doi.org/10.3390/nu12072005>.

## Studies

1. Athinarayanan, S.J. et al. (2019) 'Long-Term Effects of a Novel Continuous Remote Care Intervention Including Nutritional Ketosis for the Management of Type 2 Diabetes: A 2-year Non-randomized Clinical Trial.', Frontiers in Endocrinology, 10. Available at: <https://doi.org/10.3389/fendo.2019.00348>. Now has publications on [5-year outcomes](#), [inflammation](#), and [kidney function](#).
2. Tay, J. et al. (2018) 'Effects of an energy-restricted low-carbohydrate, high unsaturated fat/low saturated fat diet versus a high-carbohydrate, low-fat diet in type 2 diabetes: A 2-year randomized clinical trial', Diabetes, Obesity &

Metabolism, 20(4), pp. 858–871. Available at:  
<https://doi.org/10.1111/dom.13164>.

## General Practice

1. Unwin, D. et al. (2023) 'What predicts drug-free type 2 diabetes remission? Insights from an 8-year general practice service evaluation of a lower carbohydrate diet with weight loss', *BMJ Nutrition, Prevention & Health*, p. e000544. Available at: <https://doi.org/10.1136/bmjnph-2022-000544>. (dietary handout – [Unwin et al. 2020](#))

## Under-resourced Community

1. Pujol-Busquets, G. et al. (2024) 'Mixed methods evaluation of a low-carbohydrate high-fat nutrition education program for women from underserved communities in South Africa', *Appetite*, p. 107725. Available at: <https://doi.org/10.1016/j.appet.2024.107725>.

## General Resources - Implementation and De-prescribing

1. Hite, A. et al. (2022) [Clinical Guidelines](#), Society of Metabolic Health Practitioners.
2. Low-Carbohydrate Nutrition Approaches in Patients with Obesity, Prediabetes and Type 2 Diabetes - Low Carb Nutrition - Queen's Units (2019).
3. Cucuzzella, M., Riley, K. and Isaacs, D. (2021) 'Adapting Medication for Type 2 Diabetes to a Low Carbohydrate Diet', *Frontiers in Nutrition*, 0. Available at: <https://doi.org/10.3389/fnut.2021.688540>.

## Further resources

The [metabolic section](#) of the Nutrition Network reference resource has an extensive listing where you can read more about the application of therapeutic carbohydrate restriction (TCR) for diabetes.

Nutrition Network offers training modules where you can learn more about TCR for the management of diabetes for both [clinicians](#) and [patients](#).



*Individual responses to dietary composition can vary, so appropriate medical monitoring is advised. Patients who are taking medication should consult with their doctor, as the following [guidelines](#) (Society of Metabolic Health Practitioners) may need to be considered.*