

A lower carb diet sheet for type 2 diabetes: On the whole for people with T2D we are trying to minimize the damage done over time by high blood sugars. In this condition your metabolism struggles to deal with both sugar itself and the starchy carbohydrates that digest down into surprising amounts of sugar

Sugar – cut it out altogether, although it will be in the blueberries, strawberries and raspberries you are allowed to eat. Cakes and biscuits are a mixture of sugar and starch that make it almost impossible to avoid food cravings; they just make you hungrier!!

Reduce starchy carbs a lot Remember they digest down into surprising amounts of sugar. If possible, just cut out the 'White Stuff' like bread, rice, pasta, potato, crackers and cereals.

All green veg/salads are fine...Eat as much of these as you can –turn the white stuff green So that you still eat a good big dinner try substituting veg such as broccoli, zucchini or green beans for your pasta or rice – still covering them with your gravy, Bolognese or curry! Cauliflower rice is now widely available
Tip: try home-made soup – it can be taken to work for lunch and microwaved. Mushrooms, tomatoes, and onions can be included in this.

Fruit is trickier...

Some tropical fruits like bananas, oranges, grapes, mangoes or pineapple have too much sugar in and can set those carb cravings off. Berries are better and can be eaten; blueberries, raspberries, strawberries, apples and pears too.

Eat healthy proteins...

Try basing your meals on non-processed meat like chicken or red meat, eggs (three eggs a day is not too much), fish – particularly oily fish such as salmon, mackerel or tuna –are fine and can be eaten freely. Plain **full fat** yoghurt makes a good breakfast with the berries. Processed meats such as bacon, ham, sausages or salami are not as healthy and should only be eaten in moderation.

Healthy fats are fine in moderation...

Yes, fats can be fine in moderation: olive oil is very useful, butter may be tastier than margarine and could be better for you! Coconut oil is great for stir fries. Four essential vitamins A, D, E and K are only found in some fats or oils. Please avoid margarine, corn oil and vegetable oil.

Beware 'low fat' foods. They often have sugar or sweeteners added to make them palatable. Full fat mayonnaise and pesto are definitely on!!

Cheese only in moderation...

It's a very calorific mixture of fat, and protein.

Snacks: avoid, as habit forming. But unsalted nuts such as almonds or walnuts are OK to stave off hunger. The occasional treat of strong dark chocolate 70% or more in small quantity is allowed.

Eating lots of green veg with protein and healthy fats leaves you properly full in a way that lasts

Alcohol is full of carbs...

Sadly, many alcoholic drinks are full of carbohydrate – for example, beer is almost 'liquid toast' hence the beer belly!! The odd glass of dry white, red wine or spirits is not too bad if it doesn't make you hungry afterwards – or just plain water with a slice of lemon.

Sweeteners can trick you...

Finally, about sweeteners and what to drink – sweeteners have been proven to tease your brain into being even hungrier, making weight loss more difficult – drink tea, coffee, and water or herb teas. (100ml milk is 1 teaspoon of sugar)

Typically, a low carb diet contains less than 130 grams of carb per day. How low to go depends on many factors. Discuss this with your health care practitioner.

Important On prescribed medication? Check this first with your doctor before making big changes to your diet

A diet that promotes green veg, unprocessed meat, eggs, dairy, nuts, seeds, fish and berries; wholefoods



Cutting the carbs FAQs

No cereals! What can I eat for breakfast?

Try full fat plain yogurt with nuts and berries or breakfast omelet with cheese.

Just started low carb: I have a headache/cramps/feel lousy?

For some people the first few days of 'cutting carbs' is difficult. After all your system may have been running on sugar for years, this is a metabolic shock! It takes a while for the system to swap to burning fat as fuel instead. Make sure you are drinking enough water. Odd as it sounds many people find they need extra salt on a lower carb diet. Interestingly this is because the sugar hormone – insulin causes you to retain salt- so cutting sugar may result in 'peeing out' salt you had been hanging onto for some time. In its turn this loss of salt can improve your blood pressure.

I am on prescribed medication, does that matter?






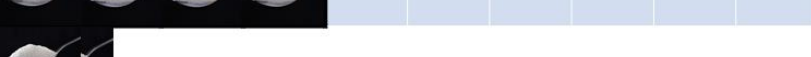


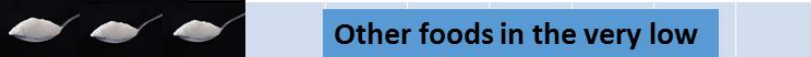


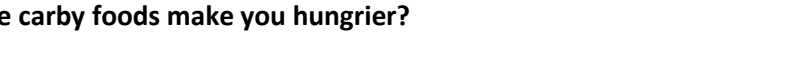
Yes, this may matter. The most important drugs are, any you are taking for diabetes. If they lower your blood sugar and low carb does too you may have a problem! The new SGLT2 inhibitor drugs (e.g. Dapagliflozin or Empagliflozin) have particular problems. You should consult your doctor before making major dietary changes. Though the commonest prescribed drug for diabetes, metformin is fine with a low carb approach.

