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**Subject:** FW: Inquiry into the Role of Diet in Type 2 Diabetes Prevention and Management  
**Attachments:** Results of a survey by a US practitioner of people who have trialled carbohydrate reduced diets.docx; Jennifer Elliott-1.docx

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**Sent:** Friday, 12 October 2018 5:33 AM  
**To:** Committee, Education & Health Standing <[laehsc@parliament.wa.gov.au](mailto:laehsc@parliament.wa.gov.au)>  
**Subject:** Inquiry into the Role of Diet in Type 2 Diabetes Prevention and Management

Jennifer Elliott

Committee Members for the Inquiry into the Role of Diet in Type 2 Diabetes Prevention and Management  
Via Committee Chair  
Education and Health Standing Committee  
Legislative Assembly Committee Office  
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Dear Committee Members

### **RE: SUBMISSION FOR THE INQUIRY INTO THE ROLE OF DIET IN TYPE 2 DIABETES PREVENTION AND MANAGEMENT**

I have been a dietitian for nearly 40 years, with a particular interest in the management of type 2 diabetes, Metabolic Syndrome and insulin resistance.  
Even though I have been recommending carbohydrate restriction to clients with these conditions for many years, this was not my practice in the early days.

When I graduated in 1979 the Australian Dietary Guidelines had just been released. We were taught that these guidelines were the basis of a healthy diet for everyone and for many years I believed this.

My practice changed because of the experience of having a child with a weight problem, despite a very healthy diet and lifestyle. She gained weight around the tummy at an early age, seemed to have less energy than her siblings, was a mouth-breather, suffered with reflux and could be moody at times. All signs I now recognise as relating to insulin resistance.

At around 12 years of age she gained a lot of weight quite quickly and by age 14 was borderline obese. And I was at loss to explain why.

I luckily met a GP whose family situation was remarkably similar to mine; 3 slim, high energy, eat-what-they-like children and one with a weight problem. After hearing about the presence of insulin resistance in young, seemingly healthy children, and not just in people with diabetes as she had been taught, this GP had her daughter tested and suggested the same for my daughter.

A two-hour GTT with the addition of 5 insulin measures showed normal blood glucose levels but a high insulin response, fitting the diagnostic criteria for insulin resistance.

I have been researching everything I could about insulin resistance and its relationship to diabetes and obesity ever since.

Noting the terms of reference of your inquiry, I would like to focus primarily on the **adequacy of prevention and intervention programs.**

## Introduction

In Australia, nutrition programs designed to prevent many health related disorders or to manage such disorders once they have developed, are almost exclusively based on the Australian Dietary Guidelines, a set of principles for healthy eating that have been with us for over 40 years.

I believe that the ADGs as a guiding set of principles for good health are a failure and have contributed to the obesity and diabetes epidemics that we are currently facing.

The ADGs are not, and have never been, based on science. If they were, it would not be possible for the 2003-2013 edition have come up with the advice for Australian adults to eat the equivalent of 8-24 slices of bread per day.

The ADGs have failed to keep the population healthy, and programs based on them have largely failed to treat/manage obesity and diabetes once developed.

To understand why this is the case, I'd like to present some background to the development of the ADGs and propose reasons not only for their failure to keep Australians healthy, but how they may actually contribute to people becoming overweight and diabetic.

## History of the ADGs

The ADGs started as a compilation of "ideas" about healthy eating that were accepted and became policy without ever being tested. The first edition in the 70s recommended reducing fat intake and eating plenty of carbohydrates such as breads and cereals and this advice has continued with all subsequent revisions.

A history of the ADGs can be found at <http://blog.babyboomersandbellies.com/?p=17>

The advice to reduce fat intake to help maintain a healthy weight or for weight loss is based primarily on the fact that fat contains more energy than other macronutrients eg fat has twice the energy content of carbohydrate. (1tsp fat/oil = 36 cal; 1 tsp sugar = 16 cal). Coupled with the common, but erroneous, belief that weight gain is simply a case of eating too much and exercising too little, cutting calories by reducing fat intake seemed like a good idea.

Similar guidelines were being considered for implementation in the U.S. but with more opposition than we saw in Australia. A respected lipid researcher urged caution in the low fat recommendation, saying that if such advice were given to the American population, it would be equivalent to conducting a large-scale experiment, the consequences of which were unknown.

The consequences of demonising fat and recommending “plenty of carbs” for the last 40 years are no longer unknown.

