



CARDIOVASCULAR DISEASE



A LOW CARBOHYDRATE APPROACH

REFERENCE HANDOUT

'It is time to stop counting calories, and time instead to promote dietary changes that substantially and rapidly reduce cardiovascular morbidity and mortality'

- [Malhotra et al \(2015\)](#).



SYSTEMATIC REVIEWS AND META-ANALYSIS

Gjuladin-Hellon T, Davies IG, Penson P, Amiri Baghbadorani R. Effects of carbohydrate-restricted diets on low-density lipoprotein cholesterol levels in overweight and obese adults: a systematic review and meta-analysis. *Nutr Rev.* 2019;77(3):161-180. [doi:10.1093/nutrit/nuy0492](https://doi.org/10.1093/nutrit/nuy0492).

Dong T, Guo M, Zhang P, Sun G, Chen B. The effects of low-carbohydrate diets on cardiovascular risk factors: A meta-analysis. *PLoS ONE.* 2020;15(1):e0225348. [doi:10.1371/journal.pone.02253483](https://doi.org/10.1371/journal.pone.02253483).

Santos FL, Esteves SS, da Costa Pereira A, Yancy WS, Nunes JPL. Systematic review and meta-analysis of clinical trials of the effects of low carbohydrate diets on cardiovascular risk factors. *Obes Rev.* 2012;13(11):1048-1066. [doi:10.1111/j.1467-789X.2012.01021.x](https://doi.org/10.1111/j.1467-789X.2012.01021.x)



TRIALS

Wood RJ, Volek JS, Davis SR, Dell'Ova C, Fernandez ML. Effects of a carbohydrate-restricted diet on emerging plasma markers for cardiovascular disease. *Nutr Metab (Lond).* 2006;3:19. [doi:10.1186/1743-7075-3-192](https://doi.org/10.1186/1743-7075-3-192).

Harvey CJ d C, Schofield GM, Zinn C, Thornley SJ, Crofts C, Merien FLR. Low-carbohydrate diets differing in carbohydrate restriction improve cardiometabolic and anthropometric markers in healthy adults: A randomised clinical trial. *PeerJ.* 2019;7:e6273. [doi:10.7717/peerj.62733](https://doi.org/10.7717/peerj.62733).

Athinarayanan SJ, Hallberg SJ, McKenzie AL, et al. Impact of A Two-Year Trial of Nutritional Ketosis on Indices of Cardiovascular Disease Risk in Patients With Type 2 Diabetes. *In Review*; 2020. [doi:10.21203/rs.3.rs-78136/v1](https://doi.org/10.21203/rs.3.rs-78136/v1)



WHAT ABOUT FAT?

Zhu Y, Bo Y, Liu Y. Dietary total fat, fatty acids intake, and risk of cardiovascular disease: a dose-response meta-analysis of cohort studies. *Lipids in Health and Disease*. 2019;18(1):91. doi:[10.1186/s12944-019-1035-22](https://doi.org/10.1186/s12944-019-1035-22).

Shih CW, Hauser ME, Aronica L, Rigdon J, Gardner CD. Changes in blood lipid concentrations associated with changes in intake of dietary saturated fat in the context of a healthy low-carbohydrate weight-loss diet: a secondary analysis of the Diet Intervention Examining The Factors Interacting with Treatment Success (DIETFITS) trial. *Am J Clin Nutr*. 2019;109(2):433-441. doi:[10.1093/ajcn/nqy3053](https://doi.org/10.1093/ajcn/nqy3053).

Mozaffarian D, Rimm EB, Herrington DM. Dietary fats, carbohydrate, and progression of coronary atherosclerosis in postmenopausal women. *Am J Clin Nutr*. 2004;80(5):1175-1184. doi:[10.1093/ajcn/80.5.11754](https://doi.org/10.1093/ajcn/80.5.11754).

Astrup A, Magkos F, Bier DM, et al. Saturated Fats and Health: A Reassessment and Proposal for Food-based Recommendations: JACC State-of-the-Art Review. *Journal of the American College of Cardiology*. Published online June 17, 2020. doi:[10.1016/j.jacc.2020.05.077](https://doi.org/10.1016/j.jacc.2020.05.077)



OTHER MEASUREMENTS

Hu T, Jacobs DR, Bazzano LA, Bertoni AG, Steffen LM. Low-carbohydrate diets and prevalence, incidence and progression of coronary artery calcium in the Multi-Ethnic Study of Atherosclerosis (MESA). *British Journal of Nutrition*. 2019;121(4):461-468. doi:[10.1017/S00071145180035132](https://doi.org/10.1017/S00071145180035132).

Chen C-Y, Huang W-S, Chen H-C, et al. Effect of a 90 g/day low-carbohydrate diet on glycaemic control, small, dense low-density lipoprotein and carotid intima-media thickness in type 2 diabetic patients: An 18-month randomised controlled trial. *PLOS ONE*. 2020;15(10):e0240158. doi:[10.1371/journal.pone.0240158](https://doi.org/10.1371/journal.pone.0240158)



OTHER HELPFUL STUDIES

Unwin DJ, Tobin SD, Murray SW, Delon C, Brady AJ. Substantial and Sustained Improvements in Blood Pressure, Weight and Lipid Profiles from a Carbohydrate Restricted Diet: An Observational Study of Insulin Resistant Patients in Primary Care. International Journal of Environmental Research and Public Health. 2019;16(15):2680. doi:[10.3390/ijerph161526802](https://doi.org/10.3390/ijerph161526802).

Creighton BC, Hyde PN, Maresh CM, Kraemer WJ, Phinney SD, Volek JS. Paradox of hypercholesterolaemia in highly trained, keto-adapted athletes. BMJ Open Sport Exerc Med. 2018;4(1):e000429. doi:[10.1136/bmjsem-2018-0004293](https://doi.org/10.1136/bmjsem-2018-0004293).

Norwitz NG, Loh V. A Standard Lipid Panel Is Insufficient for the Care of a Patient on a High-Fat, Low-Carbohydrate Ketogenic Diet. Front Med. 2020;7. doi:[10.3389/fmed.2020.000974](https://doi.org/10.3389/fmed.2020.000974).

Ballard KD, Quann EE, Kupchak BR, et al. Dietary carbohydrate restriction improves insulin sensitivity, blood pressure, microvascular function, and cellular adhesion markers in individuals taking statins. Nutr Res. 2013;33(11):905-912. doi:[10.1016/j.nutres.2013.07.022](https://doi.org/10.1016/j.nutres.2013.07.022)

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 [clinical guidelines](#) (Society of Metabolic Health Practitioners - Hite et al.) may need to be considered.

Want to find out more about reducing your risk of CVD using a Low Carbohydrate or Ketogenic Diet?



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