

From the other side of the desk: Patient perspective

Why I adopted the low-carbohydrate approach

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About this series

The aim of the “From the other side of the desk” series is to provide a patient perspective and a pause for thought to reflect on the doctor–patient relationship.

Author

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I was diagnosed with type 1 diabetes in 1957 when I was 6 years old. By the 1980s, I had developed some complications: eye damage (retinopathy) and nerve damage (neuropathy), including delayed stomach emptying (gastroparesis). Over the years, I tried hard to keep good blood glucose levels and applied the standard high-carbohydrate, low-glycaemic advice. But I could not achieve consistently near-normal blood glucose. As a result, I was having severe hypoglycaemia, and my diabetes complications were worsening. The high-carbohydrate advice just did not work.

In 1998, I became aware of a novel approach consisting of a low-carbohydrate food plan, with a normal intake of protein and variable consumption of fat, which results in reduced insulin doses. I learnt about this approach from various sources, including Dr Richard Bernstein, an endocrinologist with type 1 diabetes, who has written extensively on this, such as in his book *Dr. Bernstein's Diabetes Solution*. After much experimentation, I have reduced my total daily intake of carbohydrate from over 250 g to 80 g.

Seeing results

Since adopting the low-carbohydrate approach, my insulin requirements have fallen by 50% to 25 units daily. My HbA_{1c} has greatly improved. Variations in my daily blood glucose levels have reduced, and episodes of hypoglycaemia are much less severe. As noted by my ophthalmologist, my retinopathy has stabilised.

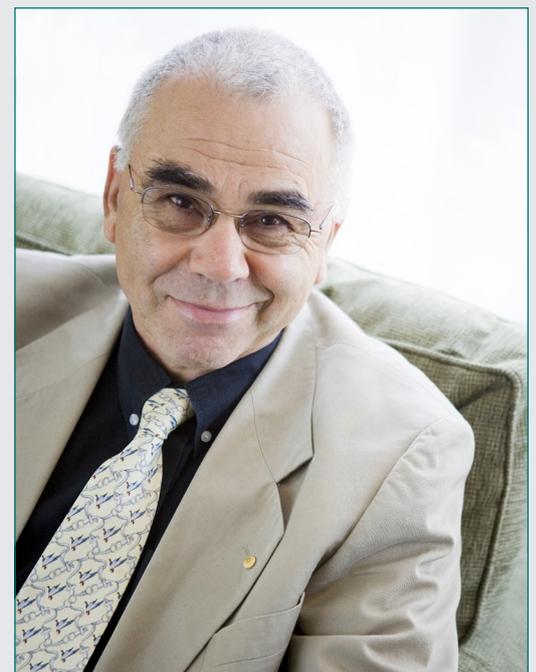
Importantly, hunger has decreased (insulin is

an appetite stimulant, and this regimen resulted in much less insulin). I am more motivated, feel less frustrated, and my subjective quality of life and outlook have improved enormously.

I do not regard this food plan as “radical” or a “fad”. It should not be confused with the extreme nutritional plans, which are periodically given publicity. This is not a “high-protein diet”; protein content is chosen and adjusted in part based on what gives a feeling of satiety.

Rationale

In *Diabetes Voice* in 2002, the Secretary-General of the International Society for



Paediatric and Adolescent Diabetes commented that: “Nutritional management is commonly described as one of the cornerstones of diabetes care... unfortunately, it is the cornerstone which may be least understood, most under-researched, and to which there is the poorest adherence.”

There remains enormous confusion and misunderstanding about the optimal dietary advice for people with diabetes. Why are people with diabetes advised to eat so much carbohydrate? Often this is 50% of calories for carbohydrate, which effectively means 300 g of carbohydrate daily. That is equivalent to 60 teaspoons of sugar daily! It should be borne in mind that this is a food type that is the root cause of blood glucose instability and which increases the need for insulin – in turn creating further problems.

Lowering daily carbohydrate intake makes sense for many reasons. The greater the intake of carbohydrate, the more unpredictable the timing and size of the resultant increase in blood glucose. This is exacerbated by the variability of insulin absorption (the impact and timing of the action of insulin in lowering blood glucose). Moreover, this variability increases as the quantity of injected insulin increases. All of which means that a regimen consisting of a high intake of carbohydrates, including complex carbohydrates, results in erratic and unpredictable blood glucose profiles, compared to a low-carbohydrate, low-insulin regimen.