### **Carbohydrate metabolism and insulin resistance.**

There is increasing scientific evidence that the idea of overweight simply being the result of too much food and not enough exercise, best managed by a low fat diet/energy reduced diet, is inadequate. It has been demonstrated that there are differences in the way people metabolise foods, particularly carbohydrates and while many people are able to metabolise carbohydrates well and thrive on a reduced fat diet, this is not the case for all.

Carbohydrate foods such as bread, potato, rice, pasta, cereals, fruit, milk, sugar etc are broken down to simple sugars, predominantly glucose. Glucose is absorbed into the blood and the subsequent rise in the blood glucose level (BGL) triggers the pancreas to release insulin. Insulin aids in the transport of glucose into cells where it is either stored as glycogen or used to provide energy.

Many people are able to metabolise carbohydrate foods in this way. They are likely to release the right amount of insulin in response to a rise in their BGL, glucose is quickly cleared from the blood into cells, BGLs remain in the ideal range, our person has lots of energy and doesn't gain weight easily.

However insulin resistant people have a different metabolic response after eating carbohydrates. If their muscles are resistant to the action of insulin, glucose does not enter muscles quickly and an enhanced insulin response may be precipitated in an attempt by the body to maintain glycaemic control.

High insulin levels may maintain ideal glucose levels for many years but at a cost.

In the scientific literature, there is documentation that high insulin levels are associated with high triglycerides, low HDL, fatty liver, sleep apnoea, excessive hunger, weight gain,

central adiposity, difficulty losing weight, tiredness, reflux/ indigestion, type 2 diabetes, gout, hypertension, anxiety, depression, loss of muscle mass, micro albuminuria, inflammation, CHD, poorer breast cancer prognosis and memory impairment. (I can provide references for all these associations if asked)

To put this into real-life context, a person who has an excessive insulin response after eating carbs is likely to have hormonal responses triggered that make them excessively hungry, crave more carbs, experience mood changes associated with comfort eating and/or binge eating, tiredness/lethargy that make them less inclined to exercise and reduced satiation after meals so that they eat more without feeling full.

In addition to these effects on hunger and appetite, high insulin levels promote weight gain by increasing the conversion of glucose to fat in the liver and stimulating visceral fat receptors to take up this fat, resulting in central obesity. And weight loss is made difficult by the effect of high insulin levels on inhibiting lipolysis (fat breakdown).

These are more likely to be the issues that explain the lack of success of the usual practice of focusing on energy and fat restriction, without regard to carbohydrate intake. For insulin resistant people, low fat/high carb advice sentences them to a struggle of cravings, excessive hunger, low energy and reduced satiation.

### **Development of type 2 diabetes.**

Type 2 diabetes and pre-diabetes are often diagnosed at the end of a process that has been developing over many years. The high insulin response at the start of the process may keep the blood glucose level at an appropriate level for a while but over time, insulin levels can change as the disorder progresses. The stage may be reached where there is a decline in  $\beta$ -cell function and the pancreas is unable to maintain adequate insulin production. Blood glucose levels rise as a consequence and the diagnosis of type 2 diabetes is made at this stage.

When a person is first diagnosed with type 2 diabetes they are often advised that it can be managed with diet and exercise. If diet and exercise are not successful in lowering blood glucose levels then medication is given. Often insulin injections are introduced at a later stage if blood glucose levels remain high. The sequence of events from treatment with diet and exercise only, to the addition of oral medications and finally of insulin, is commonly observed.

With the current management approach, blood glucose levels appear to become harder to control over time and increasing doses of medication and insulin are prescribed.

I believe that the reasons optimum blood glucose levels are not achieved is due to poor understanding of the underlying cause, resulting in **incorrect dietary advice** being given at the very beginning.

## The adequacy of prevention and intervention programs

Generally the diet advice provided by diabetes organisations for people with type 2 diabetes follows similar guidelines. It's appropriate in this submission to look at those from Diabetes W.A. in more detail.

As detailed on their website, Diabetes W.A. makes the recommendation to follow the Australian Dietary Guidelines as a preventive measure

<https://diabeteswa.com.au/prevention/reduce-your-risk/eating-for-good-health/>

I do not believe that this advice is correct. If an insulin resistant person followed the ADGs ie reduced their fat intake and ate plenty of carbohydrate foods, they have a greater chance of their insulin resistance worsening over time and eventually developing diabetes. And as we have seen happen over the last 40 years since the ADGs were introduced.

