

The Blood Sugar Diet

Dear Colleague,

We are pleased to write that your patient is taking steps to reduce their blood sugars and lose weight by implementing a low Carb Mediterranean style diet. They are doing this either through the 8 Week Blood Sugar Diet Book, with support from the online community, or by enrolling on an online Program (www.thebloodsugardiet.com.au) which has been developed and supported by GPs and other health professionals.

Your help in providing support and monitoring is very much appreciated whilst your patient makes the necessary dietary and lifestyle changes.

The diet is based on extensive research done by Professor Roy Taylor of Newcastle University, and then developed by Dr Michael Mosley in his bestselling book *The 8-week Blood Sugar Diet*. Dr Clare Bailey, who wrote the accompanying recipe book, is a GP in the UK and has helped many patients improve their blood sugars and reverse their diabetes. She is currently involved in academic research with Oxford University into this relatively novel approach.

Professor Taylor, who has shown in a number of studies that most well motivated Type 2 Diabetics can lose significant amounts of weight and return their blood glucose levels to the normal range, is also doing a large multicentre trial in the UK (see link on information sheet below)

The success of The Blood Sugar Diet (BSD) has inspired us to create an online program to support both patients and their health practitioners. It is a step-by-step guide, based on a low carb Mediterranean style diet combined with various options for calorie restriction ranging from the 800 calories daily approach, to 5:2 intermittent fasting or simply reducing portions. We have found that when it is tailored to the patient's needs they are more likely to implement and maintain the lifestyle changes required to achieve long-term success.

Our philosophy is to educate patients about food; provide practical support via weekly shopping lists and recipes; and – critically - engage with them in an online forum where medical professionals are available to offer support.

From experience, it is often necessary to reduce or stop insulin, SGLT-2 Inhibitors ('flozins') and sulphonylureas as well as anti-hypertensive medication early on. To provide pointers for medical professionals we have attached a summary below to help you support your patient.

Your help with arranging standard blood testing, such as monitoring HbA1c and the patient's home blood sugars, is very much appreciated (see more information in the summary below). In some areas, we are also able to arrange more detailed tests such as DEXA scans, which can be very useful in identifying the extent of unhealthy visceral fat. It is also highly motivating to be able to compare the pre and post diet scans.

In addition to developing a nurse run course for patients, we are planning to run training courses for medical professionals who wish to learn more about this approach so they can better support their patients to lose weight and improve their blood sugars. A professional's forum will also be available soon to answer queries either about the program or regarding changes to medication that can be expected over the course of the diet, as well as discussing amongst the member's, successes and issues that may arise. We hope you will find this helpful.

All the best,

Dr Clare Bailey, GP Buckinghamshire, UK

Dr Patrick Garratt, GP Perth, Western Australia

Supporting Patients to improve their blood sugars

All options are based on a moderately low carb Mediterranean style diet. Options to choose a more intensive 800cal 'fasting' approach to intermittent fasting or simply portion control.

The BSD FAST 800: Fast, intensive and effective. Involves eating just over 800 calories a day. Requires motivation and commitment. This is the 'treatment phase'.

The 5:2 BSD with INTERMITTENT FASTING: More flexible, less intensive. Cut down to 800 calories, on some days, also known as 'fasting'. Usually means 5 days eating a Mediterranean style diet with some portion control and 2 days 'fasting' on about 800 calories. Not suitable for those on certain medications such as insulin, gliclazide or warfarin.

The BSD MED STYLE WAY OF LIFE: Slower & gentler. No fasting, just portion control, suitable for most people including; those who don't need to lose weight, are less motivated, the elderly, and with medical supervision.

MAINTENANCE: Once target is reached, continue to base food on the Mediterranean style diet. Many can relax a bit, no longer counting, just watching portions. Some prefer to continue intermittent fasting, perhaps doing a 6:1 version (800 cals 1 day/week) to maintain the benefits. Continue to avoid snacking if possible! However if you return to previous habits the diabetes is likely to return.

