My Low Carbohydrate Journey Back to Health: Keto was the Key

Although highly motivated by health issues, over a six month period I was unable to lose even one pound with typical calorie-restriction "Eat Less, Move More". However, a strict Low Carbohydrate (Ketogenic) diet enabled me to lose 3 stone (19kg) in just seven months, significantly reduce my Cardiovascular risk and reverse/put into remission Prediabetes, all without feeling starved or deprived! (Weight loss isn't compulsory, so even people without weight problems can improve their health with a Low Carb diet.) I hope my story might help and encourage others...

The following narrative contains pointers to key dietary and health information, gleaned from various sources, which gave me the confidence to start a Ketogenic diet. I have endeavoured to summarise this info accurately, but possibly some errors have crept in. For an authoritative account of the underlying physiology, research results and background info I highly recommend the readable and practical 2011 book *The Art and Science of Low Carbohydrate Living* by Jeff S. Volek PhD RD & Stephen D. Phinney MD PhD. The suitably qualified authors together have five decades of clinical and research experience in the field of nutrition and have published hundreds of research papers.

Other benefits which I experienced after a few weeks of starting a Ketogenic (Keto) diet:

Increased mental alertness
Constant feelings of lethargy vanished
Loud snoring stopped (for which my wife is truly grateful!)
Excess tummy acid no longer a problem (and antacid medication no longer needed)

I gather that these positive effects are not uncommon for people switching to a Keto diet.

For those new to the terms: HbA1c gives the average level of blood glucose over the previous 2 to 3 months (depending on personal physiology). Below 42 mmol/mol (or 6.0%) is normal, 42 to 47 (6.0% to 6.4%) indicates Prediabetes, and 48 or over (6.5% or over) indicates Diabetes.

Type 1 Diabetes, where the pancreas produces little or no insulin, is caused by the immune system incorrectly destroying the insulin-producing beta cells. I gather there is currently no cure.

In Type 2 Diabetes, the pancreas is producing insulin OK but the body is not responding to it normally. This condition is called *Insulin Resistance*, which can indeed be reversed. Prediabetes is the precursor to Type 2 where HbA1c is above normal but not high enough for Diabetes to be diagnosed.

In both Type 1 and Type 2 Diabetes, blood glucose levels are significantly higher than normal and, if left untreated, cause serious damage to blood vessels resulting in blindness, kidney problems, heart disease, possible limb amputation and other grim conditions.

In Jan 2018 I qualified for a diagnosis of Metabolic Syndrome: Insulin Resistance/Prediabetes evidenced by elevated HbA1c, high Blood Pressure and abdominal obesity (a large belly) which indicated visceral fat (fat stored around internal organs). Consequently, I was not at all healthy - essentially, Cardiovascular Disease (e.g.: a stroke or heart attack) just waiting to happen, as well as being on my way to getting full-blown Type 2 Diabetes.

Since I was diagnosed with Prediabetes (HbA1c of 42) I started attending the local Diabetes Prevention Programme (DPP) classes, paid for by the NHS. I didn't eat badly - a varied diet with lots of fruit and veg and few sweet things, but before the classes even started I had eliminated the small amount of honey and what little refined sugar remained in my diet. The classes were taught and run well and helped me confront the situation and learn the various concepts and terminology - it all seemed rather overwhelming at first. Sadly, what causes Insulin Resistance, which is at the root of things, wasn’t explained precisely. We were merely told it is “associated with” obesity and certain other factors. (I even wondered if the mechanism wasn't really understood, since the

information we were given was so vague.) It consequently remained a nebulous concept and thus hard to tackle, which I found troubling.

My Body Mass Index very nearly put me into the Obese category, so weight-loss was a key objective. Calorie Restriction or “Eat Less, Move More” was the message we were taught (at length and in great detail), but for a couple of physiological reasons this proved ineffective for me: Firstly, Chronic Fatigue Syndrome means I have strictly limited energy, so really can't exercise much. Secondly, when I reduced my food intake I experienced such acidic hunger that I could hardly sleep and soon became exhausted. (This was despite being on antacid medication twice a day and taking Rennie etc.) I was very keen to avoid both Type 2 diabetes (with its associated complications) and also Cardiovascular Disease, but over a six-month period I was unable to lose one pound however hard I tried. (It really wasn’t because I was lacking willpower, as the lady leading the DPP course once unhelpfully suggested. However, on another occasion when I detailed what I was eating, she had no suggestions for improvement and said that I couldn't do any better.) Happily, walking all I could over several months did reduce my BP from about 155/95 to about 135/90, a considerable improvement and showed I was taking things seriously and putting in the effort.