Gastroparesis

Gastroparesis, provoked by diabetes-related nerve damage, further adds to variable and unpredictable blood glucose levels. This condition, which is very common in people with long-standing diabetes, can be very unpleasant, with symptoms ranging from mild discomfort to acute pain. In people with gastroparesis, large amounts of carbohydrate can remain in the stomach for variable periods of time. Then, unpredictably, and possibly very suddenly, these carbohydrates are processed or emptied with the resultant glucose entering the circulation uncontrolled.

The large amounts of insulin that are

injected by people with gastroparesis on a high-carbohydrate diet continue acting, contributing to highly irregular blood glucose levels and the possibility of major hypoglycaemia. The risk of hyperglycaemia is increased as, at some point, the carbohydrate is digested, resulting in a rapid and drastic rise in blood glucose.

Understandably, recommendations to consume high levels of carbohydrates are a formula for very variable blood glucose levels and hypoglycaemia. Indeed, this is the experience of many people with diabetes. There are other potential implications of high-carbohydrate recommendations.

A possible relationship exists between high insulin doses and the development of vascular disease, including heart disease, independent of any other factor. A growing body of evidence describes the role of even brief increases in post-meal blood glucose levels in the development of disabling and potentially life-threatening diabetes complications. It is speculated that night-time hypoglycaemia – “dead-in-bed” syndrome – may also be caused by the large amounts of insulin taken by people trying to match their high carbohydrate intake – in many cases tragically resulting in a life-ending hypoglycaemia.

What to eat

This is a simple and practical regimen; a wealth of satisfying and tasty low-carbohydrate snacks and meals are readily available or can be easily prepared. Here is one example of a satisfying meal that contains 10 g to 15 g of carbohydrate and 120 g of protein:

- Soup made from stock.
- Garden salad with olive oil.
- A medium-sized serving of fish or vegetable protein.
- Cooked vegetables (no potatoes or similar)
- Cheese (e.g Brie).
- Tea or coffee with a small amount of milk.

Such a meal requires very few units of insulin – in my case 3 to 4. Compare this to the effects of a meal with 100 g or more of carbohydrate: more insulin is required in response, resulting

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in considerably greater variability and unpredictability in blood glucose levels, and worse outcomes.

Importantly, in a high-carbohydrate system it becomes extremely difficult to estimate accurately the intake of carbohydrates. Food labelling provides only an approximation of carbohydrate content. In a meal consisting of 100 g of carbohydrates, a 20% error in estimating translates into 20 g of carbohydrate either overcompensated or undercompensated (by the action of a dose of insulin). This compounds unpredictability in blood glucose levels. The degree of error described above can be very significant; by comparison, the treatment for hypoglycaemia is about 15–20 g of glucose.

As an aside, the glucose tolerance test, which is widely used in the diagnosis of diabetes, uses 75 g or 100 g of carbohydrate to test the body’s mechanism for regulating blood glucose. “Standard” dietary advice, in effect, obliges people with diabetes to metabolise the equivalent (the type of carbohydrate might differ, but the volume is the same) of three glucose-tolerance-test loads every day! What is the sense in recommending that a person who has major problems metabolising carbohydrates consume a huge carbohydrate load every day?

Why is so much carbohydrate consumption recommended?

One of the historical reasons for the traditional dietary recommendations for people with diabetes – and indeed, the general population – relates to heart disease and other vascular disorders, which have been attributed to an increased intake of fat. In order to reduce the amount of fat consumed while meeting the target intake of calories, a decision was taken to recommend increasing the amount of

carbohydrate in people’s diet. However, this was done without examining the contribution of carbohydrate itself to heart disease and obesity, the implications for people with diabetes of higher carbohydrate intake in terms of varying blood glucose levels, or the negative effects from the large amounts of insulin that are required to attempt to control blood glucose.

We will see a reduction in the diabetes epidemic when there is a major change in dietary recommendations.

It is not difficult to live with a nutritional regimen that is low in carbohydrates, higher in fats (lower in saturated fat and higher in the unsaturated fats) that help to provide the required energy. Calories can be obtained from healthy fats; for example, two tablespoons of olive oil yield 360 calories – a significant amount in terms of a person’s daily needs. The premise that a high carbohydrate intake is essential to meet caloric needs of people with diabetes in order to reduce the risk of heart disease is clearly unsound.

Conclusion

The current recommendations overlook a fundamental reality: blood glucose levels in people with diabetes vary with increasing unpredictability as the consumption of carbohydrate increases. A reduced intake of carbohydrates requires smaller amounts of insulin, resulting in increased predictability and smaller variation in blood glucose levels. The tools exist to maintain continuously near-normal blood glucose levels. Indeed, this approach has improved my life enormously. Yet only small numbers of people benefit from these because high-carbohydrate recommendations continue to be the standard advice. ■