Constipation; Help!

With all the green stuff in this diet this should not be a problem, first check your fluid intake. Magnesium supplements can really help or milled linseed on your full fat yoghurt and raspberries.

What can I have to drink?

Water (sparkling) with slice of lemon. Tea, herb teas are good. Coffee, avoid latte as each 100mls of milk is equivalent to about a teaspoon of sugar. Alcohol in moderation or on holiday spirits-gin, whiskey, vodka with sugar free mixers or just ice, red wine or for a special occasion champagne is OK. Remember moderation because alcohol makes you hungry and could 'dissolve your resolve'!

Food Item	Glycaemic index	Serve size g	How does each food affect blood glucose compared with one 4g teaspoon of table sugar? 
Basmati rice	69	150	10.1 
Potato, white, boiled	96	150	9.1 
French Fries baked	64	150	7.5 
Spaghetti White boiled	39	180	6.6 
Sweet corn boiled	60	80	4.0 
Frozen peas, boiled	51	80	1.3 
Banana	62	120	5.7 
Apple	39	120	2.3 
Wholemeal Small slice	74	30	3.0 
Broccoli	15	80	0.2 
Eggs	0	60	0 

Other foods in the very low glycaemic range would be chicken, oily fish, almonds, mushrooms, cheese

How does insulin fit in and how can eating these carby foods make you hungrier?

After digestion of carbohydrate any glucose released is rapidly absorbed into the bloodstream –the body knows that high blood sugar levels are toxic to it, so responds by producing the hormone insulin from the pancreas gland.

One of the functions of insulin is to cause your abdominal fat cells and liver to absorb the excess blood glucose to produce fat or the lipid triglyceride. The resultant lower blood glucose level may cause you to have hunger or ‘carb cravings’ and you return to the cookie jar to repeat the cycle.

It seems that when carbs are restricted and insulin levels go down, the fat isn’t “locked” away in the fat cells anymore and becomes accessible for the body to use as alternative energy source. In this way you become a ‘fat burner’ leading to reduced need for eating.

It’s quite possible for the body to become adapted to burning fat (rather than sugar) as its main fuel over several weeks. Many on the low-carb diet notice they lose belly fat first because of this.

The low carb diet is a lifestyle choice rather than a diet for a few weeks, because of course going back to the carbs will stimulate the insulin levels and obesity again, to cause worsening diabetes.

Will a diet higher in healthy fats increase my cholesterol level?

Surprisingly low carb studies often show the opposite (4), because much of the fat in your blood is manufactured from carbs by your liver and has not come from the diet at all. This applies particularly to triglyceride levels, also the healthy HDL Cholesterol usually rises.

What about blood pressure?

Studies have shown reducing carbohydrates in the diet can improve blood pressure significantly (5, 6), in part because a low carb, low insulin diet causes you to lose more salt in the urine.

Finally remember everyone is different.

There is no one correct diet; see what works best for you and do more of it.

This information is only part of how any particular person may decide which diet or indeed lifestyle is the best for them. If you are on prescribed medication or suffer from a significant medical condition, we strongly advise you to consult your own doctor before making changes. For example, improvements in lifestyle and weight loss may also significantly improve your blood pressure or diabetes control requiring a reduction in medication.

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References

1. Murdoch C, Unwin D, Cavan D, Cucuzzella M, Patel M. Adapting diabetes medication for low carbohydrate management of type 2 diabetes: a practical guide. *Br J Gen Pract.* 2019;69(684):360-1.
2. Unwin D, Khalid AA, Unwin J, Crocombe D, Delon C, Martyn K, et al. Insights from a general practice service evaluation supporting a lower carbohydrate diet in patients with type 2 diabetes mellitus and prediabetes: a secondary analysis of routine clinic data including HbA1c, weight and prescribing over 6 years. *BMJ Nutrition, Prevention & Health.* 2020:bmjnph-2020-000072.
3. David Unwin DH, Geoffrey Livesey,. It is the glycaemic response to, not the carbohydrate content of food that matters in diabetes and obesity: The glycaemic index revisited. *Journal of Insulin Resistance.* 2016;2016;1(1), a8.<https://insulinresistance.org/index.php/jir/article/view/8/11>.
4. 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.* 2018.
5. 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.
6. Evans CE, Greenwood DC, Threapleton DE, Gale CP, Cleghorn CL, Burley VJ. Glycemic index, glycemic load, and blood pressure: a systematic review and meta-analysis of randomized controlled trials. *Am J Clin Nutr.* 2017;105(5):1176-90.