TIPS: On a low calorie day increase water intake by 1-1.5 litres (to about 2.5L depending on activity and circumstances), plan ahead, tell other people and try to avoid snacking (if you must, a small portion of nuts is best). As with all diets, we recommend doing it with the support of a health professional.

Considerations:

- 1. Consider a different variant of diabetes or type 1;** If the patient is atypical or not responding as expected.
- 2. May involve significant restriction of food intake (800 calories);** for up to 8-12w.
- 3. Managing diabetic medication:** Aim to reduce medication that could cause hypos first. Otherwise on a last in, first out basis. Reduce evening hypoglycaemic medication first. Reassure that there may be a temporary increase in blood sugar, but if they stick to the diet it will continue to improve.

Insulin; If making a significant change to a low carb diet & particularly if reducing to 800 calories, reduce insulin by half if on >20 Units (do this the previous night for long acting insulin) Advise re risk of hypos and management. Continue to reduce by half again, depending on fasting blood sugars (Can usually reduce or discontinue by 2 weeks if fasting blood sugars are around 8 or below). If insulin <20 Units stop it altogether. Ask patient to check FBS regularly during the day (about 4 times a day initially). Aim to run a bit high for a few weeks. Review at 1w or sooner as required.

Sulphonylureas; Stop or reduce by half on commencement of the BSD Fast 800 diet.

All other oral hypoglycaemic agents; Can be decreased or stopped according to degree of control achieved. Advise re hypo risk and management.

SGLT-2 Inhibitors ('flozins'); usually stop (risk of Euglycaemic DKA)

Antihypertensives: Unless poor control or on 2 or more medications, this can be halved or stopped on commencement of the BSD. BP likely to reduce within days as insulin resistance improves, so advise patient to watch out for feeling light headed and/or check BP at home – may require further reduction or discontinuation.

Agree a plan for the patient to contact appropriate healthcare professional if blood glucose levels become very high (fasting >14mmol per litre) or they are getting hypos. Or if the BP is too high or too low. *More details in table on final page.*

- 4. Tests - baseline bloods;**

HbA1C; although advised to do only 3monthly, significant improvements usually seen within 6 wks.

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Fasting glucose; may return to normal within a few weeks.

Lipid profile; usually improves alongside reduced blood sugars, despite increase in fat intake.

ALT/GGT; Improves as liver recovers.

Hb & Iron status; should be assessed prior to starting, especially for the elderly or vegetarians.

U&Es; TFTs;

Measurements: BP, weight, height, BMI, waist circumference (via umbilicus)

5. **Goal:** Depending on starting weight. Aim to lose 10-15% of body weight. If original BMI > 40, goal may need to be 15-20%. South Asians may need to aim for BMI closer to 22 or 23.
6. **Encourage patient to choose which approach to follow.** Check lifestyle, individual suitability, motivation & clinical needs. Consider the 5:2 BSD or the easier Mediterranean style way of life. Can move from one approach to another.
7. **Extra retinal screening required if moderate or more severe retinopathy** is present. Re-screen within six months of achieving a substantial improvement in blood glucose. Sudden normalisation in retinal blood flow can disadvantage damaged areas of the retina, resulting in deterioration in retinopathy.
8. **Side effects;** Commonest are probably headache, constipation and tiredness, usually due to dehydration. Normally settles with extra water (1-1.5L). Sometimes helped by a little extra salt in the diet. Consider vitamin supplementation on 800 calorie days.
9. **Although a low calorie Mediterranean style diet is suitable for most people, AVOID** reduced calorie diet if the patient is;
 - Underweight and/or has a history of an eating disorder
 - Under 18 years of age
 - Breastfeeding or pregnant (can do Mediterranean style diet with monitoring)
 - Diagnosed with a significant psychiatric disorder or substance abuse
 - Frail or recovering from surgery, uncontrolled BP, cardiac arrhythmia or other abnormalities.
 - Under active investigation or treatment or has a significant medical condition affecting ability to comply with diet, a history of intermittent porphyria
 - Unwell, has a fever, renal failure (stage 4 or 5), recent cardiac event, stroke or heart failure.
 - Some medications such as Warfarin and Lithium need adjusting and are not suitable for intermittent fasting due to dose fluctuations.
 - Careful monitoring for patients with history of seizure is also recommended.
10. **Review;** Review adherence, hypos, side effects, blood sugars, medication, BP, weight & waist at 2 weeks, then monthly for 2-3m, then as required. Monitor HbA1C. Maintain routine diabetic reviews, even if blood sugar returns to normal.
11. **Resources;** Professional support at <https://thebloodsugardiet.com/information-for-professionals/>
Information of Prof Roy Taylor's research:
<http://www.ncl.ac.uk/magres/research/diabetes/reversal/#publicinformation>
Patient advice, useful resources, recipes and online community www.thebloodsugardiet.com.au
and www.thebloodsugardiet.com . See **The 8 Week Blood Sugar Diet Recipe Book**, by Dr Clare Bailey for program and recipes. **The 8 Week Blood Sugar diet**, by Michael Mosley for scientific studies, stories and more information.