At the DPP classes, we were directed to the Diabetes UK website, but I came across www.diabetes.co.uk and found it rather more helpful and informative, and discovered their Low-Carb Diet community forum. I found people there who had lost weight easily and significantly reduced their HbA1c by adopting a Low Carbohydrate diet. (A Low Carbohydrate diet consists of restricted carbohydrate, adequate protein plus mono/saturated fat and usually doesn't include calorie counting. A Ketogenic diet is less than 20g carbohydrate per day, Moderate Low Carb is 20-50g per day and Liberal is 50-100g. Fibre passes right through the body, so isn't counted.) However, I was cautious about eating much saturated fat. One person even made mention of - horrors - the Atkins diet! I did, though, come across the name Dr Jason Fung and investigated some more. (I noted his book *The Diabetes Code* has a foreword written by Nina Teicholz.)

Jason Fung had been a kidney specialist in Canada for nine years and worked with numerous patients with Diabetes. From research results he realised that, from a long-term perspective, the standard treatment for Type 2 Diabetes (insulin etc.) invariably had poor patient outcomes and was merely treating a symptom rather than the underlying disease. He also came across studies which showed people doing Atkins long-term didn't fall over from heart failure as was expected. He then wondered if there were a better perspective and thus better treatment for Type 2 Diabetes, i.e. Low Carb diets.

I listened to both Jason Fung and Nina Teicholz being interviewed on episodes of The Low Carb Cardiologist Podcast, hosted by Dr Bret Scher (who is a “card-carrying, board certified cardiologist" and now hosts the Diet Doctor podcasts) and I learnt about the American physiologist Ancel Keys. His belief that eating saturated fat causes heart disease came to prominence following President Eisenhower’s heart attack in 1955, when there was an urgency to discover what had caused it. Political and commercial weight were thrown behind Keys' claim, even though it was unproven.

Point of logic: We can show ambulances are *associated* with serious car accidents, since they can often be found at the scene, but that doesn't prove that ambulances are the *cause*.

Keys' famous “Seven Countries Study”, which took decades to do, is supposed to prove his claim. Actually, it doesn't, since an epidemiological study like his can only establish *association* and not *causality*. (A different type of study is required to prove evidence of causes.) Keys' claim and study are the rather shaky foundation that decades of low fat dietary dogma are built upon. Even though better studies have either vindicated dietary saturated fat, or showed no link to heart disease, repeatedly the dietary (and treatment) guidelines have not been updated, essentially for non-scientific reasons. The UK, among many countries, has simply adopted the US lead against dietary saturated fat and continued with it, despite the contrary evidence. (This page illustrates a fairly recent example of the guidelines not being changed despite the contrary evidence and medical professionals realising the guidelines are incorrect:

http://www.zoeharcombe.com/2018/07/saturated-fat-consultation-sacn-my-response/)

Saturated fat build-up in the blood (and body cells) indeed indicates an increased risk of Cardiovascular Disease. However, it doesn't originate from eating saturated fat, as research studies have shown. In fact, the saturated fat is made by the liver - a process called *hepatic de novo lipogenesis.* This process is triggered by insulin and typically occurs when dietary fat is replaced by carbohydrate. This mechanism offers an explanation why a March 2018 study entitled *Global Correlates of Cardiovascular Risk: A Comparison of 158 Countries* stated: "However, regardless of the statistical method used, the results always show very similar trends and identify high carbohydrate consumption (mainly in the form of cereals and wheat, in particular) as the dietary factor most consistently associated with the risk of CVDs." where CVDs = Cardiovascular Diseases. Someone eating a Ketogenic diet will tend to have lower levels of saturated fat in their blood and body tissue than someone eating a low fat diet rich in carbohydrate.