In addition, for those who have developed diabetes, Diabetes W.A. says that healthy eating for people with diabetes is no different from what is recommended for everyone else.

The Diabetes W.A. website also provides meal suggestions.

**Breakfast:** 2 slices wholegrain raisin toast with a thin spread of poly or monounsaturated margarine

Carb content: 30 gm carb = approx. 7 tsp sugar

**Lunch:** 2 slices wholegrain bread spread with 1/4 avocado, 2 slices low-fat cheese, lettuce, cucumber and sliced tomato

Carb content: 30 gm carb = approx. 7 tsp sugar

**Dinner:** 100g lean stir-fried lamb strips served in 1/2 wholemeal Lebanese flat bread with sliced tomato, cucumber, onion, 1 cup tabouleh and 2 tablespoons hummus

Carb content: 40 gm = apprx. 10 tsp sugar

**Snacks** include fruit, crackers and bread, all of which contain around 15 gm carbohydrate per serve, which will be broken down to 3-4 teaspoons glucose.

Essentially the advice from the Diabetes W.A. is encouraging people who have high blood glucose levels **as a result of a problem with carbohydrate metabolism**, to eat the very foods that lie at the heart of the problem.

When such diet advice is followed, blood glucose and insulin levels are likely to be raised over the entire day. Over the longer term, these higher levels may lead to weight gain, high blood fats, poor sleep and possibly to the development of other diseases such as gout,

kidney and heart disease. The resulting lack of success in reducing blood glucose levels with such diet advice is often interpreted as “the diet not working”. The truth is that high blood glucose levels and weight gain are exactly what should be **expected** from following advice to eat carbohydrates at each meal and for snacks. Quite simply, such advice is illogical and counter productive.

A marked difference can be seen when contrasted with a lower carbohydrate meal plan.

Such an example could be:

**Breakfast:** 3-egg omelette with tomato, onion and cheese  
pan-fried mushrooms

**Lunch:** Chicken, avocado and macadamia salad with whole egg mayonnaise

**Dinner:** Beef in creamy mushroom sauce, cauliflower rice and grilled asparagus.  
Small serve berries and cream or full fat yoghurt

**Snacks:** celery, capsicum, cucumber, cheese, low carb dips

Low carbohydrate meal plans such as this have been shown in clinical trials to result in lower blood glucose levels, improved diabetes markers, improved lipid levels, reduced need for medication and to be well accepted by patients.

A recently published joint position paper from the American Diabetes Association and the European Association for the Study of Diabetes includes approval of Low Carbohydrate diets for use in the management of Type 2 diabetes, with the recognition that they are both safe and effective. They added that no benefit of moderate carbohydrate restriction (26–45%) was observed.

### **Effective diabetes self-management with reference to Aboriginal communities**

I would also like to comment on effective diabetes self-management with reference to Aboriginal communities. I note that on the Diabetes W.A. website, diet advice for Aboriginal people with diabetes is to have approximately 50% of the diet as carbohydrate foods. These are suggested to be mainly grains and cereals such as bread, flour, damper, breakfast cereals, rice, pasta and couscous. Also advised are low fat dairy, lean meats, tofu, margarine, vegetable oil and soy milk.

With regard to Australian Aborigines and type 2 diabetes, it is clear that a pre-European diet was a very low carbohydrate diet; however as talked about in this blog (by a West Australian) we have simply tweaked the Australian Dietary Guidelines to apply to all.

<http://macrofour.com/prof-andrikopoulos-paleo-pringle-australian-diabetes>

This is despite the fact that a traditional diet was shown in the 1980s to reverse diabetes in people in the Kimberley region. It appears that solution was not continued because low-fat dietary guidelines were being introduced nationally as a public health initiative. This is described in this blog post by the same author who also takes a look at the diet of Southwest aborigines.

<http://macrofour.com/nyungar-diabetes-australian-dietary-genocide>

As a dietitian, I am concerned that a guide to healthy eating for indigenous Australians would ignore the body of work by Prof. O'Dea and instead impose a diet based on inappropriate evidence which is inconsistent with the macronutrient composition of a traditional diet.

Finally, noting that other traditional people have the same issue and are using a grass-roots approach to solve it themselves, I am concerned that we are not empowering Australians with good information to be able to take their health in their own hands. I believe that this post by the same author about a Tongan in New Zealand using a restrictive low carbohydrate diet and keeping it's cost low and the food culturally appropriate is relevant to this discussion.