Type 2 Diabetes: Diabetic Medications on a Low Carbohydrate Diet - Summary & Suggestions

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There are three main considerations with the use of diabetic medications in type 2 diabetes when on a low carbohydrate diet:

1. Is there a risk of hypoglycaemia?
2. What is the degree of carbohydrate restriction?
3. Does the medication provide benefit, and if so, do any potential side effects outweigh the benefit.

We include some general information about this here and on the website, but it is not a substitute for proper, individual medical advice.

Drug Group	Action	Hypo risk?	Suggested action (to continue/stop)
Sulfonylureas (e.g. Gliclazide)	Increase pancreatic insulin secretion	YES	STOP (or if gradual carbohydrate restriction then wean by e.g. halving dose successively)
Insulins*	Exogenous insulin	YES	REDUCE/STOP (Convert to all basal and wean appropriately, e.g. successive 30-50% reductions, towards elimination) *see below
Meglitinides (e.g. Repaglinide)	Increase pancreatic insulin secretion	YES	STOP (or if gradual carbohydrate restriction then wean by e.g. halving dose successively)
SGLT-2 inhibitors (e.g. Empagliflozin)	Increase renal glucose secretion	No	STOP . Risk of Euglycaemic DKA with normal/near normal sugars (especially if LADA that has been misdiagnosed as T2DM).
GLP-1 agonists (e.g. Liraglutide)	Slow gastric emptying. Glucose dependent pancreatic insulin secretion.	No	Optional, consider clinical pros/cons (expensive).
Biguanides (e.g. Metformin)	Reduces insulin resistance	No	Optional, consider clinical pros/cons.
Thiazolidinediones (e.g. Pioglitazone)	Reduce peripheral insulin resistance	No	Usually stop. Concern over risks usually outweigh benefits.
DPP-4 inhibitors (e.g. Sitagliptin)	Inhibit DPP-4 enzyme	No	Stop. No significant risk, but no benefit in most cases.
Alpha-glucosidase inhibitors (e.g. Acarbose)	Delay digestion of starch and sucrose	No	Stop. No benefit on a low carbohydrate diet.
Blood glucose testing strips	Provide feedback on blood glucose response to food	N/A	A period of measuring blood glucose helpful for informing them about the effect of various foods on blood glucose. Measurement may also be useful if HbA1c is not improving as expected.
<p>*Insulin reduction suggestion -Tailor to individual. Usually requires close supervision with healthcare professional, and if in doubt seek expert input.</p> <p>T2DM without 'beta cell failure': If using basal-bolus regime convert to long-acting insulin only, BD in equal doses (OD may suit some people). On commencing low carb diet reduce total insulin by 30-50%. Monitor QDS initially for hypoglycaemia (rescue glucose if required). Continue down-titration of insulin as insulin resistance improves (can take months).</p> <p>Caution: Some T2DM may have significant 'beta cell failure'; or other forms of pancreatic insufficiency (e.g. LADA or T3c) misdiagnosed as T2DM. Consider this if rapidly increasing HbA1c, thirst, polydipsia, weight loss, low C-peptide. Insulin should not be eliminated in this cohort, although basal and bolus dose adjustment needed for carbohydrate restriction.</p>			