Nina Teicholz spent nine years doing background research and analysing the relevant US dietary research studies published since the 1950s, and found that the US dietary guidelines against saturated fat have not been supported by good science. She published her findings in the 2014 book *The Big Fat Surprise*, which has received positive appraisal in more than a dozen scholarly review papers, including *The Lancet*. The piece in *The Lancet* Vol 390 August 19, 2017 titled "Fat and heart disease: challenging the dogma" says " … readers might be incredulous at some of Teicholz's claims and want to check the references. When many of those papers are read again from a more critical perspective, the angst and anger will rise." i.e.: what Nina claims in her book can be verified, and realising how for decades we have been given incorrect advice about diet and saturated fat will produce anger and angst.

The review continues: "Teicholz reminds us to … remember that associations do not provide evidence of causality … " (Note again the important distinction between association and causality.) Sadly, such logical errors can exist in both medical research studies (whether conducted by pharmaceutical companies or not) and the medical advice we are given. I have found glaring logical inconsistencies in both official health advice against Low Carbohydrate diets and also the half-hearted Low Carbohydrate advice given by other organisations.

An example of highly publicised Low Carb misinformation: In August 2018 there were numerous press reports saying a 25-year US study showed that Low Carb diets can shorten life expectancy. In the study paper, the "Low Carb" group had a median (average) of energy from carbohydrate of 37%. Assuming they ate 2000 calories daily, that makes 185g of carbohydrate. This is far too high even to be considered Liberal Low Carb (typically 50-100g, but usually at most 130g), so the paper was incorrect to say it had produced a result relevant to Low Carb diets. (There were also issues about the way the study was conducted, and with the statistical analysis, which imply the conclusions of the paper should not be given much credence.)

I continued listening to other episodes of The Low Carb Cardiologist Podcast, including those with Dave Feldman, Siobhan Huggins and Ivor Cummins. I also discovered The Fat Guy Podcast (hosted by Brett Mason) for Keto vs Atkins (Atkins doesn't restrict protein as Keto does), electrolyte info (the need for sodium, magnesium and potassium supplements to avoid "Keto Flu" and muscle cramps), how to estimate your daily protein requirement by considering your Lean Body Mass, and I found it to be very encouraging. I even bought the 2009 update of the original Dr Atkins book titled *New Diet Revolution*, as recommended by a Low-Carb Diet forum member, and found it helpful and took many notes.

Dr Atkins, a cardiologist, was actually scientific, sensible and nuanced but perhaps a little brash. However, his 2009 book contains an apology: "When I wrote the first edition of this book in 1992, I was hotly indignant over the dietary guidelines that I felt were ruining people's lives. I was very critical of some of the individuals who proposed low-fat weight loss programs, and I apologize, because many of them were sincere in their efforts to help people." Sadly, although Dr Atkins was right about Low Carb High Fat, he was shunned/ridiculed by much of the Medical Establishment and thus ignored by many people who could have found help through his methods.

I continued attending the Diabetes Prevention Programme classes where we were rightly encouraged to avoid "free" (i.e.: added) sugar and fruit juice (although sugar in fruit or dried fruit was considered OK). We were also advised to have wholemeal bread, potatoes with their skins on and wholemeal pasta, which I duly did. This advice seems sensible since their Glycaemic Index (which indicates the effect of a carbohydrate on a person's blood glucose level) is lower than that of white bread, peeled potatoes and regular pasta. I then came across Dr David Unwin.

Dr David Unwin, a senior GP from Southport UK, and his wife Dr Jen Unwin (a Consultant Clinical Psychologist) had a paper published in early 2014 entitled "Low carbohydrate diet to achieve weight loss and improve HbA1c in type 2 diabetes and pre-diabetes: experience from one general practice". It says:

> The authors' interest was first sparked by the fact that even wholemeal bread (GI index 71) or baked potato (GI index 85) has a higher glycaemic index than table sugar itself (GI index 68).

This sentence eloquently shows the inadequacy of the "continue eating carbohydrate" dietary advice being given to people with Type 2 Diabetes or Prediabetes, and which we were given at the DPP classes. (Depending on size, eating a baked jacket potato is likely rather worse for your blood glucose than eating 20 sugar cubes, which you probably wouldn't even dream of doing.) I gather David Unwin has been working closely with www.diabetes.co.uk on their Low Carb Program for some time now. Also, his Low Carb work, which has been saving his NHS GP practice over £35k pa on insulin and other drugs, has begun to get such approval from the NHS that they have asked him to promote his methods to other GPs and he is also helping to train NHS diabetes nurses.

