

A lower carb diet sheet for type 2 diabetes: On the whole for people with T2D we are trying to minimise 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, courgettes or green beans for your mash, 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 or HCP before making big changes to your diet

PS some folk need more salt on a low carb diet

Cutting the carbs FAQs

No cereals! What can I eat for breakfast?

Try full fat plain yogurt with nuts and berries or your standard British- eggs, bacon, mushroom and tomato. Another vegetarian option could be a breakfast omelet with cheese. For breakfast on-the-go just take a few hard-boiled eggs and a slice of boiled ham.

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 'weeing out' salt you had been hanging onto for some time. In its turn this loss of salt can improve your blood pressure. I remember I suddenly started feeling dizzy if I stood up too quickly! Some doctors find their patients are able to reduce their BP medications. For the same reason some find muscle cramps and weakness are a problem. Again, more salt is the remedy, sometimes magnesium supplements also help with this.

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 (eg. 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 about when I'm travelling or at work?

Buy slices of meat/cheese/crudities. Low carb bread sandwiches. Boxed up salad with olives, meat, eggs, cheese. As a bonus full fat mayo is back on! I always travel with a pack of almonds and a bar of 90% dark chocolate for emergencies.

At work is there is a microwave? Try left overs re-heated or scrambled egg with cheese and tomato or homemade soup

What can I have to drink?

Water (sparkling) with slice of lemon. Coffee, avoid latte as each 100mls of milk is equivalent to about a teaspoon of sugar, or Tea. Herb teas are good. Alcohol; my son Rob calls beer 'liquid toast' hence the beer belly, but 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 I did say moderation because alcohol makes you hungry and could 'dissolve your resolve'!

Can I have a cheat meal or snack?

Having a 'cheat meal' may slow your weight loss as you'll go back to being a sugar burner and it may take several days to return to fat burning.

Also be honest, if you are a sugar or carb addict will it be a struggle to get back on track again? I remember one Christmas my wife Jen came off the wagon for 'just one meal' and didn't regain control till May having gained two stone! Snacks: in general, I find these just add to my hunger –though to be honest it took me a year to stop eating biscuits altogether. For a while I tried raw carrot and cheese or nuts and still occasionally have a few almonds.

Eating out and holidays

This can be a challenge, but I have eaten delicious low carb meals across five continents over the last 8 years. Most restaurants are happy to swap the chips for green veg or salad. Instead of a sweet I ask for a plate of cheese (without the biscuits –then you often get more cheese!) Sometimes, odd as it sounds I may even order a final course like chicken liver pate off the starter menu. Avoid all-inclusive holidays –it will be cheap carby stuff for sure. Warn hotels or restaurants you are low carb in advance, you will need to explain this means no bread but more green veg. On the whole avoid Chinese meals, not only are they full of sugar (think sweet and sour) but they add a lot of monosodium glutamate (MSG, E number 621) as a flavour enhancer. This can really ramp up your appetite and gives some people (including me) heart palpitations.

A good resource produced by another GP practice, NewForest. A great webpage please look;

<https://newforestpcn.co.uk/low-carb/>

The Low-carbohydrate diet for pre-diabetes and Type 2 Diabetes; an overview

(Also good for reducing middle aged spread and may improve blood pressure & liver function)

Someone with Type 2 diabetes has a particular problem in metabolizing a particular sugar, glucose. This means the blood sugar levels after a sugary or carby meal stay at high levels, possibly over time damaging the small blood vessels in the eye, kidney and other organs. So good diabetic control can make all the difference.

So it makes sense to **cut back on foods either containing sugars or built up from sugars**, which form their building blocks. The starches in flour, potatoes, rice, breakfast cereals and other grains are examples where glucose is concentrated by the plant for storage. When we eat these starches the process of digestion rapidly breaks them back down into glucose. This is why they are said to have a **high glycaemic index** (high GI) and glycaemic load (GL)

The most logical way for those with Type 2 Diabetes to avoid damaging high blood sugars is not to take in sugar itself or high GI carbs. Especially as we can live well off other foods such green veg, protein such as in eggs, meat & fish, also nuts and healthy fats like olive oil or even butter. **Any weight loss that comes with this diet can really help people with diabetes to avoid medication altogether and feel healthier into the bargain!**

An important point for those of you thinking of going low carb who are already on drugs for diabetes is that you should discuss this with your doctor as drug dosages may need to be reduced or the drug stopped altogether. Particular examples are insulin, gliclazide or the new SGLT2 inhibitors like dapagliflozin. Metformin the commonest drug for diabetes is quite safe with a low carb diet(1).










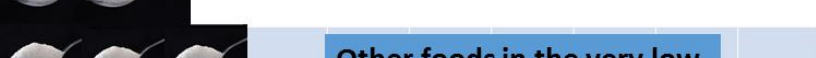
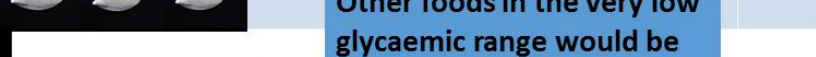

Is it possible to reverse my T2 Diabetes?

Yes, though I prefer the term drug-free remission as this reminds us that if we go back to overeating again the condition will return. At Norwood we keep careful records of the results achieved by our patients' by cutting sugar and starchy carbs. Of our patients who choose a low carb approach 49% achieve drug free remission(2), the average weight loss is 9.5 Kg. Our patient with the greatest weight loss is 10 stone lighter!

Are there other approaches to improving diabetic control?

Yes, any diet that helps you lose weight successfully will probably help, for some very heavy individuals' bariatric surgery can work too.

The UK NICE guidelines on T2 diabetes include the advice: Encourage low glycaemic index sources of carbohydrate in the diet. Here is an infographic to explain this, based on the glycaemic load of portions of different foods. For example; 150 g of boiled rice can be expected to affect blood glucose to approximately the same extent as ten teaspoons of table sugar(3)

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, possibly getting fatter in the process.

According to many experts on low-carb diets, including Gary Taubes and the late Dr. Atkins, lower insulin levels as a result of reduced carb consumption is the main reason for the effectiveness of low-carb diets. I have come to see Type 2 diabetes as a state of carbohydrate intolerance. Over 33 good scientific studies have shown the approach to work well.

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.

Dr David Unwin FRCGP

RCGP National Champion for Collaborative Care and Support Planning in Obesity & Diabetes

RCGP clinical expert in diabetes

Ambassador for the All Party Parliamentary Group on Diabetes

Founder member of The Public Health Collaboration

NHS Innovator of the year 2016

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.