<http://macrofour.com/kiwi-tongan-joseph-finau-daphnis>

I believe that it is time to reassess the advice currently given to people with diabetes, and to critically evaluate the role of the Australian Dietary Guidelines in contributing to the current high rates of obesity and diabetes.

I hope that WA can lead the way and the rest of Australia follows.

Yours sincerely

Jennifer Elliott

**Attachments:**

1. Results of a survey by a US practitioner of people who have trialled carbohydrate reduced diets.
2. Case study

## **Results of a survey by a US practitioner of people who have trialed carbohydrate reduced diets.**

(Can be verified if requested)

1. I lost about 15 lbs and only have 5 lbs more to go. My type 2 diabetes is heading into remission. I quit statins and Metformin. My triglycerides dropped amazingly

*Are you planning to stay on it or change?*

I am in it for life. I enjoy what I eat and miss nothing. I have so much energy! I started working out too! I am 64 so feeling this great is something new after 20+ years of type 2 diabetes limiting what I could do.

2. *Q. How long you have been/were on this nutrition*

A. 1 year, 2 months.

Results: I have lost 45 pounds, most in the first 6 months, and my BMI is 26.5, still overweight. My A1c dropped from 6.1 to 4.9.

For me it was the easiest diet to follow, and I've tried quite a few....most notably Quick Weight Loss Centers and Weight Watchers, never had this level of success or ability to commit.

It's easy to follow, I don't ever feel deprived, I'm in control of my food instead of food being in control of me, I'm never hungry.

3. I don't know what my percentages are, but I try to stay below 20g carbs, 50-60g protein, 150g or more fat. Absolutely staying Keto for life. I feel better now than I have for 10 or more years and can't imagine going back to carbs.

I have lost 58 lbs so far.

Easiest way of eating I've ever experienced and totally doable.

I feel better than I did in my 50s. I'm 69 now, turning 70 in March, and this is my way of life now.

3. I've done keto diet for several years. I was able to get off blood pressure meds and lose sixty pounds which I kept off.

4. Time on low carb: Over 4.5 years now.

I started for blood sugar control and my 100+ pound weight loss was a huge bonus!

I went from a life of illness and drug addiction to taking control of my health! Continuing for life.

I've never been so healthy! Not even as a child. I've even got my entire family doing it now. We regret not going keto many years ago.

Never going to stop.

5. Keto and intermittent fasting "cured" my Type 2 and I lost 110 pounds in weight 10 inches off waist . I try and stay below 20g of carbs per day.

## **A Reduced Carbohydrate Diet Results in Weight Loss and Improved Glycaemic Control in a Patient with Poorly Controlled Type 2 diabetes.**

Jennifer Elliott

**Background:** Evidence suggests that a reduction in carbohydrate intake is an effective strategy to reduce BGLs in people with Type 2 diabetes.

**Case study:** A 38 year old man with poorly controlled diabetes (HbA1c 10.7%), BMI 51.9 and features of MetS (central obesity, hypertension, HDL 0.8 mmol/l and Tg 1.85 mmol/l) presented for dietary advice.

Education included an explanation of pathways of carbohydrate metabolism and the effects of insulin resistance on hunger, appetite, energy levels, central weight gain, snoring, blood lipids and moods. The rationale for reducing carbohydrate intake to reduce insulin levels was explained and a 2-week trial of non-ketogenic carbohydrate restriction commenced. The diet intervention restricted carbohydrate foods to one meal per day, with other meals and snacks consisting of foods with a minimal carbohydrate content. This eating plan was well accepted by the patient, who chose to continue it for longer.

### **Results after 7 weeks:**

1. 13 kg weight loss (150 to 137 kg)
2. Cessation of insulin injections. (At initial consultation, insulin regimen was Lantus 32 u/s evening and Novorapid 22 u/s with meals).
3. FBG reduced from 14-19 mmol/l to 5 - 7 mmol/l
4. Pre-meal BGLs reduced from 15-20 mmol/l to 5-7 mmol/l
5. HbA1c reduced from 10.7% to 7.7%
6. Reduced snoring
7. Reduced hunger
8. Improved moods

**Conclusion:** A reduced carbohydrate intake for the management of Type 2 diabetes resulted in weight loss, improved glycaemic control, reduction in diabetes medication and was well accepted by the patient.