Through Jason Fung's website I found that a 1919 book *A Biometric Study of Basal Metabolism in Man* shows that calorie-restriction ("Eat Less, Move More") inevitably leads to a comparable metabolic slowdown, so is bound to fail long-term for *physiological* reasons. (Your body is trying to keep you alive in what appears to be a food shortage.) Even if initially successful, it will become less and less effective until weight loss grinds to a halt. Then calorie-restriction is essential merely to avoid weight gain, and various hormones (including ones triggered by eating carbohydrate) are constantly screaming at you to eat something. (Studies have shown that after twenty-two months of calorie restriction, the hormones are screaming just as loudly.) When you finally succumb to the overwhelming odds, you will probably end up heavier than you were to begin with. Also, you are probably accused of (or feel guilty about) being weak and lacking will-power, which is actually quite untrue: hormones are not subject to will-power. (Also, metabolic slowdown is not at all pleasant, and far worse than mere hunger pangs. Some totalitarian regimes have used calorie-restriction and the resulting metabolic slowdown to torture their political opponents.) Happily, a Low Carb diet is able to get around these two physiological problems associated with calorie-restriction.

One 1959 study by Albert Stunkard, M.D. and Mavis Mclaren-Hume, M.S. said "This study grew out of an attempt to resolve a paradox - the contrast between my difficulties in treating obesity and the widespread assumption that such treatment was easy and effective." Sound familiar? It detailed that their success rate for an obese person on a calorie-restricted diet losing 20 pounds and keeping it off for two years, even if they were supervised and supported, was just 2%. (Much more recent studies with similar long-term parameters fare no better – we've spent at least 60 years barking up the wrong tree.) I'm not at all surprised by the 98% long-term failure rate. What is surprising is that instead of entertaining the possibility that "Eat Less, Move More" is somehow inadequate (or simply does not suit everyone), dieticians blame the patient for the failure of a treatment plan that was shown a hundred years ago would be ineffective long-term. It is also surprising that (seemingly) most dieticians and healthcare professionals view Low Carb/Keto as a "fad diet" and having no scientific basis. Ironically, it is "Low Fat" and "Eat Less, Move More" that are not supported by good science.

It has been reported that despite the Low Fat message we've been given for decades that obesity, Type 2 Diabetes and heart disease are on the increase. Seemingly, most dieticians presume it is

because people are obstinately not following their advice (and even lying about their food intake), whereas it is actually *because* people are following the advice and the advice is incorrect.

Some perspective: On the whole I have found medical professionals to be sincere, well-trained and helpful and I wouldn't be alive now without them. Perhaps one reason for the intense feelings on both sides of the dietary debate is to do with apportioning blame: I wasn't chastised or had my character brought into question when I needed an emergency appendectomy. I gather my negative experience of having my willpower called into question by a healthcare professional is not at all unusual for people struggling to lose weight. However, dieticians are merely following their flawed training and not deliberately misleading or mistreating people, but it does seem rather unfair on the poor patient! (It also seems high-time that updated dietary training should be given to dieticians and other healthcare professionals.)

A blood lipid profile consists of values for HDL Cholesterol, LDL Cholesterol and Triglycerides. HDL Cholesterol, so-called "good cholesterol", is heading towards the liver and considered benign. LDL Cholesterol, so-called "bad cholesterol", is essentially travelling from the liver to other organs. Describing LDL as “bad cholesterol” is an unhelpful oversimplification. Firstly, not all LDL Cholesterol is bad: if a healthy person injures themselves or gets an infection then LDL levels become elevated as the body works hard to repair itself, but LDL levels fall again when the problem has resolved. In these cases, elevated LDL is a sign of a problem, and isn’t the problem itself. (Recall the distinction between association and causality.) Indeed, arterial plaque consists of LDL, but not all LDL particles are created equal:

I found the talk 'Making Sense of LDL' by Asst Prof. Ken Sikaris on YouTube very helpful. He correctly states that not all LDL is harmful. Also, small dense LDL (sdLDL) is the most likely to cause arterial plaque and then narrowing and hardening of the arteries (which in turn could lead to Cardiovascular Disease) but people on a Ketogenic diet tend to have less sdLDL than those eating a diet rich in carbohydrates, and starting a Ketogenic diet will typically reduce a person’s percentage of sdLDL. Also, cardiologists find the quotient Triglycerides/HDL is a much better indicator of Cardiovascular risk than merely the level of serum LDL Cholesterol. (This material is also expertly covered in Ch 8 “Lipoprotein Effects” of the book mentioned earlier by Volek and Phinney.)

Someone on a Ketogenic diet is in Ketosis, i.e.: in fat-burning mode rather than glucose-burning mode. LDL is part of the transport mechanism which carries fat energy around the body. However, when the energy payload has been delivered, the resulting LDL is quickly recycled by the liver for reuse, so doesn't get small and dense and then possibly clog the arteries. Hence elevated LDL for someone in Ketosis isn't necessarily a health problem at all.

Having thus satisfied myself of the scientific basis and safety of Keto and knowing I had to do something about my health, I decided to give it a try. It was something of an experiment but I had various blood tests done before I started, as Atkins suggests, to make sure it would be done safely. I kept my GP onside with a carefully worded approach, saying that I anticipated he might want to keep an eye on things, e.g.: my lipid profile (HDL,LDL,Triglycerides), HbA1c, liver and kidney function etc. and he was happy to oblige. He was concerned, though, that my LDL would rise so was advocating it should only be short-term for weight loss. I replied "I know you aren't expecting this, but should my HDL go up and my Triglycerides go down, would you be happy for me to do it long-term?" and he confirmed that he would.

Happily, my Triglycerides were surprisingly low at the pre-diet blood test and stayed low. My HDL increased steadily, suggesting that I have reduced my cardiovascular risk. LDL increased somewhat, as expected, but taken in context that didn't cause concern. My HbA1c became low/mid 30s and classed as Normal, and after successfully losing 3½ stone my weight stabilised in the Healthy range. I've also just reached my second anniversary of doing Keto (03/07/2020).

What's the catch? You have probably realised by now that a Low Carb diet is rather counter-cultural, both socially and in medical terms. Firstly, eating out or socially is harder and more

restricted, but not impossible. Secondly, much (but not all) of the medical profession seem anti-Low Carb and unaware of the science behind it, although there are exceptions and Dr David Unwin's work is gaining official recognition. Also, there are few convenience foods that are Low Carb, so more cooking/food preparation is required. On the plus side, there are online resources (including recipes) and support available (e.g. the Low-Carb Diet forum) which are free and make a huge difference. I've produced a sheet entitled *Practical Tips for following a Low Carb or Ketogenic Diet* which can be obtained freely.

Rereading parts of *The Art and Science of Low Carbohydrate Living* it turns out that despite much research effort, what causes Insulin Resistance (IR) is not really understood. One of the features of IR is high insulin levels, and one of the roles of insulin is body-fat storage. It turns out that obesity is a *symptom* of IR and not a *cause*. No wonder those with high insulin from IR struggle, as did I, to lose weight with “Eat Less, Move More”! I gather Low Carbohydrate diets actually improve IR in a number of ways, and so enable weight-loss as well as improving other health markers, just as I experienced. Also, IR is an indication that the metabolism isn't really coping with carbohydrate, effectively carbohydrate intolerance, so carbohydrate restriction makes good sense.

People are rightly concerned about the environment, so how can we square this with red meat and dairy consumption? Done correctly, raising grass-fed cows can actually result in net carbon capture and be positive for the environment. (For example, go to www.eatwild.com and look at the Environmental Benefits section.) Beef and butter (e.g. Kerrygold butter) from grass-fed animals is also tastier and more nutritious than the grain-fed alternative.

A big "Thank You" to those who host/run the Low-Carb Diet forum at www.diabetes.co.uk and to all those in the forum community who have helped me personally with advice or info. Thanks, too, to the church friend who is also a nurse for her constructive feedback on this text.

Please feel free to share this write-up

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